

History of Treatment Received by Patients With TMD: A Preliminary Investigation

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A retrospective investigation of 257 patient records from a university-based facial pain center for patients with temporomandibular disorders examined the "natural history" of patients with temporomandibular disorders for consultation and treatment of their complaints. Data were obtained on a variety of demographic variables, referral patterns, types of providers seen for consultation, and the types of diagnostic tests ordered by these providers. Results showed that patients with temporomandibular disorders see more than three providers prior to their referral to a tertiary care center, that a considerable proportion of those providers are physicians, that patients reported undergoing a variety of diagnostic tests, and that patients reported receiving a variety of diagnoses for their condition. Results also showed that patients who initially consulted a physician were somewhat more likely to be referred to another physician, while patients who consulted a dentist were highly likely to be referred to another dentist.

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key words: temporomandibular disorders, demographics, diagnosis, treatment, providers, referral patterns

Temporomandibular disorders (TMD) are a heterogeneous collection of disorders characterized by orofacial pain and/or masticatory dysfunction.¹ The pain reported by TMD patients is typically located in the muscles of mastication, in the preauricular area, or in the temporomandibular joint (TMJ).² Patients with TMD may also report concomitant headache, other facial pains, earaches, dizziness, ringing in the ears, and pain in the shoulder/neck/upper back/lower back. Patients with TMD may also report a variety of TMJ problems other than (or in addition to) pain, including locking in the open or closed position and clicking, popping, and grating sounds in the joint. Patients may report difficulty opening their jaws wide and a sense that their occlusion is "off."

Because the symptomatology of patients with TMD can mimic a variety of disorders, patients may seek care from a variety of providers. These professionals may include otolaryngologists and internists (for complaints of dizziness, ringing in the ears, facial pain),³ neurologists (headache, dizziness, facial pain),⁴ chiropractors and physical therapists (neck, shoulder, upper back, and lower back pain), and dentists (TMJ sounds, TMJ pain, limited range of opening, and perceived malocclusion).

However, there is little knowledge regarding how patients with symptoms of TMD seek care. Similarly, little is known about the diagnostic procedures and treatment modalities used by practitioners in the general community.^{5,6} While there is considerable research on the utility of particular treatments offered in controlled research settings,^{7,8} less is known about the efficacy of the multiple, varied treatments received by patients in a standard clinical environment.⁹

Portions of the paper were presented at the International Workshop on the Temporomandibular Disorders and Related Pain Conditions, Hunt Valley, Maryland, April 1994.

Table 1 Types of Providers Seen by Patients With TMD Prior to Consultation in Facial Pain Center

Provider	Consultation			
	1st (n = 198)	2nd (n = 152)	3rd (n = 105)	4th (n = 55)
Dentist	64.1	57.2	47.6	47.3
Physician	23.2	18.4	20.9	14.5
Dental specialist	4.5	13.2	19.0	9.1
Physician specialist	6.6	9.9	10.5	20.0
Chiropractor	1.0	2.6	1.0	9.1
Other	0.5	1.3	1.0	0.0

Note: The data reported in the columns are the percentage of patients who consulted the provider type for consultation specified.

To begin to address these deficiencies in the literature, the authors of the present study retrospectively examined data provided by patients seen at a university-based facial pain center. The specific aims were to (1) determine the number and type of providers seen by patients reporting symptoms of TMD; (2) assess the pathway by which these individuals came to be patients in a tertiary care center; and (3) determine the types of diagnostic procedures and diagnoses previously offered to patients. We hypothesized that a considerable proportion of patients would have been seen by physicians, and that patients reporting symptoms of TMD would report having received a variety of diagnostic procedures and obtained a variety of diagnoses.

Materials and Methods

Data were obtained retrospectively from 257 records of patients seen at the University of Missouri-Kansas City Facial Pain Center. The Facial Pain Center functions as a tertiary care and referral facility for dentists and physicians within the greater Kansas City area and for providers in rural areas of the Midwest. Before receiving an appointment for a comprehensive multidisciplinary assessment in the Facial Pain Center, prospective patients were required to complete a 24-page patient information questionnaire. The completed form provided considerable information on patient demographics; the history and status of their problems; prior providers, consultations, diagnostic efforts, diagnoses, and treatments; and the behavioral and emotional consequences of the problems. Except for the diagnoses offered by the Facial Pain Center, the data reported in this paper came solely from the patient information questionnaires.

The demographic variables obtained from the questionnaires include age, gender, race or ethnic background, marital status, and education. Information regarding the duration of the problem was also provided. Variables relevant to providers, diagnostic tests, and diagnoses included immediate referral source, patient estimates of the number of providers seen for their facial pain problems, as well as their recollections about the tests ordered and diagnoses offered by the first four providers reported by the patients.

Results

Demographic Data

The mean age of patients who completed the information questionnaire was 37.40 years ($SD = 14.04$). The questionnaires revealed that 89.1% of the patients were women and 10.9% men; 95.7% white and 4.3% other races; and 59.6% married, 39.2% unmarried, and 1.2% other marital status. The mean duration of the problem reported by patients ($n = 196$) was 33.64 months ($SD = 51.09$); the median duration was 12.0 months. Nearly 70% of patients were referred by a dentist, while 11.9% were referred by physicians, 3.2% by attorneys and insurance companies, and 4.3% by friends and family; approximately 10% were self-referred. A total of 89.5% of patients were diagnosed with myalgia, 54.5% with internal derangement, and 19.5% with degenerative joint disease.

Providers, Tests, Diagnoses, and Treatment

Patients reported seeing a mean 3.23 providers ($SD = 1.66$) before coming to the Facial Pain Center. The types of providers seen for the first through the fourth consultations are reported in Table 1. A patient who reported seeing an orthodontist, oral surgeon, or other dental specialist was coded as seeing a "dental specialist." All other reports of seeing dentists were coded as "dentist." A patient who reported seeing an otolaryngologist, neurologist, or rheumatologist was coded as seeing a "medical specialist." All other reports of seeing physicians, including internists, family practitioners, and doctors of osteopathy, were coded as "physician." The data show that patients consulted both dentists and physicians in their attempts to receive care.

Patients reported undergoing one or more of 23 different diagnostic procedures. In Table 2, all simple radiographic procedures (ie, those not involv-

ing specialized equipment, dyes, or contrasts) were coded as "x-ray." Both the normal radiographic procedures that could be conducted in a dentist's office as well as images of the sinuses/skull are included in this category. Magnetic resonance imaging and computerized axial tomography were coded as "other imaging." (No patient reported receiving tomography of the TMJ before his/her appointment in the Facial Pain Center.) A variety of procedures were included in the "laboratory tests" code, including electroencephalograms, blood tests, bone scans, thyroid scans, spinal taps, Doppler tests, laryngoscopy, and tests for arthritis, lupus, and Lyme disease. Unspecified neurologic and back tests were included in the "office-based medical procedures." Additionally, unspecified ear and eye tests, diagnostic nerve blocks, and other injections were included in this category. Dental procedures included tests of equilibration and root detoxification. Otherwise unspecified office exams were coded as such. As suggested by Table 2, information for up to five different diagnostic procedures was provided by the patients. The data show that most patients received x-ray evaluations, while a smaller proportion received more sophisticated imaging procedures and office-based exams.

As reported by patients, the diagnoses offered by these providers also showed considerable variability. As a group, patients reported receiving 27 separate diagnoses, ranging from various TMD diagnoses, neuralgias, and headaches, to vitamin deficiencies and "gum disease." These are summarized in Table 3. In this table, the original diagnoses were combined to form a smaller number of categories. The data show that most patients received a diagnosis of TMD at each consultation. However, a considerable proportion received a different, or no, diagnosis.

Probabilities and Pathways of Care

Patients were very likely to have seen at least one dentist before coming to the Facial Pain Center. About 40% of patients had also consulted with one or more physicians. The probability that a patient had been seen by a general dentist prior to contact in the Facial Pain Center was .808; by a physician, .273; by a dental specialist, .237; by a medical specialist, .202; by any dentist, .854; by any physician, .404.

To assess the referral strategies of providers, the probability that a provider would refer patients with symptoms of TMD to professionals within or outside the provider's discipline was examined

Table 2 Percentage of Patients Reporting Diagnostic Procedures

Diagnostic test	Test number				
	1st (n = 140)	2nd (n = 87)	3rd (n = 51)	4th (n = 28)	5th (n = 10)
X-ray	60.0	42.5	35.3	53.6	20.0
Other imaging	17.9	27.6	23.5	17.9	20.0
Laboratory tests	4.3	10.3	15.7	17.9	40.0
Office-based medical procedures	5.7	4.6	5.9	10.7	10.0
Office-based dental procedures	0.7	1.1	3.9	0.0	0.0
Office exam	11.4	13.8	15.7	0.0	10.0

Table 3 Diagnoses Received by Patients Prior to Facial Pain Center

Diagnosis	Consultation			
	1st (n = 191)	2nd (n = 149)	3rd (n = 102)	4th (n = 55)
TMD	51.8	59.1	61.8	58.2
Neuralgia/atypical facial pain	1.0	2.7	2.9	5.5
Headache or other neurologic problem	4.2	4.0	4.9	1.8
Sinus or allergy problems	11.0	8.1	3.9	3.6
Occlusal problems	6.3	4.0	2.9	3.6
Posttraumatic condition	0.5	0.7	1.0	0.0
Other disease	2.1	2.0	2.0	3.6
Behavioral disorder	1.6	0.0	2.0	0.0
No diagnosable condition	11.5	8.1	10.8	20.0
Referred elsewhere	9.9	11.4	7.8	3.6

Note: The data reported in the columns are the percentage of patients who received the diagnosis for consultation specified.

(Table 4). The data suggest that initially, physicians are somewhat more likely to refer patients with symptoms of TMD to other physicians. This tendency grows stronger with each subsequent consultation. Dentists are highly likely to refer patients with symptoms of TMD to other dentists throughout the consultation process. For dentists, the tendency to refer patients with TMD to non-physician providers increases somewhat as the consultation process proceeds.

Table 4 Probabilities of Referral to Similar or Different Health Care Providers

		Next consultation			N
		Any dentist	Any physician	Other	
First consultation	Any dentist	0.842	0.149	0.010	101
	Any physician	0.449	0.531	0.020	49
	Other	0.500	0.500	0.000	2
Second consultation	Any dentist	0.818	0.152	0.030	66
	Any physician	0.405	0.595	0.000	37
	Other	0.500	0.500	0.000	2
Third consultation	Any dentist	0.735	0.176	0.088	34
	Any physician	0.286	0.619	0.095	21
	Other	0.000	0.000	0.000	0

N = Number of providers seen during consultation

In each major row (first consultation, second consultation, third consultation), the consultation source is identified (any dentist, any physician, other), along with the probability that the next professional seen is a dentist, physician, or other provider. For example, for a second consultation, the probability that a physician next referred the patient to a dentist is 40.5%, while the probability that the physician referred to another physician is 59.5%.

Discussion

The data show that patients seen at a facial pain center used a variety of providers in their pursuit of diagnosis and treatment for their symptoms. While dentists were most commonly consulted, physicians were consulted fairly frequently, from 28.3% to 34.5% of the time. The probability that a patient saw a physician at any point in the process was just over 40%, with most patients consulting a dentist at some point. These figures are similar to those reported by Von Korff⁶ for patients seen by community providers. These data clearly suggest that at least some patients regard TMD as a problem that is best managed by physicians, not dentists. Unfortunately, we do not know how patients decide to seek the care of physicians and dentists, nor do we know how such decision-making is influenced by symptom presentation, insurance reimbursement policies, and the like.

Dentists were highly likely to refer to other dentists, while physicians were likely to refer to other physicians (see Table 4). As noted earlier, nearly 70% of patients were referred by dentists. The Facial Pain Center is physically located within a dental school and is primarily staffed by dentists; it is not surprising that most patients were seen by a dentist before referral to the Center. The high consultation rate for dentists is consistent with data showing that 40% of general dentists do not treat patients with symptoms of TMD, and that about 50% of general dentists frequently refer such patients elsewhere.¹⁰ Our data on referral patterns may have implications for the national cost of diagnosing and treating patients with TMD.

The diagnostic procedures ordered for patients contained surprising variability. Of course, we did not have access to the specific complaints made by patients to each provider they saw. Nonetheless, the reported use of magnetic resonance imaging and computerized axial tomography scans was unexpectedly high. The diagnoses offered to patients also varied considerably. Most patients eventually received a diagnosis of TMD. Initially, however, a small but significant proportion of patients received diagnoses consistent with sinusitis and allergies. About 20% of patients were told at each consultation that they had no diagnosable condition, or they were told to seek additional consultation elsewhere. The reason for this inability to identify TMD, or uncertainty as to how to interpret the symptoms, is unclear. Further investigation, preferably of a prospective nature, might clarify the decision-making processes used by both dentists and physicians in diagnosing (and treating) TMD. Additionally, cost-related data could also be collected prospectively.

Summary

The data suggest that patients with TMD seek care from a variety of dental and medical providers who order divergent and potentially expensive diagnostic tests and who provide a variety of diagnoses to the patients. Since the findings are based on retrospective reports, a conservative interpretation of the data is warranted. The findings are purely descriptive and should not be construed as either an endorsement or a criticism of the profes-

sional activities undertaken by prior providers. Nonetheless, the authors believe that the data are sufficiently provocative to warrant a prospective examination of care-seeking behaviors, decision making, and costs by patients with facial pain. Future studies might also collect the same data as examined, separated by TMD type. Such studies would show whether the care-seeking patterns of TMD patients differ as a function of the diagnostic subgroup to which they belong.

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Resumen

Investigación Preliminar sobre los Tratamientos Recibidos por Pacientes con Desórdenes Temporomandibulares

Se realizó una investigación retrospectiva de 257 expedientes de un centro universitario dedicado al dolor facial para pacientes con desórdenes temporomandibulares (DTM). Este estudio examinó la "historia natural" de los pacientes afectados por DTM que habían venido a consulta y solicitado tratamiento. La información fue obtenida sobre una serie de variables demográficas, patrones de remisión, tipos de profesionales consultados, y los tipos de exámenes diagnósticos ordenados por estos profesionales. Los resultados indicaron que los pacientes con DTM ven a mas de tres profesionales, antes de ser remitidos a un centro de cuidado terciario, que una proporción considerable de estos profesionales son médicos, que los pacientes dijeron haber sido sometidos a una variedad de exámenes de diagnóstico, y haber recibido una variedad de diagnósticos para sus condiciones respectivas. Los resultados también demostraron que los pacientes que inicialmente habían consultado a un médico en cierto modo serían remitidos probablemente a otro médico, mientras que los pacientes que consultaron a un dentista serían remitidos muy seguramente a otro dentista.

Zusammenfassung

Geschichte der Behandlung von Patienten mit Myofasziopathien des Kausystems (MAP): Eine einleitende Untersuchung

Die retrospektive Untersuchung prüfte anhand von 257 Krankengeschichten aus einem Gesichtsschmerz-Zentrum die "Geschichte" der Patienten mit MAP des Kausystems bezüglich Konsultation und Behandlung ihrer Klagen. Die gesammelten Daten umfassten eine Vielfalt demographischer Variablen, die Zuweisungswege, die Typen von Beratern, die für Konsultation besucht worden waren und die diagnostischen Prüfungen, die von diesen Beratern veranlasst worden waren. Die Ergebnisse zeigten, dass Patienten mit MAP mehr als drei Berater sehen vor ihrer Zuweisung zu einer tertiären spezialisierten Klinik, dass ein beträchtlicher Anteil dieser Berater Ärzte sind und dass die Patienten über eine Vielfalt ausgeführter diagnostischer Prüfungen und Diagnosen für ihren Zustand berichteten. Die Ergebnisse zeigten auch, dass die Patienten, die anfänglich von einem Arzt beraten worden waren, meist einem weiteren Arzt, während Patienten, die von einem Zahnarzt beraten worden waren, meist einem weiteren Zahnarzt überweisen worden waren.