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Prevalence and Characteristics of Chronic Spinal Pain Patients with Different Hopes (Treatment Goals) for Ongoing Chiropractic Care

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Abstract

Objectives: The treatment goals of patients successfully using ongoing provider-based care for chronic spinal pain can help inform health policy related to this care.

Design: Multinomial logistical hierarchical linear models were used to examine the characteristics of patients with different treatment goals for their ongoing care.

Settings/Location: Observational data from a large national sample of patients from 125 chiropractic clinics clustered in 6 U.S. regions.

Subjects: Patients with nonwork-injury-related nonspecific chronic low-back pain (CLBP) and chronic neck pain (CNP).

Interventions: All were receiving ongoing chiropractic care.

Outcome measures: Primary outcomes were patient endorsement of one of four goals for their treatment. Explanatory variables included pain characteristics, pain beliefs, goals for mobility/flexibility, demographics, and other psychological variables.

Results: Across our sample of 1614 patients (885 with CLBP and 729 with CNP) just under one-third endorsed a treatment goal of having their pain go away permanently (cure). The rest had goals of preventing their pain from coming back (22% CLBP, 16% CNP); preventing their pain from getting worse (14% CLBP, 12% CNP); or temporarily relieving their pain (31% CLBP, 41% CNP). In univariate analysis across these goals, patients differed significantly on almost all variables. In the multinomial logistic models, a goal of cure was associated with shorter pain duration and more belief in a medical cure; a goal of preventing pain from coming back was associated with lower pain levels; and those with goals of preventing their pain from getting worse or temporarily relieving pain were similar, including in having their pain longer.

Conclusions: Although much of health policy follows a curative model, the majority of these CLBP and CNP patients have goals of pain management (using ongoing care) rather than "cure" (care with a specific end) for their chiropractic care. This information could be useful in crafting policy for patients facing provider-based nonpharmacologic care for chronic pain.

Keywords: chronic low-back pain, chronic neck pain, ongoing care, goals of treatment, chiropractic care

Introduction

OVER 40% OF ADULTS in the U.S. experience chronic pain,[1] often chronic spinal (back and neck) pain,[1–3] and these patients have lived with this pain for years to decades on average.[4–8] This pain is also associated with substantial comorbidity,[9] and is expensive to the health care system[10] and to employers.[11]

Although most with chronic spinal pain use medications, a substantial minority have used provider-based therapies

(e.g., chiropractic, physical therapy).[9,12] Lately several provider-based nonpharmacologic approaches (e.g., multidisciplinary rehabilitation, acupuncture, cognitive behavioral therapy, spinal manipulation) have been shown to be effective[13–20] and are now recommended as first-line treatments in clinical practice guidelines for chronic back pain.[21,22]

Unfortunately, the ongoing provision of provider-based care for chronic spinal pain is not well addressed in health and payer policies.[23–25] Coverage is not available for all recommended nonpharmacologic therapies, and where coverage is available, patients face a variety of barriers, including high out-of-pocket expenses and other (e.g., travel, missed work) costs for every visit, visit limits, and prior authorization requirements.[24]

Given the chronic (i.e., long term) nature of chronic low-back pain (CLBP) and chronic neck pain (CNP), patient demand for some type of ongoing care, and the substantial out-of-pocket and other costs patients face in seeing these providers, policy makers could benefit from data on patients who are currently using ongoing provider-based care to manage their pain. One important component to understanding these patients' use is to examine what they hope to get from their treatment—that is, are they looking for a "cure" (complete and permanent elimination of their pain, which would then end their need for treatment) or some type of management of their symptoms, which would require ongoing care. Cure is often assumed to be the goal of medical intervention and many health care policies are based on a curative model.[26,27] On the other hand, chronic pain patients may be more interested in chronic pain management,[19] support care,[28] or maintenance care.[28,29]

This study takes advantage of data from a large sample of patients using ongoing chiropractic care for their CLBP and CNP to examine the prevalence and characteristics of patients with different goals for their care.

Materials and Methods

Sample

This study uses observational longitudinal self-report data collected from a large sample of patients in the United States using chiropractic care to treat their nonspecific CLBP and/or CNP.[4] The overall project under which these data were collected,[30,31] and the data collection methods[32,33] and general patient characteristics (i.e., an average duration of pain of 14 years and average time in chiropractic care of 11 years)[4] are described elsewhere. However, in brief, data were collected from October 2016 to January 2017 and used a multistage systematic stratified sampling over four levels: regions/states, metropolitan areas, chiropractic providers/clinics, and patients. The regions and metropolitan areas were: Dallas, Texas; Minneapolis, Minnesota; Portland, Oregon; San Diego, California; Tampa, Florida; and Seneca Falls/Upstate, New York. Our goal was to recruit 20 chiropractors (clinics) per region and to gather data from 7 CLBP and 7 CNP patients per clinic.

Each clinic was provided with a short prescreening questionnaire on an iPad to offer to all patients visiting the clinic during the next 4 weeks. Patients who met prescreening criteria and provided an e-mail address were invited to the study and sent a longer screening questionnaire

to establish eligibility (i.e., that they had CLBP and/or CNP defined as pain for at least 3 months before seeing the chiropractor and/or self-report of chronicity). Eligible patients provided informed consent, answered additional questions, and then were sent a series of seven additional questionnaires over the next 3 months. Participants received online gift cards for every step of participation and those who completed all questionnaires received a total of $200. This study uses a subset of the data collected from the screening and baseline questionnaires.

Measures

In this study we describe patients' goals for ongoing care and examine the relationship between these goals and a variety of patient characteristics. Patient goals were elicited in the baseline survey using an item asking for those with only CLBP or with both CLBP and CNP, where their CLBP was worse (hereafter referred to as those with CLBP): Which of the following best describes what you hope to get from your chiropractor regarding your low-back pain? This question had four response categories, and respondents were asked to choose one: Prevent low-back pain from coming back or prevent reinjury; Prevent low-back pain from getting worse; Ease low-back pain or make low-back pain go away temporarily; and Make low-back pain go away permanently (cure). Those with only CNP or who said their CNP was worse (hereafter referred to as those with CNP) received the same question with similar response options but asking about neck pain.

We hypothesized that patients' characteristics would differ by their goals for care. For example, patients who had their pain for less time may be more likely to believe that their pain will go away completely and to have a goal of cure. The characteristics examined included characteristics of their pain, beliefs about their pain, goals/hopes for their mobility and flexibility, demographics, and psychological variables. Characteristics of pain include baseline pain levels (pain numerical rating scale or NRS[34]) and function using the 10-item Neck Disability Index (NDI)[35] for those with CNP and the 10-item Oswestry Disability Index (ODI)[36] for those with CLBP. These measures are recommended for use in their respective populations and have substantial literature on their validity and reliability (pain NRS[37–41]; NDI[42–45]; ODI[46–48]). We also included whether a respondent had both CLBP and CNP (associated with worse outcomes[49]) and their reported years of pain at baseline (a potential justification for ongoing care[19]).

The dataset also included several measures of patients' beliefs about their pain. Patients reported what their pain level would be on a 0–10 scale if they did not see their chiropractor, and whether they believed their pain was chronic. Patients also reported their level of agreement (strongly disagree to strongly agree) with statements about chronic pain, including that it will never go away, it is important to understand what causes my pain, and it is unsafe for someone with my condition to be physically active (a measure of fear avoidance[19,50,51]). We also measured three subscales of the 30-item version of the Survey of Pain Attitudes (SOPA-30): Perceived control over pain, appropriateness of medications, and belief in a medical cure and the responsibility of providers to find that cure.[52,53] We used

averages of 0 = very untrue to 4 = very true with scores >2 (2 = neither true nor untrue) indicating statements that are true for the respondent.

Because there has been a movement at least within providers to focus on function rather than pain,[54] all respondents were also asked to choose from four options for what they hope to get from their chiropractor regarding mobility and flexibility. These options somewhat paralleled those asked regarding pain, including one representing cure: I expect complete return to original mobility and flexibility.

We included age, gender, and education as possible predictors of treatment goals since studies have found that older patients respond less favorably to treatment,[6,55,56] and age may be a justification for ongoing care.[19] CLBP outcomes have also been at times found to be associated with higher (Bachelor's degree or higher) education.[57,58]

Finally, we hypothesized that certain psychological traits and states could predict patients' treatment goals. Self-efficacy for pain management (PSE) used the 5-item subscale of the Chronic Pain Self-Efficacy Scale[59] and averages of responses from 1 = very uncertain to 10 = very certain as to ability to accomplish each. Expectations (can effect outcomes,[60,61] are related to hopes/treatment goals[62,63] and are one justification for ongoing care[19]) used two items from the Credibility/Expectancy Questionnaire: how successful your chiropractor will be in reducing your pain (very or extremely successful vs. not at all), and how much improvement in pain do you expect over the next 3 months (a lot or quite a bit of improvement vs. some to no improvement).[64] Worry and anxiety are associated with worse outcomes,[51,65] and may be related to treatment goals. We included how often patients endorsed this statement as true: I worry all the time about whether pain will end (all the time to not at all). Those who are depressed have worse outcomes,[50,65] and may be justified to receive ongoing care.[19] Depression was measured using the 4-item Patient-Reported Outcomes Measurement Information System®-29 v2.0 depression scale for mild depression or above (scores >52.5).[66,67] Finally, there is growing evidence that pain catastrophizing is associated with outcomes,[60,68–70] and may affect patients' goals for treatment. We measured catastrophizing using the sum of 0–4 scores from three items asking how often these statements are true: I worry all the time about whether the pain will end, I think the pain is never going to get any better, there is nothing I can do to reduce the intensity of the pain.

Variables for clinic (chiropractor) and region (state and metropolitan area) were used to determine whether there were differences in patients' treatment goals by chiropractor or region.

Analysis

We first presented averages and frequencies by treatment goal for the variables considered as potential predictors and examined differences by endorsed goal using one-way analysis of variance and χ^2 tests, respectively.

We used multinomial logistical hierarchical linear modeling (HLM, aka multilevel modeling or mixed models[71–73]) for our analyses to account for the potential clustering of patients within clinics and regions. We set the group with the treatment goal of cure as the base outcome. Therefore,

our estimated coefficients indicate the relative risks of those with each of the other treatment goal compared with those with the goal of cure.

We first ran unconditional (no predictor variables) HLM models to determine whether patients' goals were clustered by region and/or by chiropractor/clinic. We used the Bayesian Information Criterion (BIC) fit statistic (smallest value) to choose the best unconditional model in terms of clustering variable.[74] We then added the proposed predictor variables (pain characteristics, pain beliefs, mobility/flexibility goals, demographics and psychological variables) that were found to differ significantly ($p < 0.05$) across treatment goals for either condition in our univariate analyses to the best unconditional HLM to see which variables best predicted patient treatment goals.

All analyses were performed using Stata 15.1. This study was approved by the RAND Human Subjects Protection Committee.

Results

Of the 2024 chiropractic patients with CLBP and CNP who completed the baseline survey,[4] 1708 had nonspecific chronic low back or neck pain, and 1614 (94.5%) of these had sufficient data to be included in our analyses—885 with nonspecific CLBP and 729 with nonspecific CNP. Tables 1 and 2 show the means and frequencies of each of our predictor variables by treatment goals for those with CLBP and CNP, respectively. As can be seen, patients endorsing each treatment goal differed by almost all these variables for both the CLBP and CNP samples.

Table 3 shows the results of the unconditional models. As can be seen from the variance attributed to region and clinic that neither variable explained a significant proportion of the overall variance seen in the data—that is, goals did not vary by clinic and region. Since the models without clustering had the best (lowest) BIC values, our full models did not cluster by clinic or region.

Tables 4 and 5 show the results of the full models for CLBP and CNP and including all the predictor variables that were found to be significantly different across treatment goal groups for at least one condition in our univariate analyses (Tables 1 and 2). As can be seen, when we control for all variables fewer show significant differences across groups.

Compared with those with other treatment goals, patients with a goal of cure tended to be less likely to believe their pain would never go away, and more likely to believe it is important to understand the cause of their pain, to have a goal for their mobility and flexibility of a return to original levels, and to believe in a medical cure and the responsibility of providers to find that cure. They also have had their pain for a shorter period of time than those with other treatment goals. Nevertheless, roughly half of this group has had their pain for at least 5 years and a third for 10 years or more implying that their goal of cure has been elusive.

The rest (majority) of the patients in our sample had goals relating to different types of pain management. One group endorsed the goal of preventing their pain from coming back or preventing reinjury; a goal which implies that they had accepted where they were and did not want their previous pain levels to return. This group did have significantly lower pain levels than those with other goals. Another group, the

TABLE 1. CHARACTERISTICS OF PATIENTS WITH CHRONIC LOW-BACK PAIN WHO ENDORSED EACH TREATMENT GOAL

	Prevent pain from coming back 197 (22%)	Prevent pain from getting worse 126 (14%)	Ease pain or make it temporarily go away 277 (31%)	Make pain go away permanently (cure) 285 (32%)
Characteristics of pain				
Rating of low-back pain past 7 days (0–10)[a]	2.8 (2.0)	3.9 (1.8)	3.9 (2.0)	3.9 (2.1)
Oswestry Disability Index score (0–100)[a]	16.6 (11.2)	22.9 (13.2)	22.1 (12.3)	20.6 (13.1)
Have both CLBP and CNP[b]	89 (45.2%)	74 (58.7%)	157 (56.7%)	133 (46.7%)
Years of pain[a]				
Less than 1 year	30 (15.2%)	12 (9.5%)	14 (5.1%)	61 (21.4%)
1 to <2 Years	17 (8.6%)	6 (4.8%)	10 (3.6%)	29 (10.2%)
2 to <5 Years	29 (14.7%)	12 (9.5%)	39 (14.1%)	45 (15.8%)
5 to <10 Years	28 (14.2%)	15 (11.9%)	43 (15.5%)	55 (19.3%)
10+ Years	89 (45.2%)	73 (57.9%)	165 (59.6%)	92 (32.3%)
Unknown	4 (2.0%)	8 (6.3%)	6 (2.2%)	3 (1.1%)
Beliefs about their pain				
What low-back pain would have been[a]	6.1 (2.5)	7.1 (2.3)	7.0 (1.9)	6.7 (2.3)
Believe their low-back pain is chronic[a]	117 (59.4%)	94 (74.6%)	211 (76.2%)	160 (56.1%)
Chronic pain will never go away: Agree to strongly agree[a]	51 (25.9%)	48 (38.1%)	97 (35.0%)	47 (16.5%)
It is important to understand what causes my pain: Agree to strongly agree[b]	192 (97.5%)	115 (91.3%)	254 (91.7%)	276 (96.8%)
It is unsafe for someone with my condition to be physically active: Agree to strongly agree	8 (4.1%)	12 (9.5%)	15 (5.4%)	19 (6.7%)
Perceived control over pain (0–4)	2.2 (0.8)	2.1 (0.7)	2.0 (0.7)	2.0 (0.8)
Appropriateness of medications[a] (0–4)	0.9 (0.8)	1.3 (0.9)	1.2 (0.9)	1.1 (0.9)
Belief in a medical cure[a] (0–4)	2.4 (0.9)	1.9 (0.8)	1.9 (0.9)	2.6 (0.8)
Treatment goals regarding mobility and flexibility[a]				
Expect complete return to original levels	54 (27.4%)	8 (6.3%)	31 (11.2%)	94 (33.0%)
Expect my mobility/flexibility to improve soon after	81 (41.1%)	37 (29.4%)	157 (56.7%)	122 (42.8%)
Expect to learn how to ensure they do not get worse	39 (19.8%)	72 (57.1%)	70 (25.3%)	39 (13.7%)
My mobility and flexibility not affected by my pain	23 (11.7%)	9 (7.1%)	19 (6.9%)	30 (10.5%)
Demographics				
Average age in years[b]	49.6 (14.4)	50.6 (16.0)	49.9 (14.9)	45.7 (14.6)
Age (categorized)[c]				
Less than 30 years	17 (8.6%)	16 (12.7%)	24 (8.7%)	43 (15.1%)
30–49 Years	78 (39.6%)	42 (33.3%)	104 (37.5%)	119 (41.8%)
50–64 Years	73 (37.1%)	40 (31.7%)	99 (35.7%)	91 (31.9%)
65+ Years	29 (14.7%)	28 (22.2%)	50 (18.1%)	32 (11.2%)
Gender: Female[c]	126 (64.0%)	94 (74.6%)	183 (66.1%)	172 (60.4%)
Education: at least a 4-year degree[a]	114 (57.9%)	45 (35.7%)	167 (60.3%)	145 (50.9%)
Psychological variables				
Pain management self efficacy[a] (0–10)	8.0 (1.5)	7.0 (1.9)	7.2 (1.9)	7.6 (1.9)
Expect chiropractic very–extremely successful[a]	158 (80.2%)	75 (59.5%)	180 (65.0%)	219 (76.8%)
Expect a lot to quite a bit of improvement[a]	129 (65.5%)	70 (55.6%)	144 (52.0%)	216 (75.8%)
Worry about pain: Mod to all the time[b]	24 (12.2%)	24 (19.0%)	43 (15.5%)	70 (24.6%)
Has depression according to PROMIS items	36 (18.3%)	35 (27.8%)	71 (25.6%)	71 (24.9%)
Catastrophizing (0–12 scale)[a]	1.6 (2.0)	3.0 (2.7)	2.4 (2.1)	2.4 (2.6)

[a]Values across treatment goals differ significantly at $p < 0.001$.
[b]Values across treatment goals differ significantly at $p < 0.01$.
[c]Values across treatment goals differ significantly at $p < 0.05$.
CLBP, chronic low-back pain; CNP, chronic neck pain; PROMIS, Patient-Reported Outcomes Measurement Information System®.

TABLE 2. CHARACTERISTICS OF PATIENTS WITH CHRONIC NECK PAIN WHO ENDORSED EACH TREATMENT GOAL

	Prevent pain from coming back 113 (16%)	Prevent pain from getting worse 89 (12%)	Ease pain or make it temporarily go away 299 (41%)	Make pain go away permanently (cure) 228 (31%)
Characteristics of pain				
Rating of neck pain past 7 days (0–10)[a]	3.0 (2.1)	3.8 (2.0)	4.1 (2.1)	4.2 (2.0)
Neck Disability Index score (0–100)[a]	18.0 (10.9)	21.3 (13.6)	23.7 (13.2)	23.4 (10.9)
Have both CLBP and CNP	61 (54.0%)	57 (64.0%)	191 (63.9%)	128 (56.1%)
Years of pain[a]				
Less than 1 year	19 (16.8%)	4 (4.5%)	20 (6.7%)	44 (19.3%)
1 to <2 Years	6 (5.3%)	3 (3.4%)	7 (2.3%)	22 (9.6%)
2 to <5 Years	21 (18.6%)	13 (14.6%)	37 (12.4%)	47 (20.6%)
5 to <10 Years	19 (16.8%)	17 (19.1%)	59 (19.7%)	40 (17.5%)
10+ Years	48 (42.5%)	47 (52.8%)	167 (55.9%)	70 (30.7%)
Unknown	0 (0.0%)	5 (5.6%)	9 (3.0%)	5 (2.2%)
Beliefs about their pain				
What neck pain would have been[a]	6.1 (2.6)	7.0 (2.2)	6.9 (2.2)	7.1 (2.1)
Believe their neck pain is chronic[a]	76 (67.3%)	72 (80.9%)	208 (69.6%)	131 (57.5%)
Chronic pain will never go away: Agree to strongly agree[a]	22 (19.5%)	35 (39.3%)	102 (34.1%)	46 (20.2%)
It is important to understand what causes my pain: Agree to strongly agree	109 (96.5%)	81 (91.0%)	280 (93.6%)	222 (97.4%)
It's unsafe for someone with my condition to be physically active: Agree to strongly agree	4 (3.5%)	7 (7.9%)	6 (2.0%)	9 (3.9%)
Perceived control over pain (0–4)	2.3 (0.6)	2.1 (0.7)	2.1 (0.7)	2.2 (0.7)
Appropriateness of medications (0–4)	0.9 (0.8)	1.2 (1.0)	1.1 (0.9)	1.0 (0.8)
Belief in a medical cure[a] (0–4)	2.5 (0.9)	2.0 (0.8)	2.0 (0.8)	2.6 (0.8)
Treatment goals regarding mobility and flexibility[a]				
Expect complete return to original levels	36 (31.9%)	12 (13.5%)	51 (17.1%)	97 (42.5%)
Expect my mobility/flexibility to improve soon after	54 (47.8%)	31 (34.8%)	151 (50.5%)	79 (34.6%)
Expect to learn how to ensure they don't get worse	19 (16.8%)	36 (40.4%)	65 (21.7%)	23 (10.1%)
My mobility and flexibility not affected by my pain	4 (3.5%)	10 (11.2%)	32 (10.7%)	29 (12.7%)
Demographics				
Average age in years[b]	45.8 (12.1)	50.9 (12.2)	45.8 (13.6)	44.4 (12.9)
Age (categorized)[c]				
Less than 30 years	9 (8.0%)	5 (5.6%)	38 (12.7%)	31 (13.6%)
30–49 Years	58 (51.3%)	31 (34.8%)	137 (45.8%)	112 (49.1%)
50–64 Years	36 (31.9%)	42 (47.2%)	91 (30.4%)	69 (30.3%)
65+ Years	10 (8.8%)	11 (12.4%)	33 (11.0%)	16 (7.0%)
Gender: Female	85 (75.2%)	74 (83.1%)	240 (80.3%)	191 (83.8%)
Education: At least a 4-year degree[c]	71 (62.8%)	41 (46.1%)	187 (62.5%)	131 (57.5%)
Psychological variables				
Pain management self-efficacy (1–10)	8.0 (1.6)	7.5 (1.9)	7.6 (1.7)	7.7 (1.7)
Expect chiropractic very–extremely successful[b]	98 (86.7%)	60 (67.4%)	217 (72.6%)	183 (80.3%)
Expect a lot to quite a bit of improvement[a]	79 (69.9%)	43 (48.3%)	178 (59.5%)	162 (71.1%)
Worry about pain: Mod to all the time	14 (12.4%)	16 (18.0%)	43 (14.4%)	43 (18.9%)
Has depression based on PROMIS items	23 (20.4%)	22 (24.7%)	80 (26.8%)	61 (26.8%)
Catastrophizing (0–12 scale)[c]	1.6 (1.9)	2.4 (2.4)	2.3 (2.4)	2.2 (2.3)

[a]Values across treatment goals differ significantly at $p < 0.001$.
[b]Values across treatment goals differ significantly at $p < 0.01$.
[c]Values across treatment goals differ significantly at $p < 0.05$.

TABLE 3. RESULTS OF THE UNCONDITIONAL MODELS

Estimated coefficients	CLBP—clustering variable used				CNP—clustering variable used			
	Region and clinic	Region only	Clinic only	Neither	Region and clinic	Region only	Clinic only	Neither
Prevalence of patients with a goal of preventing pain from coming back compared with those with a goal of cure	0.69 (0.5, 0.9)	0.69 (0.5–0.9)	0.70 (0.6–0.9)	0.69 (0.6–0.8)	0.50 (0.4–0.7)	0.50 (0.4–0.6)	0.50 (0.4–0.7)	0.50 (0.4–0.6)
Prevalence of patients with a goal of preventing pain from getting worse compared with those with a goal of cure	0.44 (0.3–0.6)	0.44 (0.3–0.6)	0.44 (0.4–0.6)	0.44 (0.4–0.5)	0.40 (0.3–0.5)	0.39 (0.3–0.5)	0.40 (0.3–0.5)	0.39 (0.3–0.5)
Prevalence of patients with a goal of easing pain temporarily compared with those with a goal of cure	0.97 (0.8–1.3)	0.97 (0.8–1.2)	0.98 (0.8–1.2)	0.97 (0.8–1.1)	1.33 (1.1–1.6)	1.31 (1.1–1.6)	1.33 (1.1–1.6)	1.31 (1.1–1.6)
Variance attributable to Region	1.04 (0.9–1.1)	1.04 (0.96–1.1)	—	—	1.00 (1.0–1.0)	1.00 (1.0–1.0)	—	—
Variance attributable to Clinic	1.17 (0.9–1.5)	—	1.20 (0.96–1.5)	—	1.32 (0.97–1.8)	—	1.32 (0.97–1.8)	—
BIC	2400.8	2397.5	2395.4	2392.9	1885.4	1885.0	1878.8	1878.4

BIC, Bayesian Information Criterion.

smallest group (12%–14% of the samples), endorsed the goal of preventing their pain from getting worse. A related goal of learning how to ensure their mobility and flexibility did not get worse was 7–12 times more likely in this group than in those with a goal of cure. The last group is the largest for CNP (41%) and equally as large as those with a goal of cure (31%) for CLBP. They endorse a goal for treatment of easing their pain or temporarily relieving it. In many ways this group is similar to those with the goal of preventing their pain from getting worse, but that similarity can differ by condition. For example, those with CNP over 5 years were three to four times more likely to have either of these goals than a goal of cure, but those with longer-term CLBP were only more likely to have a goal of easing their pain.

Discussion

Patients using chiropractic care for their CLBP and CNP have different treatment goals for that care. Just under one-third of those with either type of pain report a goal of having their pain go away permanently, a goal we called "cure." Given the average amount of time these patients have lived with their pain (14 years[4]) this low focus on cure should not be surprising. The majority, on the other hand, report other goals related to the management of their symptoms. Many health care and payer policies and clinical trial protocols for provider-based therapies are geared toward cure. That is, it will take X number of treatments and then you should be done—that is, be cured. Care beyond the initial course of treatment can require documentation of continued improvement.[19,75–78] Others have argued that continued care would require clinical deterioration with treatment withdrawal.[19,28] However, given these patients' management-related goals, either requirement may be counter to the role of medicine to relieve suffering and even unethical. We may need to find and support some ongoing care system that better matches these chronic spinal pain patients' goals for their care.

Given low average pain levels (3–4 on a 0–10 scale), and low disability (minimal to moderate for back[36] and mild for neck[44]), and given patient estimates that their pain would be twice as high if they did not see their chiropractor, it could be said that these patients are all to some extent managing their pain, and fairly well, with ongoing chiropractic care. Another study of these same patients showed that they generally hold steady at these pain and disability levels for the next 3 months.[79] Given this, continuous improvement may not be a reasonable criterion for continued care.

Several studies have found pain management self-efficacy goes up with treatment (with a mind–body program in older adults with CLBP,[80] with acupuncture and Alexander technique for CNP,[81] and with interdisciplinary pain management for a variety of pain conditions[82]). Our scores for the PSE (7–8 on a 1–10 scale) are higher than all pretreatment scores in these studies but are well in line with their post-treatment scores. This would be expected since our sample has all been under treatment, often for years. These high PSE scores are also in line with average scores tending toward truth (i.e., >2) for their having control over their pain.

Various authors have used different names for ongoing chiropractic pain management. One term, maintenance care, has been particularly vilified as a negative form of ongoing

TABLE 4. FULL MULTINOMIAL LOGISTIC MODEL FOR THOSE WITH CHRONIC LOW-BACK PAIN

Base condition: Goal of cure	Prevent pain from coming back	Prevent pain from getting worse	Ease pain or make it temporarily go away
Constant	1.74 (0.2–16.7)	4.64 (0.3–64.2)	5.30 (0.6–44.2)
Characteristics of pain			
Rating of low-back pain past 7 days (0–10)	**0.84 (0.7–0.97)**	0.91 (0.8–1.1)	1.00 (0.9–1.2)
Oswestry Disability Index score (0–100)	0.99 (1.0–1.0)	0.99 (1.0–1.0)	1.00 (1.0–1.0)
Have both CLBP and CNP	0.93 (0.6–1.4)	0.90 (0.5–1.5)	0.93 (0.6–1.4)
Years in pain (Ref: <1 year)			
1 to <2 Years	1.09 (0.5–2.4)	0.84 (0.3–2.8)	1.30 (0.5–3.5)
2 to <5 Years	1.15 (0.6–2.3)	1.09 (0.4–2.9)	**2.69 (1.2–5.9)**
5 to <10 Years	0.87 (0.4–1.7)	0.89 (0.3–2.3)	**2.23 (1.04–4.8)**
10+ Years	1.39 (0.8–2.5)	1.98 (0.9–4.4)	**3.61 (1.8–7.2)**
Unknown	1.96 (0.4–10.4)	6.32 (1.2–32.9)	5.41 (1.0–28.1)
Beliefs about their pain			
What low-back pain would have been	1.00 (0.9–1.1)	1.08 (0.9–1.2)	1.04 (0.9–1.2)
Believe their low-back pain is chronic	1.06 (0.7–1.6)	1.08 (0.6–1.9)	1.22 (0.8–1.9)
Chronic pain will never go away: Agree to strongly agree	**2.05 (1.2–3.4)**	**1.80 (1.0–3.2)**	**1.82 (1.1–2.9)**
It is important to understand what causes my pain: Agree to strongly agree	1.07 (0.3–3.4)	**0.27 (0.1–0.8)**	**0.39 (0.2–0.99)**
Appropriateness of medications (0–4)	**0.70 (0.5–0.9)**	0.77 (0.6–1.04)	0.81 (0.6–1.03)
Belief in a medical cure (0–4)	**0.74 (0.6–0.97)**	**0.49 (0.4–0.7)**	**0.51 (0.4–0.7)**
Treatment goals regarding mobility and flexibility (Ref: Expect complete return to original levels)			
Expect my mobility/flexibility to improve soon after	1.12 (0.7–1.8)	**2.35 (1.00–5.5)**	**2.68 (1.6–4.6)**
Expect to learn how to ensure they do not get worse	1.59 (0.9–3.0)	**12.21 (5.0–29.5)**	**2.96 (1.6–5.6)**
My mobility and flexibility not affected by my pain	0.99 (0.5–2.0)	2.90 (0.96–8.8)	1.49 (0.7–3.2)
Demographics			
Average age in years	1.01 (1.0–1.0)	1.00 (1.0–1.0)	1.00 (1.0–1.0)
Gender: Female	1.23 (0.8–1.9)	**1.97 (1.1–3.4)**	1.21 (0.8–1.8)
Education: At least a 4-year degree	1.19 (0.8–1.8)	0.60 (0.4–1.00)	**1.61 (1.1–2.4)**
Psychological variables			
Pain management self-efficacy (0–10)	1.02 (0.9–1.2)	0.92 (0.8–1.1)	0.89 (0.8–1.0)
Expect chiropractic very–extremely successful	1.05 (0.6–1.8)	0.75 (0.4–1.4)	0.93 (0.6–1.5)
Expect a lot to quite a bit of improvement	0.61 (0.4–1.0)	0.74 (0.4–1.3)	0.45 (0.3–0.7)
Worry about pain: mod to all the time	1.13 (0.5–2.4)	0.48 (0.2–1.1)	0.72 (0.4–1.4)
Catastrophizing (0–12 scale)	0.90 (0.8–1.04)	1.07 (0.9–1.3)	0.90 (0.8–1.0)

Bold highlights significant relationships.

care. The concern here seems to be that patients return for ongoing chiropractic care because of clinician dependence, lowered self-efficacy, or heightened fear.[19,83] It is true that some patients in our sample worry about their pain to a moderate to great degree, but the percentage with this level of worry was low (between 12% and 25%), and as discussed above, their level of pain management self-efficacy was generally high.

There also seems to be some variation in how maintenance care is defined. It has been defined variously as elective care given at regular intervals designed to maintain maximum health and promote optimal function,[28] long-term care that includes ongoing patient health education,[84] and care for a patient that did not report a specific complaint.[85] One group of chiropractors in Denmark has done the most work on the concept of maintenance care. They define it as care for nonacute patients with the purpose of preventing recurrence of episodic conditions and/or maintaining a desired level of function.[86,87] Under this definition at least two of our groups (i.e., with goals of preventing their pain from getting worse or preventing their pain from coming back) might be experiencing maintenance care.

Another term, support care, has been used to describe necessary care for patients who have reached maximum therapeutic benefit (their improvement has plateaued), but for whom therapeutic withdrawal has led to deterioration and failure to sustain previous therapeutic gains.[28] It is fairly clear that the patients in this sample have reached a plateau in their improvement.[79] However, it is unclear whether therapeutic withdrawal, years of lived experience that included various withdrawals, or their chiropractor was the source of their estimates of what their pain would be if they did not see their chiropractor. They definitely believe that their previous therapeutic gains would deteriorate without continued care, so these patients could also be considered to be receiving support care.

This study benefits from extensive data collected from a large sample of patients with chronic nonspecific spinal pain. However, it is not without limitations. We offered patients the four options for treatment goals used in this study. We did allow respondents to write in an ''other'' goal. However, only two each in the CLBP and CNP samples did, and these patients were excluded from our analysis sample.

TABLE 5. FULL MULTINOMIAL LOGISTIC MODEL FOR THOSE WITH CHRONIC NECK PAIN

Base condition: Goal of cure	Prevent pain from coming back	Prevent pain from getting worse	Ease pain or make it temporarily go away
Constant	8.80 (0.6–136.7)	1.35 (0.1–27.4)	11.74 (1.4–101.9)
Characteristics of pain			
Rating of neck pain past 7 days (0–10)	**0.82 (0.7–0.99)**	0.94 (0.8–1.1)	0.99 (0.9–1.1)
Neck Disability Index score (0–100)	0.98 (1.0–1.0)	**0.96 (0.9–0.99)**	1.00 (1.0–1.0)
Have both CLBP and CNP	0.97 (0.6–1.6)	1.10 (0.6–2.0)	1.04 (0.7–1.6)
Years in pain (Ref: <1 year)			
1 to <2 Years	0.49 (0.2–1.5)	0.96 (0.2–5.6)	0.55 (0.2–1.6)
2 to <5 Years	0.75 (0.3–1.7)	2.22 (0.6–8.0)	1.26 (0.6–2.7)
5 to <10 Years	0.85 (0.4–2.0)	**3.74 (1.04–13.4)**	**2.72 (1.3–5.7)**
10+ Years	1.19 (0.6–2.5)	**3.86 (1.2–12.7)**	**3.33 (1.7–6.6)**
Unknown	0.00 (0.0)	7.94 (1.3–47.4)	2.96 (0.8–11.3)
Beliefs about their pain			
What low-back pain would have been	0.91 (0.8–1.05)	1.00 (0.8–1.2)	0.93 (0.8–1.1)
Believe their neck pain is chronic	1.65 (0.96–2.8)	**2.00 (1.01–4.0)**	1.06 (0.7–1.6)
Chronic pain will never go away: Agree to strongly agree	0.97 (0.5–1.8)	**2.11 (1.1–4.0)**	1.59 (0.99–2.6)
It is important to understand what causes my pain: Agree to strongly agree	0.70 (0.2–2.8)	**0.27 (0.1–0.9)**	0.49 (0.2–1.4)
Appropriateness of medications (0–4)	0.95 (0.7–1.3)	0.99 (0.7–1.4)	0.90 (0.7–1.2)
Belief in a medical cure (0–4)	0.79 (0.6–1.1)	**0.57 (0.4–0.8)**	**0.50 (0.4–0.6)**
Treatment goals regarding mobility and flexibility (Ref: Expect complete return to original levels)			
Expect my mobility/flexibility to improve soon after	**2.08 (1.2–3.6)**	**2.60 (1.2–5.7)**	**3.06 (1.9–4.9)**
Expect to learn how to ensure they do not get worse	**2.81 (1.3–6.3)**	**7.06 (2.8–17.5)**	**3.51 (1.8–6.8)**
My mobility and flexibility not affected by my pain	0.32 (0.1–1.01)	2.20 (0.8–6.1)	1.84 (0.9–3.6)
Demographics			
Average age in years	0.99 (1.0–1.0)	1.02 (1.0–1.0)	0.99 (1.0–1.0)
Gender: Female	0.64 (0.3–1.2)	1.30 (0.6–2.8)	0.76 (0.4–1.3)
Education: At least a 4-year degree	0.99 (0.6–1.7)	0.60 (0.3–1.1)	1.04 (0.7–1.6)
Psychological variables			
Pain management self-efficacy (0–10)	0.95 (0.8–1.1)	0.88 (0.7–1.1)	0.97 (0.8–1.1)
Expect chiropractic very–extremely successful	1.70 (0.8–3.6)	0.89 (0.4–1.8)	0.87 (0.5–1.5)
Expect a lot to quite a bit of improvement	1.13 (0.6–2.0)	0.83 (0.4–1.6)	1.00 (0.6–1.6)
Worry about pain: Mod to all the time	1.28 (0.5–3.4)	1.32 (0.5–3.7)	0.62 (0.3–1.3)
Catastrophizing (0–12 scale)	0.93 (0.8–1.1)	0.96 (0.8–1.2)	0.99 (0.9–1.1)

Bold highlights significant relationships.

Nevertheless, patients may have stated their treatment goals differently. It would have also been interesting to know how long they held these goals and whether they were salient during their treatment decisions. Given the concern that patients utilize ongoing chiropractic care due to reasons such as clinician dependence or coercion for provider financial gain, it would have been helpful to have a measure of whether patients' responses were based on what they were told by their chiropractor versus their lived experience. Nevertheless, their having lived with their pain condition for an average of 14 years[4] gives weight to responses based on lived experience.

Conclusions

Although much of health policy is based on a curative model, less than a third of a large sample of patients with CLBP and CNP under ongoing chiropractic care have a stated hope or goal of cure—their pain going away permanently. Instead, most patients have goals related to the ongoing successful management of their chronic spinal pain. How can this goal of provider-based pain management be viably supported and sustained? Policy makers need more information about how patients are using ongoing provider-based care to develop policies regarding this care. This study provides some of this information.

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