Northwestern Med J. 2023;3(3):172-179
doi: 10.54307/NWMJ.2023.36035

Original Article

Evaluation of Turkish dentists' knowledge and awareness of temporomandibular disorders

Türk diş hekimlerinin temporomandibular eklem rahatsızlıkları hakkındaki bilgi ve tutumlarının değerlendirilmesi

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Atıf/Cite as: Yildiz S, Alpaydın T, Buyuk SK. Evaluation of Turkish dentists' knowledge and awareness of temporomandibular disorders. Northwestern Med J. 2023;3(3):172-179.

ABSTRACT

Aim: The aim of this study was to evaluate the awareness and treatment approaches of general dentists about temporomandibular disorders (TMD).
Methods: A cross-sectional 21-item questionnaire study was performed and was sent to general practitioner dentists in Turkey. The demographics, length of professional experience, and their level of knowledge about TMD management were evaluated.
Results: Eighty general practitioner dentists responded to the questionnaire. In the first part of the questionnaire, a statistically significant difference was found for the statement 'One of the symptoms of TMD is headache.' between the responses of dentists with more than 5 years of professional experience and those with less than 5 years of professional experience ($p=0.012$). No statistically significant difference was found in the responses to the other questions about TMD in other part of the questionnaire ($p>0.05$).
Conclusions: The knowledge and awareness about the diagnosis and treatment of TMD is low among general practitioner dentists. Informative seminars or courses should be organized to increase the knowledge of TMD among general practitioner dentists.

Keywords: Dentist, etiology, temporomandibular disorders, temporomandibular joint

ÖZ

Amaç: Bu çalışmanın amacı, pratisyen diş hekimlerinin temporomandibular bozukluklar (TMD) konusundaki farkındalıklarını ve tedavi yaklaşımlarını değerlendirmektir.
Yöntem: 21 maddelik kesitsel bir anket çalışması yapılmış ve Türkiye'deki pratisyen diş hekimlerine gönderilmiştir. Demografik özellikler, mesleki deneyim süreleri ve TMD yönetimi hakkındaki bilgi düzeyleri değerlendirilmiştir.
Bulgular: Seksen pratisyen diş hekimi anketi yanıtlamıştır. Anketin ilk bölümünde mesleki deneyimi 5 yıldan az olan diş hekimlerinin yanıtları arasında 5 yıldan fazla mesleki deneyime sahip 'TMD belirtilerinden biri baş ağrısıdır.' ifadesinde istatistiksel olarak anlamlı bir fark bulunmuştur. ($p=0,012$). Anketin diğer bölümünde TMD ile ilgili diğer sorulara verilen yanıtlarda istatistiksel olarak anlamlı fark bulunmamıştır ($p>0,05$).
Sonuçlar: Pratisyen diş hekimleri arasında TMD'nin tanı ve tedavisine ilişkin bilgi ve farkındalık düşüktür. Pratisyen diş hekimlerinin TMD hakkındaki bilgilerini artırmak için bilgilendirici seminerler veya kurslar düzenlenmelidir.

Anahtar kelimeler: Diş hekimleri, etiyoloji, temporomandibular eklem, temporomandibular eklem rahatsızlığı

Received: 15.03.2023
Accepted: 29.08.2023
Publication date: 01.10.2023

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INTRODUCTION

The temporomandibular joint (TMJ) is a joint that connects the skull to the mandible and is located between the glenoid fossa of the temporal bone and the condylar process of the mandible (1-3). Temporomandibular disorder (TMD) is a general term describing the signs and symptoms of all associated dysfunctions or disorders of the TMJ and its joint components, such as the associated muscles and ligaments (4).

The management of TMD involves the work of dentists with different expertise. The diagnosis of TMD is multifactorial in nature and requires appropriate examination and planning for treatment. Detection and diagnosis of the problem requires the cooperation of maxillofacial radiologists, orthodontists, prosthodontists, or maxillofacial surgeons (4,5). The pain in the affected area, discomfort in the masticatory muscles, reduced movement of the mandible, accompanying noise during the movement of the jaw are some of the symptoms of TMD (6,7).

TMD is estimated to have a prevalence of 5-12% in the population, including adults and children. Therefore, TMD has been recognized as an important public health problem (8). The Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) are used to classify the different categories of TMD. According to the DC/TMD, these disorders can be classified as "acute or chronic" and "complex or simple" (9,10). The lack of knowledge about orofacial pain, especially in children and adolescents, can be a serious limitation in the management of TMD pain (11). Orofacial pain not only affects quality of life but can also be associated with poor general health, depression, and other mental deficiencies (12). Faculties of dentistry use multiple educational strategies, including theoretical, non-clinical, and clinical training to prepare students to become dentists. Dental schools must provide dentists with the necessary skills to face the challenges of daily practice to ensure a high quality of dental care (13). The aim of this was to evaluate the awareness and attitudes of Turkish general dentists toward TMD in order to evaluate the quality of treatment received by patients and the need for TMD continuing education programs.

MATERIALS AND METHODS

A link to the questionnaire created with Google Forms were e-mailed to dentists working in Turkey for this study. Twenty-one participants were excluded from the study because they were specialist dentists, 5 were research assistants and 2 were excluded because of incomplete responses. The G*Power 3.1 program, alpha error probability = 0.05, power value 0.95, effect size 0.50, the total number of participants required was found to be 80 participants.

The questionnaire consists of 21 questions in total. The first part of the questionnaire includes information on gender, institution of employment (public institution / private practice) and length of professional experience (less than 5 years / more than 5 years ≥). The second part of the questionnaire included questions about the etiology and prevalence of TMD and consisted of 10 questions. The last part of the questionnaire evaluated the dentists' knowledge and attitudes toward the treatment of TMD. The inclusion criterion was to be a general practitioner dentist. The exclusion criteria were having a specialty or doctorate in one of the specialties of dentistry or being a practicing dentist.

Statistical method

The data were analyzed using IBM SPSS (version 26, IBM SPSS Statistics, Armonk, USA). The Pearson, chi-square test and Fischer's exact test were used to compare categorical variables. The significance level was set at $p<0.05$.

RESULTS

The total number of general practitioner dentists who answered the questionnaire was 80. When the demographic data of the participants are analyzed, it is seen that 43 of them were female

and 37 of them were male (Table 1). When the institutional information of the participants is examined, it is seen that 33 participant dentists work in public institutions and 47 participant dentists work in private clinics. The average length of professional experience of the participants was 5.9 years.

When the answers given by the participants to the question 'Have you received any training other than your undergraduate / graduate education related to TMJ and / or TMD?' were examined, it is seen that 87.5% of the participants have not received any training and 12.5% has received training (Table 2). When the answers to the question 'What do you think is the most important factor in the etiology of TMD?' are analyzed, it is seen that 32.5% of the participants referred to the occlusal factors, followed by the parafunctional habits with 30%. A statistically significant

Table 1. Demographic data of the participants.

		Experience less than 5 years	Experience more than 5 years	P*
Gender	Female	21	22	0.823
	Male	19	18	
Organization	Public organization	9	24	0.001
	Private practice	31	16	

Table 2. Participants' answers to the second part of the survey (categorical).

		Total	Percentage (%)
Have you received any training other than your graduate education related to TME and/ or TMD?	Yes	10	12.5
	No	70	87.5
What is the most important factor in TMD etiology?	Occlusal factors	26	32.5
	Trauma	5	6.25
	Emotional Stress	24	30
	Deep pain input	1	1.25
	Parafunction	24	30
One of TMD symptoms is headache.	Yes	73	91.25
	No	5	6.25
	No idea	2	2.5
TMD can come as an ear symptom.	Yes	74	92.5
	No	4	5
	No idea	2	2.5
TMD may be the cause of unexplained orofacial pain.	Yes	72	90
	No	2	2.5
	No idea	6	7.5
Mouth opening measurement is a safe way for TMD diagnosis.	Yes	43	53.75
	No	29	36.25
	No idea	8	10
The examination of chewing muscles plays an important role in TMD diagnosis.	Yes	76	95
	No	4	5
TME imaging methods are useful for TMD diagnosis.	Yes	74	92.5
	No	1	1.25
	No idea	5	6.25
What is the incidence of TMD in the general population?	Less than 20 %	5	6.25
	Between 20-40 %	29	36.25
	Between 40-60 %	31	38.75
	Between 60-80 %	15	18.75
How old is the incidence of TMD in the general population?	0-20 years	1	1.25
	20-40 years	63	78.75
	40-60 years	13	16.25
	More than 60 years	3	3.75

Table 3. Participants' answers to the section of the survey according to their experience period.

		Experience less than 5 years	Experience more than 5 years	P
Have you received any training other than your graduate education related to TMD?	Yes	4	6	0.499[a]
	No	36	34	
What is the most important factor in TMD etiology?	Occlusal factors	11	15	0.685[b]
	Trauma	3	2	
	Emotional Stress	14	10	
	Deep pain input	1	0	
	Parafunction	11	13	
One of TMD symptoms is headache.	Yes	33	40	0.012[b]
	No	5	0	
	No idea	2	0	
TMD can come as an ear symptom.	Yes	35	39	**0.232[b]**
	No	3	1	
	No idea	2	0	
TMD may be the cause of unexplained orofacial pain.	Yes	35	37	0.835[b]
	No	1	1	
	No idea	4	2	
Mouth opening measurement is a safe way for TMD diagnosis.	Yes	20	23	0.409[b]
	No	14	15	
	No idea	6	2	
The examination of chewing muscles plays an important role in TMD diagnosis.	Yes	38	38	1.000[b]
	No	2	2	
TME imaging methods are useful for TMD diagnosis.	Yes	35	39	0.201[b]
	No	1	0	
	No idea	4	1	
What is the incidence of TMD in the general population?	Less than 20 %	1	4	0.598[b]
	Between 20-40 %	15	14	
	Between 40-60 %	17	14	
	Between 60-80 %	7	8	
How old is the incidence of TMD in the general population?	0-20 years	1	0	1.000[b]
	20-40 years	31	32	
	40-60 years	7	6	
	More than 60 years	1	2	

[a] *Pearson Chi-Square test,* [b] *Fischer's Exact test.*

difference was found between the responses of dentists with less than 5 years of professional experience and dentists with more than 5 years of professional experience to the statement 'One of the symptoms of TMD is headache.' (p=0,012) (Table 3). 38.75% of the participating dentists answered that TMD is seen in 40-60% of the population, 36.25% in 20-40% of the population, 18.75% in 60-80% of the population and 6.25% in less than 20% of the population. 78.75% of the participating dentists answered that TMD is seen in the population between the ages of 20-40 years, 16.25% between the ages of 40-60 years, 3.75% in patients older than 60 years, and 1.25% between the ages of 0-20 years. No statistically significant difference was found in the responses to the other questions in the second part of the questionnaire (p>0.05).

When the answers given in the last part of the questionnaire were analyzed, it is seen that 67.5% of the participating dentists did not routinely perform TMR treatment, while 32.5% routinely performed TMD treatment (Table 4). 72.5% of the participating dentists reported that not every diagnosed clicking sound should be treated, 65% reported that occlusal splints had a place in the treatment of TMD, 97.5% reported that they referred patients with TMD to specialists, and 65% reported that they could only diagnose

Table 4. Participants' answers to the last part of the survey (categorical).

		Total	Percentage (%)
Do you routinely treat patients with TMD?	Yes	26	32.5
	No	54	67.5
Any diagnosed click should be treated.	Yes	13	16.25
	No	58	72.5
	No idea	9	1.125
Non-steroidal anti-inflammatory drugs are useful in TMD treatment.	Yes	55	68.75
	No	11	13.75
	No idea	14	17.5
Occlusal splints are required for TMD treatment.	Yes	52	65
	No	12	15
	No idea	16	20
Do you refer patients with TMD to specialist dentists?	Yes	78	97.5
	No	2	2.5
How often do you notice TMD in your patients?	Usually	27	33.75
	When the patient has a primary complaint	52	65
	Never	1	1.25
What is the most common TMD finding you have encountered?	Ankylose	1	1.25
	Myofascial pain dysfunction syndrome	8	10
	Subluxation	1	1.25
	Clicking	30	37.5
	Deviation in Mandibula	3	3.75
	Clicking and deviation in Mandibula	25	31.25
	Pain	12	22.5

TMD if the patient's primary complaint was TMJ-related. When the answers to the question "What is the most common TMD finding you have encountered?" are analyzed, the most common TMD findings encountered by the participating dentists are listed as follows: 37.5% clicking sound, 31.25% clicking sound with mandibular deviation, 22.5% pain, 10% myofascial pain dysfunction syndrome, 3.25% mandibular deviation, 1.25% ankylosis, and 1.25% subluxation. When analyzing the answers to the questions in this section, there was no statistically significant difference between the dentists with less than 5 years of professional experience and dentists with more than 5 years of professional experience ($p>0.05$) (Table 5).

DISCUSSION

TMD is one of the most common causes of pain and discomfort in the mouth, jaw, and face, including the ears and forehead. This multifactorial disorder can be caused by many factors such as genetics, stress, and malocclusion (14). There is a general lack of knowledge about TMD among general practitioner dentists in Turkey. 87.5% of dentists did not receive any training for the diagnosis and treatment of TMD after graduating from the faculty. This is particularly critical as specialization or postgraduate study has been shown to increase the ability of healthcare professionals to treat complex diseases (10).

This study also found that health professionals with more years of experience were more aware of TMD. Even if their experience is not directly related to the diagnosis and treatment of TMD, indirect encounters with patients can help health professionals develop good clinical reasoning skills (10).

Çebi et al.[15] conducted a study on oral and dental health students in 2018, the rate of bruxism awareness was found to be 24.2%, while the presence of bruxism was found to be 52.5%. It is seen that bruxism is common among students. However, the awareness of bruxism among students was found to be low.

Table 5. Answers to the last part of the survey according to the time of professional experience.

		Experience less than 5 years	Experience more than 5 years	P
Do you routinely treat patients with TMD?	Yes	9	17	0.056[a]
	No	31	23	
Any diagnosed click should be treated.	Yes	8	5	0.674[b]
	No	27	31	
	No idea	5	4	
NSAIDs are useful in TMD treatment.	Yes	26	29	0.169[a]
	No	4	7	
	No idea	10	4	
Occlusal splints are required for TMD treatment.	Yes	23	29	0.230[a]
	No	6	6	
	No idea	11	5	
Do you refer patients with TMD to specialist dentists?	Yes	39	39	1.000[b]
	No	1	1	
How often do you notice TMD in your patients?	Usually	13	14	1.000[b]
	When the patient has a primary complaint	26	26	
	Never	1	0	
What is the most common TMD finding you have encountered?	Ankylose	1	0	0.197[b]
	Myofascial pain dysfunction syndrome	5	3	
	Subluxation	0	1	
	Clicking	13	17	
	Deviation in Mandibula	3	0	
	Clicking and deviation in Mandibula	10	15	
	Pain	8	4	

[a] Pearson Chi-Square test, [b] Fischer's Exact test.

In a study conducted in Saudi Arabia, the level of public knowledge about TMD was assessed and it was found that 22.7% of the participants chose dentists and 74.5% chose medical doctors as the qualified specialists for TMD treatment. In their study, the available survey data revealed that there was insufficient knowledge about TMD, and they emphasized the need for educational seminars to increase public awareness of TMD (16).

In a study conducted in India, 71% of 148 dentists reported referring their patients with temporomandibular disorders to other health professionals, while 28% did not. Of the dentists surveyed, 92% reported that they would refer their cases to a physiotherapist, if necessary, 8% that they would not, and 1% said that they would collaborate with physiotherapists for definitive treatment plans (17).

In our study, physicians with more than 5 years of experience were found to be statistically significant in some parameters compared to patients with less than 5 years of experience. Although experienced physicians were more successful and willing to diagnose and treat TMD than physicians with less than 5 years of experience, both showed similar statistical results for referral to a specialist. The level of experience of a health professional can influence the clinical decisions they make (18).

López-Frías et al.[19] conducted a study on 130 general dentists in 2019, 96.32% of the participants believe that parafunctional habits, trauma, and psychosocial factors are involved in the etiology of TMD. In our study, the opinion of general dentists on the most important factors playing a role in the etiology of TMD was occlusal factors with a rate of 32.5% and parafunctional habits with a rate of 30%. In addition, 67.5% of

the participating dentists did not routinely treat TMD, while 32.5% did routinely treated TMD, and 65% of them stated that occlusion splints are beneficial for the TMD treatment in the present study.

Prodoehl et al.[20] also found that the number of hours devoted to TMD education in the United States was insufficient. They also suggested that additional postgraduate courses are needed. The results of our study indicate that general practitioner dentists do not have sufficient awareness of TMD. It is important to increase the awareness and knowledge of general practitioner dentists about treatment alternatives for TMD patients through various seminars and courses during their postgraduate education period.

Ethics Committee Approval: The study protocol was approved by the Ordu University Clinical Research Ethics Committee (03.02.2023 / 60).

Conflict of Interest: The authors have declared that they have no conflict of interest.

Funding: The authors have declared that they have not received any financial support.

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