Cross-Sectional Study

Psychometric Properties of the Multidimensional Pain Inventory: Japanese Language Version (MPI-J)

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Background: Many self-report scales have been developed. Among them, are those clinically useful scales for quantifying chronic pain (such as the Numeric Rating Scale), which are useful for determining the effectiveness of treatment, and multifaceted and comprehensive pain assessment scales that are used to determine therapeutic strategies. The representative measure of the latter is the West Haven Yale Multidimensional Pain Inventory (WHY-MPI), which constitutes a system for classifying patients with chronic pain termed the multiaxial assessment of pain (MAP), proposed by Turk and Rudy.

Objectives: This study aimed to evaluate the psychometric characteristics of the Japanese version of the MPI (MPI-J).

Study Design: Cross-sectional study.

Setting: Specialized Pain Management Center at Hoshi General Hospital.

Methods: We assessed the reliability and validity of the MPI-J in 100 Japanese patients with chronic musculoskeletal pain. Internal consistency was assessed using Cronbach's α coefficient for reliability. Regarding the convergent and discriminant validities, we examined the intercorrelations among the 9 subscales of the MPI-J, and the MPI-J intercorrelation was compared with the other language versions. Regarding criterion-related validity, the correlation coefficients between the MPI-J and some variables such as pain, mood, and quality of life were examined.

Results: The subscales of the MPI-J demonstrated acceptable reliability coefficients (0.75-0.95). Regarding the intercorrelation between the MPI-J variables and criterion-related validity, previous study results of versions in other languages were also confirmed in this study.

Limitations: This study has some limitations. First, in this study, the analyses performed did not take into consideration the presence or absence of a diagnosis of neuropathic pain. Second, our study sample size was small, and the subjects were intractable cases referred to our pain center due to difficulty in treatment at many medical institutions. Therefore, the results of this study should be interpreted as a survey at a specialized medical institution where many intractable cases are referred. Third, it should be noted that a stronger association between the items of each scale may have been shown because the study was conducted on intractable cases than if it was conducted in general outpatient clinics.

Conclusion: The study findings support the applicability of the MPI-J as a clinical assessment scale in Japanese patients with chronic musculoskeletal pain.

Key words: Self-reporting scale, Multidimensional Pain Inventory (MPI), Japanese Language version (MPI-J), chronic pain, chronic musculoskeletal pain, psychometrics, reliability, validity, questionnaire

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A self-report scale is an evaluation method often used in the clinical evaluation of chronic pain. The self-report scale for chronic pain is commonly used for pain and dysfunction, emotional distress (depression, anxiety, etc.), and coping methods (e.g., pain catastrophizing). Several evaluation scales have been developed (1). Among those that are clinically useful for chronic pain are the scales for quantifying pain, such as the Numeric Rating Scale (2), which is useful for determining the effectiveness of treatment, and multifaceted and comprehensive pain assessment scales that are used to determine the therapeutic strategy. It is important to distinguish between these 2 types of scales.

The representative measure of the latter is the West Haven Yale Multidimensional Pain Inventory (WHY-MPI) (3), which constitutes a system for classifying patients with chronic pain called the multiaxial assessment of pain (MAP), proposed by Turk and Rudy (1,4). In the MAP system, pain-relevant information is integrated along 3 axes: 1) biomedical aspects, 2) psychosocial aspects, and 3) behavioral aspects. They suggested that patients can be classified into subgroups with different reactivity to psychosocial treatment based only on the information of 2) psychosocial aspects, and 3) behavioral aspects, independent of the 1) biomedical aspects. Kerns et al developed the WHY-MPI to classify patients into subgroups (5). MPI measures and integrates pain-related information on the MAP axis 2) and axis 3).

The MPI comprises 61 items (including 5 items not scored), constituting 3 sections. The MPI section I, which measures pain-relevant psychosocial aspects (MAP axis 2), has 28 items (of which 24 are scored) and is made up of 5 scales: pain severity (PS), interference caused by the pain (I), perceived life control (LC), affective distress (AD), and social support (S) (Table 1). In the MPI section II and III, some behavioral aspects (MAP axis 3) are measured. The MPI section II contains 14 items and measures patients' perception of pain-related responses of significant others, resulting in 3 scales: punishing responses (PR), solicitous responses (SR), and distracting responses (DR). The MPI section III has 19 items (with 18 scored items) and assesses patients' common daily activities in 4 scales: household chores (HC), outdoor work (OW), activities away from home (AH), and social activities (SA). The general activity (GA) score is obtained by averaging the HC, OW, AH, and SA scale scores. Finally, the MPI contains 9 scales (PS, I, LC, AD, S, PR, SR, DR, GA). The 3 MAP axes should not be confused with the 3 MPI sections. MPI section I measures some psycho-social aspects from MAP-axis 2). In MPI section II and III, information on pain behavior is obtained, which is related to MAP-axis 3).

By analyzing the 9 MPI scales (PS, I, LC, AD, S, PR, SR, DR, GA) using dedicated computer software (6,7), patients are classified into 3 subgroups with different therapeutic reactivities. The MPI has 3 subgroups: 1) adaptive copers (AC), patients with low pain impact and high levels of functional activity; 2) dysfunctional (DYS), patients with high pain impact, AD, and severe functional limitations; and 3) interpersonally distressed (ID), patients with poor social support from their significant others (8). AC patients have relatively good adaptive capacity, and sufficient improvement can be expected by some pain-related educating or cognitive-behavioral pain management training without multidisciplinary treatment (1). DYS patients have significant others with a solicitous response, and these patients can expect the greatest improvement with an operant treatment approach that involves significant others to modify their responses to patients' pain behavior (1). In addition, ID patients are likely to improve with pain coping skills and cognitive behavioral therapy with interpersonal skills training such as assertive training (1). In this way, by identifying the 3 groups based on MPI, it is possible to predict an intervention method that is likely to be effective for each group regarding MAP-axes 2) and 3) psychosocial-behavioral aspects. In other words, MPI and MAP systems enable a treatment strategy that is directed towards both aspects: biomedical aspects and psychosocial-behavioral aspects, simultaneously.

It has been shown that among various psychological measures, the 3 classifications of MPI are important predictors in cognitive behavioral therapy for chronic low back pain (9). In a review of the evaluation of patients with chronic pain, Mikail et al concluded that MPI should be included in the comprehensive assessment of all chronic pain patients (10). Others have found MPI to be an excellent measure for predicting treatment outcomes (11).

The MPI has been translated into Spanish (12), French (13), German (14), Dutch (15), Swedish (16), Italian (17), Turkish (18), and Chinese (19). Although it has been translated into Japanese (20), its validity for patients with chronic musculoskeletal pain has not yet been verified, and it is generally not available. This study aimed to evaluate the psychometric characteristics of the Japanese version of the MPI (MPI-J). We assessed the reliability and validity of the MPI-J in patients with chronic musculoskeletal pain. We adopted

the following pain-related scales to assess the validity of MPI-J. The Short-Form McGill Pain Questionnaire (SF-MPQ) (21), a shorter version of the MPQ (22), comprises 15 words from the original MPQ. The Pain Rating Index of SF-MPQ comprises 2 subscales: 1) sensory subscale and 2) affective subscale. The SF-MPQ also includes one 6-point scale for Present Pain Intensity (PPI) and one item for a 10-cm visual analog scale (VAS) for average pain. The Profile of Mood States (POMS) was developed to assess transient distinct mood states (23). A brief version of the POMS, comprising 30 questions, uses a 5-point scale to calculate 6 subscale scores: tension-anxiety, depression-dejection, anger-hostility, vigor, fatigue, and confusion (24). The Short-Form 36 Health Survey (SF-36) questionnaire was developed to measure health-related quality of life (25). In the SF-36 questionnaire, 2 global measures have been derived, referred to as the physical component summary (PCS) and mental component summary (MCS).

Methods

Patients

The patients were 100 patients with chronic musculoskeletal pain (63.0% female) attending the Pain Management Center at Hoshi General Hospital. All patients were native Japanese. The main criteria for the inclusion in this study were as follows: a) suffering from pain for more than 6 months; b) absence of oncologic pain; c) age range of 18-65 years; and d) the absence of psychotic disorders. Detailed demographic and clinical characteristics of the patients are shown in Table 2. According to the IASP classification of the types of musculoskeletal pain in this study (26), 23 patients (23.0%) suggested neuropathic pain (9 patients with lumbar spinal stenosis, 10 patients with lumbar disc herniation, 2 patients with cervical spondylotic myelopathy, and 2 patients with cervical spondylotic radiculopathy) and 16 patients (16.0%) suggested nociceptive pain (rheumatoid arthritis). Twenty (20.0%) patients had lifestyle-related diseases (hypertension, diabetes, hyperlipidemia, gout, etc.), and 14.0% had mental health problems for which they were undergoing treatment.

Measures

In the original version of the MPI (3), patients were asked to answer by rating their responses according to a 7-point numeric scale. The instructions given to the subjects varied for each of the 3 sections of the questionnaire. The MPI was translated into 8 independent versions by 8 Japanese dentists, who then agreed on the final version after consultation with a native English-speaking translator. This newly translated questionnaire was then translated back into English by another native English-speaking translator for comparison purposes.

Table 1. *Correlation between MPI-J scales and other measures.*

			VAS	PPI	MPQ-S	MPQ-A	POMS-TA	POMS-D	POMS-AH	POMS-V	POMS-F	POMS-C	PCS	MCS
Psychosocial aspects (MAP axis 2)	MPI Section I	PS	0.88**	0.85**	0.72**	0.71**	0.57**	0.52**	0.31**	-0.32**	0.53**	0.46**	-0.63**	-0.36**
		I	0.68**	0.59**	0.55**	0.60**	0.50**	0.50**	0.31**	-0.26*	0.50**	0.47**	-0.52**	-0.29**
		LC	-0.62**	-0.50**	-0.49**	-0.54**	-0.56**	-0.50**	-0.41**	0.58**	-0.53**	-0.39**	0.35**	0.55**
		AD	0.52**	0.42**	0.42**	0.52**	0.77**	0.70**	0.52**	-0.44**	0.65**	0.57**	-0.26*	-0.66**
		S	0.06	0.10	0.15	0.08	0.07	0.05	0.06	0.13	0.08	0.14	-0.13	0.00
Behavioral aspects (MAP axis 3)	MPI Section II	PR	0.29**	0.20	0.15	0.21	0.17	0.19	0.24*	-0.11	0.21	0.15	-0.01	-0.25*
		SR	0.03	0.01	0.09	0.06	0.12	0.10	0.12	0.05	0.13	0.21	-0.18	-0.03
		DR	-0.02	-0.02	0.06	-0.01	0.05	0.03	0.11	0.28**	0.02	0.16	-0.06	0.11
	MPI Section III	GA	-0.33**	-0.27*	-0.23*	-0.25*	-0.27*	-0.28**	-0.12	0.41**	-0.17	-0.16	0.47**	0.20

*$P < 0.05$, **$P < 0.01$

VAS, Visual Analog Scale for overall intensity of pain; PPI, Present Pain Intensity; MPQ-S, Short-Form McGill Pain Questionnaire sensorial; MPQ-A, Short-Form McGill Pain Questionnaire affective; POMS-TA, Profile of Mood States tension-anxiety; POMS-D, Profile of Mood States depression-dejection; POMS-AH, Profile of Mood States anger-hostility; POMS-V, Profile of Mood States vigor; POMS-F, Profile of Mood States fatigue; POMS-C, Profile of Mood States confusion; PCS, Short-Form 36 Health Survey Physical Component Summary; MCS, Short-Form 36 Health Survey Mental Component Summary; MPI-J, Japanese version of the Multidimensional Pain Inventory

Table 2. Demographics and clinical characteristics of patients (n = 100).

Variable	Values
Age (years), mean ± SD	52.4 ± 13.2
Gender, n (%)	
Men	37 (37.0)
Female	63 (63.0)
Height (cm), mean ± SD	161.2 ± 8.2
Weight (kg), mean ± SD	59.3 ± 13.6
Marital status, n (%)	
Unmarried	65 (65.0)
Married	35 (35.0)
Divorce	13 (13.0)
Bereaved	4 (4.0)
Living status, n (%)	
Alone	9 (9.0)
With families, etc.	91 (91.0)
Educational level, n (%)	
High school	51 (51.0)
Junior college	29 (29.0)
College and above	19 (19.0)
Other	1 (1.0)
Employment, n (%)	
Employed full-time	29 (29.0)
Employed part-time	23 (23.0)
Self employed	11 (11.0)
Student	2 (2.0)
Full-time homemaker	14 (14.0)
Unemployed	18 (18.0)
Other	3 (3.0)
Pain site	
Head, face, oral	34 (34.0)
Neck and shoulders	50 (50.0)
Upper limbs	44 (44.0)
Chest	11 (11.0)
Abdomen	10 (10.0)
Lower back	63 (63.0)
Lower extremities	69 (69.0)
Anus, perineum	5 (5.0)
Duration of pain, n (%)	
6 months or more and less than 1 year	21 (21.0)
1 year or more and less than 3 years	24 (24.0)
3 years or more and less than 10 years	37 (37.0)
10 years or more	18 (18.0)
Visits to medical institutions for pain in the past, mean ± SD	3.8 ± 2.7
History of surgery for pain, n (%)	25 (25.0)

The psychologist reviewed the back-translated questionnaire and found that the original and translated versions of the MPI (MPI-J) were substantially equivalent (20) (Appendix A).

Procedure

Each patient underwent a medical evaluation by an orthopedic specialist and completed the self-administered questionnaire used in this study. Written informed consent to participate in the study was obtained from all the patients. This study was approved by the ethics committees of the participating institutions: Fukushima Medical University (Reference number: 2429) and Hoshi General Hospital (Reference number: 27-3).

Statistical Analysis

Statistical analyses were performed using JMP Pro version 14 (SAS Institute, Tokyo, Japan). Internal consistency was assessed using Cronbach's alpha coefficient (27). Figures in the range of 0.7-0.9 are preferable even if values as low as 0.6 may be acceptable (28). Regarding convergent and discriminant validity, we examined the intercorrelations among the 9 subscales of the MPI-J. In addition, the MPI-J intercorrelation was compared with the American (3), German (14), and Dutch versions (15). Regarding criterion-related validity, the correlation coefficients between the MPI-J and VAS, PPI, MPQ, POMS, and SF-36 were examined.

Results

Reliability

Table 3 presents a list of the average scores, standard deviations, and internal consistency (Cronbach's α) for the 9 MPI scales. On all 9 scales, the relative internal consistency remained within the range of 0.75-0.95.

Convergent and Discriminant Validity

Scale intercorrelations were calculated for the MPI-J using Pearson's r to test for discriminant validity between scales and facilitate a comparison with other MPI versions in order to detect possible differences between translations or populations (Tables 4 and 5).

The intercorrelations for the MPI-J, irrespective of the direction, were within the range of 0.0-0.73. The correlation values between PS-I (r = 0.73, $P < 0.01$), PS-LC (r = -0.61, $P < 0.01$), PS-AD (r = 0.57, $P < 0.01$), PS-GA (r = -0.37, $P < 0.01$), I-LC (r = -0.48, $P < 0.01$), I-AD (r = 0.54, $P < 0.01$), LC-AD (r = -0.66, $P < 0.01$), LC-GA (r = 0.46., $P < 0.01$), AD-GA (r = -0.40, $P < 0.01$), S-PR (r = -0.40, $P <$

0.01), S-SR (r = 0.73, $P < 0.01$), S-DR (r = 0.52, $P < 0.01$), and SR-DR (r = 0.66, $P < 0.01$) are more than moderate.

The MPI-J appears to be in accordance with other MPI versions, according to scale intercorrelations. As recognized by Lousberg (15), the American, German, and Dutch versions of MPI all show relatively high correlations with 3 pairs of scales, namely, the PS-I, LC-AD, and S-SR. The same is true for MPI-J.

Criterion-Related Validity

To evaluate the convergent validity between the MPI-J and other validated questionnaires, the correlation coefficient was calculated between the 9 scales of the MPI-J and the VAS, PPI, MPQ, POMS, SF-36 PCS, and MCS. Table 1 shows the correlation coefficients between the MPI-J and each variable.

Discussion

This study established that the psychometric properties of the MPI-J are satisfactory in terms of reliability and validity. The current results are similar to those obtained using other language versions of the MPI (3), such as Dutch (15), Swedish (16), German (14), French (13), and Italian (17).

The subscales of the MPI-J demonstrated acceptable reliability coefficients (0.75-0.95). High Cronbach's alpha coefficients indicate that the MPI-J items are consistent in the domains measured. Coefficients below 0.6, indicating inadequate reliability, and coefficients higher than 0.9, indicating excellent reliability, are useful for making individual treatment decisions. Our results are similar to or better than those obtained for other language versions of the MPI. For example, in the original study by Kerns et al (3) conducted in a heterogeneous chronic pain population, alpha coefficients ranged from 0.72 for PS to 0.90 for interference. In a Swedish study on people with primarily heterogeneous musculoskeletal pain, the internal consistencies ranged from 0.66 for LC to 0.86 for interference (16). Similar values were obtained in a Dutch study that included patients with fibromyalgia syndrome and low back pain (15). In that study, alpha values ranged from 0.65 for DR to 0.89 for interference. In contrast to other studies, this study found excellent reliability (0.91 for PS, 0.94 for interference, and 0.95 for support).

Regarding the intercorrelation between the MPI-J variables, the results of previous studies were also confirmed in this study. Consistent with the predicted results, a positive correlation was found between the PS and interference scales and between the support and solicitous response scales, whereas a negative correlation was found between the LC and AD scales.

Table 3. *Means, standard deviations, and Cronbach's α coefficients for MPI-J scales.*

Scale	Number of questions	Mean	SD	Cronbach's α
Pain severity	3	3.23	1.70	0.91
Interference	11	3.30	1.54	0.94
Life control	4	3.16	1.45	0.86
Affective distress	3	3.24	1.52	0.75
Support	3	3.80	1.75	0.95
Punishing responses	4	1.47	1.48	0.88
Solicitous responses	6	2.71	1.58	0.88
Distracting responses	4	1.80	1.41	0.76
General activity	18	2.39	1.08	0.87

MPI-J, Japanese version of the Multidimensional Pain Inventory

Table 4. *Intercorrelations between scales.*

	I	LC	AD	S	PR	SR	DR	GA
PS	0.73**	-0.61**	0.57**	0.07	0.23*	0.03	0.00	-0.37**
I		-0.48**	0.54**	0.16	0.20	0.19	0.04	-0.32**
LC			-0.66**	0.13	-0.29**	0.12	0.25*	0.46**
AD				-0.12	0.28**	-0.04	-0.18	-0.40**
S					-0.40**	0.73**	0.52**	0.05
PR						-0.25*	-0.24*	-0.08
SR							0.66**	0.06
DR								0.24*

*$P < 0.05$, **$P < 0.01$

PS, pain severity; I, interference; LC, life control; AD, affective distress; S, support; PR, punishing responses; SR, solicitous responses; DR, distracting responses; GA, general activity

Table 5. *Inter-scale correlations from the American, German, Dutch, and Japanese versions of the MPI.*

		I	LC	AD	S	PR	SR	DR	GA
PS	a	0.58	-0.16	0.34	0.05	0.03	0.31	0.05	-0.17
	b	0.68	-0.13	0.33	0.29	0.11	0.17	0.31	-0.05
	c	0.56	-0.32	0.40	0.23	0.12	0.24	0.15	-0.13
	d	0.73	-0.61	0.57	0.07	0.23	0.03	0.00	-0.37
I	a		-0.15	0.26	0.09	0.00	0.34	0.10	-0.22
	b		-0.18	0.44	0.34	0.25	0.24	0.34	-0.07
	c		-0.27	0.41	0.22	0.24	0.23	0.17	-0.21
	d		-0.48	0.54	0.16	0.20	0.19	0.04	-0.32
LC	a			-0.52	0.06	-0.14	-0.08	0.11	0.19
	b			-0.52	0.23	-0.24	0.17	0.05	0.09
	c			-0.57	0.07	-0.22	0.02	0.05	0.14
	d			-0.66	0.13	-0.29	0.12	0.25	0.46
AD	a				-0.03	0.20	0.04	-0.01	-0.10
	b				0.06	0.28	0.01	0.16	0.02
	c				-0.05	0.32	0.07	0.05	-0.13
	d				-0.12	0.28	-0.04	-0.18	-0.40
S	a					-0.38	0.56	0.42	-0.12
	b					-0.23	0.66	0.49	0.06
	c					-0.34	0.65	0.44	-0.10
	d					-0.40	0.73	0.52	0.05
PR	a						0.04	-0.01	-0.08
	b						-0.29	-0.02	0.05
	c						-0.16	-0.13	-0.04
	d						-0.25	-0.24	-0.08
SR	a							0.49	-0.18
	b							0.40	0.09
	c							0.53	0.02
	d							0.66	0.06
DR	a								0.08
	b								0.18
	c								0.08
	d								0.24

a: American version (n = 120); b: German version (n = 185); c: Dutch version (n = 733); d: Japanese version (n = 100)
PS, pain severity; I, interference; LC, life control; AD, affective distress; S, support; PR, punishing responses; SR, solicitous responses; DR, distracting responses; GA, general activity; MPI, Multidimensional Pain Inventory

Unlike the American (3), German (14), and Dutch versions (15) of the MPI, the MPI-J showed a higher correlation between SR and DR. This trend was similar to that of the Swedish version (16), which showed a correlation coefficient of 0.63 for SR and DR. Significant others trying to divert the patient's attention away from the pain seemed to have different implications for the patient, depending on the culture.

Similar to the Italian version of the MPI (17), correlation factors with external measurements indicate the presence of significant positive correlation values between the PS, VAS, and PPI. The results also highlight the positive correlation between PS and the MPQ, POMS, and SF-36 subscales. There was a correlation between the POMS or SF-36 subscale and the PS, interference, LC, AD, and GA. From these results, it was confirmed that the MPI-J captured not only the sensation and intensity of pain but also the emotional discom-

fort. On the other hand, unlike other MPI scales, MPI S and PR, SR, and DR showed almost no significant correlation with VAS, PPI, MPQ, POMS, and SF-36. In other words, MPI shows that it is possible to evaluate the response patterns of significant others to the patient's pain behavior, which is not measured by the general pain-related scale used in this study. That is why MPI is considered to be useful in developing a treatment strategy for chronic pain. Section II of the MPI has been used frequently as a stand-alone evaluation scale in studies of the role of partner behavior in contributing to or maintaining chronic pain behavior (29).

Limitations

This study has some limitations. First, in this study, the subjects are roughly defined as patients with chronic musculoskeletal pain, and the analyses performed did not take into consideration the presence or absence of a diagnosis of neuropathic pain. Therefore, this point should be considered in the clinical interpretation of the results of this study. Second, our study sample size was small, and the subjects were intractable cases referred to our pain center due to difficulty in treatment at many medical institutions. Therefore, the results of this study should not be extrapolated to general outpatient clinics but should be interpreted as a survey at a specialized medical institution where many intractable cases are referred. In addition, it should be noted that a stronger association between the items of each scale may have been shown because the study was conducted on intractable cases than if it was conducted in general outpatient clinics.

Conclusion

In conclusion, this study supports the use of the MPI-J as a clinical assessment scale. The MPI-J has satisfactory reliability and validity; consequently, it might be suitable for the Japanese population suffering from chronic musculoskeletal pain.

Appendix A. Supplemental digital content

The Japanese version of the West Haven Yale Multidimensional Pain Inventory

Blinded Ethical approval

This study was approved by the ethics committees of the participating institutions: Fukushima Medical University (Reference number: 2429) and Hoshi General Hospital (Reference number: 27-3). Written informed consent to participate in the study was obtained from all the patients.

Author Contribution

Satoshi Kasahara: conception and design, and analysis and interpretation of data, Drafting the article; Naoto Takahashi: acquisition of data, conception, and design; Ko Matsudaira: conception and design, revising the article; Hiroyuki Oka: analysis and interpretation of data, revising the article; Kozue Takatsuki: acquisition of data; Shoji Yabuki: acquisition of data, conception, and design.

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Appendix A. *Japanese version of the West Haven-Yale Multidimensional Pain Inventory.*

［多面的痛み調査票］

SECTION I

あなたの痛みと、痛みによる生活への影響に関する質問です。あなたに当てはまる番号に○を付けて下さい。

１．現在の痛みのレベルを教えてください。

0　1　2　3　4　5　6

痛みなし　非常に激しい痛み

２．全体的にみて、痛みはどの程度日常生活の障害になりますか？

0　1　2　3　4　5　6

障害はない　極度の障害

３．痛みが始まってから仕事の能力はどの程度影響を受けましたか？

（　）痛み以外の理由で現在仕事をしていない場合は、ここに○印を付けてください。

0　1　2　3　4　5　6

変化なし　極度の変化

４．社会的な活動や娯楽に参加して得られる満足感や楽しさが、どの程度痛みの影響を受けましたか？

0　1　2　3　4　5　6

変化なし　極度の変化

５．あなたの配偶者（大切な人）は、あなたの痛みに対してどの程度支えになったり助けになってくれていますか？

0　1　2　3　4　5　6

全く支えになっていない　最高に支えてくれる

６．過去一週間の全体的な気分を評価して下さい。

0　1　2　3　4　5　6

極端に低い　極端に高い

７．痛みはどの程度睡眠の妨げになってきましたか？

0　1　2　3　4　5　6

全く妨げない　極度に妨げる

８．過去一週間を平均すると、痛みはどの程度深刻でしたか？

0　1　2　3　4　5　6

全く深刻でない　極度に深刻である

９．痛みが始まる時や弱まる時、ひどくなる時を予測できますか？

0　1　2　3　4　5　6

全く予測できない　とても予測できる

Appendix A con't. *Japanese version of the West Haven-Yale Multidimensional Pain Inventory.*

１０．娯楽や社会的な活動に参加する能力は、どの程度痛みの影響を受けてきましたか？

０　１　２　３　４　５　６

影響なし　極度に影響を受けた

１１．痛みを悪化させないために、どの程度行動を制限していますか？

０　１　２　３　４　５　６

全くしていない　非常に制限している

１２．家族との活動で得られる満足感や楽しさは、どの程度痛みの影響を受けてきましたか？

０　１　２　３　４　５　６

影響なし　極度に影響を受けた

１３．あなたの配偶者（大切な人）は、痛みについてあなたのことをどれくらい心配していますか？

０　１　２　３　４　５　６

全く心配していない　極度に心配している

１４．過去一週間、どの程度自分の生活をコントロールできていたと感じますか？

０　１　２　３　４　５　６

全くできていない　非常にできていた

１５．普段、あなたの痛みは、１日のうちに、どの程度変化（増加か減少）しますか？

０　１　２　３　４　５　６

変化しない　大きく変化する

１６．痛みのためにどの程度苦痛を感じていますか？

０　１　２　３　４　５　６

全く苦痛でない　極度に苦痛である

１７．痛みをやわらげる行為をどのくらい頻繁に行うことができますか？

０　１　２　３　４　５　６

全くできない　とても頻繁にできる

１８．配偶者や家族、その他の大切な人との関係が、どの程度痛みの影響を受けてきましたか？

０　１　２　３　４　５　６

影響なし　非常に影響を受けた

１９．仕事から得られる満足度や楽しみが、どの程度痛みの影響を受けてきましたか？

（　）現在仕事についていない場合は、ここに○印を付けてください。

０　１　２　３　４　５　６

影響なし　非常に影響を受けた

２０．配偶者（大切な人）はあなたの痛みについてどの程度思いやりを示してくれますか？

０　１　２　３　４　５　６

全く示さない　非常に示してくれる

Appendix A con't. *Japanese version of the West Haven-Yale Multidimensional Pain Inventory.*

２１．過去一週間、自分の問題にどの程度対処できたと感じましたか？

0　1　2　3　4　5　6

全くできなかった　とてもよくできた

２２．自分の痛みをどの程度コントロールできると感じていますか？

0　1　2　3　4　5　6

全くできない　多くをできる

２３．家事をこなす能力はどの程度痛みの影響を受けてきましたか？

0　1　2　3　4　5　6

影響なし　非常に影響を受けた

２４．過去一週間、生活上でストレスのかかるような状況にうまく対処できましたか？

0　1　2　3　4　5　6

全くできなかった　非常によくできた

２５．自分の行動を計画する能力は、どの程度痛みの影響を受けてきましたか？

0　1　2　3　4　5　6

影響なし　非常に影響を受けた

２６．過去一週間、どの程度イライラしていましたか？

0　1　2　3　4　5　6

全くしてない　非常にイライラしていた

２７．痛みはどの程度、家族以外の人々との交友関係を変化させてきましたか、あるいは妨げてきましたか？

0　1　2　3　4　5　6

変化なし　非常に変化した

２８．過去一週間にどの程度緊張あるいは心配していましたか？

0　1　2　3　4　5　6

全く緊張も不安もなし　非常に緊張や心配があった

SECTION II

あなたが痛みを感じている時に、あなたに対して配偶者（大切な人）がする反応の頻度を選んでください。

１．あなたを無視する。

0　1　2　3　4　5　6

決してしない　とても頻繁

２．何かできることはないかと聞いてくれる。

0　1　2　3　4　5　6

決してしない　とても頻繁

Appendix A con't. *Japanese version of the West Haven-Yale Multidimensional Pain Inventory.*

３．本などを読んでくれる。

0	1	2	3	4	5	6
決してしない						とても頻繁

４．あなたに対してイライラする。

0	1	2	3	4	5	6
決してしない						とても頻繁

５．あなたの仕事や義務を代わってくれる。

0	1	2	3	4	5	6
決してしない						とても頻繁

６．痛みからあなたの気を紛らせるために何か他のことについて話してくれる。

0	1	2	3	4	5	6
決してしない						とても頻繁

７．あなたに対して欲求不満を感じる。

0	1	2	3	4	5	6
決してしない						とても頻繁

８．あなたを休ませようとする。

0	1	2	3	4	5	6
決してしない						とても頻繁

９．何らかの活動にあなたを参加させようとする。

0	1	2	3	4	5	6
決してしない						とても頻繁

１０．あなたに対して怒る。

0	1	2	3	4	5	6
決してしない						とても頻繁

１１．痛み止めを持って来てくれる。

0	1	2	3	4	5	6
決してしない						とても頻繁

１２．趣味に取り組むよう励ましてくれる。

0	1	2	3	4	5	6
決してしない						とても頻繁

１３．食べものや飲みものを持って来てくれる。

0	1	2	3	4	5	6
決してしない						とても頻繁

Appendix A con't. *Japanese version of the West Haven-Yale Multidimensional Pain Inventory.*

１４．痛みから気を紛らわすためにテレビをつけてくれる。

0　1　2　3　4　5　6

決してしない　とても頻繁

SECTION III

以下に示した 19 の日常活動について、あなたがどれくらいの頻度で行っているか選んでください。

１．食器を洗う。

0　1　2　3　4　5　6

決してしない　とても頻繁

２．芝を刈る。（　）芝生がない場合は、ここに○印をつけてください。

0　1　2　3　4　5　6

決してしない　とても頻繁

３．外食をする。

0　1　2　3　4　5　6

決してしない　とても頻繁

４．トランプなどのゲームで遊ぶ。

0　1　2　3　4　5　6

決してしない　とても頻繁

５．食料品を買いに行く。

0　1　2　3　4　5　6

決してしない　とても頻繁

６．庭仕事をする。（　）庭がない場合は、ここに○印を付けてください。

0　1　2　3　4　5　6

決してしない　とても頻繁

７．映画を観に行く。

0　1　2　3　4　5　6

決してしない　とても頻繁

８．友人を訪ねる。

0　1　2　3　4　5　6

決してしない　とても頻繁

９．家の掃除を手伝う。

0　1　2　3　4　5　6

決してしない　とても頻繁

１０．車の整備をする。（　）車を持っていない場合は、ここに○印を付けてください。

Appendix A con't. *Japanese version of the West Haven-Yale Multidimensional Pain Inventory.*

0 1 2 3 4 5 6
決してしない とても頻繁

１１．車やバスに乗る。
0 1 2 3 4 5 6
決してしない とても頻繁

１２．親戚を訪ねる。（ ）160km 以内に親戚がいない場合は、ここに○印を付けてください。
0 1 2 3 4 5 6
決してしない とても頻繁

１３．食事の支度をする。
0 1 2 3 4 5 6
決してしない とても頻繁

１４．洗車をする。（ ）車がなければ、ここに○印を付けてください。
0 1 2 3 4 5 6
決してしない とても頻繁

１５．旅行をする。
0 1 2 3 4 5 6
決してしない とても頻繁

１６．公園や海岸に行く。
0 1 2 3 4 5 6
決してしない とても頻繁

１７．洗濯をする。
0 1 2 3 4 5 6
決してしない とても頻繁

１８．必要な家の手入れをする。
0 1 2 3 4 5 6
決してしない とても頻繁

１９．性的活動を行う。
0 1 2 3 4 5 6
決してしない とても頻繁

Coding the West Haven-Yale Multidimensional Pain Inventory

9 subscales

Section I: Pain Impact

Scale 1: Pain Severity = (1+8+16) / 3

Scale 2: Interference = (2+3+4+10+11+12+18+19+23+25+27) / 11

Scale 3: Life Control = (14+21+22+24) / 4

Scale 4: Affective distress = (6 reversed) + 26 + 28) / 3

Scale 5: Support = (5+13+20) / 3

Section II: Response by Significant Others

Scale 6: Negative Responses = (1+4+7+10) / 4

Scale 7: Solicitous Responses = (2+5+8+11+13+14) / 6

Scale 8: Distracting Responses = (3+6+9+12) / 4

Section III: Activities

Scale 9a: Household Chores = (1+5+9+13+17) / 5

Scale 9b: Outdoor Work = (2+6+10+14+18) / 5

Scale 9c: Activities Away from Home = (3+7+11+15) / 4

Scale 9d: Social Activities = (4+8+12+16) /4

Scale 9: General Activity Level = (Scale 9a + Scale 9b + Scale 9c + Scale 9d) / 4

This scoring procedure calculates a mean score for each scale. The denominator, which reflects the number of items in that scale, will need to be adjusted if there are missing values for the summed items on a particular scale (i.e., numerator). For example, if a patient indicated that Question 1 in Section I was "not applicable" or left this question unanswered, then the denominator of Scale 1 would be 2 rather than 3 and only 2 items would be summed to form the numerator. This type of adjustment should be made for each scale that contains missing values so that a patient's score can be compared to scale norms as well as compared to the original unit of measurement, the item ratings, on which scale scores are based.

Note: Items 7, 9, 15, and 17 in Section I and Item 19 in Section III are not included in the scales above.