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Patient Satisfaction with the Chiropractic Clinical Encounter: Report from a Practice-Based Research Program

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THE PURPOSE OF THIS STUDY was to describe aspects of the clinical encounter in diverse chiropractic practices and to assess patient satisfaction among a sample of their patients. There were 2,987 eligible patients of the 172 participating doctors of chiropractic (DCs) in the United States and Canada, all members of a practice-based research program operating in a chiropractic research center. Patients aged 18 years and older who had visited the office at least once prior to that day's visit were eligible; each DC was asked to enroll the first 20 eligible patients presenting on a specified date in 1999. Chief complaints were primarily pain related (61.6%), with 31.4% saying they had "no problem today," indicating a follow-up or maintenance care visit. For the 2,796 U.S. patients, 57.9% paid some out-of-pocket expense and 31.3% reported paying cash only. The median number of reported visits in the past year to their chiropractor was 13 [interquartile range (IQR): 18]. The majority of patients were highly satisfied with their care; 85.0% reported that their chiropractor always listened carefully; 85.3% that the DC explained things understandably; 88.2% that the DC showed respect for what they had to say; and 75.6% that he or she involved them in decisions as much as they wanted. The median proportion of patients, per DC, with a chief complaint who said their doctor always spent enough time with them was 82% (IQR: 19%) and 82.3% reported that their chiropractors never recommended more visits than necessary. It appears that interpersonal aspects of the clinical encounter may play a larger role in patient satisfaction with chiropractic care than actual time spent or specific procedures used. (JNMS: Journal of the Neuromusculoskeletal System 9:109–117, 2001)

Key words: Chiropractic, Patient satisfaction, Practice-based research

Patient satisfaction is becoming an increasingly important consideration in the competitive health care marketplace. Patient satisfaction is related to patient compliance and even outcomes of treatment, and is also an essential component of a successful practice, for both medical and chiropractic physicians (1). Several studies have shown chiropractic patients to be more satisfied with their care than are medical patients with medical care (2–5). Features of the doctor–patient interaction identified as being associated with the greater satisfaction that patients had with chiropractic care included: the amount of information given, concern for them, and the chiropractor's comfort and confidence in dealing with their problem. A study of medical patients with low back pain found that patients' failure to receive an adequate explanation of their low back pain was the most frequent source of dissatisfaction (6). Other studies conducted among chiropractic patients have found uniformly high ratings for all items on satisfaction questionnaires (7,8). However, to date, studies have focused on comparisons between chiropractic and medical care and have not investigated practice characteristics among different chiropractors that might affect patient satisfaction. Because assessing these could provide useful information for chiropractors, the purpose of this study was to describe aspects of the chiropractic clinical encounter in diverse chiropractic practices and to assess levels of patient satisfaction in a sample of their patients.

METHODS

Study Population

Participating doctors of chiropractic (DCs) were U.S. and Canadian members of a practice-based research program operating in a chiropractic research center. Participants were recruited through an invitation to the approximately 300 existing members of the program and at two professional organization meetings that occurred during the planning phase of the project. The study population for this project was comprised of patients of these DCs. Patients aged 18 years and older who had visited the office at least once prior to that day's visit

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were eligible. Each DC was asked to enroll the first 20 eligible patients beginning on one of two specified dates in November 1999.

Data Collection and Analysis

Data were collected by the established methods of the program, described in detail elsewhere (9–11). The program, established in 1995, uses methods based on those used in practice-based research programs in family medicine and includes training in data collection procedures by the program's full-time coordinator, centralized data management by the research center, and quality assurance (9,12–15). Office staff were trained in form administration via phone by the program coordinator; DCs in the program signed a participation agreement to adhere to all protocols as accurately as possible and also received an operations manual.

DCs and office staff were instructed to ask enrolled patients to complete the data collection form while they were in the office at that visit; the specifics of administering the form were left to the discretion of each office. However, all patients placed their completed questionnaire in an envelope and sealed it before returning it to the office staff. The office staff were supplied with a tracking card to document the receipt of each envelope from enrolled patients; DCs were given two extra forms/envelopes to use if a patient did not return a form or completed it improperly. Patients were given a small incentive gift (a magnetic picture frame) when they returned the completed questionnaire.

The patient booklet included questions on demographics, chief complaint, satisfaction with care as assessed by the Chiropractic Supplemental Item Set for the Consumer Assessment of Health Plans Study and aspects of the clinical encounter as assessed by the Components of Primary Care Instrument (CPCI), both described below. To determine their reason for seeking care, a question on the form read, "What is the main health concern that caused you to seek care today?" with options of "no problem today (check-up or maintenance)", "pain," or "other concern (*not* pain)," with a space to describe other complaints. These categories were based on the results of previous projects (9–11). Patients were also asked, "How did you pay for the chiropractic services you received in this office?" with closed-ended responses of which they were to mark all that applied because several types of payment may have been used (such as insurance and a cash copayment).

The booklet also included an explanation of the project and assurance of the confidentiality of all information, serving as an informed consent; this had been previously approved by the Institutional Review Board of the research center. Each DC completed a practitioner characteristics form and one DC from each practice completed a practice characteristics form. The chiropractors' form collected information on services and procedures provided routinely, including practice and practitioner demographics and an estimation of usual weekly patient volume and time spent with patients under various circumstances (new, established, or maintenance patients; patients with special needs). They were also asked, "Do you consider yourself a primary care provider?" and "Do you consider yourself a subluxation-based practitioner?" No interpretation of these terms was offered; it was left up to the respondents to answer in view of their own interpretation of the terms.

Data were managed through the program's established methods (8). Open-ended responses, such as patient nonpain complaints, were coded by the program coordinator prior to data entry. Data were key double-entry verified. Electronic data were managed in a password-protected relational database on a secure network; hardcopy data were stored in a locked cabinet in the program office. Data were exported to SAS for Windows (Release 6.12) where they were further managed (as indicated below), the CPCI was scored, and the final dataset was created.

Each DC was requested to enroll 20 eligible patients and was provided two additional forms. The forms were sequentially numbered from 1 to 22. The two eligibility criteria were checked for the first 20 enrolled patients of each DC and those found ineligible were not included in the final dataset. For DCs who enrolled more than 20 patients, up to two eligible patients using forms numbered 21 or 22 were used in place of the ineligible patients.

Data were analyzed using SAS for Windows (Release 6.12). Descriptive statistics concerning practice and patient characteristics, CPCI scores, and patient satisfaction ratings were obtained.

Components of Primary Care Instrument

Although chiropractors believe themselves to be primary care providers, neither the public nor other professionals generally view them in this role (16–18). However, chiropractors are increasingly utilized as primary providers for patients with musculoskeletal complaints, especially back pain (10,19). Furthermore, chiropractors are known to demonstrate many of the attributes of primary care providers, particularly the doctor–patient interaction aspects that appear to contribute to their high patient satisfaction ratings (20,21). Therefore, we felt it would be informative to gather detailed information on doctor–patient interactions related to the provision of primary care. The Institute of Medicine (IOM) defines primary care as "the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership

with patients, and practicing in the context of family and community." (21, p.1) These broad attributes have been operationalized into measurable constructs by the CPCI (22,23). The CPCI is designed to assess the patient's perception of the doctor–physician interaction and includes the following components: comprehensiveness of care; accumulated knowledge of the patients' health needs, values, preferences, and history; interpersonal communication; coordination of care; advocacy; family orientation; community orientation; continuity of care, length of relationship with the physician in years; and the patient's preference for having a regular doctor (22,23). The instrument was used with permission of the author and scored according to the established method used in a practice-based research study of family physicians (22,23). The 46-item instrument uses a six-point Likert scale with "strongly disagree" and "strongly agree" as anchors; for four of the questions (concerning coordination of care), there is a "not applicable" choice.

Patient Satisfaction

Chiropractic patients' satisfaction with their care was evaluated using a nine-item adaptation of the Chiropractic Supplemental Item Set for the Consumer Assessment of Health Plans Study, used with permission from the authors (24). Eight of the items have a four-point Likert scale (never, sometimes, usually, always), and one, on how well the chiropractor managed the patient's pain, has a five-point scale (poor, fair, good, very good, excellent).

Quality Assurance

The program follows a standardized quality assurance protocol. This includes central-site computerized procedures including data verification and validation schemes and field-site procedures. The field-site procedures focused on assessing enrollment at the sites by randomly selecting 20 DCs to participate in the quality assurance procedure to verify the number of patients that visited their office during the enrollment period. Selected participants were instructed to photocopy their schedule after noting which patients were enrolled and which were not. For those patients not enrolled, doctors were instructed to give the reason (ineligible, patient refusal, or not asked).

For each DC participating in the quality assurance procedure, the program coordinator tabulated the number of patient forms received, the number of patients who were subsequently determined ineligible at the central site, and the numbers of and reasons for patient refusals and patients who were not asked to participate. All schedules with patient names were kept in a secure area, only viewed by the program coordinator, and shredded after the numbers were recorded.

RESULTS

Participating Practitioner Characteristics

There were a total of 172 DCs in 139 practices; 161 in 39 states of the United States and 11 in Canada. Most (66.2%) were solo practitioners. In the group practices, most were DCs, although six practices included a medical physician and 20 a massage therapist. Practice location was fairly evenly distributed among urban, suburban, and small town, with only 10% in rural areas. All practices had access to X-ray facilities, either in the office (74.6%), through a standing arrangement with a radiology clinic (19.6%), another chiropractor (2.9%), or a medical physician (3.6%). Ninety-three percent of participants considered themselves primary care providers; 70.3% considered themselves subluxation-based practitioners, with 66.3% considering themselves both primary care providers and subluxation-based practitioners.

Of the practitioners, 82% were male, and 80% had been in practice 5 years or more. Practitioners reported a median of 100 (range 3–350) patient visits per week, with a mean of 146 (median 110, range 12–600) patient visits to the practice. Table 1 shows practitioners' estimated time spent with various categories of patient. The median reported time spent with new patients was 45 minutes, 10 minutes for established patients, and 10 minutes for maintenance care patients, with more time estimated for patients with special needs (see Table 1).

Practitioners reported that they X-ray (or order X-rays for) a mean of 58.6% (median 70%, range 0–99%) new patients and order laboratory tests on a mean of 2.4 (median 0, range 0–170) patients per week. Of the 161 U.S. practitioners, 99.4% accept private insurance as payment, 90.1% Medicare, and 36.7% Medicaid.

Use of Spinal Adjustments and Other Procedures

DCs reported using an average of four different adjustive techniques; 19% used only one. The most commonly used adjustive techniques were: Diversified (28.5%), Activator

TABLE 1. Estimated Time Spent with Patients by Participating Chiropractors ($n = 172$)

Type of visit	*n*	Estimated time spent in minutes Median (range)
New patient	172	45 (10–99)
Established patient	171	10 (2–60)
Maintenance care	169	10 (2–40)
Geriatric patient	168	10 (3–60)
Patients needing preventive services/counseling	163	15 (2–60)
Patients with disabilities	154	15 (1–60)

TABLE 2. Participating Chiropractors' Use of Procedures in Addition to Spinal Adjustment ($n = 172$)

	% use with at least 50% of patients	% use with <50% of patients	% never use
Corrective exercise instructions	69.2	29.7	1.2
Exercise counseling (general health)	58.7	38.4	2.3
Diet/nutrition counseling (general health)	49.4	49.4	0.6
Myofascial release/trigger point therapy	40.1	47.7	12.2
Diet/nutrition counseling (corrective)	34.9	57.6	7.6
Physical modalities (e.g., heat, cold, ultrasound)	33.1	50.0	16.3
Nutritional supplements	30.2	59.3	9.9
Massage	19.2	53.5	26.2
Stress management	19.2	58.1	20.3
Acupressure	18.0	45.3	35.5
Weight loss counseling[a]	14.5	61.6	23.3
Smoking cessation[a]	11.0	51.7	35.5
Substance abuse counseling[a]	6.4	36.0	56.4
Herbal preparations	4.7	61.0	33.7
Naturopathy	4.7	11.0	82.6
Acupuncture	2.9	11.6	83.7
Homeopathy	2.3	39.0	58.1

[a]For patients to whom these applied.

(19.2%), BEST (12.8%), and Gonstead (9.3%). Fifteen different adjustive techniques were reported in all.

Table 2 shows the procedures, in addition to spinal adjustment, that practitioners reported they used with at least 50% of patients, less than 50% of patients, or never used. Information on exercise, either corrective exercise instruction (69.2%) or exercise counseling for general health (58.7%), was most commonly reported to be provided to at least 50% of patients.

Study Sample

Of the 172 participating DCs, 80 enrolled exactly 20 patients, 26 enrolled more than 20, and 66 less than 20. Those practices enrolling less than 20 patients enrolled a median of 15 patients, ranging from 2 to 19. Of the 13 DCs enrolling fewer than 10 patients, most had either small or part-time practices; however, five of these DCs did report difficulty in enrolling patients due to the length of the data collection form.

There were 93 enrolled patients subsequently determined to be ineligible: 49 patients of 32 DCs were less than 18 years of age (three-quarters of these were teenagers); three were new patients; and eligibility was not able to be verified for 25 who did not indicate their age and for 16 who left questions regarding previous care received by the DC unanswered. From the offices of these ineligible patients, 17 eligible patients who enrolled using forms 21 or 22 were included in the final sample to replace ineligible patients. The final study sample included 2,987 patients with 45% of the DCs having 20 patients included (median 17, range 2–20).

Patient Characteristics

There were 2,987 eligible chiropractic patients. Table 3 summarizes their characteristics. The majority were female (63.6%), white (91.3%), aged 35–54 (51.2%), and employed (68.6%), with a high school degree or some college (62.7%). Approximately one-third of patients (33.4%) reported that they had been patients of the participating chiropractor for less than 1 year; 2.7% had been patients of that DC for over 20 years.

Patients primarily reported pain-related chief complaints (61.6%); however, 31.4% said they had "no problem today," indicating a follow-up or maintenance care visit. All participating DCs enrolled at least two patients with a chief complaint, with a median of 13 patients per DC. Five DCs did not enroll any maintenance patients; the median number of maintenance patients enrolled per DC was five. Of those reporting a chief complaint, the highest proportion had a reported duration greater than 1 year (45.9%), with 18.9% 6 weeks to 1 year, 21.2% 1–6 weeks, and 12.1% less than 1 week. Patients reported their overall health as follows: 8.6%, excellent; 36.3%, very good; 42.5%, good; 11.0%, fair; and 1.5%, poor.

TABLE 3. Characteristics of the Patient Sample

Patient characteristic	% of total[a] ($n = 2,987$)
Sex	
Female	63.6
Male	34.5
Age (years)	
18–24	5.3
25–34	13.2
35–44	25.6
45–54	25.6
55–64	15.0
65 and over	15.3
Race/ethnicity	
White/European American	91.3
African American	2.5
Hispanic	1.6
Mixed race/other	1.6
Asian	1.1
American Indian or Alaskan Native	1.1
Highest educational level	
Less than high school graduation	5.9
High school graduation	24.9
Some college, no degree	37.8
College degree (4-year)	15.3
Postgraduate	15.8
Employment status	
Employed	68.6
Retired	16.8
Not employed outside home	10.7
Unemployed	3.2
Years under this doctor's care	
Less than 1	33.4
1–2	17.9
3–5	18.2
6–10	15.0
11–15	5.8
16–20	4.0
Over 20	2.7
Chief complaint	
Pain-related	61.6
No problem today	31.4
Nonmusculoskeletal, non-pain-related	2.6
Musculoskeletal, non-pain-related	2.2
Other/unclassifiable	1.7
Self-rating of overall health	
Excellent	8.6
Very good	36.3
Good	42.5
Fair	11.0
Poor	1.5

[a]Responses in each category may not equal 100% due to missing values.

For the 2,796 U.S. patients, 57.9% paid some amount of out-of-pocket expense; 45.1% used private insurance; 11.4% Medicare; and 1.6% reported that they received care free of charge (Table 4). About one-third (31.3%) reported paying cash only. No pronounced differences between reported payment methods for maintenance and nonmaintenance patients were apparent (Table 4).

The median number of reported visits in the past year to their chiropractor was 13 (IQR: 18); to other types of practitioners besides chiropractors and including MDs, the median was 3 (IQR: 4). Most patients had not seen either other DCs in the practice (78.6%) or DCs outside the practice (80.5%) in the past year, and 14.0% reported that they had not seen any other doctors (including MDs) outside the practice in the past year.

Characteristics of Doctor–Patient Interaction as Assessed by CPCI

The mean scores for all components of the CPCI were above three on the six-point scale, as shown in Table 5. Of the components, patients rated their chiropractors highest in advocacy and interpersonal communication and lowest in comprehensiveness of care. Missing values for the individual items of the CPCI ranged from 2.4% to 10.6%. In addition, a large proportion of patients marked "not applicable" for the four questions concerning coordination of care (Table 5).

Patient Satisfaction

Overall, the majority of patients were highly satisfied with their chiropractors' care, as shown in Table 6. Over 75% reported that their chiropractor always listened carefully (85.0%), explained things understandably (85.3%), showed respect for what they had to say (88.2%), and involved them in decisions as much as they wanted (75.6%).

Time Spent with Patients—The majority of patients (85.3%) felt they had enough time with their chiropractor; 11.0% said they would have liked a little more, 1.3% a lot more, and 0.4% less time (2.0% did not respond). The median percentage of patients, per DC, with a chief complaint who said their doctor *always* spent enough time with them was 82% (IQR: 19%). Broken down by the average amount of time per visit DCs reported spending with established patients, it was as follows: median of 75% (IQR: 23%) for DCs who reported spending ≤5 minutes; median of 84% (IQR: 19%) for doctors who reported spending 5–10 minutes; median of 80% (IQR:16%) for those who reported spending 10–15 minutes; and 85.7% (IQR: 17%) for those doctors who reported spending over 15 minutes per visit. The median percentage of maintenance patients, per DC, who said their doctor *always* spent enough time with them was 83% (IQR: 33%). Broken down by the average amount of time per visit DCs reported spending with maintenance patients, it was as follows: median of 80% (IQR: 30%) for DCs who reported spending ≤5 minutes; median of 80% (IQR: 29%) for doctors who reported spending 5–10 minutes; median of 100% (IQR:16%) for those who reported spending 10–15

TABLE 4. Nonmaintenance and Maintenance Care Patients' Reported Methods of Payment for Chiropractic Services in Participating Offices

Payment method[a]	Type of patient[b](%)		
	Nonmaintenance ($n = 1,935$)	Maintenance ($n = 861$)	All ($n = 2,796$)
Insurance + cash[c]	23.4	24.2	23.4
Insurance only	22.6	19.5	21.6
Cash only or cash + other[d]	56.2	64.8	58.9
Cash only	28.8	36.9	31.3
Medicare only or Medicare + other[d]	11.0	12.4	11.4
Medicaid only or Medicaid + other[d]	1.2	0.8	1.1
Personal injury only or PI + other[d]	9.2	4.7	7.8
Workers' Compensation or WC + other[d]	5.3	2.3	4.4
Care provided free[e]	1.6	2.1	1.8

Only U.S. patients included in this table ($n = 2,796$). PI, personal injury; WC, Workers' Compensation.
[a]Patients were asked to mark all payment methods they had used for chiropractic services in that office (not on that visit only).
[b]For this study, "maintenance care" was defined as patient report of having "no problem today (check-up or maintenance)" or any open-ended patient responses indicating absence of symptoms at that visit. "Nonmaintenance care" includes all other responses to "What is the main health concern that caused you to seek care today?"
[c]Percentage of patients marking both "insurance" and "cash"; other payments may have been marked also.
[d]Percentage of patients marking the stated form of payment and any other forms.
[e]Percentage of patients marking no method other than "care was provided free of charge."

TABLE 5. Participating Patients' Perceptions of Interactions with Their Chiropractors as Reflected by Scores on the CPCI ($n = 2,987$)

Component	n[a]	Mean score (SD)
Advocacy	2,830	5.20 (0.80)
Interpersonal communication	2,877	5.10 (0.82)
Accumulated knowledge	2,879	4.55 (1.04)
Community context	2,687	4.31 (1.49)
Family context	2,847	4.12 (1.65)
Coordination of care[b]	2,785	4.08 (1.30)
Comprehensiveness of care	2,852	3.89 (1.27)

[a]Sample *n* varies among components due to missing data.
[b]If "not applicable" was marked, that item was not included in the calculation, as per the scoring algorithm for the instrument. These questions, with proportion of "NA" responses, were: "This doctor always follows up on my visits with other health care providers (54.0% NA); "This doctor helps me interpret my lab tests, X-rays or visits to other doctors (48.8% NA); "This doctor communicates with the other health providers I see (54.9% NA); "This doctor does not always know about care I have received at other places (26.4% NA).

minutes; and 85.7% (IQR: 14%) for those doctors who reported spending over 15 minutes per visit.

Visit Frequency—Most (82.2%) patients reported that their chiropractors never recommended more visits than necessary. There was little difference in this response for patients with varying numbers of patient reported visits in the past year: 87.3% ($n = 158$) of those reporting over 50 visits in the last year; 84.7% of those reporting 25–50 visits; 84.0% of those reporting 13–24 visits; 82.2% of those reporting 7–12 visits; and 78.6% of those reporting 1–6 visits said their chiropractor never recommended more visits than necessary. The median percentage of patients, per DC, who said their doctor never recommended more visits than necessary was 87% (IQR: 17%). There was also very little difference in patients' satisfaction with visit frequency among four levels of practice volume: a median of 89% (IQR: 17%) of patients in practices with <55 weekly patient visits; a median of 90% (IQR: 15%) of those in practices with 55–90 visits; a median of 86% (IQR:22%) for those in practices with 91–155 visits; and a median of 85% (IQR: 15%) for those in practices with more than 155 visits felt their DC never recommended more visits than necessary.

Worth of Out-of-Pocket Expenses—Of the 2,497 patients who paid any out-of-pocket expenses, 73.9% reported chiropractic care was always worth out-of-pocket expenses.

Pain Management—Of the 1,840 patients reporting that they had pain, 56.4% said the care they received for it was "excellent," 30.5% "very good," 9.4% "good," 1.3% "fair," and 0.2% "poor"; 2.2% did not respond.

Quality Assurance Results

Eighteen of the 20 DCs randomly chosen complied with the quality assurance procedure. Five DCs reported no refusals, seven reported one, five reported two to four, and one reported seven. Two DCs reported that they enrolled

TABLE 6. Participating Patients' Satisfaction with Chiropractic Care ($n = 2,987$)

	Never (%)	Sometimes (%)	Usually (%)	Always (%)
How often did your chiropractor:				
listen carefully to you?	0	0.9	12.4	85.0
explain things in a way you could understand?	0.1	1.0	11.9	85.3
show respect for what you had to say?	0	0.6	9.2	88.2
spend enough time with you?	0.1	2.1	18.1	77.5
involve you as much as you wanted in decisions about your chiropractic care?	0.5	2.4	19.1	75.6
How often was out-of-pocket cost worth it? ($n = 2,497$; 16.4% reported no out-of-pocket)	0.8	2.9	19.2	73.9
How often did you get the chiropractic tests, treatment, or modalities you thought you needed?	0.3	2.3	21.1	73.1
Did you ever feel that your chiropractor recommended more visits than were necessary?	82.2	10.7	1.6	2.3

Percentages do not total 100% due to missing values.

all eligible patients and all but two of the DCs indicated they did not enroll at least one ineligible patient; however, eight patients in five of the offices were subsequently found to be ineligible. Ten DCs reported that they didn't ask 1–2, four didn't ask 3–7, and two didn't ask 11–24 patients to participate. Reasons given for not inviting all eligible patients to participate were primarily related to consideration of patients who would find participation difficult, such as lack of time (28), severe pain (4), non-English speaking (4), poor eyesight (3), disability (3), illiteracy (2), and elderly (2). In addition, staff in three offices forgot to ask 15 patients (total for the three offices) to participate.

DISCUSSION

This study's limitations were those inherent to practice-based research, particularly selection bias due to the use of volunteer practitioners, who may not be representative of the general population of chiropractors; and of patients, since participation is voluntary; and lack of control of data collection due to the diverse settings in which it is collected, resulting in some eligible patients being missed. However, the chiropractors in this study appear to be quite similar to the population of U.S. chiropractors in terms of demographics, practice characteristics, and patient satisfaction (25–27). In addition, from the results of the quality assurance procedures, there is no indication that DCs were systematically selecting or excluding patients for participation. Another important limitation was the use of exclusively self-report data, particularly in regard to defining whether a patient was receiving maintenance care and determining methods of payment, since these questions may have been interpreted differently by different patients.

The CPCI scores for chiropractors were quite similar to those for community-based family physicians and nurse practitioners in managed care settings, reported in a practice-based research study of 1,475 patients in 15 member practices of the Ambulatory Sentinel Practice Network (23). Participants in that study were primarily medical physicians and a small proportion of osteopathic physicians and nurse practitioners, stratified into various levels of organizational restrictiveness. Patients in practices of medium organizational restrictiveness ($n = 312$; variation among all categories was not statistically significant) rated clinicians as follows: advocacy, 5.09; communication, 5.01; accumulated knowledge, 4.77; community context, 4.40; family context, 4.46; coordination of care, 4.91; comprehensiveness of care, 5.12 (23). Scores for chiropractors were similar, although they were lower for coordination and comprehensiveness of care. However, a large proportion of patients in our study marked "not applicable" for questions related to coordination of care, possibly indicating that they do not expect their chiropractors to serve this function.

Patient satisfaction scores in our sample of chiropractic patients were uniformly high, similar to results of other studies (1–5,7,8). In particular, these results are consistent with the previous finding that patients are highly satisfied with chiropractic care even when they pay out-of-pocket expenses (5). In our study, 57.9% of patients reported paying some cash, and 31.3% reported paying cash only. Because such a preponderance of patients were highly satisfied with all the aspects of care on which they were questioned, it was not possible to identify specific factors which might be associated with satisfaction, due to the lack of variation in the responses. It is possible that the questions on patient satisfaction, which had very limited response categories (four for most questions), were not sensitive enough to detect fine differences in a patient population that, like this one, was so overwhelmingly positive, since these questions were primarily designed

for comparing chiropractic patients' attitudes to those of patients of other types of providers. Unfortunately, we were unable to make this interprofessional comparison because we could not identify any other published studies at this time that specifically indicated that they had used this particular set of questions.

Interestingly, it appeared that few patients objected to frequent visits, even when the number was over 50—well above the average for chiropractors—or to the time spent with them—even when it was less than 5 minutes per visit. It is also noteworthy that only 56.2% of patients rated their pain management as "excellent"—although an additional 30.6% rated it as good—suggesting that pain management alone is most likely not responsible for the extremely high satisfaction ratings. From these results, it appears that interpersonal aspects of the clinical encounter, such as advocacy, listening to the patient and explaining things in an understandable way, and very likely other individual personal characteristics of the doctors which we were unable to assess in this study, play a larger role in patient satisfaction with chiropractic care than actual time spent or specific procedures used.

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REFERENCES

1. Coulter ID, Hays RD, Danielson CD. The chiropractic satisfaction questionnaire. Top Clin Chiropractic 1994;1(4): 40–43.
2. Cherkin D, McCornack J. Patient evaluations of low back pain care from family physicians and chiropractors. Western J Med 1989;150(3):351–355.
3. Nyiendo J, Haas M, Goodwin P. Patient characteristics, practice activities, and one-month outcomes for chronic, recurrent low-back pain treated by chiropractors and family medicine physicians: a practice-based feasibility study. J Manipulative Physiol Ther 2000;23(4):239–245.
4. Solomon DH, Bates DW, Panush RS, Katz JN. Costs, outcomes, and patient satisfaction by provider type for patients with rheumatic and musculoskeletal conditions: a

critical review of the literature and proposed methodologic standards. Ann Intern Med 1997;127(1):52–60.
5. Carey TS, Garrett J, Jackman A, McLaughlin C. Fryer J. Smucker DR. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. Engl J Med 1995;333(14):913–917.
6. Deyo RA, Diehl AK. Patient satisfaction with medical care for low-back pain. Spine 1986;11(1):28–30.
7. Verhoef MJ, Page SA, Waddell SC. The Chiropractic Outcome Study: pain, functional ability and satisfaction with care. J Manipulative Physiol Ther 1997;20(4):235–240.
8. Hansen JP, Futch DB. Chiropractic services in a staff model HMO: utilization and satisfaction. HMO Pract 1997;11(1):39–42.
9. Hawk C, Long C, Boulanger K. Development of a practice-based research program. J Manipulative Physiol Ther 1998; 21(3):149–156.
10. Hawk C, Long CR, Boulanger K, Morschhauser E, Fuhr A. Chiropractic care for patients aged 55 years and older: report from a practice-based research program. J Am Geriatr Soc 2000;48:534–545.
11. Hawk C, Long CR, Boulanger K. Prevalence of nonmusculoskeletal complaints in chiropractic practice: report from a practice-based research program. J Manipulative Physiol Ther 2001;24(3):157–169.
12. Nutting PA, Beasley JW, Werner JJ. Practice-based research networks answer primary care questions. JAMA 1999;281: 686–688.
13. Carey TS, Kinsinger L, Keyserling T, Harris R. Research in the community: recruiting and retaining practices. J Community Health 1996;21:315–327.
14. Nutting PA, Green LA. And the evidence continues to establish the feasibility of practice-based research [editorial]. Fam Med 1993;25(7):434–36.
15. Culpepper L, Froom J. The International Primary Care Network: purpose, methods, and policies. Fam Med 1988;20(3):197–201.
16. Hawk C, Dusio ME. A survey of 492 US chiropractors on primary care and prevention-related issues. J Manipulative Physiol Ther 1995;18(2):57–64.
17. Mainous AG, Gill JM, Zoller JS, Wolman MG. Fragmentation of patient care between chiropractors and family physicians. Arch Fam Med 2000;9:446–450.
18. Teitelbaum M. The role of chiropractic in primary care: findings of four community studies. J Manipulative Physiol Ther 2000;23(6):601–609.
19. Horwitz AD, Hosek R, Boyle J, Cianciulli A, Glass J, Codario R. A new gatekeeper for back pain. Am J Managed Care 1998;4(4):576–579.
20. Coulehan JL. The treatment act: an analysis of the clinical art in chiropractic. J Manipulative Physiol Ther 1991;14(1): 5–12.
21. Institute of Medicine. The Future of Primary Care. Washington, DC: National Academy Press, 1996.
22. Flocke SA. Measuring attributes of primary care: development of a new instrument. J Fam Pract 1997;45(1):64–74.
23. Flocke SA, Orzano AJ, Selinger A, Werner JJ, Vorel L, Nutting PA, Stange KC. Does managed care restrictiveness affect the perceived quality of primary care? A report from ASPN. J Fam Pract 1999;48(10):762–768.
24. Coulter ID, Hays RD, Genovese BJ, Hurwitz EL, Spitzer K. Chiropractic Supplemental Item Set for the Consumer Assessment of Health Plans Study. Los Angeles: RAND Corporation, 1999.
25. Christensen MG, Kerkhoff D, Kollasch MW. Job Analysis of Chiropractic. Greeley, CO: National Board of Chiropractic Examiners, 2000.
26. Goertz C. Summary of the 1997 ACA annual statistical survey on chiropractic practice. J Am Chiro Assoc 1998; 35(6):30–34.
27. Hurwitz EL, Coulter ID, Adams AH, Genovese BJ, Shekelle PG. Use of chiropractic services from 1985-1991 in the United States and Canada. Am J Public Health 1998;88(5):771–776.