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The Constellation of Chronic Low Back Pain and Other Subjective Symptoms: Does the View Differ from China?

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Abstract

Study Design—This was a pilot, cross-sectional study. Its site was West China Hospital in Chengdu, Sichuan Province.

Objective—An objective was to explore whether, in China, LBP characteristically is one symptom among co-occurring subjective symptoms. More basic objectives were to test a supplemented list of symptoms and to reconfigure findings from the literature on co-occurrence of symptoms so that they pertain specifically to cLBP. The governing metaphor was a constellation of symptoms in which cLBP is located.

Summary of Background Data—With the exception of small, isolated societies, previous studies of co-occurrence of symptoms were conducted in the affluent West. Although China's population is larger than the *combined* populations of affluent countries of the West, research on co-occurring symptoms has been neglected in China. Unknown is whether results from studies of co-occurring symptoms in the affluent West may be extended to China.

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Level of Evidence: N/A

Methods—A survey with the supplemented symptom list was cross-culturally adapted into Chinese and administered to cLBP patients (N=72) and normal controls (N=102). Multiple regression analysis was used to determine the effects of covariates (age, gender, education) on symptom reporting.

Results—cLBP patients reported higher median numbers of symptoms than normal controls, including total symptoms (9 vs. 3), musculoskeletal symptoms (4 vs. 1), and non-musculoskeletal symptoms (6 vs. 2.5); differences between cLBP and normal controls were highly significant (p 's <0.001). Covariates had little effect on symptom reporting.

Conclusions—cLBP characteristically was one symptom in a constellation of symptoms. This finding came from one research site in China. Nevertheless, consistency between studies is notable, with findings from the affluent West supporting the finding from the Chinese site. The tendency to concentrate on a discrete clinical entity, cLBP itself, may obscure the constellation of symptoms. The more expansive view of cLBP has implications for clinical practice and research.

Keywords

Chronic Low Back Pain; Outcomes of Treatment; China; Cross-Cultural Comparison; Cross-Cultural Adaptation of Self-Report Measures; Subjective Health Complaints Inventory; Standardized Nordic Questionnaire; Co-morbid Conditions; Medically Unexplained Symptoms; Chronic Multi-Symptom Syndromes; Functional Somatic Syndromes; Differential Diagnosis

Introduction

Especially in a short clinic visit, patients may present chronic low back pain (cLBP) as though it were a discrete clinical entity and physicians may diagnosis it as such. Increasingly in the literature, however, cLBP is seen in the context of other subjective symptoms with which it co-occurs. The title of an article expresses co-occurrence of this nature, “Chronic pain syndromes: You can't have one without another”.¹ However, with the exception of small, isolated societies,^{2,3} studies of co-occurrence of cLBP and other symptoms have been conducted in affluent countries of the West, notably Norway.⁴⁻⁸ The population of China is 1.4 billion, which is larger than the *combined* populations of affluent (“high income”) countries of the West.⁹

In view of the lack of studies of co-occurring symptoms in China, the question is whether findings from the studies conducted in the affluent West may be extended to China. An editorial in *Nature* sums up decades of research in the behavioral sciences and cautions against such an extension of findings.¹⁰ In the words of the editorial, research articles from the affluent West “routinely assume that their results are broadly representative...[but] a growing body of evidence suggests that this is not the case.”

Why might subjective symptoms in China and the affluent West differ? China has a distinct socio-cultural context, which exerts an influence on experiences of subjective symptoms. It has had a tumultuous recent history, from the Cultural Revolution (to go back no further) to the vast rural-to-urban migration now under way, and the attendant effects on individuals have been profound. As scholars of China have documented, these effects may lead not only to depression but also may be somatized and manifested as such symptoms as dizziness,

sleep disturbances, and chronic pain.¹¹⁻¹³ China has also seen a rapid economic rise, which has resulted in income disparities, and, paradoxically, an increase in the symptom of sadness.¹⁴

More generally, there are well-documented discrepancies in cross-national rates of subjective symptoms.¹⁵⁻¹⁷ For example, among nurses, the prevalence of disabling low back pain is four times higher in Costa Rica and Nicaragua than in Pakistan and Japan.¹⁸ Rates of “cough” and “wheezing” symptoms similarly vary multifold in cross-national comparisons.¹⁹⁻²¹ In short, distinct socio-cultural circumstances of China in conjunction with pervasive cross-national disparities in rates suggest that patterns of subjective symptoms seen in the affluent West do not necessarily also occur in China. An objective of this study, then, was to initiate research on cLBP and co-occurring symptoms specifically in China.

A more basic objective was to reconfigure findings from the literature on subjective symptoms so that they pertain to cLBP. Overlapping symptoms is a common finding in the literature.²²⁻²⁵ In contrast with a Venn diagram with multiple overlapping symptoms, the governing metaphor here is a constellation of symptoms in which cLBP is located. To draw out the metaphor further, single points in the constellation may variously appear at any one moment in time (in other words, cLBP patients may variously report other symptoms besides cLBP), but, aside from cLBP, no one point in the constellation is essential to discern its overall contours. Seen as one symptom within a constellation, critical issues in the treatment of cLBP come into view.

Materials and Methods

Terminology

Although the term “subjective health symptoms” is used here, the underlying meaning of a number of other terms is similar, among them “medically unexplained symptoms”,²² “functional somatic syndromes”,²³ and “chronic multi-symptom syndromes”.²⁴ These terms have common core features. Each of them refers to subjective experiences obviously real to those who undergo them, often to the point of debility; on the other hand, researchers have striven to substantiate the biomedical substrate of such experiences but so far have largely come up empty-handed.²⁶ So as not to be detained further by a terminological issue, a simple, operational definition will be provided for this paper: subjective symptoms comprise those listed in the Table 1.

Symptom List

Of the 32 symptoms in the Table 1, 28 come from the Subjective Health Complaints Inventory.²⁷ The four symptoms added to the list are asterisked in Table 1, and the rationales for adding them are in Table 2.

The questionnaire with the supplemented symptom list went through a process of cross-cultural adaptation, with two forward translations (English to Chinese), two backward translations (Chinese to English), and then two more forward translations (Chinese to English).²⁸ Each translator, involved in only one step in the process, worked independently

of the others. After each step, a committee resolved discrepancies between translations. For the Chinese version of subjective health symptoms used for this study, see Supplementary Data.

Research Site and Participant Selection

The research took place at West China Hospital, which is located in Chengdu, a city in Sichuan Province. West China Hospital, one of the largest hospitals in the world,²⁹ is a referral hospital that draws patients from throughout southwest China. The Institutional Review Board of West China Hospital approved of the study.

Patients from the hospital's western-style Pain Clinic were recruited for the study. The study enrolled consecutive patients that fit selection criteria listed in Table 3. Excluded from the study were patients with an identifiable pathophysiology, such as back fracture or sciatica. Included were patients with non-specific low back pain, which is prominently classified as a “functional somatic syndrome”^{23,25} due to its unknown or uncertain etiology.³⁰

Normal controls came from the eyeglasses clinic of West China Hospital. Those seeking eyeglasses themselves were not recruited for the study, since eyestrain may be a subjective symptom. Rather, people between the ages of 20 and 64 who accompanied those seeking eyeglasses, usually a family member, were recruited as normal controls.

Overview of Research Strategy

The constellation of symptoms in which cLBP is located came into view through two contrasts:

1. In order to discern broad contours of the constellation in the first place, cLBP patients were contrasted with normal controls. This comparison has been made before, but in Norway,⁴ not China.
2. The 32 subjective symptoms in Table 1 were classified into two subcategories, i.e., 9 musculoskeletal symptoms (including LBP), which are in the gray-shaded area of the table, and 23 symptoms other than musculoskeletal. Classification was done simply on the basis of what Feinstein calls sensibility (“enlightened common sense”).³¹ For each patient within the cLBP population, the number of symptoms within each of the two subcategories was tabulated. Then, for the cLBP population as a whole, one subcategory of symptoms was correlated against the other. Again, this relationship has been explored before, but in Norway.⁸

Data Analysis

The distribution of symptoms listed in Table 1 was skewed in the normal control population, and for this reason the Wilcoxon rank sum test was used to compare numbers of symptoms in the normal control population with numbers of symptoms in the cLBP population. Ensuing analyses in this paper pertained to the cLBP population only. Pearson correlation was used to test the association between musculoskeletal symptoms and non-musculoskeletal symptoms. In order to determine the effect of age, gender, and education on symptom reporting, multiple regression analysis was performed.

Results

The study recruited 72 cLBP patients and 102 normal controls. Prevalence of their subjective symptoms in the past month is shown in Table 1. For each symptom, the questionnaire in this study (as in the Subjective Health Complaints Inventory²⁷) provided four response categories (“not at all”, “a little”, “some” and “serious”). The report of a “serious” symptom was rare. Thus, in Table 1, this study followed the precedent of previous studies,^{4,5} and collapsed the categories of “serious” and “some” into the single category of “substantial”. Aside from data in Table 1, data presented in this paper consist of reports of “any” of the designated symptoms, which aggregates all three categories of symptom intensity (“a little”, “some” and “substantial”). Thus, Tables 4 and 5 as well as Figure 1 present data on any experience of the designated symptoms in the past month, regardless of the intensity of the experience.

As shown in Table 4, cLBP patients reported a median of 9 total symptoms vs. 3 for normal controls; a median of 4 musculoskeletal symptoms vs. 1 for normal controls; and a median of 6 non-musculoskeletal symptoms vs. 2.5 for normal controls (all p s<0.001).

Table 4 also shows demographic characteristics of the two populations. Education was significantly higher in the normal control population than the cLBP population. The percentage of women was higher in the cLBP population, although this difference was only marginally significant.

Figure 1 depicts the relationship between musculoskeletal and non-musculoskeletal symptoms in the cLBP population. These subcategories of symptoms were moderately related (Pearson $r=0.38$, $p=0.001$), with one subcategory accounting for little of the variation in the other ($R^2 = 0.14$).

In regression analyses, the effects of age, gender, and education were tested, successively, on total symptoms and the two subcategories that compose it, i.e., musculoskeletal symptoms and non-musculoskeletal symptoms. Results are shown in Table 5. None of the covariates had a significant effect on musculoskeletal symptoms. One covariate, gender, had a marginally significant effect on, respectively, total symptoms and non-musculoskeletal symptoms; thus, men had about 2½ fewer total symptoms than women ($p=0.07$) and about 2 fewer non-musculoskeletal symptoms than women ($p=0.08$). Covariates accounted for only a minor amount of variation in all three analyses (R^2 adj <10%)

Discussion

In China, a population of cLBP patients endorsed significantly higher median numbers of subjective symptoms than a population of normal controls, including total symptoms (9 vs. 3), musculoskeletal symptoms (4 vs. 1), and non-musculoskeletal symptoms (6 vs. 2.5). The finding of cLBP as one symptom in a constellation of symptoms may thus be extended from smaller countries of the affluent West to a site in the most populous country in the world.

In delineating the constellation, the question was whether it consisted of a single strand composed of the two subcategories of symptoms, i.e., musculoskeletal symptoms and non-

musculoskeletal symptoms, with the number of one subcategory of symptom increasing linearly with the number of the other. There was a moderately significant relationship between the subcategories of symptoms, although one subcategory accounted for little variation in the other (Figure 1). In other words, musculoskeletal symptoms may not be used as a proxy for non-musculoskeletal symptoms. Rather, in order to view the constellation in its entirety, data on symptoms in both subcategories are necessary.

Four symptoms were added to the Subjective Health Complaints Inventory, i.e., temporomandibular joint disorder, pain in the hips or thighs, and knee pain (Table 2). The added symptoms led to noteworthy results (Table 1). For example, more than one-third of the Chinese cLBP patients (36%) reported “any” pain in the hips or thighs, and for almost one-fourth of them (24%) this pain was “substantial”. All added symptoms were at least two-and-a-half times more prevalent in cLBP patients than in normal controls (chi-square test $p < 0.01$). The supplemented symptom list presented here was not intended to be definitive; rather, its purpose was to collect symptoms commonly occurring with cLBP in one place. In this way, symptoms may be simultaneously inspected and the list may be further revised and supplemented.

This paper concentrated on the delineation of the constellation of co-occurring symptoms, which is to be distinguished from an underlying *explanation* of the constellation. The multivariate analysis tested the effect of covariates (age, gender, and education), but this only constituted an initial exploration and did little to explain the emergence of the constellation. There is a substantial literature on central sensitization, a form of neuroplasticity, which has been advanced as the explanation of co-occurring symptoms.^{32,33} The consistency of findings cross-culturally, i.e., in the affluent West and now also in China, suggests central sensitization may be implicated in the co-occurrence of symptoms. Research in this paper, however, was not designed as a direct test of such a mechanism.

Aside from the explanation of why co-occurring symptoms emerge in the first place, a separate question is what is the prognosis of patients once they have already developed cLBP and co-occurring symptoms. Fragmentary evidence from previous studies indicates that the presence of co-occurring symptoms adversely affects the outcomes of back pain treatment.^{7,34} This raises the further question of what, more precisely, is the relationship between the number of subjective symptoms and the outcomes of back pain treatment. Is this relationship monotonic, i.e., as the number of symptoms increases, do treatment outcomes systematically worsen? Is there a threshold effect, i.e., is there a number of subjective symptoms beyond which treatment outcomes do not improve? A comprehensive list of subjective symptoms is necessary to test the relationship between subjective symptoms and treatment outcomes. Furthermore, the treatment of cLBP patients with multiple symptoms may result in the “balloon effect”; at follow-ups, low back pain itself may subside, but other symptoms may emerge or increase in intensity. A test for this effect again presupposes a comprehensive list of commonly co-occurring symptoms.

A study conducted in Norway also found that cLBP patients endorsed significantly more subjective symptoms than normal controls.⁴ The Chinese population of cLBP patients studied here, however, endorsed almost twice as many symptoms as the Norwegian cLBP

patients (a median of 9 vs. 5 for Norwegian cLBP patients). This suggests another question that may be investigated in ensuing research: In the general population as well as cLBP population, is the burden of subjective symptoms greater in China than in the affluent West? If so, still another matter to investigate is whether socio-cultural circumstances in China, discussed earlier in the paper, are implicated.

This was a pilot study. Data for it came from one research site, West China Hospital, which may not be representative of other sites in China. On the other hand, regardless of where research on co-occurring symptoms has been conducted, consistency between studies is notable, with findings from the affluent West supporting findings from the Chinese research site studied here. Additionally, the effects of covariates (age, sex, education) on symptom reporting were only marginally significant or insignificant in this study, which may be due to relatively small population sizes (N's were 72 and 102 for, respectively, cLBP patients and normal controls). Studies with larger population sizes are required to clarify the effects of covariates. Larger population sizes, however, would have been unlikely to affect main results of this study. In other words, differences between numbers of symptoms reported by normal controls and numbers reported by cLBP patients were all highly significant (p values <0.001).

To conclude, cLBP of the nature discussed here is far from “uncomplicated”. Its complexities, however, may be overlooked in the clinic. Physicians, including those at West China Hospital, are trained in the process of “differential diagnosis”, which entails successive differentiations among diagnoses until one or a few discrete ones are reached.³⁵ As opposed to casting a wide net that may pick up a multiplicity of subjective symptoms, differential diagnosis consists of a process of narrowing down. Treatment guidelines for low back pain hardly raise the matter of co-occurrence of symptoms let alone a systematic survey of them,³⁶ and so they do little to offset this process. The ensuing tendency to concentrate on a discrete clinical entity, cLBP itself, may obscure the constellation of co-occurring symptoms. On the other hand, once cLBP is seen in a constellation, largely unexamined questions emerge, such as:

- cLBP patients in this study reported high prevalence rates of co-occurring symptoms; for example, one-third of them reported substantial sleep problems and one-fourth reported substantial hip or thigh pain (Table 1). The question that follows is: What are the effects of treatment of low back pain on symptoms besides low back pain? Does the “balloon effect” (defined earlier in this paper) occur?
- The median number of symptoms among cLBP patients in this study was 9, which leads to the question: To what extent do other symptoms detract from the treatment of low back pain?

Clearly, the more expansive view of cLBP has implications that are consequential not only in research but ultimately also in the clinic.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1. Association Between Musculoskeletal Symptoms and Non-Musculoskeletal Symptoms in the Chronic Low Back Pain Population

Table 1
Subjective Health Symptoms in the Past Month

	Chronic Low Back Pain Patients N=72		Normal Controls N=102	
Subjective Health Symptom	Any N (%)	Substantial N (%)	Any N (%)	Substantial N (%)
1. Cold, flu	17 (23.61%)	3 (4.17%)	17 (16.67%)	3 (2.94%)
2. Cough, Bronchitis	8 (11.11%)	2 (2.78%)	10 (9.8%)	1 (0.98%)
3. Asthma	0 (0%)	0 (0%)	1 (0.98%)	0 (0%)
4. Headache	28 (38.89%)	6 (8.33%)	26 (25.49%)	0 (0%)
*5 Problem of the Temporomandibular Joint Disorder: This means pain, tenderness, or tiredness in the joint used to open and close the mouth, sounds when opening or the closing the mouth, and difficulty in opening the mouth.	10 (13.89%)	3 (4.17%)	2 (1.96%)	1 (0.98%)
6. Neck pain	41 (56.94%)	16 (22.22%)	25 (24.51%)	2 (1.96%)
7 Pain upper part of back	49 (68.06%)	41 (56.94%)	19 (18.63%)	1 (0.98%)
8 Pain lower part of back	72 (100%)	67 (93.06%)	26 (25.49%)	1 (0.98%)
9 Pains in arms	16 (22.22%)	5 (6.94%)	4 (3.92%)	0 (0%)
10 Pains in shoulders	30 (41.67%)	13 (18.06%)	22 (21.57%)	2 (1.96%)
*11 Pain in one or more hips or thighs	26 (36.11%)	17 (23.61%)	2 (1.96%)	0 (0%)
*12 Knee pain	19 (26.39%)	4 (5.56%)	11 (10.78%)	1 (0.98%)
*13 Ankle or feet pain	16 (22.22%)	4 (5.56%)	4 (3.92%)	1 (0.98%)
14 Migraine	20 (27.78%)	8 (11.11%)	8 (7.84%)	0 (0%)
15 Extra heart beats	19 (26.39%)	8 (11.11%)	6 (5.88%)	0 (0%)
16 Chest pain	8 (11.11%)	3 (4.17%)	4 (3.92%)	0 (0%)
17 Breathing difficulties	7 (9.72%)	3 (4.17%)	1 (0.98%)	0 (0%)
18 Heart-burn	8 (11.11%)	1 (1.39%)	6 (5.88%)	2 (1.96%)
19 Stomach discomfort	32 (44.44%)	6 (8.33%)	34 (33.33%)	0 (0%)
20 Gastritis, ulcers-ulceration	16 (22.22%)	5 (6.94%)	6 (5.88%)	0 (0%)
21 Stomach pains	16 (22.22%)	3 (4.17%)	8 (7.84%)	0 (0%)
22 Wind	19 (26.39%)	7 (9.72%)	8 (7.84%)	2 (1.96%)
23 Diarrhea	13 (18.06%)	2 (2.78%)	2 (1.96%)	0 (0%)
24 Constipation	14 (19.44%)	5 (6.94%)	13 (12.75%)	0 (0%)
25 Eczema	3 (4.17%)	0 (0%)	20 (19.61%)	3 (2.94%)
26 Allergic skin problems	8 (11.11%)	3 (4.17%)	5 (4.9%)	1 (0.98%)
27 Flushes, heat sensations	12 (16.67%)	2 (2.78%)	4 (3.92%)	0 (0%)
28 Sleep problems	49 (68.06%)	24 (33.33%)	33 (32.35%)	5 (4.9%)
29 Tiredness	46 (63.89%)	23 (31.94%)	39 (38.24%)	4 (3.92%)
30 Dizziness	23 (31.94%)	7 (9.72%)	13 (12.75%)	0 (0%)
31 Anxiety	34 (47.22%)	13 (18.06%)	20 (19.61%)	3 (2.94%)
32 Sad, depressed	18 (25%)	8 (11.11%)	5 (4.9%)	0 (0%)

Notes: Symptoms in the above table are listed in the order in which they appear in the Subjective Health Complaint Inventory,²⁷ with the exception that the four added symptoms, designated by asterisks, are inserted. The column labeled “Any” subsumes two categories of symptom intensity, “A Little” and “Substantial”. The only symptom described in the questionnaire was Temporomandibular Joint Disorder, because, according to

fieldwork at the study site, many respondents were not familiar with the term. The nine symptoms in the gray-shaded area of the table are musculoskeletal; the other symptoms in the table are non-musculoskeletal.

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Table 2
Symptoms Added to this Study (And Rationales for Doing So)

Added Symptom	Rationale for Adding the Symptom to this Study
Knee pain	The Standardized Nordic Questionnaire systematically surveys musculoskeletal pain sites, from the neck to the ankles/feet. ³⁷ Included in it is “knee pain”, which was added to the list of symptoms in this study. The one-month prevalence of knee pain is 17% to 20% in the general populations of the U.S. and U.K., and its one-month prevalence in the age 65 U.S. population is 30%. ³⁸⁻⁴⁰ Osteoarthritis of the knee is more common in China than in the West, possibly due to prolonged squatting in China, ⁴¹ and, thus, knee pain may be still more prevalent in China than in the West. In the general population of rural Tibet, the point prevalence of knee pain is 25%. ⁴²
Pain in one or more hips or thighs	Hip or thigh pain is another symptom from the Standardized Nordic Questionnaire added to this study. The point prevalence of chronic (>3 months) hip or thigh pain in two towns in Sweden is 12%, ⁴³ and the two-week prevalence of hip pain among nurses' aides in Norway is 27%. ⁴⁴ One-fourth of the Chinese cLBP population surveyed for this study reported “substantial” hip or thigh pain the past month (Table 1).
Temporomandibular Joint Disorder (TMD)	TMD was added to the symptom list in this study because a previous study found that it is 7 times more likely in cLBP patients than in the general population. ⁴⁵
Ankle and feet pain	A symptom from the Subjective Health Complaints Inventory, “pain in the feet during exercise”, was removed from this study due to its ambiguity. One source of ambiguity was the word “exercise”. Common activities in China include climbing several flights of stairs to an apartment or office, and working in occupations that entail high physical demands, such as construction and farming. Do these activities constitute “exercise”? Another source of ambiguity in the term “pain in the feet during exercise” was whether “feet” also include ankles. The Standardized Nordic Questionnaire provides a less ambiguous term for a similar symptom, i.e., “ankle and feet pain”, and it was added to the symptom list in this study. The one-month prevalence of ankle and feet pain in UK and Dutch general populations is 13% to 17%. ^{39,46}

Table 3
Selection Criteria, Chronic Low Back Pain Patients

A. Inclusion Criteria	
1	Age 20-64 years
2	Ability to speak Mandarin and read Chinese questionnaires
3	Duration of low back pain ≥ 3 months
4	Self-reported low back pain (between the costal margin and the inferior gluteal folds) confirmed by attending physician
5	For the previous two weeks, average low back pain of moderate or severe intensity (≥ 5 on the 0 to 10 numerical rating scale)
6	New episode of care (no treatment for back pain at a clinic affiliated with West China Hospital during the preceding 3 months)
B. Exclusion Criteria	
1	Sciatica (pain that radiates below the buttocks)
2	Previous back surgery
3	Possible/Probable back fracture
4	If woman, pregnant or may be pregnant
5	Cancer or spinal infection
6	Severe co-morbid illness that may affect responses on questionnaires

Note: The above selection criteria were derived from prominent studies of LBP treatment.⁴⁷⁻⁵⁰

Table 4
Comparisons Between Chronic Low Back Pain (cLBP) and Normal Control Populations

	cLBP Patients N =72	Normal Controls N =102	<i>p</i> value
Total Number of Subjective Symptoms (Musculoskeletal and Symptoms Other than Musculoskeletal)			
Median (Interquartile Range)	9 (6~13)	3 (1~6)	<0.001 (Wilcoxon rank sum test)
Range (Minimum~Maximum)	20 (1~21)	17 (0~17)	
Number of Musculoskeletal Symptoms			
Median (Interquartile Range)	4 (2~5)	1(0~2)	<0.001 (Wilcoxon rank sum test)
Range (Minimum~Maximum)	8 (1~9)	7 (0~7)	
Number of Symptoms Other than Musculoskeletal			
Median (Interquartile Range)	6 (3~8)	2.5 (1~4)	<0.001 (Wilcoxon rank sum test)
Range (Minimum~Maximum)	15 (0~15)	11 (0~11)	
Education N (%)			
Less than High School	31 (43.1%)	27 (26.5%)	0.003 (Chi Square test)
High School Graduate	17 (23.6%)	14 (13.7%)	
Some College or Above	24 (33.3%)	61 (59.8%)	
Gender			
Female N (%)	55 (76.4%)	65 (63.7%)	0.08 (Chi Square test)
Age Categories N (%)			
Age 20~29	11 (15.3%)	9 (8.9%)	0.39 (Chi Square test)
Age 30~50	52 (72.2%)	81 (80.2%)	
Age 51-64	9 (12.5%)	11 (10.9%)	

Notes: Age for one normal control is missing. For particular symptoms that compose “Total Symptoms”, “Musculoskeletal Symptoms”, and “Symptoms Other than Musculoskeletal”, see Table 1.

Table 5

Regression Analysis of Symptom Reporting in the Chronic Low Back Pain Population: Effects of Covariates (Age, Gender, and Education) on Total Symptoms (Analysis 1), Musculoskeletal Symptoms Only (Analysis 2), and Symptoms Other than Musculoskeletal (Analysis 3)

Covariates		Analysis 1: Total Symptoms β (95% CI)	p value	Analysis 2: Musculoskeletal Symptoms Only β (95% CI)	p value	Analysis 3: Symptoms Other than Musculoskeletal β (95% CI)	p value		
Age	20~29	Reference	0.57	Reference	0.34	Reference	0.95		
	30~50	0.84 (-2.53, 4.21)		0.92 (-0.50, 2.33)		-0.07 (-2.67, 2.52)			
	51~64	1.63 (-2.82, 6.08)		1.30 (-0.57, 3.17)		0.33 (-3.09, 3.75)			
Gender	Male vs. Female	-2.48 (-5.13, 0.17)	0.07	-0.64 (-1.75, 0.48)	0.26	-1.84 (-3.88, 0.19)	0.08		
Education	Less than High School	Reference	0.56	Reference	0.64	Reference	0.55		
	High School Graduate	-0.64 (-3.52, 2.25)		0.18 (-1.03, 1.39)		-0.82 (-3.04, 1.40)			
	Some College or Above	-1.47 (-4.18, 1.24)		-0.42 (1.56, 0.71)		-1.05 (-3.13, 1.03)			
		Analysis 1: R^2 adj = 0.09			Analysis 2: R^2 adj = 0.09			Analysis 3: R^2 adj = 0.07	

Notes: CI = Confidence Interval. For particular symptoms that compose "Total Symptoms", "Musculoskeletal Symptoms Only", and "Symptoms Other than Musculoskeletal", see Table 1.