

Association Between TMD Treatment Need, Sick Leaves, and Use of Health Care Services for Adults

Marjaana Kuttila, DDS
Specialist in Clinical Dentistry
Otonhammas
Jyväskylä, Finland

Seppo Kuttila, MD
Specialist in Otorhinolaryngology
Otonhammas
Jyväskylä, Finland

Yrsa Le Bell, DDS, PhD
Chief
Graduate Program in Clinical Dentistry
Institute of Dentistry
University of Turku
Turku, Finland

Pentti Alanen, PhD
Professor
Department of Community Dentistry
Institute of Dentistry
University of Turku
Turku, Finland

Correspondence to:
Dr Marjaana Kuttila
Otonhammas
Puistokatu 2 A
40100 Jyväskylä, Finland
e-mail: Marjaana.Kuttila@utu.fi

The objective of this study was to analyze the relationship between need for treatment of temporomandibular disorders, sick leaves, and use of health care services in a study population of 441 adults born between 1927 and 1967. The findings indicated that these were strongly associated. The results were in agreement with earlier studies suggesting that stomatognathic disorders are one link between medicine and dentistry in health care. Subjects with temporomandibular disorders were significantly more often on sick leave, visited a physician more often, and had more physiotherapy and massage than subjects who did not need treatment for temporomandibular disorders. Intervention studies are needed to improve cooperation between different specialties, to eliminate unnecessary examinations as well as ineffective treatment modalities, and to decrease the cost of health care.

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Several studies have repeatedly revealed that temporomandibular disorders (TMD) and general health are associated.¹⁻¹² The nature of these associations seems to be complicated, partially because of the diverse opinions on the etiology of TMD (for a recent review, see Okeson¹³(pp119-127)). Another reason is that TMD includes several different types of disorders that are difficult to differentiate¹² (for review, see Okeson¹³(pp127-141)). Symptomatic treatment that does not eliminate the causes of TMD is common. As a result, the use of health services among subjects with TMD is higher than the average of that in comparable populations.^{1,2,7,14-16} Many chronic pain conditions in the head, neck, or shoulder area call for continuous medication and/or physiotherapy. Therefore, it is of interest to realize that the number of studies analyzing the burden of TMD problems on the health care service system has remained small.¹⁷⁻¹⁹ The aim of the present study was to analyze associations between TMD treatment need, sick leaves, and the use of health care services in an adult population.

Materials and Methods

Starting in 1992, a total of 515 subjects (246 men and 269 women) who were born in 1927, '37, '47, '57, or '67 participated in a 2-year follow-up study of TMD. The sample was drawn from the files representing the population of the Jyväskylä municipality, Finland. Of the subjects, 478 participated in the second examination, and 446

participated in all three consecutive examinations at 12-month intervals. The clinical examination included measurement of the range of the movements of the mandible; deviation during opening-closing; recording of temporomandibular joint (TMJ) sounds applying stethoscope, disc displacement without reduction, or luxation; registration of pain on movements; and pain on palpation of TMJ and masticatory muscles. The following muscles were palpated bilaterally: anterior part and insertion of the temporal muscle; superficialis and deep part of masseter; posterior digastric; and medial and lateral pterygoids.

After the clinical examinations, the subjects were interviewed for both symptoms and signs related to TMD. An experienced clinician (MK) performed all clinical examinations. Before the study, she went through a calibration period at the University of Turku together with another experienced clinician (YLB) to increase the validity and reliability of the observations. A detailed description of the sampling procedure, the sample, and the clinical examinations has been published elsewhere.²⁰ After the third examination, a questionnaire regarding sick leaves and the use of health care services during the preceding 12 months was sent to all 478 subjects who participated in the second examination. Of them, 441 completed and returned the questionnaire. During the clinical follow-up study, the subjects did not know that they would retrospectively be asked about their sick leaves or other health problems. The questionnaire consisted of nine items regarding the health behavior of the subjects during the preceding 12 months: (1) number of weeks on sick leave; (2) reasons for the sick leaves; (3) number of visits to physician; (4) the specialty of the physician visited; (5) reasons for these visits; (6) physiotherapy; (7) reasons for physiotherapy; (8) massage; and (9) number of radiographs taken.

For the TMD treatment need analyses, a new classification was introduced. The subjects were classified into active-, passive-, or no-treatment-need groups. The classification was based on anamnestic data, clinical, and radiologic findings, and clinical experience. A subject was considered to belong to the active-treatment-need group if he or she needed professionally assessed care for signs or symptoms of TMD independent of other oral or dental care. The subject was put in the passive-treatment-need group if stomatognathic treatment was considered necessary in association with other dental care, such as prosthetics or periodontal care, to ensure the success of the dental care. The subjects in this group showed some minor signs or symptoms of TMD but were assessed as needing no stomatognathic treat-

Table 1 Distribution of Subjects According to Gender, Age, and TMD Treatment Need

	TMD treatment need			Total
	Active	Passive	No need	
Born 1927				
Men	2	13	25	40
Women	7	22	20	49
Born 1937				
Men	3	18	20	41
Women	9	22	15	46
Born 1947				
Men	3	19	20	42
Women	5	24	16	45
Born 1957				
Men	3	14	22	39
Women	11	17	20	48
Born 1967				
Men	0	9	37	46
Women	9	18	18	45
Total				
Men	11	73	124	208
Women	41	103	89	233
Overall	52	176	213	441

Chi square = 26.84; $P < .0001$.

ment if no other dental care was seen as necessary.^{13(pp153-155)} The subjects in the no-treatment-need group were healthy from the stomatognathic point of view. The principles of this classification system, as well as the distribution of the subjects according to this classification, have been published in detail earlier.²⁰

Associations between TMD treatment need, sick leaves, and use of health care services were analyzed using analysis of variance (ANOVA) and the chi square test.

Results

The subjects with active treatment need for TMD displayed higher values in practically all the measured dimensions of health care than the subjects with passive or no treatment need for TMD. Women had significantly more often an active need for TMD treatment than did men (Table 1). Inside the treatment need subgroups, there was a slight tendency toward greater use of health services among women than among men. As expected, all the values were slightly higher in the older age groups than in the younger ones. Subjects with active treatment need for TMD had been on sick leave for more weeks than subjects with passive or

Table 2 Percentages of Subjects With 0, 1-4, or 5 or More Weeks of Sick Leave in Different TMD Treatment Need Groups During the 12 Months Before Clinical TMD Examination

	Treatment need for TMD		
	Active	Passive	No need
No. of weeks of sick leave			
0	50	71	77
1-4	25	20	19
5 or more	25	9	4
No. of subjects	52	176	213

Chi square = 27.623; $P < .001$.**Table 4** Percentages of Subjects With 0, 1-3, or 4 or More Visits to a Physician During the 12 Months Preceding the Clinical TMD Examination

	Treatment need for TMD		
	Active	Passive	No need
No. of visits to physician			
0	4	16	25
1-3	29	58	55
4 or more	67	26	20
No. of subjects	52	176	213

Chi square = 53.05; $P < .001$.

no need for TMD treatment. The mean number of weeks on sick leave was 10 times more in the active-treatment-need group compared to the no-need group. Fifty percent of subjects in the active-treatment-need group reported at least 1 week on sick leave. The corresponding percentages were 29% in the passive- and 23% in the no-treatment-need groups. There were more weeks on sick leave because of influenza and because of psychologic reasons in the active-treatment-need group than in the other groups (Tables 2 and 3).

The subjects with active treatment need for TMD visited a physician, most often a general practitioner, significantly more often than did the subjects with no treatment need for TMD (Table 4). Only 4% of subjects in the active-treatment-need group did not visit a physician at all, and 67% of the subjects visited a physician four or more times. The difference between the active- and no-treatment-need groups in visiting a physician was more than ten-fold concerning visits to an otorhinolaryngology specialist (Table 5). There were only a few visits to other specialists, apart from those in occupational health.

Table 3 Mean Number of Weeks on Sick Leave for Different Reasons

Reasons for sick leaves	Treatment need for TMD			F value
	Active	Passive	No need	
Influenza	1.30	0.18	0.14	7.53***
Traumas	0.25	0.20	0.15	0.17
Surgical operations	1.08	0.57	0.18	1.36
Exhaustion	1.27	0.41	0.14	1.93
Psychologic reasons	1.63	0.10	0.00	7.97***
Other	0.79	0.35	0.08	
Total	6.32	1.81	0.69	15.06***

* $P < .05$.** $P < .01$.*** $P < .001$.**Table 5** Mean Number of All Visits to Physicians During the 12-Month Follow Up

	Treatment need for TMD			F value
	Active	Passive	No need	
General practitioner	1.79	1.30	0.92	7.68***
Specialist in				
occupational health	0.90	0.51	0.40	4.24*
otorhinolaryngology	0.37	0.08	0.03	5.44*
physiatry	0.25	0.01	0.00	14.88***

* $P < .05$.** $P < .01$.*** $P < .001$.

The association between TMD treatment need and use of health care services was clear in all subgroups of aches in the orofacial region (Table 6). The subjects in the active-treatment-need group visited a physician because of the symptoms of orofacial pain three times more often than the subjects in the no-treatment-need subgroup. The subjects in the active-treatment-need group also had physiotherapy or massage significantly more often than the subjects with no need for TMD treatment (Table 7). The same tendency was seen in radiographs taken from the head or neck. Radiographs of the skull, the cervical spine, and the sinuses, as well as orthopantomograms, were taken in subjects in the active-treatment-need group twice as often as in subjects in the other treatment need subgroups (Table 8).

Discussion

The response rate to the questionnaire was high (92%). This is at least partially explained by the fact that all of the remaining 441 subjects had

Table 6 Mean Number of Common Symptoms in the Orofacial Region as Reasons for Visits to Physicians

Reasons	Treatment need for TMD			F value
	Active	Passive	No need	
Earache	0.15	0.01	0.04	5.29**
Cheekache	0.15	0.01	0.01	7.02***
Headache	0.23	0.04	0.05	6.88**
Neckache	0.35	0.14	0.11	3.21*
Influenza	0.63	0.30	0.26	5.96**
Sinusitis	0.40	0.14	0.14	3.80*

* $P < .05$.** $P < .01$.*** $P < .001$.**Table 8** Percentages of Subjects With Radiographs Taken During the 12-Month Follow Up

	Treatment need for TMD		
	Active	Passive	No need
Skull radiograph	1.9	1.1	1.9
Cervical spine radiograph	9.6	5.7	6.1
Orthopantomogram	11.5	5.1	5.6
Paranasal sinus radiograph	13.6	4.5	4.7
Total	34.6	15.3	14.1

Chi square = 13.1; $P = .0015$.

already participated twice in the follow-up study (ie, the nonrespondents had already dropped out during the earlier follow up). One source of error is that the subjects did not necessarily correctly remember their health care behavior during the preceding 12 months. There is, however, no reason to believe that there would be a systematic error between the groups in this respect. The reliability and validity of the classification of the subjects into the different treatment need subgroups is difficult to assess. However, it can safely be assumed that the extreme groups—subjects with active or no treatment need—were correctly separated from each other.

Earlier results were confirmed in the present study. Subjects with TMD are shown to be on sick leave often,^{2,7} visit physicians often,^{1,5,14-16} and use a lot of medication,³ physiotherapy, or massage.^{9-11,16} The prevalence figures for active treatment need for TMD were on the same level as in most cross-sectional epidemiologic studies discussing need or demand of care for TMD.²¹⁻²³ The applied treatment need classification seemed to re-

Table 7 Percentages of Subjects Having Had Physiotherapy and/or Massage During the 12-Month Follow Up

	Treatment need for TMD			F value
	Active	Passive	No need	
Physiotherapy, total	36.5	18.0	11.0	19.20***
Physiotherapy because of				
back pain	13.5	5.0	4.0	7.71*
neck and shoulder pain	29.0	15.0	9.0	13.49**
face and cervical area	11.5	2.0	0.5	21.11***
Massage	46.0	30.0	22.0	12.73**
n	52	176	213	

* $P < .05$.** $P < .01$.*** $P < .001$.

veal the associations between TMD treatment need and the use of health care services. Our grouping can be compared with those suggested by De Kanter et al²³: active treatment need is comparable to De Kanter's "signs present with need for treatment," and passive treatment need is comparable to De Kanter's "signs present with no need for treatment." In general, we agree with the opinion presented by Okeson:^{13(p154)} "There may be an indication for occlusal adjustment as part of a restorative dental treatment plan required for dental reasons by a patient with a TMD."

The present results demonstrate that our classification can offer one more possibility to analyze the treatment need problems associated with TMD. However, the concepts need and demand are vague by nature. A clinical examination in which a professionally assessed TMD treatment need is observed can increase the subjects' awareness of these problems, and lead to treatment demand. This is an unavoidable methodologic problem in all follow-up studies in stomatognathic physiology.

Some epidemiologic reports have suggested that the frequency of TMD is similar in both genders,²⁴⁻³² but women are overrepresented in studies.^{26,27} Our results were not in line with those studies but agreed well with the studies indicating that women show more professionally assessed signs and symptoms of TMD than do men.³³⁻⁴⁰ A recently published study of Brazilian high school and university students showed that women had moderate or severe symptoms of TMD four times more often than did men.⁴¹ In other words, the higher numbers of women in the use of health care services and sick leaves were not explained by gender difference but by the higher prevalence of TMD signs and symptoms in women. This is also in agreement with prospective studies by Berkanovic

et al⁴² and Rakowski et al,⁴³ who found no gender differences in health care visits for a variety of health problems. Moreover, von Korff⁴⁴ has reported that there were no differences in men and women seeking care for TMD pain. We think that the common observation that women more eagerly seek care for their health problems than do men has less explanatory power in TMD research than is often believed.⁴⁵

The awareness of the physician to diagnose and treat the TMD patient is often limited. This can lead to unnecessary radiographs, antibiotics, and pain medications. According to Glass and Glaros⁴⁶ and Glass et al,⁴⁷ the fact that patients with TMD initially seek care from physicians can be problematic because about 40% of TMD patients may have been misdiagnosed by physicians. Also, the patient's initial visit to a physician may increase the total costs. In our opinion, proper treatment for these patients would be referring the patient to a stomatognathically experienced dentist to minimize suffering and total costs. The clear association between TMD treatment need and the use of health services emphasizes the necessity to compare different treatment modalities in chronic pain conditions in the head, neck, and shoulder areas also from an economic point of view.

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Resumen

La Asociación Entre la Necesidad de Tratamiento de los Desórdenes Temporomandibulares, las Licencias por Enfermedad, y el Uso de los Servicios de Salud en los Adultos

El objetivo de este estudio fue el de analizar la relación entre la necesidad de tratamiento de los desórdenes temporomandibulares (DTM), las licencias por enfermedad, y el uso de los servicios de salud en una población de 441 adultos nacidos entre 1927 y 1967. Los hallazgos indican que estos resultados estaban enfáticamente de acuerdo con estudios anteriores que indicaban que los desórdenes estomatognáticos están relacionados a la medicina y a la odontología. Las personas con desórdenes temporomandibulares estaban ausentes por enfermedad mas a menudo, visitaban al médico con mas frecuencia, y habían tenido mas fisioterapia y masajes que las personas que no habían necesitado tratamiento para los DTM. Estas diferencias fueron significativas. Los estudios de mediación son necesarios para mejorar la cooperación entre las diferentes especialidades, para eliminar los exámenes innecesarios lo mismo que modalidades de tratamientos inútiles, y para disminuir el costo de los cuidados de salud.

Zusammenfassung

Beziehung zwischen TMD Behandlungsnotwendigkeit, Arbeitsunfähigkeit und Gebrauch von Gesundheitspflegediensten für Erwachsene

Das Ziel dieser Studie war es, die Beziehung zwischen Behandlungsnotwendigkeit von temporomandibulären Erkrankungen, Arbeitsunfähigkeit und Gebrauch von Gesundheitspflegediensten in einer Studiengruppe von 441 Erwachsenen, die zwischen 1927 und 1967 geboren wurden, zu analysieren. Die Befunde weisen darauf hin, dass diese Resultate gut mit früheren Studien übereinstimmen, welche nahelegen, dass stomatognathe Erkrankungen ein Bindeglied zwischen Medizin und Zahnmedizin in der Gesundheitspflege darstellen. Personen mit temporomandibulären Erkrankungen waren signifikant öfter arbeitsunfähig, besuchten den Arzt häufiger und hatten mehr Physiotherapie und Massagen als Leute, welche keine Behandlung für temporomandibuläre Erkrankungen benötigten. Weiter Studien sind notwendig, um die Kooperation zwischen den verschiedenen Spezialfachern zu verbessern, um unnötige Untersuchungen als auch uneffektive Behandlungsmodalitäten zu eliminieren, sowie um die Kosten der Gesundheitspflege zu reduzieren.

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