

Impact of Consultation Length on Satisfaction in Patients with Chronic Low Back Pain: A Nationwide Multicenter Study in Japan

Naohisa Miyakoshi¹⁾²³⁾, Daisuke Kudo¹⁾²³⁾, Yukihiro Matsuyama²⁾²³⁾, Toshihiko Yamashita³⁾²³⁾, Mamoru Kawakami⁴⁾²³⁾, Kazuhisa Takahashi⁵⁾²³⁾, Munehito Yoshida⁶⁾²³⁾, Takashi Kaito⁷⁾²³⁾, Shiro Imagama⁸⁾²³⁾, Seiji Ohtori⁹⁾²³⁾, Toshihiko Taguchi⁹⁾²³⁾, Hiroataka Haro¹⁰⁾²³⁾, Hiroshi Taneichi¹¹⁾²³⁾, Masashi Yamazaki¹²⁾²³⁾, Gen Inoue¹³⁾²³⁾, Kotaro Nishida¹⁴⁾²³⁾, Hiroshi Yamada¹⁵⁾²³⁾, Daijiro Kabata¹⁶⁾²³⁾, Ayumi Shintani¹⁶⁾²³⁾, Motoki Iwasaki¹⁷⁾²³⁾, Manabu Ito¹⁸⁾²³⁾, Hideki Murakami¹⁹⁾²³⁾, Kazuo Yonenobu²⁰⁾²³⁾, Tomoyuki Takura²¹⁾²³⁾ and Joji Mochida²²⁾²³⁾

1) Department of Orthopedic Surgery, Akita University Graduate School of Medicine, Akita, Japan, 2) Division of Orthopedic Surgery, Hamamatsu University School of Medicine, Hamamatsu, Japan, 3) Department of Orthopaedic Surgery, Sapporo Medical University School of Medicine, Sapporo, Japan, 4) Spine Care Center, Wakayama Medical University Kihoku Hospital, Katsuragi-cho, Japan, 5) Department of Orthopaedic Surgery, Graduate School of Medicine, Chiba University, Chiba, Japan, 6) Sumiya Orthopaedic Hospital, Wakayama, Japan, 7) Department of Orthopaedic Surgery, Osaka University Graduate School of Medicine, Suita, Japan, 8) Department of Orthopaedics/Rheumatology, Nagoya University Graduate School of Medicine, Nagoya, Japan, 9) Department of Orthopaedic Surgery, Yamaguchi Rosai Hospital, Sanyoonoda, Japan, 10) Department of Orthopaedic Surgery, University of Yamanashi, Chuo, Japan, 11) Department of Orthopaedic Surgery, Dokkyo Medical University, Mibumachi, Japan, 12) Department of Orthopaedic Surgery, Faculty of Medicine, University of Tsukuba, Tsukuba, Japan, 13) Department of Orthopaedic Surgery, Kitasato University School of Medicine, Sagami-hara, Japan, 14) Department of Orthopaedic Surgery, University of the Ryukyus, Faculty of Medicine, Nishihara, Japan, 15) Department of Orthopaedic Surgery, Wakayama Medical University, Wakayama, Japan, 16) Department of Medical Statistics, Osaka City University Graduate School of Medicine and Faculty of Medicine, Osaka, Japan, 17) Department of Orthopaedic Surgery, Osaka Rosai Hospital, Sakai, Japan, 18) Department of Orthopaedic Surgery, National Hospital Organization, Hokkaido Medical Center, Sapporo, Japan, 19) Department of Orthopaedic Surgery, Nagoya City University, Graduate School of Medical Sciences, Nagoya, Japan, 20) Osaka Yukioka College of Health Science, Osaka, Japan, 21) Department of Healthcare Economics and Health Policy, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan, 22) Department of Orthopaedic Surgery, Japan Medical Alliance, Ebina General Hospital, Ebina, Japan, 23) The Project Committee of the Japanese Society for Spine Surgery and Related Research (JSSR)

Corresponding author: Naohisa Miyakoshi, miyakosh@doc.med.akita-u.ac.jp

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Abstract:

Introduction: Chronic low back pain (CLBP) is a major health burden worldwide and requires patient satisfaction with treatment. Consultation length can be an important factor in patient satisfaction, but few studies have investigated the impact of consultation length on satisfaction in patients with CLBP. This study tried to elucidate the impact of consultation length on clinical outcomes in patients with CLBP.

Methods: This study is part of an analysis using the database of the nationwide, multicenter cohort for CLBP performed by the Project Committee of the Japanese Society for Spine Surgery and Related Research. A total of 427 patients aged 20-85 years (median age, 73.0 years; female, 58.6%) with CLBP were prospectively followed-up monthly for 6 months. Multi-variable nonlinear regression analyses were performed to assess the effect of consultation length on outcome measures including subjective satisfaction score, EuroQol 5-dimension, Japanese Orthopaedic Association (JOA) score, Roland-Morris Disability Questionnaire, JOA Back Pain Evaluation Questionnaire, visual analog scale (VAS) and Medical Outcome Survey short-form 8-item health survey that evaluated at the next phase. Furthermore, we assessed whether the effect of consultation length on patient satisfaction was modified by the baseline Brief Scale for Psychiatric Problems in Orthopaedic Patients (BS-POP) score for patient and physician versions.

Results: VAS for CLBP was the only score that correlated significantly with consultation length ($P = 0.018$). Satisfaction score showed a significant positive correlation with consultation length in patients with the highest baseline BS-POP scores ($P < 0.2$). Moreover, consultation lengths more than 7.6 min and 15.1 min offered increase of satisfaction if patients show the highest BS-POP scores on patient and physician versions, respectively.

Conclusions: These findings suggest that a sufficiently long consultation is an important factor for subjective satisfaction in the patients with CLBP, particularly in patients with psychological problems.

Keywords:

chronic low back pain, consultation length, satisfaction, psychiatric problem

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Introduction

Low back pain (LBP) is an extremely common complaint worldwide. The global point prevalence of LBP with a duration exceeding 3 months increased from 460 million people in 2005 to 540 million people in 2015¹. According to a previous systematic review, the point prevalence of LBP ranges from 12% to 33%, whereas the lifetime prevalence ranges from 11% to 84%². Almost all adults suffer once in their lifetime from LBP, and 10%-15% develop chronic LBP (CLBP)³. In Japan, the lifetime prevalence of CLBP has been estimated at 83%⁴. Risk factors such as smoking (odds ratio [OR] 1.30, 95% confidence interval [CI] 1.16-1.45)⁵, obesity (OR 1.53, 95% CI 1.22-1.92)⁶, depression (OR 1.59, 95% CI 1.26-2.01)⁷, weight of the load during work (OR 1.11, 95% CI 1.05-1.18 per 10 kg lifted), and number of lifts (OR 1.09, 95% CI 1.03-1.15 per ten lifts per day)⁸ have been reported to increase the risks of LBP. In addition, older age, poor general health, increased psychological or psychosocial stress, poor interpersonal relationships with colleagues, physically heavy work, worse baseline functional disability, sciatica, and the presence of compensation have been associated with poor outcomes in patients with LBP⁹.

According to a 2010 epidemiological study of 11,507 participants, more than 80% of the respondents with persistent chronic pain had a history of treatment¹⁰. However, about 50% had discontinued treatment despite the persistence of pain due to dissatisfaction¹⁰. Interestingly, folk treatment ap-

proaches such as chiropractic, osteopathy, massage, or acupuncture/moxibustion treatments yielded higher patient satisfaction than the methods provided by medical facilities^{10,11}. The above studies suggest that the clinician's empathy and ability to communicate, including providing sufficient explanation of the patient's condition, influence the satisfaction of patients being treated for CLBP. Moreover, consultation length may be inadequate in outpatient clinics in Japan because the current mean number of specialist consultations in Japan is 13.1 per person per year compared to 6.7 in Organization for Economic Co-operation and Development (OECD) countries¹². In fact, previous studies have demonstrated a relationship between patient satisfaction and consultation length in general practice^{13,14}. In orthopedic clinics, and excluding patients with upper extremity symptoms, a significant correlation was found between time spent with the surgeon and overall patient satisfaction ($P = 0.037$), but not with clinic wait time ($P = 0.625$)¹⁵. On the other hand, orthopedic patients with upper extremity symptoms demonstrated that shorter time in the waiting room, not time spent with the surgeon, was associated with patient satisfaction^{16,17}, and patient satisfaction correlated strongly with patient-rated surgeon empathy and symptoms of depression¹⁷. A Cochrane systematic review of clinical trials also reported insufficient evidence on whether increasing consultation length provides benefits to the patients¹⁸.

To the best of our knowledge, few studies have investigated the impact of consultation length on satisfaction in pa-

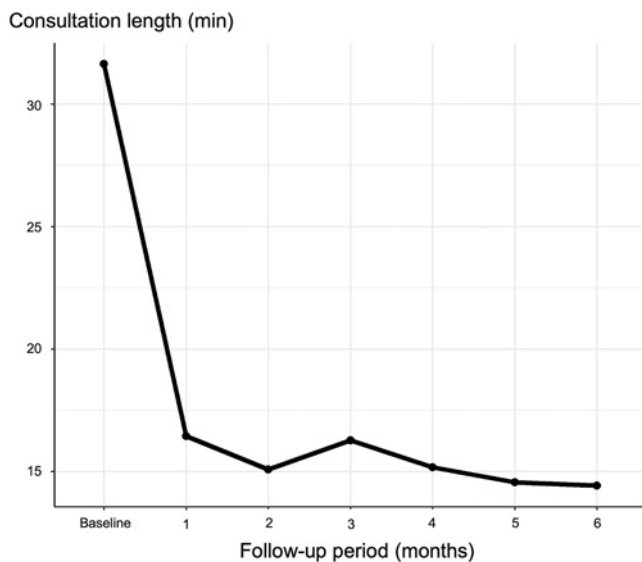


Figure 1. Consultation length at each time point. The consultation length in the registration period (first visit) was longer than in the following phases.

tients with CLBP. The purpose of this study was therefore to clarify the relationship between consultation length for patients with CLBP and patient satisfaction and clinical outcomes using a nationwide, multicenter cohort in Japan.

Materials and Methods

This study is part of an analysis using the database of the nationwide, multicenter cohort for CLBP performed by the Project Committee of the Japanese Society for Spine Surgery and Related Research (JSSR). Data were obtained prospectively from 28 institutions in Japan from January 2014 to June 2016¹⁹⁾. A detailed profile of the initial project study of this cohort has been described elsewhere¹⁹⁾. Study approval was granted by the local ethical committee and informed consent was obtained from all patients participating in this study.

Inclusion and exclusion criteria

The inclusion and exclusion criteria were the same as those in a previously study¹⁹⁾. Briefly, patients aged 20 to 85 with any type of CLBP (lasting more than 3 months) under conservative treatment were enrolled. Patients were excluded if they had: 1) hemorrhagic gastrointestinal disease; 2) serious cardiac, hepatic, or renal function disorder; 3) dementia or psychiatric disease preventing reliable recording of study information; 4) history of drug or alcohol dependence; 5) history of malignant tumor within the previous 5 years; or 6) Brief Scale for Psychiatric Problems in Orthopaedic Patients (BS-POP) score meeting the criteria for apparent psychiatric problems, as ≥ 10 for the physician version and ≥ 15 for the patient version²⁰⁾.

Study design

Background data including age, sex, duration of CLBP,

body mass index, history of malignant tumor, smoking habit, employment status, frequency of exercise, number of live-in family members, hobby, Center for Epidemiologic Studies depression scale (CES-D) score, BS-POP, and medication were collected at baseline¹⁹⁾.

All patients received medications for CLBP with one or a combination of four leading drugs such as loxoprofen, celecoxib, acetaminophen, and a combination of tramadol and acetaminophen for six months. Use of medications for pain (e.g., neuropathic pain) other than these four drugs did not change and no patients underwent surgeries for CLBP during the observation period¹⁹⁾.

The consultation length (in minutes) for all patients was measured at baseline and every month in the 6-month follow-up period. In this study, consultation length was defined as the period starting from the clinician's (or the patient's) entrance into the consulting room to the time the clinician (or the patient) left the room. Medical interview, physical and radiological examinations, and discussion after examinations were included in the consultation length.

Patients followed-up for more than 3 months were included for analysis. Consultation length at first visit (registration period) was excluded from analysis because of the unusually long consultation length-compared with that at the following study sessions-due to detailed physical and radiological examinations (Fig. 1).

Clinical outcomes

Outcome measures included the patient's subjective satisfaction score, EuroQol five-dimensions three-level (EQ-5D) for utility-based evaluation of quality of life (QOL), Medical Outcome Survey short-form 8-item health survey (SF-8) for comprehensive QOL measures, and Roland-Morris Disability Questionnaire (RDQ), Japanese Orthopaedic Association (JOA) score, JOA Back Pain Evaluation Questionnaire (JOABPEQ) consisting of five domains (pain-related disorders, lumbar spine dysfunction, gait disturbance, social life disturbance, psychological disorders), and visual analog scale (VAS) for disease-specific indicators of LBP¹⁹⁾. These outcomes were investigated at baseline and every month for 6 months. The subjective satisfaction score was developed by the Project Committee of the JSSR for this study to measure the patient's comprehensive satisfaction using the following scale: 1, very dissatisfied; 2, dissatisfied; 3, neither satisfied nor dissatisfied; 4, satisfied; and 5, very satisfied.

Statistical analysis

To assess the effect of consultation length on patient satisfaction as evaluated in the next phase, we conducted a multivariable nonlinear regression analysis with a Huber-White robust sandwich estimator of variance-covariance matrix to account for dependence in repeated measures within a single patient. This model was performed with adjustment for age, sex, body mass index, smoking status, disease duration, histories of cancer, osteoporosis, spine surgery, and spine dis-

Table 1. Baseline Characteristics of Subjects.

	Included in analysis	Missing (%)
N	427	
Age (median [IQR])	73.0 [66.0, 78.0]	2.5
Female (% [n])	58.6 (248)	1.1
BMI (median [IQR])	23.7 [21.5, 26.4]	5.4
Smoking habit	9.6 (41)	0
Unemployment (% [n])	75.1 (316)	1.2
Exercise		
Rarely (% [n])	58.6 (232)	7.5
Occasionally (% [n])	11.4 (45)	
Frequently (% [n])	12.4 (49)	
Every day (% [n])	17.7 (70)	
Baseline outcomes		
EQ-5D (median [IQR])	0.65 [0.58, 0.72]	2.5
JOA score (median [IQR])	19.0 [16.0, 22.0]	5.8
RDQ (median [IQR])	10.0 [6.0, 14.0]	6.5
JOABPEQ		
Pain related disorder (median [IQR])	43.0 [14.0, 71.0]	3.0
Lumbar spine dysfunction (median [IQR])	33.0 [33.0, 58.3]	1.6
Gait disturbance (median [IQR])	43.0 [21.0, 71.0]	3.5
Social life disturbance (median [IQR])	51.0 [32.0, 65.0]	3.3
Psychological disorder (median [IQR])	50.0 [42.0, 62.0]	3.5
VAS (median [IQR])	56.0 [40.0, 74.0]	3.2
SF-8		
PCS (median [IQR])	37.2 [29.8, 41.7]	2.8
MCS (median [IQR])	49.2 [44.1, 54.9]	2.8
BS-POP by physician (median [IQR])	9.0 [8.0, 9.0]	4.7
BS-POP by patient (median [IQR])	13.0 [11.0, 14.0]	7.4
CES-D (median [IQR])	14.0 [10.0, 22.0]	4.2

Abbreviation: IQR, interquartile range; VAS, visual analog scale; JOA, Japanese Orthopaedic Association; JOABPEQ, JOA Back Pain Evaluation Questionnaire; RDQ, Roland-Morris Disability Questionnaire; SF-8, MOS short-form 8-item health survey; PCS, physical component summary; MCS, mental component summary; BS-POP, Brief Scale for Psychiatric Problems in Orthopaedic Patients; CES-D, Center for Epidemiologic Studies depression scale.

ease, baseline medicines (nonsteroidal anti-inflammatory drugs, acetaminophen, muscle relaxants, tramadol and acetaminophen combination, neuropathic pain medication, antidepressants, and opioids), CES-D, exercise status, work, hobby, number of family members, and number of comorbidities. A nonlinear restricted-cubic-spline was contained to consider the nonlinear effect of consultation length on patient satisfaction. We then performed regression analyses similar to those described above using the following other variables as dependent variables: EQ-5D, JOA score, RDQ, JOABPEQ, VAS, and SF-8.

Furthermore, to examine whether the effect of consultation length on patient satisfaction was modified by baseline BS-POP (patient or doctor), multivariable nonlinear regression analyses including cross-product terms between consultation length and each baseline BS-POP score were performed. Predicted regression lines for the following five BS-POP groups were then shown as follows: lowest, first quartile, second quartile, third quartile, and highest value among

the analysis cohort. Repeated-measure data within a single patient were accounted by the robust estimator, and nonlinear effects of consultation length were considered similarly to the above regression model without cross-product terms.

All statistical inferences were made using a two-sided significance level of 5% except for the interaction (cross-product term) analysis. Because of the underpowered nature of the interaction model, a two-sided significance level of 20% was employed with statistical inferences for the analysis including cross-product terms²¹). Data cleaning and analyses were conducted with R version 3.5.1 software (<https://www.r-project.org/foundation/>) using the “rms” package.

Results

A total of 427 eligible patients were included for statistical analysis. The median age was 73.0 years and 58.6% were female. The main baseline characteristics of the 427 patients are shown in Table 1. More details of the demo-

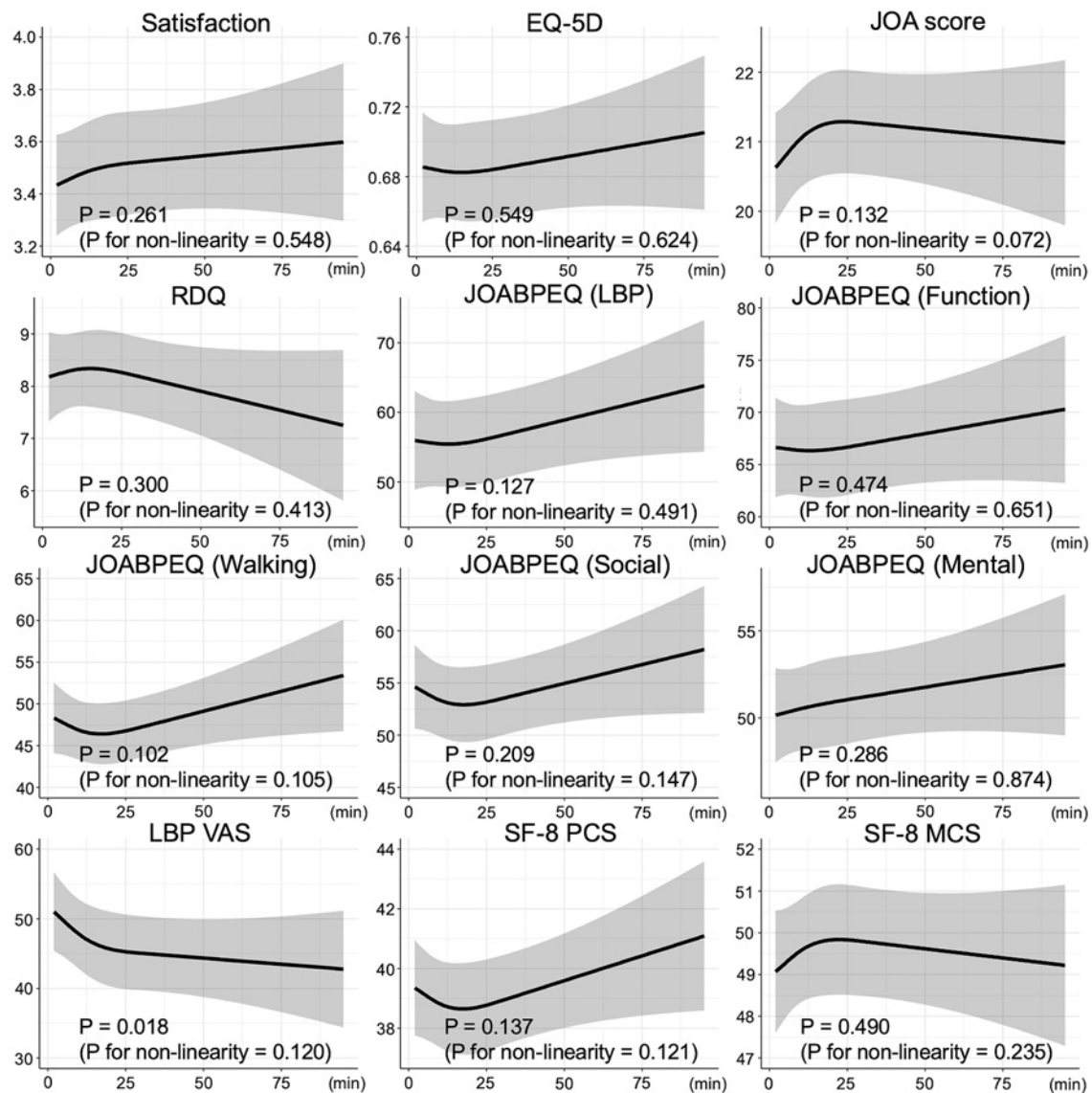


Figure 2. Results of multivariate nonlinear regression analysis. VAS for LBP correlated significantly with consultation length.

graphic characteristics of these patients have been described previously¹⁹.

Fig. 2 indicates the results of multivariate nonlinear regression analysis for each outcome. VAS for CLBP correlated significantly with consultation length. However, no other measures correlated significantly with consultation length (Fig. 2).

Fig. 3a, 3b show the results of multivariate nonlinear regression analysis to identify correlations between patient satisfaction and consultation length based on baseline BS-POP scores from the patient or physician versions, respectively. Satisfaction score showed a significant positive correlation with consultation length in patients with the highest baseline BS-POP scores for the patient version ($P = 0.107$). The inflection point for increased patient satisfaction was 7.6 min (Fig. 3a). Interestingly, similar results were found for BS-POP score for the physician version (Fig. 3b). Satisfaction score showed a significant positive correlation with consulta-

tion length in patients with the highest baseline BS-POP score for the physician version ($P = 0.090$). The inflection point to increase patient satisfaction was 15.1 min (Fig. 3b).

Discussion

A recent systematic review reported that most LBP patients improved substantially within 6 weeks, and by 12 months the mean pain level was 6 on a 100-point scale (95% CI, 3-10)²². However, 67% of patients at 3 months and 65% at 12 months reported some degree of pain^{22,23}. According to a previous survey in Japan, chronic musculoskeletal pain does not necessarily improve despite treatment, and patients often feel dissatisfied¹⁰. The lower back represents one of the most reported sites of pain (52.7%), followed by the neck (52.0%)¹⁰. In addition, 33% of individuals with acute LBP have been reported to experience recurrence at 1 year²⁴. Many conservative and operative treat-

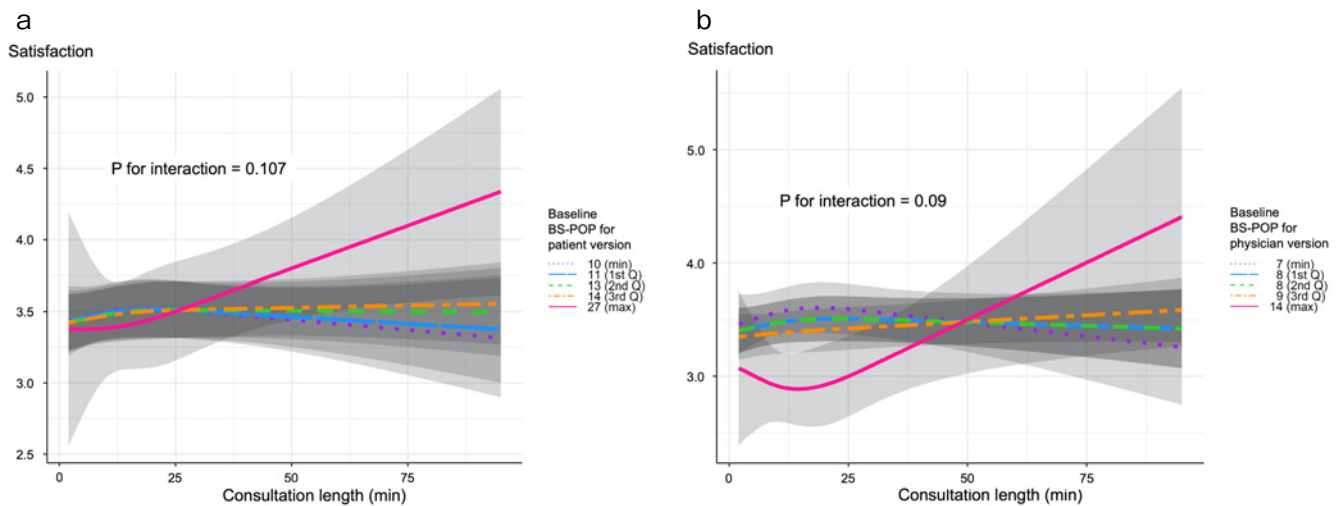


Figure 3. Relationships of satisfaction score and consultation length by baseline BS-POP score. Satisfaction scores showed significant positive correlations with consultation length in patients with the highest baseline BS-POP score for both patient version ($P=0.107$) (a) and physician version ($P=0.090$) (b).

ments have been reported²⁵); however, treatment for CLBP is often difficult²⁶. Elucidating factors that can affect treatment satisfaction in patients with CLBP is therefore very important. To the best of our knowledge, the present study was the first to investigate the impact of consultation length on satisfaction in patients with CLBP.

The present study resulted in some new findings. First, multivariate nonlinear regression analysis including various factors that may influence the outcome demonstrated that consultation length was significantly correlated with VAS for CLBP. Second, increased consultation length was associated with patient satisfaction among patients with the highest baseline BS-POP scores for both patient and physician versions. In addition, we also found the inflection points for consultation length to make patients with the highest BS-POP scores satisfied.

In our daily work, management of CLBP in patients with concomitant psychiatric problems is often a source of concern. This is because CLBP is closely associated with psychological factors²⁷, and the rate of major depression increases in a linear fashion with greater severity of pain²⁸, creating a vicious spiral. The present study cohort excluded in advance any patients with significant psychiatric problems as evaluated from the BS-POP¹⁹, that is, ≥ 10 for the physician version and ≥ 15 for the patient version²⁰. However, even in this cohort for which most subjects seemed to show a normal mental state, the results of the present study indicate consultation length as an important factor for satisfaction in patients with high BS-POP scores.

According to previous studies, time spent with the physician, thoroughness, and listening were factors associated with the patient's perception of quality of care²⁹ because patients want good communication from their health-care providers³⁰. Interestingly, studies have demonstrated that patients with CLBP treated by folk medicine were more satisfied than those treated at medical facilities^{10,11}. For example,

a study showed that the mean satisfaction score in the chiropractic group (36.1) was significantly higher than that in the medical group (30.6; $P < 0.001$), and the mean number of items of self-care advice was significantly greater in the chiropractic group (2.3) than in the medical group (1.3; $P < 0.001$)¹¹. In addition, the amount of self-care advice and treatment explanations received were positively associated with satisfaction¹¹. These findings suggest associations between the amount of information patients receive and their degree of satisfaction. The length of time we can spend with patients seems to represent a very important modifier for these associations.

Although the present study represents the first nationwide prospective study to examine patient satisfaction with CLBP treatment adjusting for many background factors, various study limitations should be mentioned. First, the quality and details of consultation were not investigated. Specific items required for the consultation were not defined in this study. Second, since the time available in consultation is also limited by each doctor, this study did not evaluate clinician factors affecting consultation length. For example, previous studies have shown that in general practice, longer consultations were associated with female doctors, less-experienced doctors, male doctors with high emotional exhaustion, and female doctors with low emotional exhaustion³¹. Such unmeasured factors in doctors might have influenced patient satisfaction in this study.

In conclusion, consultation length correlated significantly with VAS for LBP in patients with CLBP. In addition, satisfaction and consultation length correlated positively with patients showing the highest BS-POP scores. In such patients, inflection points for consultation length to achieve satisfaction were 7.6 min and 15.1 min when chosen using the patient and physician versions of the BS-POP, respectively. These findings strongly suggest that a sufficiently long consultation is an important factor for patient satisfaction, par-

ticularly in patients with psychological problems.

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