

## Evaluation of Quality of Life in Patient with Temporomandibular Disorders

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**Objectives:** To explore the quality of life in patients with temporomandibular disorders and to evaluate it in terms of source and duration of the pain.

**Methods:** A total of 61 patients with temporomandibular disorders participated in this study. According to pain source, they were divided into 2 groups, masticatory muscle pain (MMP) group and intracapsular pain (ICP) group. And each group was divided into acute phase group (pain duration <6 months) and chronic phase group (pain duration =6 months).

The Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) was used to measure patients' quality of life. The scores for eight-scale profile and the physical component summary (PCS) and mental component summary (MCS) of the SF-36 were compared between groups (MMP vs. ICP and acute vs. chronic). Student *t*-test was used to analyze the difference of the scores of the SF-36 between MMP and ICP groups. **Results:** MMP group showed significantly lower score in the 3 scales of the SF-36 (Role limitations due to emotional problems, Vitality, Bodily pain) when compared to ICP group. In acute phase there was no significant difference between MMP and ICP group in PCS as well as MCS scores, but in chronic phase MMP group showed significantly lower MCS score than ICP group.

**Conclusions:** The masticatory muscle pain in patients with temporomandibular disorders, negatively influences the quality of life especially in chronic phase, and the mental components of quality of life are significantly interfered in the TMD patients with chronic masticatory muscle pain.

**Key words:** Quality of life, SF-36, Temporomandibular disorders

### I. INTRODUCTION

Quality of life can be defined as the overall state of well-being that individuals experience as assessed by subjective and objective measures of functioning, health, and satisfaction with the important dimen-

sions of their lives<sup>1)</sup>. Among the most important health care developments made during the past decades years is as increasing consensus regarding the centrality of the patient's point of view in monitoring medical care outcomes<sup>2)</sup>. Indeed, the goal of medical care for most patients today is to obtain a more effective life and to preserve functioning and well-being<sup>3)</sup>.

Pain has been defined by the American pain Society as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage". Pain is not only a highly noxious experience, but it can also have an overwhelmingly

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negative effect on nearly every other aspect of life, including mood and capacity to function in daily roles<sup>4</sup>. This is especially true in cases of long-lasting(chronic) pain<sup>5</sup>. Chronic pain is defined as pain that is either continuous or recurrent (i.e. pain with pain-free intervals) for six months or longer and physically unexplained.

When a distressing and disabling symptom such as pain persists it will have an impact on all domains of a person's life. Physical functioning, work, family, and social relationships are usually impaired by chronic pain. Depression, anxiety, and social isolation are symptoms that often accompany chronic pain<sup>6</sup>. According to a study by the World Health Organization, individuals who live with persistent pain are four times more likely than those without pain to suffer from depression or anxiety, and more than twice as likely to have difficulty working<sup>7</sup>.

A strong association was found between daily pain and indices of poor quality of life. One of the few studies involving the pain-dairy method and a comprehensive assessment of quality of life related to pain showed that in comparison with healthy controls, patients with chronic headache reported significantly poorer psychological and somatic functioning, worse functional status, and lower satisfaction with life in general and with health<sup>8</sup>.

In a study of 128 adolescents with chronic pain, Hunfeld<sup>9</sup> and researchers found that quality of life decreased as intensity and frequency of pain increased. In a study of 150 patients with chronic pain, including pain of neuropathic, somatic, psychogenic, and viscera origins, Becker and colleagues found that scores on both the Psychological General Well-Being (PGWB) scale and the SF-36 were significantly reduced compared with scores in the normal population ( $p < 0,001$ )<sup>10</sup>.

Temporomandibular disorders (TMD) are a debilitating and often-refractory group of conditions affecting a significant sector of the population. The majority of TMD patients could be divided into 2 broad categories that included problems with the temporomandibular joint (TMJ) itself and problems

with the muscles of mastication<sup>11</sup>. That is TMD consist of masticatory muscle pain (MMP) and intracapsular pain (ICP).

The importance of psychosocial issues was recently highlighted in the development of the Research Diagnostic Criteria for TMD (RDC/TMD)<sup>12</sup>. This is reflected in the findings of several recent studies of TMD patients. For example, MMP patients reported greater symptoms of depression, anxiety, fatigue, and sleep dysfunction than a group of normal pain-free individuals<sup>13</sup>. In another study, Korszum<sup>14</sup> examined the co-morbidity of depressive disorders with chronic facial pain and TMD, and found that 28% of TMD patients met criteria for the diagnosis of depression. TMD are linked to psychological distress. These distress would have the effect of diminishing quality of life. MMP patients showed higher levels of psychological difficulties and displayed more dysfunctional behavior than did ICP patients<sup>15</sup>. Overall, these facts suggest that MMP groups could be characterized as having more psychological distress than ICP patients. Therefore, we expect that TMD patient will reveal the lower quality of life, especially in the MMP group than the ICP group.

Poor sleep quality is a very common clinical characteristic reported by chronic pain patients<sup>16</sup>. Patients with TMD, especially those with a chronic pain condition, also complain frequently of sleep disturbances<sup>17</sup>. Although pain is probably the most commonly postulated cause of sleep disturbances occurring in pain patients, psychologic distress, such as anxiety or depression, has also been suggested to explain sleep disturbances in chronic pain patients<sup>16</sup>. This suggests that not only the intensity of perceived pain but also psychologic distress may be closely associated with sleep quality.

Pain causes arousal and arousal interferes with the ability to initiate and/or maintain sleep<sup>18</sup>. The relationship may not be unidirectional, mediating variables may exist. Sleep disturbance may be both a consequence of and a contributing factor for chronic pain. Poor sleep may be a contributing

factor to the extent that it increases one's sensitivity to pain and/or reduces one's ability to cope with pain<sup>19</sup>. Sleep quality represents a complex phenomenon that is difficult to define and measure objectively. Sleep quality includes quantitative aspects of sleep, such as sleep duration, sleep latency, or number of arousals, as well as more purely subjective aspects, such as depth or restfulness of sleep.

Recently goals of TMD treatment include that reduce or eliminate pain, restore normal jaw function, reduce the need for future health care, and restore normal lifestyle functioning. Although the patient is usually the best judge of whether these goals have been achieved, data concerning a patient's experiences of disease and treatment are difficult to collect and assess objectively. Scoring standardized responses to standardized questions is an efficient ways to measure health status. Among the surveys most useful with diverse groups and treatments are surveys that address general health concepts not specific to any age, disease, or treatment group. General health measures can be used in ways not possible with disease- or treatment-specific measures, including comparisons of the relative burden of different diseases and the relative benefits of different treatments.

Quality of life is a major outcome variable in choosing and evaluating treatment alternatives for TMD. There are more important goals that improve the quality of life rather than relief the pain in patient with TMD. But little is known about the influence of chronic pain in concern the life quality or sleep quality in patients with TMD. Because, the number of well validated and sufficiently responsive life and sleep quality measures is limited. So, there are few reports of life quality or sleep quality in the patients with TMD.

The objective of this research was to identify differences between 2 groups of TMD patients, those with MMP versus ICP, and to compare these differences in terms of pain severity, sleep quality, and life quality.

## II. MATERIALS AND METHODS

### 1. Subjects

The subjects were 61 patients with TMD. They were selected from patients referred to the Department of Oral Medicine, Kyungpook National University Hospital for treatment of TMJ problems.

They were consisted of 37 patients in the MMP group (13 men and 24 women, ages 15 to 73 years; mean age  $26.8 \pm 11.083$ ) and 24 patients in the ICP group (7 men and 17 women, ages 15 to 53 years; mean age  $27.9 \pm 9.746$ ). There was no significant difference ( $p > 0.05$ ) between the 2 diagnostic groups in age and gender. Each TMD patient was evaluated for subjective and objective signs and symptoms of MMP and ICP in accord with the Research Diagnostic Criteria<sup>12</sup>. For this study, the primary diagnosis of MMP or ICP were made when the subjects' chief complaints originated from the masticatory muscles or intracapsule of the TMJ.

### 2. Measurement of patients' clinical characteristics

At the first clinic visit prior to clinical examination, patients completed 3 questionnaires together with a routine pain history questionnaire. These included the Pittsburgh Sleep Quality Index (PSQI), the McGill Pain Questionnaires (MPQ), the Medical Outcomes Study 36-item short-form health survey (SF-36).

The PSQI was used to measure patients' sleep quality. It is a 19-item self-report questionnaire that assesses sleep quality and disturbances over a 1-month time period. These 19 individual items generate seven "component" scores, each weighted equally on a 0-3 scale; subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The sum of scores for these seven components yields one global score, which has a range of 0-21; higher scores indicate worse sleep quality. A global PSQI

score greater than 5 yielded a diagnostic sensitivity of 89.6% and specificity of 86.5% (kappa=0.75, p<0.001) in distinguishing good and poor sleepers<sup>20</sup>.

Simple tests such as the MPQ<sup>5,21</sup> have been developed to provide valuable information on the multidimensional aspects of pain conditions. The MPQ consists primarily of 3 major classes and 16 subclasses of word descriptors that are used by patients to specify subjective pain experience. The 3 classes are (1) words that describe the sensory qualities of the experience (2) words that describe the affective qualities of the experience and (3) evaluative words that describe the subjective overall intensity of the total pain experience. Each subclass, which was given a descriptive label, consists of a group of words that were considered by most subjects to be qualitatively similar. It also contains an intensity scale and other items to determine the properties of pain experience. The questionnaire was designed to provide quantitative measures of clinical pain that can be treated statistically. But, these study were used a "Short

Form" of the MPQ (MPQ-SF) which was designed to obtain information from patients when time is limited. It was found to correlate highly with and demonstrate differences due to treatment in a manner similar to the long form of the MPQ (MPQ-LF). The MPQ-SF includes 15 words from the Sensory (11 words) and Affective (4 words) categories. The patient is asked to measure if their pain has each word's "quality" or not, and if it is present, rate it as "mild, moderate or severe". In addition, the patient rates the overall intensity of pain, namely present pain intensity, on a VAS (visual-analogue scale), and a evaluation overall intensity of total pain experience by choosing an appropriate word (this is a 0 to 5 scale). The scales should be used to help the clinician understand the patients whole experience of pain.

SF-36<sup>22,23</sup>(The Medical Outcomes Study 36-item short-form health survey) is a multipurpose, short-form health survey with only 36 questions. It yields an eight-scale profile of scores as well as physical and mental health summary measures. It is

Table 1. Average Total Scores (Standard Deviations) for MOS sub-scales by race

	Asian N=33	White N=45	Black N=39	Hispanic N=33	Other N=26	Total N=176
Physical functioning	89.09 (17.92)	88.44 (17.93)	89.10 (18.81)	89.70 (21.25)	95.38 (8.82)	89.87 (17.76)
Role limits due to health problems	97.73 (9.61)	79.44 (35.07)	88.46 (26.19)	85.60 (28.66)	91.35 (18.63)	87.78 (26.72)
Body pain	82.85 (10.08)	74.96 (16.80)	75.62 (20.11)	77.33 (19.04)	79.77 (11.02)	77.74 (16.42)
General Health	80.06 (13.26)	75.47 (17.1)	77.15 (16.55)	79.03 (16.73)	79.34 (22.25)	77.94 (17.03)
Vitality	71.06 (12.79)	61.44 (17.92)	65.77 (19.75)	60.15 (23.67)	62.31 (21.22)	64.10 (19.42)
Social functioning	93.56 (14.70)	83.61 (21.12)	83.33 (21.52)	82.57 (24.19)	83.65 (18.29)	85.23 (20.58)
Role limits due to emotional problems	90.90 (20.87)	75.56 (36.51)	85.47 (27.35)	77.78 (36.00)	92.31 (23.68)	83.52 (30.65)
Mental Health	82.79 (13.95)	74.04 (14.89)	76.72 (17.81)	73.45 (17.43)	74.15 (14.93)	76.18 (16.10)

a generic measure, as opposed to one that targets a specific age, disease, or treatment group. Accordingly, the SF-36 has been useful in comparing general and specific populations, comparing the relative burden of diseases, differentiating the health benefits produced by a wide range of different treatments, and screening individual patients. SF-36 has three levels: (1) items, (2) eight scales that aggregate 2-10 items each; physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE), mental health (MH), and (3) two summary measures that aggregate 4 scales; Physical Component Summary (PCS), Mental Component Summary (MCS). All but one of the 36 items (self-reported health transition) are used to score the eight SF-36 scales. Each item is used in scoring only one scale.

Specifically, scales that load highest on the physical component are most responsive to treatments that change physical morbidity, whereas scales loading highest on the mental component respond most to drugs and therapies that target mental health.

The published report<sup>3)</sup> was revealed to the norms, average total scores (standard deviations) for MOS sub-scales by race in the northeastern United States. These norms are presented in Tables 1.

### 3. Statistical Analysis

Student *t*-test were used to analyze separately differences between the ICP group and the MMP

group on pain intensity, pain duration, sleep quality, and life quality. When P value was below 0.05, there was considered statistically significant. All data analyses were conducted with the SPSS analysis program.

## III. RESULTS

### 1. Pain measures

There was no significant difference ( $p > 0.05$ ) between the 2 diagnostic groups in pain severity. Although the MMP group (25 months) has been longer pain duration than the ICP group (14 months), statistical difference was not significant. These results are presented in Table 2.

### 2. Sensory and affective pain descriptors

The descriptive terms used to differentiate between sensory pain experiences and affective pain experiences from the MPQ. The sum of the score of sensory descriptors and affective descriptors endorsed by each patient were calculated and a comparison was made between the groups. The results are revealed to the table 3. There was no significant difference between the 2 diagnostic groups in each categories of MPQ.

### 3. Pain duration

The 2 diagnostic groups were divided into two groups according to pain duration that was divided

Table 2. Pain Severity and Duration

	Intercapsular group (n=24)	Myalgia group (n=37)	P-value
Pain severity	51.08 (23.723)	54.35 (24.526)	0.6085
Pain duration(months)	14.835 (23.378)	26.17 (31.328)	0.1344

Mean (Standard Deviations)

Table 3. Comparison of MPQ between the 2 diagnostic groups

	ICP (n=24)	MMP (n=37)	P-value
S-PRI	4.625 (3.9211)	6.8919 (6.2485)	0.0869
A-PRI	0.333 (0.7614)	0.973 (2.2297)	0.1148
T-PRI	4.9583 (4.1649)	7.8649 (8.1689)	0.0727
PPI-VAS	51.083 (23.723)	54.351 (24.526)	0.6085
EVAL	2.25 (1.1887)	2.4324 (1.2592)	0.5743

Mean (Standard Deviations), S-PRI = sensory PRI; A-PRI = affective PRI; T-PRI = total PRI; PPI-VAS = present pain intensity-visual analogue scale; EVAL = evaluation overall intensity of total pain experience  
 The two groups reported similar pain experiences from a sensory and affective perspective.

Table 4. Comparison of MPQ, PSQI, and SF-36 according to pain duration in the ICP group

		Within 6 months	After 6 months	P-value
MPQ	T-PRI	4.875 (4.5442)	5.125 (3.5632)	0.8933
	EVAL	2.1875 (1.1087)	2.2375 (1.4079)	0.7243
PSQI	Global score	4.75 (1.8323)	6.4375 (3.1826)	0.1814
	AVER	75.158 (12.887)	72.178 (15.648)	0.6236
SF-36	PCS	77.969 (13.866)	73.233 (14.596)	0.5588
	MCS	71.003 (15.118)	67.013 (18.81)	0.5795

Mean (Standard Deviations)

Table 5. Comparison of MPQ, PSQI, and SF-36 according to pain duration in the MMP group

		Within 6 months	After 6 months	P-value
MPQ	T-PRI	5.8182 (3.7497)	10.867 (11.587)	0.1226
	EVAL	2.2 (1.3202)	2.5909 (1.2212)	0.3612
PSQI	Global score	6.9091 (3.0065)	8.3333 (3.6968)	0.2059
	AVER	69.955 (13.295)	60.283 (21.12)	0.0957
SF-36	PCS	73.21 (12.386)	65.183 (23.404)	0.2381
	MCS	66.699 (15.461)	55.383 (21.239)	0.0688

Mean (Standard Deviations)

into the two phase ; acute (within 6 month) phase and chronic (post 6 months) phase. Then, we compared to categories of MPQ, PSQI, SF-36 according to pain duration within each diagnostic

group. These results are presented in Table 4,5. There was no significant difference in each diagnostic group according to pain duration. Other comparison, there were compared to categories of

Table 6. Comparison of MPQ, PSQI, and SF-36 between the 2 diagnostic groups in acute phase

		ICP (n=24)	MMP (n=37)	P-value
MPQ	T-PRI	4.875 (4.5442)	5.8182 (3.7497)	0.6538
	EVAL	2.1875 (1.1087)	2.2 (1.3202)	0.9774
PSQI	Global score	4.75 (1.8323)	6.9091 (3.0065)	0.1361
	AVER	75.158 (12.887)	69.955 (13.295)	0.5018
SF-36	PCS	77.969 (13.866)	73.21 (12.386)	0.2723
	MCS	71.003 (15.118)	66.699 (15.461)	0.5633

Mean (Standard Deviations)

Table 7. Comparison of MPQ, PSQI, and SF-36 between the 2 diagnostic groups in chronic phase

		ICP (n=24)	MMP	P-value
MPQ	T-PRI	5.125 (3.5632)	10.867 (11.587)	0.0775
	EVAL	2.2375 (1.4079)	2.5909 (1.2212)	0.6837
PSQI	Global score	6.4375 (3.1826)	8.3333 (3.6968)	0.0685
	AVER	72.178 (15.648)	60.283 (21.12)	0.0239
SF-36	PCS	73.233 (14.596)	65.183 (23.404)	0.2339
	MCS	67.013 (18.81)	55.383 (21.239)	0.0246

Mean (Standard Deviations)

MPQ, PSQI, SF-36 between the 2 diagnostic groups in same pain duration (acute phase and chronic phase).

These results are presented in Table 6,7. There was no significant difference between the 2 diagnostic group with acute phase. In chronic phase, even though the categories of MPQ, PSQI did not differ between the 2 diagnostic groups, the ICP group had a higher score of average and MCS of SF-36 in comparison to the one in the MMP group. These results revealed that the MMP group had the lower life quality and the diminished mental health than the ICP group when suffered more than 6 months.

#### 4. Sleep quality

The global score obtained from the PSQI was used to determine if there was a significant difference in overall sleep quality between the 2 diagnostic groups. Analysis of variance revealed that there were no significant difference between the 2 diagnostic groups in sleep quality exclusive of one component score. But, there was significant difference ( $p=0.0160$ ) between the MMP group ( $1.9459 \pm 0.8481$ ) and the ICP group ( $1.375 \pm 0.9237$ ) in habitual sleep efficiency. The MMP group had lower habitual sleep efficiency than the ICP group. The MMP group was detracted the efficiency of sleep, reduced the sleeping time actually against the lying time for falling asleep.

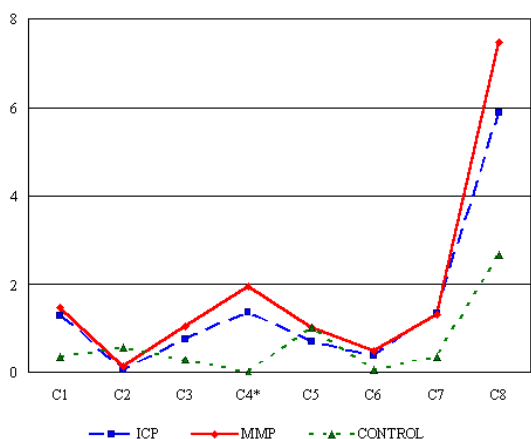


Fig. 1. Mean PSQI subscale scores ; MMP, ICP, control<sup>18</sup>

C1 = Subjective sleep quality; C2 = Sleep latency; C3 = Sleep duration; C4 = Habitual sleep efficiency; C5 = Sleep disturbances; C6 = Use of sleeping medication; C7 = Daytime dysfunction; C8 = Global score, \*: p<0.05 by Student *t* test

Group differences resulted in distinctive component and global score profiles, shown in Fig. 1. The ICP group and the MMP group have different components score profiles than things of control subjects, published norms. But, the 2 diagnostic groups have similar or lower components score of sleep latency and sleep disturbance in comparison to control subjects. The profiles between 2 diagnostic groups were similar each

other, but with expected elevations in habitual sleep efficiency and PSQI global score.

The 2 diagnostic groups were divided into two groups according to the sleep quality, using the median cutoff (global PSQI score = 5). The first group was the good sleeper when the global score of PSQI was below 5. And when beyond 5, the other group was the poor sleeper.

Then, we compared to categories of MPQ, SF-36 according to sleep quality in each diagnostic group. These results are presented in Table 8, 9.

There was no significant difference in the categories of MPQ (T-PRI, evaluation overall intensity of total pain experience), SF-36 (average, PCS, MCS) in the ICP group according to sleep quality. There was significant difference between the good sleeper and the poor sleeper in the MMP group. In the MMP group, even though T- PRI of MPQ did not differ between the good sleeper and the poor sleeper, the good sleeper had a lower score of category "evaluation over all intensity of total pain experience" of MPQ in comparison to the one in the poor sleeper. Also, the poor sleeper had a lower score of categories of SF- 36 than the good sleeper. The lower score of average, MCS, and PCS of SF-36 revealed that was diminished the eight scales of SF-36. The fact, the MMP group with the poor sleep was anguished by physical disturbance and pain, and was curbed physically moving one's body. In addition, they had a difficulty to psychological domain of the life and social activity and had

Table 8. Comparison of MPQ, SF-36 by sleep quality in the ICP group (PSQI global score <5: good sleeper, >5: poor sleeper)

		Good sleeper	Poor sleeper	P-value
MPQ	T-PRI	3.4545 (3.1421)	6.2308 (4.6035)	0.1048
	EVAL	2 (1.4832)	2.4615 (0.8771)	0.3546
	AVER	78.593 (11.485)	70.417 (14.535)	0.1458
SF-36	PCS	81.886 (11.664)	72.423 (14.581)	0.0972
	MCS	74.391 (13.389)	65.681 (17.667)	0.1939

Mean (Standard Deviations)



Table 9. Comparison of MPQ, SF-36 by sleep quality in the MMP group (PSQI global score <5; good sleeper, >5; poor sleeper)

		Good sleeper	Poor sleeper	P-value
MPQ	T-PRI	5.3846 (4.0319)	9.2083 (9.5188)	0.0973
	EVAL	1.8462 (1.1242)	2.75 (1.1887)	0.0351
	AVER	77.327 (7.8693)	59.917 (18.048)	0.0003
SF-36	PCS	81.654 (5.0668)	63.62 (19.126)	0.0002
	MCS	73 (11.973)	56.214 (19.089)	0.0069

Mean (Standard Deviations)

Table 10. Comparison of MPQ, SF-36 between the 2 diagnostic groups with good sleep quality

		ICP (n=24)	MMP (n=37)	P-value
MPQ	T-PRI	3.4545 (3.1421)	5.3846 (4.0319)	0.2107
	EVAL	2 (1.4832)	1.8462 (1.2142)	0.7824
	AVER	78.593 (11.485)	77.327 (7.8693)	0.7525
SF-36	PCS	81.886 (11.664)	81.654 (5.0668)	0.520
	MCS	74.391 (13.389)	73 (11.973)	0.7907

Mean (Standard Deviations)

Table 11. Comparison of MPQ, SF-36 between the 2 diagnostic groups with poor sleep quality

		ICP (n=24)	MMP (n=37)	P-value
MPQ	T-PRI	6.2308 (4.6035)	9.2083 (7.5188)	0.2088
	EVAL	2.4615 (0.8771)	2.75 (1.1887)	0.4481
	AVER	70.417 (14.535)	59.17 (18.048)	0.0802
SF-36	PCS	72.423 (14.581)	63.62 (19.126)	0.1576
	MCS	65.681 (17.667)	56.214 (19.089)	0.1486

Mean (Standard Deviations)

more psychological distress than the good sleeper. They were worsen the quality of life in both physical component and mental component.

The this comparison, there were accomplished to categories of MPQ, SF-36 between the 2 diagnostic groups in same sleep quality (good sleeper and poor sleeper). These results are presented in Table 10, 11. There was no significant difference in the categories

of MPQ, SF-36 between the 2 diagnostic group with good sleep quality. The poor sleeper were too. These results revealed that both the MMP group and the ICP group were resembling the pain severity and property, and were not differ in aspect of physical and mental components of the life quality in same sleep quality.

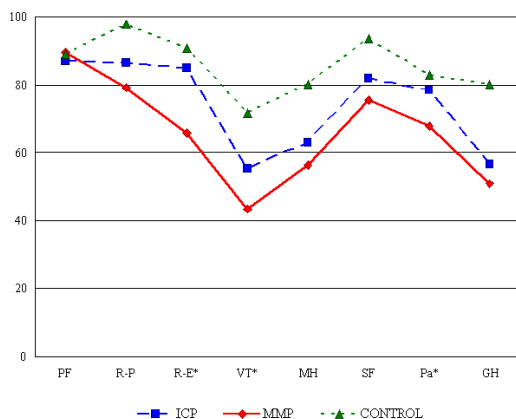


Fig. 2. Mean SF-36 subscale scores ; MMP, ICP, control  
 PF = Physical functioning; RP = Role limitations due to physical problems; RE = Role limitations due to emotional problems; VT = Vitality; MH = Mental health; SF = Social functioning; Pa = Bodily pain; GH = General health perception, \*: p<0.05 by Student t test

### 5. Life quality

There was no significant difference ( $p>0.05$ ) between the 2 diagnostic groups in 5 scales of SF-36. There was significant difference in RE (ICP group;  $87.754 \pm 25.963$ , MMP group;  $65.757 \pm 36.479$ , P-value = 0.0309), VT (ICP group;  $55.147 \pm 20.585$ , MMP group;  $43.378 \pm 19.187$ , P-value = 0.0235), and BP (ICP group;  $78.292 \pm 16.883$ , MMP group;  $67.635 \pm 20.65$ , P-value = 0.0391) among SF-36 scales between the 2 diagnostic groups. That was just the MMP group felt tired and worn out all of the time, had problems with work or other daily activities as a result of emotional problems, and very severe and extremely limiting pain more than the ICP group.

Group differences (the ICP group, the MMP group, and control group) resulted in distinctive 8 scales score profiles, shown in Fig. 2. The 2 groups made a vast difference to scale score profiles than do control group, without physical functioning.

## IV. DISCUSSION

The results of this study revealed that these 2 groups had equivalent pain intensity as well as pain duration. Also, The 2 groups reported similar pain experiences from a sensory and affective perspective of MPQ. This finding is inconsistent with the findings of previous investigators<sup>11)</sup>. While the MMP group patients suffering more than 6 months had the lower average mean score and MCS of SF-36 than the ICP group, there was no significant difference between the 2 group in less 6 months. Also, there was no significant difference in each diagnostic group according to pain duration (acute phase and chronic phase).

The MMP group had lower habitual sleep efficiency than the ICP group. And if the MMP group was a poor sleeper, they had a raised intensity of total pain experience and decreased life quality in comparison to the good sleeper in the MMP group. Namely, the MMP group with the poor sleep was anguished by physical pain and disturbance, and was curbed physically moving one's body. In addition, they had a difficulty to psychological domain of the life and social activity and had more psychological distress than the good sleeper.

There was significant difference in role limitations due to emotional problems, vitality, and bodily pain among SF-36 scales between the 2 diagnostic groups.

In contrast to previous studies<sup>24)</sup>, we found similar pain levels and duration for the MMP group and ICP group. Those individuals in the MMP group expressed more emotional problems and tiredness than the ICP group. This difference in adaptation of the MMP group to stressful chronic conditions while experiencing similar pain intensity as the ICP group suggest the MMP group differ psychologically and may realize more cognitive problems than the ICP group. More recently, Lindroth et al<sup>11)</sup> showed that the MMP group reported more anxiety and depression and perceived and managed their psychological distress in a more dysfunctional manner. In the same manner, While the MMP group

had similar pain intensity than the ICP group, those individuals suffering more 6 months reported diminished quality of life.

The MMP group was falling in sleep efficiency as the ICP group, and poor sleep may be a contributing factor to the extent that it increases one's sensitivity to pain and/or reduces one's ability to cope with pain<sup>13)</sup>. The MMP group had a lower life quality because of persistent pain, poor sleep, and mental problems.

Lindroth found that The MMP patients reported more affective symptoms due to their pain than the ICP group, while they shared similar pain experience from a sensory perspective. These results were a contrast to our finding that were similar pain experiences from a sensory and affective perspective of MPQ between the diagnostic 2 groups. Among the distinctions from results of previous studies, we think that the main cause is a use of different language. Because MPQ have been developed in English-speaking areas, pain experiences and pain descriptions reflect ethnic and cultural differences. In other words, from an anthropologic point of view, the differences in cultural constructions of pain experience must be considered, as well as the particular semiotics of pain expression<sup>5)</sup>. Also, we used SF-MPQ to derive the result instead of LF-MPQ. Owing to these facts, authors were believed to develop the difference of results.

These study provide support for the clinical utility of a psychosocial-behavioral classification system and suggest that in future research individualizing treatments and outcome measures based on patient characteristics may improve treatment efficacy and outcome evaluation.

The authors realize the nature of a retrospective study carries weaknesses inherent to this type of research. One of these weaknesses includes the inability to make statements regarding cause and effect. Additionally, the data sued in this study were obtained from patients who were self-referred for their pain. Because these patients were self-referred, our findings may not generalize to the

broader population of individuals with TMD pain who do not report to a pain clinic. In addition, the whole sample size is smaller than similar other study and the MMP group represented a substantially larger sample of participants, than in the ICP group. The magnitude of the differences in numbers between the groups may also have contributed to the findings we reported. We guess that the result of our research are not significance and reliable because the number of ICP patients and whole subjects was limited.

Most of the patients in this study had pain of a more chronic nature, and the fact emphasizes the importance of evaluating psychosocial factors and psychological distress. Also, the clinicians must be recognized that these distress have decreased the quality of life in patient with TMD, these results have suggested the value of evaluating these domains in the management of TMD.

These results demonstrate the need for longitudinal stud of how persons cope with various orofacial conditions. While these designs represent considerable investment, we believe they are crucial to developing our understanding of the etiology of these painful conditions and ultimately the development of successful, long-term management strategies.

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 국문요약

## 측두하악관절장애를 가진 환자에서의 삶의 질의 평가

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측두하악관절 장애를 가진 환자를 저작근 동통을 가진 환자와 관절강 내 동통을 가진 환자 그룹으로 구분하여, 두 그룹사이의 동통의 정도나 기간의 차이, 그리고 수면질의 차이에 따른 삶의 질의 차이를 비교하였다. 총 61명의 환자는 관절강 내 통증을 가진 환자 24명과 저작근 동통을 가진 환자 37명으로 구성되었다. 상기 환자들은 첫 내원 시 맥길 통증설문지(McGill Pain Questionnaire), 피츠버그 수면 질 평가 (Pittsburgh Sleep Quality Index), SF-36 (Medical Outcome Study 36 Item Short Form Health Survey)을 작성하고 치과적 병력과 의과적 병력을 기록한 후, 전반적인 측두하악관절에 대한 검사를 시행하였다. 두 그룹 사이에는 동통의 강도나 기간에 유의한 차이는 보이지 않았으나, 6개월 이상 측두하악관절장애를 가지는 환자 중에서는 저작근 동통을 가진 환자가 관절강 내 동통을 가지는 환자보다 SF-36의 평균과 정신적인 부분에서의 점수에서 낮은 수치를 보인다 ( $p < 0.05$ ). 피츠버그 수면 질 평가에서는 평사시의 수면 효율면에서 저작근 동통을 가진 환자 ( $1.9459 \pm 0.8481$ )가 관절강내 동통을 가지는 환자 ( $1.375 \pm 0.9237$ )에 비해 낮은 효율을 보인다. 또한 저작근 동통을 가진 환자군에서 피츠버그 수면 질 평가의 총점이 5이상인 나쁜 수면질을 가지는 군은 맥길 통증 설문지, SF-36에서 높은 동통 정도와 낮은 삶의 질을 가지는 것으로 결과가 도출되었다. 또한 저작근 동통을 가진 환자는 전체적인 삶의 질을 나타내는 SF-36에서는 감정적인 문제로 인한 역할의 제한, 생활력, 신체적 동통에서 관절강 내 동통을 가진 환자 에 비해 낮은 수치를 나타내어, 삶의 질이 특히 정신적인 면에서 손상되었다는 것을 나타낸다.

 주제어: 삶의 질, SF-36, 측두하악장애
 

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