
Exercise Therapy for Low Back Pain Chiropractors' Patterns of Use and Perceptions of Educational Quality

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Purpose: To describe chiropractors' patterns of use and perceptions of educational quality regarding exercise therapy for low back pain. **Methods:** A two-page questionnaire was mailed to a random sample of 450 U.S. chiropractors. Respondents were asked to indicate which exercises they regularly used for the management of low back pain, and to rate the quality of their formal chiropractic education in preparing them to utilize each of the 10 specified exercises. **Results:** The response rate was 35.1% ($n = 158$). Seventy-six percent of the respondents regularly used six or more exercises. Stretching/flexibility and abdominal strengthening exercises were regularly used by the highest percentage of respondents (91.6% and 87.4%, respectively). Three of the 10 exercises received "good" or "excellent" ratings for perceived educational quality from greater than 50% of the respondents. In general, clinical use paralleled perceived educational quality and whether or not the respondents received training for a specified exercise. (*The Journal of Chiropractic Education* 17(2): 105-112, 2003)

Key words: chiropractic, education, exercise, low back pain, quality

INTRODUCTION

Despite long-standing seclusion from mainstream healthcare, low public acceptance, and legislative discrimination for the chiropractic profession (1-3), 33-40% of individuals with low back pain first seek a chiropractor for their complaint (4-6) and 60% of all visits to health providers for low back pain are to chiropractors (6). Furthermore, the chiropractic profession is growing. It has been estimated that the number of doctors of chiropractic in the United States (currently approximately 60,000) will double by the year 2010, while the number of medical doctors will increase by 16% during the same time period (7). Thus it is evident that chiropractors play

a large role in the management of low back pain and demographic trends suggest that their role may become more prominent in the future.

Low back pain continues to plague industrialized societies, with the majority of adults experiencing episodes at some point in their lives and annual costs of care exceeding several billion dollars (4,6,8). Presently, there are many options not only for the type of health provider that is chosen for the care of back pain, but also for the type of therapy. Recently, there have been trends toward an active exercise approach for the treatment of back pain (9). Generally, the efficacy of this approach has been supported (8,10,11).

Exercise therapy is included in the formal training of chiropractors (12,13) and has been utilized by chiropractors for the management of low back pain since the early part of the 20th century (12). Moreover, its use has been encouraged by those within the profession (14-17), and it has been estimated

that approximately 96% of chiropractors prescribe exercise as a treatment modality (18). Despite this highly integrated and long-term relationship between the chiropractic profession, low back pain, and exercise, the specific utilization patterns of exercise therapy among chiropractors for the care of low back pain are largely unknown. In addition, while it has been reported that the clinical actions of practicing chiropractors can be reasonably predicted from their formal educational experience (19,20), it is unknown if such a relationship exists for the clinical use of exercise.

The importance of quality in chiropractic education and the relevance of chiropractic education to clinical practice have been stressed (21–24). For example, it has been suggested that the chiropractic educational experience should focus more strongly on relevancy than efficacy, so that competent practitioners are produced who will be prepared to meet the needs of healthcare consumers (21,22).

While several attempts have been made to define quality in higher education (23,25–27), a universal definition has not been established (23,26). Additionally, a variety of factors have been used to characterize educational quality, but none has sufficiently examined the relationship between quality and the educational development of students (26). In the chiropractic profession, educational quality has been described through the use of objective measures, such as faculty–student ratios, number of journal publications, and percent of college faculty with academic doctoral degrees (23), while the use of more subjective measures, such as “exceptional,” “perfection,” “transformation,” “fitness for purpose,” and “value for money,” has been recommended (22).

In a recent survey of 177 practicing U.S. chiropractors, 77% of respondents perceived their formal chiropractic education as a “good” or “excellent” preparation for clinical practice, but in the specific areas of physiotherapy and rehabilitation, their perceptions were less favorable (28). Although the need for improvements in the quality of chiropractic education related to exercise therapy has been suggested (17), the perception of practitioners regarding educational quality in this area has not been fully explored. Since exercise is widely accepted as an effective modality for the treatment of low back pain and chiropractors are important providers of care for low back pain, this needs clarification. The purpose of this study was to determine chiropractors’ patterns of use and perceptions of

educational quality regarding exercise therapy for the management of low back pain.

MATERIALS AND METHODS

Subjects

The names and addresses of 450 U.S. chiropractors were randomly selected from the alphabetical index of the *National Directory of Chiropractic, 10th edition* (29) through the use of a random number table. A sample size of this magnitude has been previously used to survey practicing chiropractors (30) and is adequate for generalizability (31). Chiropractors who graduated during the years 1984 through 1999 from chiropractic colleges that were accredited at the time of survey distribution were invited to participate in the study. A graduation year of 1984 was chosen to ensure that the respondents received a chiropractic education under recent standards of the Council on Chiropractic Education (32). Completion of the questionnaire served as informed consent to participate in the study. The study was reviewed and approved by the sponsoring university’s Institutional Review Board for the Protection of Human Subjects.

Questionnaire Design and Administration

A two-page questionnaire (see Appendix) was designed to assess chiropractors’ patterns of use and perceptions of educational quality regarding exercise therapy for low back pain. Exercises selected for inclusion on the questionnaire were identified from published literature (11,14,16,33,34). Pilot studies with academic and clinical chiropractors indicated that the chosen exercises were the most commonly used for the treatment of low back pain. Prior to distribution, the questionnaire was carefully evaluated for clarity, content, and design by a panel of academic and clinical chiropractors, and university faculty with expertise in clinical rehabilitation, exercise science, and higher education. Appropriate revisions were made to the questionnaire in accordance with the panel’s recommendations. A one-page cover letter and the questionnaire were mailed to the sample of 450 chiropractors. The respondents anonymously returned the completed questionnaires in a stamped envelope provided by the investigators and there was no follow-up to the initial distribution.

Data Analysis

Standard descriptive and nonparametric statistics were used for data analysis. Frequency distributions were derived for chiropractic college attended and number of years in clinical practice and were compared between the original sample of 450 chiropractors who were mailed questionnaires and the respondents. For each exercise, frequency distributions were developed for clinical use (use regularly, do not use regularly) and educational training (received training, did not receive training) for all respondents, and for perceived educational quality (extremely poor, poor, fair, good, excellent) for the respondents who received training for the particular exercise in question. For each exercise, a chi-square analysis was performed to evaluate the relationship between clinical use and educational training (2×2 contingency table) and between clinical use and perceived educational quality (2×5 contingency table). Statistical significance was accepted at the .05 alpha level.

RESULTS

One hundred fifty-eight chiropractors responded to the questionnaire (response rate = 35.1%). The

average (mean \pm standard deviation) number of years in practice for the respondents and the original sample of 450 chiropractors to whom questionnaires were mailed were 10.3 ± 3.1 and 10.6 ± 3.3 , respectively. Responses were received from chiropractors located in 28 states with California, Iowa, Minnesota, New York, and Texas having the highest representation (12.0%, 7.6%, 5.7%, 5.7%, and 5.7%, respectively). Twenty-five percent of the respondents were female and 75% were male. Comparison of the college of graduation characteristics of the respondents, the original sample of 450 chiropractors, and a sample of U.S. chiropractors ($n = 5,000$) from the *Job Analysis of Chiropractic 2000* (35) is found in Table 1.

Summaries of the respondents' ratings of clinical use, educational training, and perceived educational quality for each of the 10 exercise techniques are found in Table 2. One hundred percent of the respondents reported that they regularly used at least one of the 10 specified exercise techniques for the treatment of low back pain, while 5.9% reported that they regularly used exercise techniques other than the 10 specified (e.g., aquatic therapy). Seventy-six percent of the respondents reported that they regularly used six or more of the 10 listed exercise techniques. Stretching/flexibility and abdominal strengthening exercises were regularly used by the highest proportion of respondents (91.6%

Table 1. College of Graduation Characteristics of the Respondents, Original Sample, and Respondents from the *Job Analysis of Chiropractic 2000*

College	Respondents (%, $n = 158$)	Original sample (%, $n = 450$)	JAC 2000 ^a (%, $n = 5000$)
Palmer (IA)	23.7	22.6	22.3
Life (GA)	12.2	16.6	12.3
Northwestern	9.0	5.7	4.5
National	8.3	7.1	9.2
New York	6.4	6.9	7.3
Los Angeles	6.4	5.9	7.5
Western States	5.8	4.2	3.7
Logan	5.8	6.5	8.4
Palmer (CA)	5.1	3.6	3.7
Parker	4.5	3.6	3.1
Cleveland (MO)	4.5	4.0	3.5
Texas	3.2	4.2	4.3
Life (CA)	1.9	3.6	2.6
Sherman	1.9	2.2	1.7
Cleveland (CA)	1.3	3.0	3.5
Bridgeport	0.0	0.2	0.2
Canadian Memorial	0.0	0.2	0.2

^a*Job Analysis of Chiropractic 2000* (35).

Table 2. Summary of Respondents' Patterns of Use, Chiropractic Training, and Perceptions of Educational Quality Regarding Exercise Techniques Used for the Treatment of Low Back Pain

Exercise technique	Use regularly ^a	Received training ^a	Perception of educational quality ^b				
			Extremely poor	Poor	Fair	Good	Excellent
Stretching/flexibility ^c	91.6	89.1	2.8	12.3	25.5	44.3	15.1
Abdominal strengthening	87.4	89.8	7.5	11.3	28.3	39.6	13.2
Lumbar extensor strengthening	81.5	88.1	6.7	13.5	32.7	33.7	13.5
Postural ^c	76.5	88.1	5.8	9.7	29.1	33.0	22.3
Lumbar stabilization ^c	73.1	82.2	7.2	18.6	30.9	34.0	9.3
Proprioceptive ^d	65.6	72.9	9.3	16.3	31.4	29.1	14.0
Cardiovascular	60.5	86.3	5.0	19.8	36.6	27.7	10.9
Total body strengthening ^{c,d}	60.5	81.2	11.6	22.1	31.6	27.4	7.4
McKenzie ^{c,d}	48.3	66.1	14.1	16.7	37.2	26.9	5.1
Williams ^{c,d}	45.8	66.9	10.1	19.0	34.2	25.3	11.4

^aData listed as % of all respondents ($n = 158$).

^bData listed as % of respondents who received training for the specified exercise technique.

^cUse \times Training: significant interaction ($p < .05$).

^dUse \times Perception: significant interaction ($p < .05$).

and 87.4%, respectively), while McKenzie and Williams exercises were regularly used by the lowest (48.3% and 45.8%, respectively). Abdominal strengthening and stretching/flexibility exercises had the highest proportion of “received training” responses (89.8% and 89.1% respectively), while Williams and McKenzie had the lowest (66.9% and 66.1%, respectively). Based on the respondents who received training for a given exercise, stretching/flexibility and postural exercises had the highest proportion of “good” or “excellent” ratings of educational quality (59.4% and 55.3%, respectively), while total body strengthening and McKenzie exercises had the lowest (34.8% and 32.0%, respectively).

There were significant interactions ($p < .05$) between clinical use and educational training for stretching/flexibility, postural, lumbar stabilization, total body strengthening, and McKenzie and Williams exercises and between clinical use and perceived educational quality for proprioceptive, total body strengthening, and McKenzie and Williams exercises. In general, respondents who reported that they regularly used an exercise were more likely to report that they received training and were more likely to give favorable ratings of perceived educational quality for that exercise.

Sixty-two percent of the respondents reported that other sources were more influential than their formal

chiropractic college education in developing knowledge and skills regarding exercise for the management of low back pain. The respondents listed a variety of other sources including certification courses (e.g., American College of Sports Medicine, Cox, McKenzie, MedX), chiropractic postgraduate diplomate programs (e.g., orthopedics, rehabilitation, sports physician), other formal degree programs (e.g., athletic training, exercise science, physiology), other health professionals, personal sports and exercise experience, scientific journals, seminars, and textbooks. Thirty-seven percent of the respondents reported that their chiropractic college education placed a “good” or “excellent” emphasis on the use of exercise for the management of low back pain.

Overall, the written comments about the quality the chiropractic college education regarding the use of exercise for the management of low back pain were unfavorable. Some examples of the written comments include: “We could have used so much more”; “More emphasis should have been placed on patient exercise programs”; “Exercise was essentially mentioned in passing, but wasn’t explained or demonstrated to a usable level”; “The focus of the education was on passive treatment”; “Post-graduate education seems to focus on patient-active approaches”; “The majority of what I know about exercise was learned outside the curriculum of chiropractic college”; “The emphasis was on adjusting subluxations and avoiding re-injury. Exercise was not taught”; “I’m a chiropractor, not an exercise

physiologist”; and “A lot of new research supports the use of exercise as a component of injury rehabilitation since I graduated.” Other comments were of a more positive nature and included: “I thought I got an adequate education in exercise/rehab” and “The quality of education regarding exercise was excellent.”

DISCUSSION

The present study’s response rate of 35.1% may indicate that a response bias existed. It is possible that those who did not respond did not believe in exercise therapy, were dissatisfied with their education, or had numerous other reasons for nonresponse that may have biased the outcome. We found, however, that the demographic characteristics of the 158 respondents were similar to the demographics of the 450 chiropractors who were originally mailed questionnaires and to the *Job Analysis of Chiropractic 2000* (35). Thus we believe that these data are illustrative and important, despite a relatively low response rate and the possibility of a response bias. Future research is warranted to reproduce this pilot study with follow-up to the original questionnaire distribution, which may result in a higher response rate and larger sample size.

The present study’s finding that only 5.9% of the respondents regularly used exercises other than the 10 specified on the questionnaire suggests that the exercises specified on the questionnaire were an adequate representation of the exercise techniques utilized by the respondents for the treatment of low back pain. Although a 100% utilization rate of exercise appears to be high and indicative of a biased response, this rate is similar to the 96% utilization rate of exercise that has been previously reported for U.S. chiropractors (18).

In the present study, more than three-fourths of the respondents reported that they regularly used six or more of the 10 specified exercises for the care of low back pain. Since no specific disease process can be identified in most cases of low back pain (34) and one form of exercise has not been shown to be clearly superior (36), it is possible that the respondents employ a shotgun approach in the prescription of exercise for low back pain, in which several exercises are utilized simultaneously and for many diagnoses.

In the present study, the finding that clinical use closely paralleled formal chiropractic training

and perceived educational quality suggests that the respondents utilize techniques that they were formally trained to use and those for which they were well trained. This finding is consistent with earlier work, which has indicated that the clinical actions of chiropractors can be reasonably predicted from their chiropractic educational experience (19,20). The present study’s finding that 62% of the respondents considered sources other than their formal chiropractic education to be more influential regarding the use of exercise therapy for low back pain may suggest, however, that the respondents’ practice styles are heavily influenced by their colleagues, as previously reported (37).

In the present study, the two exercise techniques regularly used by the highest number of respondents were stretching/flexibility and abdominal strengthening. Interestingly, there is little evidence in the form of randomized, controlled trials to support the use of either of these exercises for the treatment of low back pain (8,34,38–41). Thus it is possible that either formal chiropractic college education or less formal training sources advocate the use of unproven techniques. The specific characteristics of chiropractors’ decision-making processes regarding exercise prescription for low back pain are unknown and warrant further investigation.

In the present study, only three of 10 exercises received “good” or “excellent” ratings for educational quality regarding exercise therapy for low back pain from greater than 50% of the respondents, indicating a less than favorable perception of formal chiropractic education in this area. This unfavorable perception was also strongly supported in the open-ended responses. One possible explanation for the unfavorable perception is that the respondents of the present study were not fully exposed to the specified exercise techniques in their formal education. Patient-active rehabilitation approaches, including exercise, became prominent for the care of low back pain in the late 1980s (9) when the majority of the respondents were still attending chiropractic college (average length of time in clinical practice for the respondents equaled 10 years). McKenzie exercise protocols, for example, were originally described in 1979 (42) and their use most likely did not become widespread until several years later. Subsequently, a low number of respondents (32.0%) perceived their education in McKenzie exercise as good or excellent. It is unknown if present-day chiropractic education adequately prepares its graduates with the current concepts regarding exercise therapy and back pain.

CONCLUSIONS

This study indicated that practicing chiropractors who responded to the questionnaire utilize a variety of exercise techniques for the management of low back pain, with 76% of the respondents reporting that they regularly use six or more exercise techniques. Stretching/flexibility and abdominal strengthening exercises were regularly used by the highest percentage of respondents. Overall, the respondents' perceptions of the quality of their formal chiropractic education regarding exercise therapy were less than favorable, with only three of 10 exercises receiving "good" or "excellent" ratings from greater than 50% of the respondents. In general,

the respondents' clinical use of a given exercise closely paralleled their perceived quality of education and whether or not they received formal chiropractic training for that exercise. Future research with a larger sample size and higher response rate is warranted to determine if the perceived quality of present-day chiropractic education is similar to the findings of this study and to characterize the factors that are involved in the exercise prescription decision-making process of chiropractors.

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Appendix: Questionnaire

SURVEY for DOCTORS of CHIROPRACTIC

Part 1. Please reflect upon your chiropractic college education. From the choices below each exercise technique, circle the single best response that most accurately describes the quality of your chiropractic college education in preparing you to utilize that exercise technique for the management of lumbar spine disorders. Consider all modes of exercise that may be included in your practice (e.g., in-office exercise, exercise in another healthcare provider's facility, unsupervised (home) exercise). If you REGULARLY use the listed exercise technique in your practice, please check the box located next to the technique.

ABDOMINAL STRENGTHENING:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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CARDIOVASCULAR/AEROBIC CONDITIONING:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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LUMBAR EXTENSOR STRENGTHENING:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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LUMBAR STABILIZATION:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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McKENZIE:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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POSTURAL:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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PROPRIOCEPTIVE:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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STRETCHING/FLEXIBILITY:

Received No Training	Extremely Poor	Poor	Fair	Good	Excellent
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TOTAL BODY STRENGTHENING

(with or without abdominal or lumbar extensor strengthening):

Received No Training Extremely Poor Poor Fair Good Excellent

WILLIAMS:

Received No Training Extremely Poor Poor Fair Good Excellent

OTHER (fill in) _____

Received No Training Extremely Poor Poor Fair Good Excellent

Part 2. Please complete the following:

Outside of your chiropractic college education, are there other sources from which you acquired the knowledge and skills regarding the use of exercise for the management of lumbar spine disorders? Please list:

In comparison to your chiropractic college education, how influential were these other sources in developing your knowledge and skills regarding the use of exercise for the management of lumbar spine disorders?

Less Influential Equally Influential More Influential

What degree of emphasis did your chiropractic college place on the use of exercise for the management of lumbar spine disorders?

Extremely Poor Poor Fair Good Excellent

Please make any other comments about the quality of your chiropractic college education regarding the use of exercise for the management of lumbar spine disorders.

Part 3. Please complete the following:

Gender: _____Female _____Male

Chiropractic College:_____

Year of Graduation:_____

State: _____

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