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Experiences With Chiropractic Care for Patients With Low Back or Neck Pain

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Abstract

Background: Musculoskeletal disorders are the second leading cause of disability worldwide. **Objective:** Examine experiences of chiropractic patients in the United States with chronic low back or neck pain. **Method:** Observational study of 1853 chronic low back pain and neck pain patients (74% female) who completed an online questionnaire at the 3-month follow-up that included Consumer Assessment of Healthcare Providers and Systems (CAHPS) items assessing their experiences with care. **Results:** We found similar reports of communication for the chiropractic sample and patients in the 2016 CAHPS National Database, but 85% in the database versus 79% in the chiropractic sample gave the most positive response to the time spent with provider item. More patients in the CAHPS database rated their provider at the top of the scale (8 percentage points). More chiropractic patients reported always getting answers to questions the same day (16 percentage points) and always being seen within 15 minutes of their appointment time (29 percentage points). **Conclusions:** The positive experiences of patients with chronic back and neck pain are supportive of their use of chiropractic care.

Keywords

patient experience, chronic pain, chiropractic, CAHPS

Introduction

Musculoskeletal disorders are among the most prevalent health problems and the second leading cause of disability worldwide (1). Low back pain prevalence for adults in the United States is about 20% (2). Mafi et al (3) found that in contrast to national guidelines, "management of routine back pain increasingly has relied on advanced diagnostic imaging, referrals to other physicians, and use of narcotics, with a concomitant decrease in nonsteroidal anti-inflammatory drug (NSAID) or acetaminophen use and no change in physical therapy referrals" (p. 1580). They concluded that treatment of back pain represented an area of potential health-care cost savings in the future.

More than 50% of US adults have sought care from a chiropractor and about 30% of those with spinal pain in the United States have used chiropractic care (4). Spinal manipulation is recommended by the American College of Physicians as a noninvasive treatment of low back pain (5). A recent study found that chiropractic care for patients with chronic low back pain or neck pain was associated with significant 3-month improvements in all PROMIS-29 v2.0 health-related quality of life measures except emotional distress (6).

High levels of patient satisfaction with chiropractic treatment have been consistently reported (7–10). For example, the average score on the 14-item chiropractic satisfaction questionnaire (administered using a 7-category response scale (very poor, poor, fair, good, very good, excellent, the best) in a sample of 486 patients of 44 chiropractors was in-between excellent and the best (8). Another study found that satisfaction of chiropractic patients with chronic low back

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pain was higher than that of patients of family physicians (11). But the sample consisted of only 71 chiropractic patients and 35 family medicine patients and used an ad hoc measure of satisfaction with ceiling effects (eg, 100% of the chiropractic patients agreed that the chiropractor felt their pain was real). A more recent study of 5422 members of the Gallup panel found that the majority perceived chiropractic care to be effective in treating back and neck pain and that chiropractors were trustworthy (4).

A robust comparison of chiropractic patient and medical patient care experiences requires use of a standardized measure. The Consumer Assessment of Healthcare Providers and Systems (CAHPS) project has advanced scientific understanding of the patient experience of care by developing standardized surveys that are in wide use throughout the United States. The CAHPS survey items represent what consumers value and for which they are the best source of information. The CAHPS Clinician & Group Survey is used extensively to assess ambulatory care delivered by provider groups and individual health-care providers (12,13).

We conducted an observational study of a sample of chronic low back pain and neck pain patients to evaluate their perceptions of the chiropractic care received. We administered CAHPS Clinician & Group Survey 3.0 items and supplemented them with other items appropriate for chiropractic care. This study provides information on the experiences of a national sample of chiropractic patients in the United States with chronic pain. These data were collected as part of a project to evaluate the appropriateness of manipulation and mobilization for chronic low back pain and neck pain.

Methods

We used multistage systematic stratified sampling with 4 levels: regions/states, sites (ie, metropolitan areas), providers/clinics, and patients (14). We recruited chiropractic practices in 6 states from major geographical regions of the United States: San Diego, California; Tampa, Florida; Minneapolis, Minnesota; Seneca Falls/Upstate, New York; Portland, Oregon; and Dallas, Texas.

We sought to recruit 20 or more chiropractic providers/clinics per site and to reflect the national proportions of provider gender, years of experience, and patient load as shown in the 2015 Practice Analysis Report from the National Board of Chiropractic Examiners (15). Our aim was to recruit 30% female practitioners, 30% with 5 to 15 years of experience and the rest with more than 15 years of experience, and equal proportions of those treating 25 to 74 patients per week versus 75 or more patients per week. We excluded providers who had more than half their patients with open personal injury/workers compensation litigation, because treatment patterns for these patients differs (eg, less radiographic use) from that of other patients (16). We also excluded providers who do not use manual manipulation or mobilization (ie, instrument-assisted-only practice). We used multiple approaches to recruit providers including announcements in journals, attending chiropractic conferences, social media, e-mail, snowball sampling, and key informants (17).

In addition to posters and fliers notifying patients about the study, the front desk staff at each clinic was asked to offer a prescreening questionnaire available to every patient who visited the clinic during a 4-week period and to keep a daily tally of all patients seen by participating chiropractors. This prescreening questionnaire was self-administered on an iPad and used to determine whether patients met the study inclusion/exclusion criteria: at least 21 years of age, could speak English well enough to complete the remaining questionnaires, not presently involved in ongoing personal injury/workers compensation litigation, and have now or ever had chronic low back or neck pain. Patients who met these criteria were invited to be in the study, and if they agreed, they were asked to provide their e-mail addresses and a phone number. All patients who provided e-mail addresses received an electronically delivered $5 USD gift card.

Patients invited to the study were e-mailed a longer screening questionnaire to determine whether they met the study criteria for chronic low back pain and chronic neck pain (ie, reported pain for at least 3 months prior to seeing the chiropractor and/or stated that their pain was chronic). If they were eligible for the study, patients were then consented and asked additional questions. Those not eligible and those who were eligible and started this screening questionnaire but did not finish it received a $5 USD gift card. Those eligible who consented and went on to complete the remaining questions on this survey received a $20 USD gift card and were then invited to complete subsequent surveys including a baseline and 3-month follow-up questionnaire. Participants received a $25 USD gift card for completing the baseline questionnaire and $25 USD gift card for completing the 3-month follow-up questionnaire.

Patient perceptions of care were assessed at the 3-month follow-up. Prior to the start of the longitudinal study, we conducted 6 focus groups (2 in Los Angeles, 2 in Chicago, and 2 in Boston) with patients to identify key aspects of experiences with chiropractic care. Based on focus group input and the literature (18), we selected items in the CAHPS Clinician & Group Survey 3.0 relevant to chiropractic care (3 access to care items, 4 communication items, and 1 global rating of the provider item). We supplemented these items with 2 additional access to care items, 5 additional communication items, 1 global rating of office appearance item, 4 items assessing office assistants, 1 item on insurance coverage, and 3 items assessing perceived outcomes of care. Prior to the main study data collection, we conducted 13 cognitive interviews to ensure the patient experience items were understood by patients, followed by a pilot study with 55 patients. The items administered in the longitudinal study are shown in the Appendix.

The study was approved by the RAND Corporation Human Subjects Protection Committee (#2013-0763) and was registered as an observational study on ClinicalTrials.gov (ID: NCT03162952).

Analysis Plan

All items were transformed linearly to a 0 to 100 possible range, with a higher score representing more positive experience with care. We created 7 patient-reported measures from the 25 items: access to care (5 items), communication (9 items), administrative assistant (4 items), overall ratings (2 items), office appearance (1 item), perceived outcomes (3 items), and insurance met expectations (1 item). We estimated internal consistency reliability (coefficient α) for the 5 multi-item scales (19) and clinic-level intraclass correlations for the 5 scales and 2 single-item measures (20). Nunnally (21) suggested reliability thresholds of 0.70 and 0.90 for group-level and individual-level comparisons, respectively. We applied the Spearman-Brown prophecy formula (22,23) to the intraclass correlation to estimate the sample sizes per clinic needed to achieve 0.70 and 0.90 reliability. Further, to examine potential selection bias we estimated correlations of the 7 patient experience measures with years seeing a chiropractor for pain, years seeing the chiropractor seen in this study for pain, number of visits to this chiropractor overall, and number of visits to this chiropractor in the last 6 months.

We compared responses to CAHPS items in the sample to those of 137 416 adult patients from 656 practice sites (370 Midwest, 145 West, 139 Northeast, 2 South; 257 hospital/health systems, 232 provider/physicians, 145 university/academic medical centers, 8 community health centers, 14 other) in the 2016 CAHPS Clinician and Group Database (24). California (n = 29 355), Minnesota (n = 24 699), Michigan (n = 21 819), and Massachusetts (n = 19 969) were the states with the most patients. The modal number of patients in the database were sampled from family practice (n = 39 078); between 3158 and 6538 patients were included from surgery, obstetrics/gynecology, ophthalmology, cardiology, and orthopedics specialties.

The CAHPS items were administered using a 6-month reporting window in the database while we used a 3-month reporting window in the chiropractic sample to cover the time between baseline and the 3-month follow-up assessment. In addition, we paid study participants to complete study questionnaires but participants in the CAHPS database were not paid. We computed 2 group (chiropractic sample vs CAHPS database) z tests of the significance of differences ($P < .05$, 2 tailed) in the proportions of patients picking the most positive ("top-box") response to each of the parallel items.

Finally, we report descriptive statistics for responses to the 3 items assessing chiropractic patients perceived outcomes of care.

All analyses were conducted using SAS 9.4 (TS1M3). Clinic-level reliability was estimated using a SAS macro (25).

Table 1. Demographic Characteristics of the Sample.[a]

Age	Mean = 49 (range: 21-95) (%)
Age 50+	50
Female (%)	74
Education	
Less than high school	0.3
High school/general education diploma	7
Some college	37
Bachelor's degree or higher	56
Race/ethnicity	
Hispanic	5
Non-Hispanic	
White	88
Asian	3
African-American	2
American Indian/Pacific Islander/Other	2
Working full time	59
Gross income (USD)	
Income < $10 000	2
$10 000 ≥ income > $60 000	37
$60 000 ≥ income > $100 000	30
Income ≥ $100 000	32

[a]n = 1835.

Results

A total of 2646 (94%) of the 2829 patients eligible for the study consented to be in it; 2024 (76%) of the 2646 completed a baseline questionnaire; 1835 (91%) of these completed the 3-month follow-up survey that includes the patient experience items. Table 1 summarizes the demographic characteristics of these 1835 patients. The average age of the end point sample was 49, 74% were female, and the majority had a college degree, were non-Hispanic white, worked full time, and had an annual income of $60 000 or more. The demographic characteristics of those who completed the 3-month survey was very similar to that of the baseline sample (results available upon request). The average score on the Patient-Reported Outcomes Measurement Information System v2.0 physical health summary scale reported by the sample on the 3-month survey was about a third of a standard deviation worse than the US general population (6).

Table 2 provides means, standard deviations, and reliability estimates for the patient experience measures. Means scores (0-100 possible range) ranged from 81 (insurance met expectations) to 95 (administrative assistant). Internal consistency reliabilities for the 5 multi-item scales ranged from 0.60 (administrative assistant) to 0.86 (communication). Four of these reliabilities met the 0.70 threshold for satisfactory reliability for group comparisons (21). Intraclass correlations for the 125 clinics in the sample ranged from 0.012 (perceived outcomes) to 0.101 (administrative assistant). The estimated number of patient responses per clinic needed to achieve 0.70 and 0.90 reliabilities, respectively, is access

Table 2. Descriptive Statistics and Reliability Estimates for Patient Experience Measures.[a]

Measure (Number of Items)	Mean	SD	α	Clinic-Level Intraclass Correlation
Access (5)	87	18	0.71	0.066
Communication (9)	86	17	0.86	0.067
Administrative assistant (4)	95	12	0.60	0.101
Global ratings (2)	89	14	0.71	0.033
Office appearance (1)	90	13	NA	0.069
Perceived outcomes (3)	82	17	0.74	0.012
Insurance met expectations (1)	81	31	NA	0.020

Abbreviation: NA, not applicable for single items.
[a]Measures are scored on 0 to 100 possible range with a higher score indicating more positive perceptions of care.

(33, 128), communication (33, 125), administrative assistant (21, 80), overall ratings (68, 260), office appearance (32, 122), perceived outcomes (197, 758), and insurance met expectations (117, 451).

As seen in Table 3, correlations among the patient experience measures ranged from 0.03 (insurance met expectations with communication) to 0.64 (global ratings of care and perceived outcomes of care). The perceived outcomes of care scale had a significant association with every other measure except the question about whether insurance met expectations. The insurance met expectations item had the smallest correlations with other measures (r's ranging from 0.03 to 0.14).

The 2-item global ratings of care scale were significantly positively associated with the total number of visits with the study chiropractor ($r = 0.05$; $P = .0208$), length of time the patient had been getting chiropractic care for pain ($r = 0.07$; $P = .0022$), and length of time the patient had been seeing the study chiropractor ($r = 0.09$; $P < .0001$). There were only 3 other significant associations with one of the chiropractor history variables: positive associations between access to care and length of time the patient received chiropractic care for pain ($r = 0.06$; $P = .0141$), perceptions of the administrative assistant and total visits with the study chiropractor ($r = 0.05$; $P = .0420$), and office appearance with how long the patient had been seeing the study chiropractor ($r = .08$; $P = .0013$).

Corresponding CAHPS items for patients in this sample compared to the 2016 CAHPS database are given in Table 4. Responses to the corresponding communication items were very similar, but those in the chiropractic sample were more likely to give the most positive response to the time spent with provider item (6 percentage points; $z = 7.14$; $P < .001$) and provider listens carefully to you (3 percentage points; $z = 3.92$; $P < .001$) than those in the CAHPS database. In addition, those in the CAHPS database sample were more likely than those in the chiropractic sample to rate their provider a 10, the most positive response (8 percentage points; $z = 7.05$; $P < .001$). The chiropractic patients reported somewhat better access to care than the medical patients. More of the chiropractic patients reported getting an appointment for urgent care always (3 percentage points; $z = 2.76$; $P = .006$) and getting answers to their questions after hours as soon as they needed (4 percentage points; $z = 3.51$; $P < .001$). A substantial greater percentage of chiropractic patients reported always getting answers to question the same day (16 percentage points; $z = 22.72$; $P < .001$) and always being seen within 15 minutes of their appointment time (29 percentage points; $z = 25.15$; $P < .001$).

Table 5 shows frequencies for the perceived outcomes items. Seven of 10 of the chiropractic patients felt that the treatment made them feel much better (71%) and helped them a lot (73%). At least some improvement in pain over the last 3 months was reported by 86% of the patients, with 22% indicating a lot of improvement.

Discussion

The 25-patient experience items administered in the study were a combination of adaptation of 8 items in the CAHPS Clinician & Group Survey 3.0 and 17 items targeted at chiropractic care for chronic neck and low back pain. We found strong support for the reliability of the measures we used (5 multi-item scales and 2 single items). We found from 21 patients per clinic (administrative assistant) to 197 patients per clinic (perceived outcomes) would be needed to obtain 0.70 reliability at the clinic level. This is consistent with the

Table 3. Product-moment Correlations Among Patient Experience Measures.[a]

Measure	Communication	Administrative Assistant	Global Ratings	Office Appearance	Perceived Outcomes	Insurance Expectations Met
Access	0.59	0.34	0.40	0.27	0.33	0.07
Communication	1.00	0.36	0.62	0.39	0.50	0.03
Administrative assistant		1.00	0.32	0.27	0.24	0.08
Global ratings			1.00	0.50	0.64	0.05
Office appearance				1.00	0.28	0.14
Perceived outcomes					1.00	0.05

[a]All correlations significant at $P < .0001$ except for correlations of insurance expectations met with access and administrative assistant ($P < .05$) and correlations of insurance expectations met with communication, global ratings, and perceived outcomes ($P > .05$).

Table 4. CAHPS Item Responses for Chiropractic Sample and 2016 CAHPS Database.[a]

Item	Chiropractic Sample (n = 1835; %)	CAHPS Database (n = 137 416; %)
Communication		
How often did this chiropractor (provider) explain things in a way that was easy to understand?		
Never	2	1
Sometimes	2	2
Usually	10	10
Always	86	86
How often did this chiropractor (provider) listen carefully to you?		
Never	1	1
Sometimes	3	2
Usually	10	8
Always	85	88[b]
How often did this chiropractor (provider) show respect for what you had to say?		
Never	1	1
Sometimes	1	2
Usually	6	6
Always	92	91
How often did this chiropractor (provider) spend enough time with you?		
Never	1	1
Sometimes	3	3
Usually	17	11
Always	79	85[b]
Global rating		
What number would you use to rate this chiropractor (provider)?		
0-6	3	4
7-8	17	13
9	25	19
10	55	63[b]
Access		
When you contacted this chiropractor's (provider's) office to get an appointment for care you needed right away, how often did you get an appointment as soon as you needed?		
Never	2	3
Sometimes	5	7
Usually	21	21
Always	72	69[c]
When you contacted this chiropractor's (provider's) office during regular office hours, how often did you get an answer to your question that same day?		
Never	0.5	5
Sometimes	3	9
Usually	10	25
Always	87	61[b]
When you contacted this chiropractor's (provider's) office after regular office hours, how often did you get an answer to your question as soon as you needed?		
Never	0	7
Sometimes	13	9
Usually	21	22
Always	66	62[b]
How often did you see this chiropractor (provider) within 15 minutes of your appointment time?		
Never	6	10
Sometimes	6	14
Usually	19	36
Always	69	40[b]

Abbreviation: CAHPS, Consumer Assessment of Healthcare Providers and Systems.

[a]The CAHPS items were administered using a 6-month reporting window in the database while we used a 3-month reporting window in the chiropractic sample to cover the time between baseline and the 3-month follow-up assessment.

[b]z test of significance of differences in percentages in most positive response category: $P < .001$.

[c]z test of significance of differences in percentages in most positive response category: $P < .01$.

Table 5. Perceptions of the Outcomes of Chiropractic Care.

Question	Percent
In the last 3 months, on average, how did the treatment from the chiropractor make you feel?	
Much worse	0.2
A little worse	0.5
No change	2
A little better	26
Much better	71
In the last 3 months, how much did the treatment from the chiropractor help you?	
Not at all	1
A little bit	5
Somewhat	21
A lot	73
Compared to how you felt 3 months ago, how much improvement in pain have you had?	
No improvement	3
A little bit of improvement	12
Some improvement	26
Quite a bit of improvement	38
A lot of improvement	22

number of completed surveys recommended per physician group for the CAHPS Clinician & Group Survey 3.0: 50 if there is a single physician, 100 if 2 physicians, and 150 if 3 physicians: https://www.ahrq.gov/sites/default/files/wysiwyg/cahps/surveys-guidance/cg/survey3.0/adult-eng-cg30-2351a.pdf. The perceived outcomes scale requires the largest number of completes because it varies the least across clinics and has the smallest intraclass correlation.

Because we included some CAHPS items (adapted to chiropractic) in our study, we were able to compare chiropractic experiences with experiences of a large sample of

patients receiving ambulatory medical care. Although a small study of chiropractic and family medicine patients with chronic low back pain reported substantially higher levels of patient satisfaction among the chiropractic patients (8), we found similar patient experiences with communication in our sample of chiropractic patients with chronic low back or neck pain compared to medical patients on corresponding CAHPS survey items. Chiropractic patients reported more positive experiences with access to care than the medical patients. Hence, the current research adds to our understanding of the relative perceptions of chiropractic versus traditional medical care. However, the CAHPS database does not have information on chronic conditions so we are unable to subset it to patients with chronic low back pain or neck pain.

The CAHPS survey was designed to assess the experiences of patients with traditional medical care and uses a 6-month recall interval. Not all the CAHPS items could be administered because some were not applicable to chiropractic. In addition, we administered the items using a 3-month recall interval to correspond to the interval between baseline and follow-up in our study. Further, the chiropractic patients in this study were paid to complete a questionnaire that included the patient experience survey items but patients in the CAHPS database were not paid.

Because not all those eligible for the study participated in it, there is a possibility of selection bias (eg, those who participated tended to have received chiropractic care longer and, therefore, to have positive care experiences). But we found only 6 of 28 product–moment correlations between the 7 patient experience measures and the 4 utilization of care measures were statistically significant ($P < .05$). The largest correlation ($r = 0.09$) indicated a trivia association between greater utilization and more positive perceptions of care, suggesting that selection bias may not be large. In addition, selection bias could also apply to the CAHPS database. Some of the patients invariably received treatment other than chiropractic during the study. Thus, any changes in health may have been affected by that. But it is unlikely that receipt of this other care would have impacted their perceptions of chiropractic care, the focus of this article.

The results of this study contribute to the literature by providing evidence that experiences with chiropractic care are generally positive among patients with chronic back or neck pain. The study findings provide empirical verification of why some chronic pain patients utilize chiropractic care on a regular basis. It supports the use of chiropractic care as one option for improving functioning and well-being of patients with chronic low back pain or neck pain (26).

Anhang Price et al (27) conducted a systematic review of the literature and concluded that most studies indicated either positive or null associations between patient experiences and best practice clinical processes, lower hospital readmissions, and desirable clinical outcomes. Future research is needed to examine the associations of patient reports about care and expert ratings of the appropriateness of chiropractic care (28).

Appendix

Patient Experience Items in the Study

Access (8 items; 3 screener items).

- Did you contact the chiropractor's office to get an appointment for an illness, injury or condition that needed care right away?
- When you contacted this chiropractor's office to get an appointment for care you needed right away, how often did you get an appointment as soon as you needed?
- Did you contact this chiropractor's office with a question during regular office hours?
- When you contacted this chiropractor's office during regular office hours, how often did you get an answer to your question that same day?
- Did you contact this chiropractor's office with a question after regular office hours?
- When you contacted this chiropractor's office after regular office hours, how often did you get an answer to your question as soon as you needed?
- How often did you see this chiropractor within 15 minutes of your appointment time?
- How often did you get all the treatment you needed from the chiropractor?

Communication (9 items).

- How often did this chiropractor explain things in a way that was easy to understand?
- How often did this chiropractor explain why you were having pain?
- How often did this chiropractor explain what the treatment was doing?
- How often did this chiropractor listen carefully to you?
- How often did this chiropractor seem to know the important information about your pain?
- Did the chiropractor seem informed and up-to-date about the care you got from medical doctors?
- How often did this chiropractor show respect for what you had to say?
- How often did this chiropractor spend enough time with you?
- Did the chiropractor give you advice about what you could do after the visit to prevent future pain?

Administrative assistant (6 items; 2 screener items).

- Did this chiropractor have an administrative assistant working at the office?
- How often was the administrative assistant at this chiropractor's office as helpful as you thought they should be?

- How often did the administrative assistant at this chiropractor's office treat you with courtesy and respect?
- Did this chiropractor have an assistant who helped with your treatment?
- How often was the assistant who helped with your treatment as helpful as you thought they should be?
- How often did the assistant who helped with your treatment treat you with courtesy and respect?

Global ratings and satisfaction (2 items).

- Using any number from 0 to 10, where 0 is the worst chiropractor possible and 10 is the best chiropractor possible, what number would you use to rate this chiropractor?
- How would you rate your satisfaction with the results from your chiropractic treatment in the last 3 months?

Office appearance (1 item).

- How would you rate the appearance of the office where you get chiropractic care?

Perceived outcomes (3 items).

- How did the treatment from the chiropractor make you feel?
- How much did the treatment from the chiropractor help you?
- Compared to how you felt 3 months ago, how much improvement in pain have you had?

Insurance (2 items; 1 screener item).

- Did you ever use insurance to cover any of the cost of treatment from the chiropractor?
- How often did insurance cover as much of the cost of treatment from the chiropractor as you expected?

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