EurAsian Journal of Oral and Maxillofacial Surgery
Official publication of AÇBİD (Association of Oral and Maxillofacial Surgery Society)

RESEARCH ARTICLE

Perspectives on Temporomandibular Disorder Classification Systems: A Preliminary Study Among Oral and Maxillofacial Surgeons in Turkey

Temporomandibular Bozukluk Sınıflandırma Sistemlerine Yönelik Bakış Açıları: Türkiye'deki Ağız, Diş ve Çene Cerrahları Arasında Bir Ön Çalışma

Ezgi Ergezen DDS[1], Salih Eren Meral DDS[2], Sıdıka Sinem Akdeniz DDS, PhD[3], Burcu Baş Akkor DDS, PhD [4], Nükhet Kütük DDS, PhD[5]

[1] Assistant Prof. Baskent University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Ankara, Turkey

[2] Assistant Prof. Hacettepe University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Ankara, Turkey

[3] Prof. Private Practice, Ankara, Turkey

[4] Prof. Ondokuz Mayıs University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Samsun, Turkey

[5] Prof. Bezmialem Vakıf University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

ABSTRACT

Purpose: Temporomandibular disorders (TMDs) represent a diverse spectrum of musculoskeletal conditions characterized by pain in the temporomandibular joint (TMJ), masticatory muscles, and craniofacial region. The impact of TMDs extends beyond physical discomfort, affecting sleep quality, social interactions, and psychological well-being, thereby reducing overall quality of life. Despite their prevalence, TMDs pose diagnostic challenges due to overlapping symptoms and the absence of a universally accepted diagnostic tool. This study aims to evaluate the perspectives of oral and maxillofacial surgeons in Turkey on TMD classification systems, considering their experience, working conditions, and integration of these tools into clinical practice.

Material and Methods: A survey was conducted among oral and maxillofacial surgeons via Google Forms between September 2023- April 2024.

Results: Preference for the Diagnostic Criteria for TMD (DC/TMD) protocol, though challenges such as time constraints during patient examinations, moderate competence in assessing radiological imaging, and limited awareness of psychological assessment tools were identified.

Conclusion: The study emphasizes the importance of multidisciplinary collaboration in TMD diagnosis and the need for the utilization of a standardized guideline in both classification and treatment modalities to address existing barriers and optimize TMD management strategies.

Keywords: Temporomandibular disorders; DC/TMD; Temporomandibular joint; RDC/TMD

ÖZET

Amaç: Temporomandibular düzensizlikler (TMD), temporomandibular eklem (TME), çiğneme kasları ve kraniofasiyal bölgede ağrı ile karakterize edilen çeşitli musküloskeletal durumları içeren geniş bir spektrumu temsil etmektedir. TMD etkisi fiziksel rahatsızlığın ötesine geçerek uyku kalitesini, sosyal etkileşimleri ve psikolojik iyilik hâlini etkileyerek genel yaşam kalitesini azaltmaktadır. Populasyonda oldukça yaygın olmasına rağmen, örtüşen semptomlar ve evrensel olarak kabul edilen bir tanı aracının olmaması gibi nedenlerle tanısal zorluklar oluşturmaktadır. Bu çalışma, Türkiye'deki ağız, diş ve çene cerrahlarının TMD sınıflandırma sistemleri üzerine bakış açılarını değerlendirmeyi amaçlamaktadır. Bu değerlendirme, katılımcıların deneyimleri, çalışma koşulları ve bu araçların klinik uygulamadaki entegrasyonunu dikkate almaktadır.

Materyal ve Metot: Google Forms üzerinden Eylül 2023 - Nisan 2024 tarihleri arasında ağız ve çene cerrahları arasında bir anket yapılmıştır.

Bulgular: Katılımcılar arasında, sınıflandırma sistemleri arasında Diagnostic Criteria for TMD (DC/TMD) protokolünün daha sık tercih edildiği, ancak hasta muayenesi sırasında zaman kısıtları, radyolojik görüntüleme değerlendirmesinde orta düzeyde yeterlilik, ve psikolojik değerlendirme araçları konusunda sınırlı farkındalık gibi zorluklar belirlenmiştir.

Sonuç: Çalışma, TMD tanısında multidisipliner çalışmanın önemini vurgulamakta ve mevcut engelleri ele almaktadır. Ayrıca sürecin doğru yönetilebilmesi ve stratejileri optimize etmek için hem sınıflandırma hem de tedavi yöntemlerinde standartlaştırılmış kılavuzların kullanılmasının gerekliliğini ortaya koymaktadır.

Anahtar Kelimeler: DC/TMD; Temporomandibulereklem; Temporomandibuler düzensizlikler; RDC/TMD

Submission Date: June 24, 2024
Acceptance Date: September 9, 2024
Corresponding author: Ezgi Ergezen
Address: Baskent University Faculty of Dentistry Department of Oral and Maxillofacial
Phone: +905377415292
Email: ezgiergezen@gmail.com

Ezgi Ergezen 0000-0002-0904-9850
Salih Eren Meral 0000-0002-5855-4570
Sıdıka Sinem Akdeniz 0000-0001-7597-9469
Burcu Baş Akkor 0000-0003-0593-3400
Nükhet Kütük 0000-0001-6563-1899

EurAsian Journal of Oral and Maxillofacial Surgery
Official publication of AÇBİD (Association of Oral and Maxillofacial Surgery Society)

INTRODUCTION

Temporomandibular disorders (TMD) consist of heterogenous musculoskeletal disorders, characterized by joint masticatory muscles and craniofacial pain[1], in addition to restricted range of motion and temporomandibular joint (TMJ) noises2. TMD symptoms affect sleep quality, social and physical activities as well as the psychology of the individual, decreasing the quality of life3. Population-based studies showed that the global prevalence of TMD is up to %34 in adults[4].

Many TMDs cause similar symptoms, which can lead to misdiagnosis[5]. Thus, the diagnostic system should provide a complete clinical evaluation including evaluating etiological and risk factors and allowing the planning of special preventive and treatment interventions. For this purpose, many classification systems have been proposed[6,7]. However, there is no consensus on the ideal tool for diagnosing these patients.

Different classification systems have been introduced, Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD), published in 1992, was used as the most common diagnostic protocol for the investigation of temporomandibular disorders[8]; until the recommendation of Diagnostic Criteria for TMD (DC/TMD) in 2014, in which a dual axes system is used to diagnose and classify the TMD [9]. While Axis I assigns the physical diagnosis, Axis II evaluates the behavioral and psychological factors for the management of TMD[9]. The DC / TMD protocol is suitable for use in both clinical and research environments and allows the identification of patients presenting simple to complex TMD[9].

In addition, not only different departments among dentistry and maxillofacial surgeons are responsible for the TMJ and TMD diagnosis; physiotherapists also collaborate with them in the diagnosis of musculoskeletal disorders. However, there is no definition of the exact roles of these specialties and at which level of treatment to be included.

This study aims to evaluate the perspective of oral and maxillofacial surgeons in Turkey on TMD classification systems regarding experience and working conditions and identify how they adopt these tools in their clinical practice.

METHODS

Hacettepe University Ethics Committee reviewed and approved the study (GO 23/602). An online survey was conducted between September 2023- April 2024 among oral and maxillofacial surgeons using Google Forms. The survey was distributed via the Oral and Maxillofacial Surgery Association (Ağız, Çene Yüz Cerrahisi Birliği Derneği - AÇBİD) e-mailing list. The survey form consisted of 36 questions; the first part of the questionnaire was about the experience and working conditions. The experience of the participants was grouped as ←5 years, 5-10 years, 10-20 years, and →20 years. Working conditions were asked to evaluate if the participant was working at a university hospital, at a public hospital, or at a private practice and whether the participants were working multidisciplinary or as sole responsible clinicians for patients with TMD. The second part evaluated the participants' attitudes and knowledge of TMD, focusing on clinical, radiological, and psychological evaluation perspectives and choice of tools. Descriptive statistical analysis was performed using Google Forms and Excel. Statistical analyses were conducted using SPSS version 25.0. The normality of the distribution of variables was assessed with the Shapiro-Wilk test. Descriptive analyses were presented using mean ± standard deviation and median (min-max) values. For categorical variables, frequency and percentage values were used. The relationships between categorical variables were examined with the Pearson Chi-Square Test when assumptions were met and with the Freeman-Halton Test (Fisher Exact Test) when assumptions were not met. A p-value of less than 0.05 was considered to be statistically significant.

RESULTS

The survey results from 100 oral and maxillofacial surgeons were analyzed. Among them, 52% have less than five years of experience after graduation, 79 % work in university hospitals, and 85% have had the chance to work multidisciplinary. 81% of the participants think that a classification system would be beneficial for the diagnosis and treatment of TMD. Nearly half (46%) of the surgeons utilize the DC/TMD classification system for categorizing temporomandibular disorders (TMD), with 58% feeling proficient with the DC/TMD tools recognized internationally for classifying TMD.

Participants mostly think that they have adequate knowledge (66%) and experience (50%) regarding the clinical and

EurAsian Journal of Oral and Maxillofacial Surgery
Official publication of AÇBİD (Association of Oral and Maxillofacial Surgery Society)

radiological examination of TMD. Additionally, 70% routinely use examination forms during the clinical examination and assessment of TMD patients. Considering the DC/TMD, 35% of the participants think that they have adequate time for the examination of the patients.

Regarding knowledge about TMD conditions, 94% believe they have sufficient knowledge about the clinical findings and diagnostic criteria for disc displacement with reduction, while 93% of those confident in their understanding of disc displacement without reduction are specialists in oral and maxillofacial surgery. 61% of the participants feel confident regarding the clinical findings and diagnostic criteria of osteoarthritis and %69 feel confident in myofascial pain disorder.

97% of the participants think that psychological evaluation is needed for TMD patients, but only 13% are using a form for psychological examination. Awareness of the DC/TMD Axis 2 evaluation tool is at 54%, though 77% have not previously used it.

Lastly, 77% of the participants believe they understand the indications and limitations of cone-beam computed tomography (CBCT) and traditional tomography in diagnosing TMD; however, this proficiency decreases with scintigraphy and MRI, to 46% and 63% respectively. Additionally, 46% of the participants feel the need to evaluate the radiological reports.

DISCUSSION

TMDs present significant clinical challenges both in diagnosis and treatment. Additionally, patients exhibit varying responses to treatment. Therefore, it is very important to define a classification system and treatment protocols that are as easy to use and clinically applicable as possible. This way, clinicians are supported in their practice, and patients can be more easily involved in the process[10]. For a complex clinical condition like TMD, it would be highly beneficial for inexperienced physicians to have opportunities for multidisciplinary collaboration, as this would facilitate better management of the process. In this study, the majorities of participants are working at a university hospital and are within the first 5 years of their careers.

The DC/TMD protocol is currently the most widely utilized by clinicians worldwide. It standardizes the diagnosis process and provides a foundation for objective data comparison. The DC/TMD offers a practical classification of TMD, distinguishing various disorders such as myalgia, local myalgia, myofascial pain with spreading, myofascial pain with referral, arthralgia, headache attributed to TMD, disc displacement with reduction, disc displacement with reduction and limited opening, disc displacement without reduction and with limited opening, degenerative joint disease, and subluxation[11]. DC/TMD protocol is currently the most adaptable and thorough tool for a multidisciplinary approach to diagnosing TMD, incorporating the biopsychosocial model[12]. Regarding the result of the current study, most of the surgeons are familiar with DC/TMD classification system, and nearly half of them are using these criteria during the examination of TMD patients.

Although the DC/TMD is recognized as one of the most suitable and comprehensive classification systems for clinical use, it has been observed that patients may experience a loss of cooperation due to the long application time, which can lead to data loss[13]. Accordingly, most participants in this study believe that they are unable to provide enough time to patients according to the DC/TMD criteria. This may be partly due to the higher participation from university hospitals, which typically demand a relatively more intense work pace.

Literature suggests that newly graduated dentists were insufficient regarding TMD[14,15]. More than half of the participants of this study feel they have adequate knowledge and half of them feel experienced. The results may be attributed to the participation of physicians with clinical experience from different eras and the absence of standardized education and guidelines for dentists in managing TMD.

While disc displacement with and without reduction, can be better differentiated by physicians, it appears that osteoarthritis and Myofascial Dysfunction Syndrome diagnoses are more challenging for clinicians. This difference in diagnostic capability might be due to the more obvious clinical and radiological features associated with disc displacements compared to the more subtle or overlapping multifactorial symptoms of osteoarthritis and myofascial pain disorders[1].

CBCT is extensively utilized across various aspects of oral and maxillofacial surgical practice. Given its broad application, it is reasonable for clinicians to be more familiar with this imaging tool. In contrast, MRI and scintigraphy have more limited applications in this field. The participants in this study expressed a higher level of confidence in using CBCT compared to other imaging modalities, likely due to its prevalent use in clinical practice. Additionally, the literature indicates that there

EurAsian Journal of Oral and Maxillofacial Surgery
Official publication of AÇBİD (Association of Oral and Maxillofacial Surgery Society)

is poor inter-examiner reliability with MRI in the diagnosis of TMD, even among experienced practitioners[16].

Although nearly all participants acknowledged the need for psychological assessment for TMD patients, the majority reported not using a specific psychiatric assessment form. The evaluation of disorders related to the psychosocial status and pain of individuals with TMD is conducted using Axis II[9]; nevertheless, this study reveals that most maxillofacial surgeons do not utilize this tool or any other.

In conclusion, the study sheds light on the challenges and practices surrounding TMD diagnosis and classification among oral and maxillofacial surgeons in Turkey. While the DC/TMD protocol emerges as a prominent diagnostic tool, there is a need for a more practical and applicable survey. Regardless of their years of experience, it was found that most surgeons struggle with interpreting MRIs of TMD patients. Additionally, it was determined that physicians face challenges in the clinical diagnosis and treatment of psychosomatic muscular changes, rather than internal derangements as categorized in DC/TMD Axis 2.

REFERENCES

1. Scrivani, S. J., Keith, D. A. & Kaban, L. B. Temporomandibular Disorders. N Engl J Med vol. 359 www.nejm.org (2008).
2. Maini, K. & Dua, A. Temporomandibular Syndrome. (In StatPearls; StatPearls Publishing: , Treasure Island, FL, USA, 2023).
3. Gonçalves, D. A. G. et al. Temporomandibular Disorders Are Differentially Associated With Headache Diagnoses: A Controlled Study. Clin J Pain 27, (2011).
4. Zieliński, G., Pająk-Zielińska, B. & Ginszt, M. A Meta-Analysis of the Global Prevalence of Temporomandibular Disorders. Journal of Clinical Medicine vol. 13 Preprint at https://doi.org/10.3390/jcm13051365 (2024).
5. González-González, A. M. & Herrero, A. J. A systematic review of temporomandibular disorder diagnostic methods. Cranio - Journal of Craniomandibular and Sleep Practice 42, 348–360 (2024).
6. Jacobson, A. The congenitally missing upper lateral incisor: A retrospective study of orthodontic space closure versus restorative treatment. American Journal of Orthodontics and Dentofacial Orthopedics 120, 567–568 (2001).
7. Velly, A. M. & G O R N I T S K Y †, M. Heterogeneity of Temporomandibular Disorders: Cluster and Case-Control Analyses.
8. Dworkin, S. F. & LeResche, L. Research diagnostic criteria for temporomandibular disorders: review, criteria, examinations and specifications, critique. J Craniomandib Disord 6, 301–55 (1992).
9. Schiffman, E. et al. Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: Recommendations of the International RDC/TMD Consortium Network* and Orofacial Pain Special Interest Group†. J Oral Facial Pain Headache 28, 6–27 (2014).
10. Yildiz, S., Balel, Y. & Tumer, M. K. Evaluation of prevalence of temporomandibular disorders based on DC / TMD Axis I diagnosis in Turkish population and correlation with Axis II. J Stomatol Oral Maxillofac Surg 124, (2023).
11. Peck, C. C. et al. Expanding the taxonomy of the diagnostic criteria for temporomandibular disorders. J Oral Rehabil 41, 2–23 (2014).
12. Warzocha, J., Gadomska-Krasny, J. & Mrowiec, J. Etiologic Factors of Temporomandibular Disorders: A Systematic Review of Literature Containing Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) and Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) from 2018 to 2022. Healthcare (Switzerland) vol. 12 Preprint at https://doi.org/10.3390/healthcare12050575 (2024).
13. Yildiz, S., Balel, Y. & Tumer, M. K. Evaluation of prevalence of temporomandibular disorders based on DC / TMD Axis I diagnosis in Turkish population and correlation with Axis II. J Stomatol Oral Maxillofac Surg 124, (2023).
14. Al-Khotani, A., Naimi-Akbar, A., Björnsson, O., Christidis, N. & Alstergren, P. Professional knowledge among Swedish and Saudi healthcare practitioners regarding oro-facial pain in children and adolescents. J Oral Rehabil 43, 1–9 (2016).
15. Al-Huraishi, H. A. et al. Newly graduated dentists' knowledge of temporomandibular disorders compared to specialists in Saudi Arabia. BMC Oral Health 20, (2020).
16. Widmalm, S. E., Brooks, S. L., Sano, T., Upton, L. G. & McKay, D. C. Limitation of the diagnostic value of MR images for diagnosing temporomandibular joint disorders. Dentomaxillofacial Radiology 35, 334–338 (2006).