

◆Original Article

The Development of a Japanese Version of the Short-Form McGill Pain Questionnaire

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Abstract Though the Short-Form McGill Pain Questionnaire has been translated into several languages and validated, a Japanese version has not yet been developed. The Short-Form McGill Pain Questionnaire (SF-MPQ) has been translated into Japanese. Fifty-seven chronic pain patients in the department of psychosomatic medicine (PS), rheumatology (RA) or orthopedics (OP) filled out the SF-MPQ. Cronbach's alpha was 0.84, which indicated internal consistency of the 15 descriptors of the SF-MPQ. Concurrent validity of the SF-MPQ descriptors was supported by the result that the VAS values and the SF-MPQ descriptors total intensity scores were highly correlated using the scores of all patients (0.76) and of each group. We conclude that the Japanese version of the SF-MPQ is useful to analyze the quality as well as the quantity aspect of pain.

Keywords : Short-Form McGill Pain Questionnaire, Japanese version, validation

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I Introduction

It is commonly accepted that pain is a subjective sensation and its description is highly varied. This is supported by the definition of the International Association for the Study of Pain (IASP) : Pain is 'an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage'¹. Furthermore, the word 'pain' refers to an endless variety of qualities that are categorized under a single linguistic label, not to a specific, single sensation that varies only in intensity², and each pain has unique qualities³. In these contexts, the evaluation and measurement of pain experiences have been investigated by many clinicians and researchers.

It was not until the development of the McGill Pain Questionnaire (MPQ) in 1975 that a multidimensional pain instrument became available that could provide valuable information on the sensory, affective and eval-

uative dimensions of pain³. The MPQ has been used under various cultures and conditions, and is one of the most useful pain measures in the world. Other language versions, including Italian, German and Dutch⁴⁻⁶, have been also developed. On the other hand, it was also indicated that the MPQ, which may take as long as 20 minutes to fill out, is not appropriate for studies in which time to obtain information from patients is limited. Thus, in 1987, Melzack developed a short-form MPQ (SF-MPQ) which consists of 15 pain descriptors (11 sensory and 4 affective), the Present Pain Intensity (PPI) index and a visual analog scale (VAS)⁷. The SF-MPQ takes less than 5 minutes to administer, and yet makes it possible to obtain more information than the VAS, numerical rating scales (1-100) or verbal rating scales (VRS) (e.g. mild, moderate, severe).

Though the SF-MPQ has been translated into several languages and validated⁸⁻¹⁰, a Japanese version has not yet been developed. The reason may lie in the difficulty of obtaining proper Japanese translation. It is nevertheless important to have a common pain questionnaire that can be compared to other languages and cultures.

The purpose of the present study is to develop a Japanese version of the SF-MPQ and to verify its reliability and validity, and specifically to examine its usefulness as a pain measurement instrument by administering it to three different groups of chronic pain patients.

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Although the original version of MPQ was translated into Japanese and the theoretical structure was confirmed by Hasegawa et al.¹¹⁾, the present study was conducted independently for the sake of SF-MPQ exclusively since the permission was obtained from original author Melzack. A more detailed explanation of this situation is provided later in this document.

II Subjects and Methods

Subjects

The subjects tested were 57 chronic pain patients: 25 from the department of psychosomatic medicine at Tohoku Rosai Hospital or at Miyagi Chuo Hospital (PS group), 20 with rheumatoid arthritis from the department of rheumatology at Tohoku Rosai Hospital (RA group: all with rheumatoid arthritis) and 12 from the department of orthopedics at Tohoku Rosai Hospital (OP group). In the PS group, the patients were comprised of 12 with somatoform pain disorder, 5 with conversion hysteria, 4 with adaptation disorder and 4 with reflex sympathetic dystrophy, but all of these 25 patients were considered to be psychogenic in a broad sense. In the OP group, 9 subjects had osteoarthritis, and the rest were diagnosed as spondylosis, spinal canal stenosis and post surgery of a knee joint.

Instruments and procedures

The SF-MPQ was first translated into Japanese by the senior author (MY). Secondly the translation was examined by a medical doctor who specialized in chronic pain and behavioral medicine, and a bilingual doctor of medicine. **Figure 1** shows the complete instrument of the Japanese version.

All patients filled out the following questionnaires by themselves in front of the author: the Japanese version of the SF-MPQ, the Japanese State-Trait Anxiety Inventory Form X-1 (STAI) and a pain distribution chart.

Statistical analysis

Means and standard deviations were determined for all variables of each questionnaire and for the ages of the patients. Then the differences among groups were examined with 1-way ANOVA and multiple comparisons. Alpha coefficient was calculated for the 15 descriptors in order to estimate the internal consistency of the SF-MPQ. Correlation coefficients between the SF-MPQ total intensity scores and the VAS values were calculated in order to reveal the concurrent validity of this measure. The proportion of the intensity score of affective descriptors to the total intensity score was compared among three groups for the purpose of estimating the discriminant validity, which was also indicated by the differences of the SF-MPQ descriptors

among three groups. Finally, factor analysis was carried out on the 15 descriptors in order to show the factorial validity of the SF-MPQ.

III Results

Table 1 shows the means and standard deviations for all variables in each group. All mean scores were the highest in the PS group and the lowest in the OP group for the SF-MPQ descriptors, the VAS and the PPI. Significant differences were found between the above two groups in all values except the sensory intensity scores. For the number of painful areas indicated on the pain distribution chart, the significantly lowest score was obtained in the OP group. Although the mean age of the PS group was 44.0 (± 16.9) years, which was the significantly lowest among three groups, no significant correlation was observed between the age and each of the other variables in each group.

Figure 2 shows the correlation between the SF-MPQ total intensity scores and the VAS values in all patients. The correlation coefficient was 0.76, which was statistically significant ($p < 0.01$). The correlation coefficients in PS, RA and OP groups were 0.76, 0.70, and 0.76 respectively, which were all statistically significant ($p < 0.01$).

Figure 3 displays the comparison of the proportion of the SF-MPQ affective intensity scores to the total intensity scores among three groups. The value was the significantly lowest in the OP group. In order to explore the reason for the difference, the correlation analysis was performed between the affective proportion and the other variables in each group (**Table 2**). The only significant correlations were for the STAI scores in the PS group and the SF-MPQ total intensity scores in the OP group.

Cronbach's alpha was calculated by using the data of the SF-MPQ 15 descriptors of all patients. The value obtained was 0.84. **Table 3** shows the results of factor analysis and the 15 descriptors loaded on three factors: an affective pain factor comprised of 5, 6, 12, 13, 14 and 15, an acute sensory pain factor comprised of 1, 2, 3, 4, 7 and 11, and a more chronic sensory pain factor comprised of 8, 9 and 10.

IV Discussion

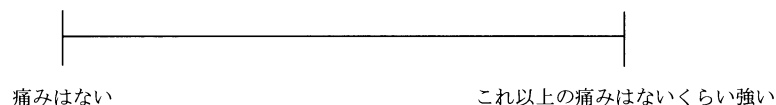
The results of the present study showed that the VAS values and the SF-MPQ descriptors total intensity scores were highly correlated in each group and in all patients. The VAS has been widely used and regarded as a reliable and valid instrument for evaluating the

質問 A. 過去 1 週間のあなたの痛みを評価して下さい。(全項目に必ず 1 つチェックして下さい)

	まったくない	いくらかある	かなりある	強くある
1. ズキンズキンと脈打つ痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
2. ギクッと走るような痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
3. 突き刺されるような痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4. 鋭い痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
5. しめつけられるような痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
6. 食い込むような痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
7. 焼け付くような痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
8. うずくような痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
9. 重苦しい痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
10. さわると痛い	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
11. 割れるような痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
12. 心身ともうんざりするよ うな痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
13. 気分が悪くなるよ うな痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
14. 恐ろしくなるよ うな痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
15. 耐え難い、身のおきど ころのない痛み	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

質問 B. 過去 1 週間のあなたの痛みを評価して下さい。

下の直線は「痛みはない」から「これ以上の痛みはないくらい強い」までのうち、右側ほど痛みが強いことを意味します。この直線上に、過去 1 週間のあなたの痛みの強さをタテ棒 (/) で記入して下さい。



質問 C. 現在の痛みの強さ

- 0 全く痛みなし
- 1 わずかな痛み
- 2 わずらわしい痛み
- 3 やっかいで情けない痛み
- 4 激しい痛み
- 5 耐え難い痛み

Questionnaire developed by Ronald Melzack

Copyright R. Melzack, 1970, 1987

Figure 1 短縮版 McGill 痛み質問表 (日本語版)

Table 1 Means and standard deviations for all variables and for the ages of patients in each group

Variable	PS	RA	OP
SF-MPQ descriptors			
Intensity scores—total (0–45)	15.8±7.7*	12.4±6.8	8.9±8.6*
—sensory (0–33)	10.8±5.3	8.4±4.5	7.3±6.3
—affective (0–12)	5.0±3.9**	4.0±2.8	1.7±2.4**
Number of descriptors chosen (0–15)	8.9±3.3*	7.3±3.4	6.0±4.1*
VAS (0–10 cm)	6.4±2.2*	5.0±2.7	4.2±2.3*
PPI (0–5)	3.1±1.3*	2.9±1.2	2.1±1.1*
Number of painful areas	3.8±1.9*	4.1±1.8*	2.0±1.3*
STAI	53.3±13.6	48.6±12.7	48.8±10.3
Age (years)	44.0±16.9**	57.2±14.9**	61.3±17.2**

SF-MPQ, short-form McGill Pain Questionnaire, VAS: visual analogue scale, PPI: present pain intensity, STAI: Japanese state-trait anxiety inventory form X-1, PS: psychosomatic, RA: rheumatoid arthritis, OP: orthopedics

Values with the same superscript are significantly different from each other. * $p < 0.05$, ** $p < 0.01$

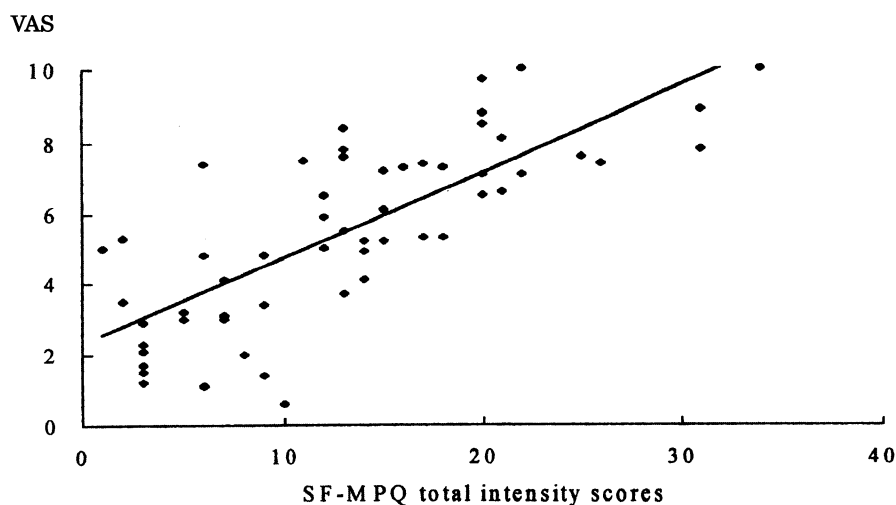


Figure 2 Correlation between the SF-MPQ total intensity scores and VAS values in all patients. VAS, visual analogue scale.

quantitative aspect of patients' subjective pain for more than 15 years^{12,13}). In the initial study of the SF-MPQ using the patients of postsurgical pain, labor pain and musculoskeletal pain⁷), the correlation coefficients were 0.78, 0.60 and 0.68 respectively, all of which were significant ($p < 0.05$). In the Swedish version, the value was 0.60 in the rheumatoid arthritis group, which was also significant ($p < 0.01$)⁹). These facts may well support the concurrent validity of the descriptor scale in the Japanese version as well as the other versions of the SF-MPQ.

The significant difference in the proportion of the

affective descriptors among the three groups without particular relations with other variables indicates that the SF-MPQ descriptor scale can clarify the qualitative dimension of pain. The result that the proportion of affective descriptors in the PS group and the RA group was significantly higher than in the OP group suggests that the patients in the PS group and the RA group were affected by other factors than the severity of pain. The causes of rheumatoid arthritis or what is called psychogenic pain may not be easily understood by the patients themselves even though they are explained, which might have some effects on the perception of

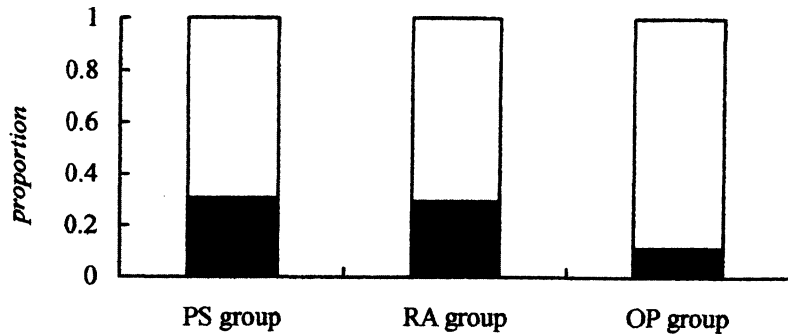


Figure 3 The proportion of the affective intensity scores to the total intensity scores in each patient group. PS, psychosomatic; RA, rheumatoid arthritis; OP, orthopedics.

Table 2 Correlation coefficients between the proportion of affective descriptors and other variables in each group

	Proportion of affective descriptors		
	PS group	RA group	OP group
Age	0.22	0.29	-0.06
SF-MPQ total intensity scores	0.08	0.39	0.78**
VAS	-0.03	0.08	0.57
STAI	0.44*	0.09	-0.44

SF-MPQ, short-form McGill Pain Questionnaire, VAS: visual analogue scale, STAI: Japanese state-trait anxiety inventory form X-1, PS: psychosomatic, RA: rheumatoid arthritis, OP: orthopedics

* $p < 0.05$; ** $p < 0.01$

their pain.

It should be noted that the four affective descriptors loaded on the same factor (factor 1). This result indicates that the Japanese version may retain a feature of the original SF-MPQ that could distinguish the quality of pain. On the other hand, factor 1 also includes two other descriptors (cramping, gnawing) which was not expected according to the original version of the SF-MPQ. The reason of this is not clear. The shades of meaning which the two words have might not have been conveyed into the Japanese translation. In the study of the Swedish version⁹⁾, cramping (krampaktig) and gnawing (gnagande) loaded on the factor 2 and factor 3, respectively, and the other words loaded on the same factors as the present study.

The present study using the SF-MPQ, the pain distribution chart and the STAI was not able to distinguish the PS group from the RA group in most variables. Further research should be done on this point.

Several matters should be explained as to why two types of Japanese wordings will come to exist in terms

of MPQ either with original¹¹⁾ or short-form if our present study is to be published. At first, we were not aware of Hasegawa's work on the MPQ since our study itself was conducted almost at the same time, and then the result has only now been summarized for publication. Secondly, the original author Melzack recognized and approved both the original and the short-form Japanese version of MPQ. Another point should be also mentioned that the difference in Japanese wordings is not perceived as significant between original and short-form MPQ.

We conclude that the Japanese version of the SF-MPQ is useful to analyze the quality as well as quantity aspect of pain.

V Acknowledgments

Thanks are due to Drs Tadashi Kojima and Terunobu Saito for their help in recruiting patients. Permission to translate the SF-MPQ was obtained from Dr. Ronald Melzack who kindly gave us practical advice as well.

Table 3 Results of factor analysis of the SF-MPQ descriptors (factor loading after varimax rotation)

Descriptor	Factor 1	Factor 2	Factor 3
1. throbbing	0.034	0.470	0.215
2. shooting	0.102	0.527	-0.023
3. stabbing	0.143	0.558	-0.122
4. sharp	-0.018	0.510	0.340
5. cramping	0.523	0.212	0.261
6. gnawing	0.518	0.410	0.026
7. burning	0.349	0.401	0.038
8. aching	0.174	0.006	0.715
9. heavy	0.493	0.090	0.532
10. tender	0.263	0.096	0.397
11. splitting	0.117	0.656	0.069
12. tiring-exhausting	0.567	0.140	0.387
13. sickening	0.611	-0.050	0.415
14. fearful	0.845	0.102	0.167
15. punishing-cruel	0.836	0.163	0.101

Underlines indicate the highest loading of each descriptor.

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