Journal of Craniomaxillofacial Research

Vol. 4, No. 1 Winter 2017

Prevalence of temporomandibular disorder in patients with chronic headache

Shamsolmoulouk Najafi [1,2*], Abbas Tafakhori [3], Mohammad Javad Kharrazi Fard [4], Laleh Radfar [5]

1. Department of Oral Medicine, School of Dentistry, Tehran University of Medical Sciences, International Campus, Tehran, Iran.
2. Dental Research Center, Dentistry Research Institute, Tehran University of Medical Sciences, Tehran, Iran.
3. Department of neurology, Imam Khomeini hqspital, Tehran University of Medical Sciences, Tehran, Iran.
4. Dental Research Center, Dentistry Research Institute, Tehran University of Medical Sciences, Tehran, Iran.
5. Dentistry student, School of Dentistry, International Campus, Tehran University of Medical Sciences, Tehran, Iran.

ARTICLE INFO

Article Type:
Original Article

Received: 12 Oct 2016
Revised: 15 Nov 2016
Accepted: 29 Des 2016

**Corresponding author:*

Shamsolmolouk Najafi

North amir abad avenue, school of dentistry, department of oral medicine.

Tel: +98-912-3236378
Fax: +98-21-84902473
Email: Najafi_drsh@yahoo.com

ABSTRACT

Background and Objectives: Temporomandibular disorder (TMD) refers to chronic pain of the temporomandibular joint (TMJ) associated with headache, neck pain, shoulder pain or back pain. The origin of these pains may be related to TMD. Many patients with chronic headache undergo different treatments for long periods of time with no cure. These headaches can be treated with proper diagnosis. This study aimed to assess the prevalence of TMD in patients with chronic pain.

Materials and Methods: In this cross-sectional study, the prevalence of TMD was evaluated in 119 patients with chronic headache. Patients with headache for more than 6 months and those whose headache did not improve with medication were included. The research diagnostic criteria for temporomandibular disorders RDC/TMD (AXIS I, AXISII) questionnaire was used for assessment of TMD. Independent t-test was used to assess the correlation of TMD with headache and age. Chi square test was used to compare males and females.

Results: A total of 119 patients with a mean age of 36.14±10.86 years (range 18-65 years) were evaluated. Of patients, 30% were males and 70% were females. The prevalence of TMD was 66%. The prevalence of mayofacial pain dysfunction syndrome (MPDS) was 11%. The prevalence of pain, clenching, trismus and clicking was 15.1%, 4.2%, 5% and 10.1%, respectively.

Conclusion: The prevalence of TMD was high in patients with chronic headache. Thus, assessment of TMJ is recommended in diagnostic workup and treatment of patients with chronic headache.

Keywords: Temporomandibular disorder; Chronic pain, Headache.

Introduction

Temporomandibular disorder (TMD) is the third most common cause of pain after headache and backache [1]. This disorder is associated with a common clinical pain involving the muscles of mastication, temporomandibular joint (TMJ) and its surrounding tissues. It may manifest as pain in the TMJ or only involve the movement of the joints or cause clicking and crepitus during movement [2]. The prevalence of TMD varies from 8-15% in adults and this condition is more common in females [3]. The origin of pain is often not known but neurological problems, genetic defects or physiological factors commonly play a role in this regard [4-9]. The TMD pain negatively affects daily activities, psychological function and quality of life of patients. Treatment cost of TMD is high and was reported to be 4 billion dollars in the United States in the past century [10]. TMD is characterized by pain and dysfunction of the TMJ and muscles of mastication. Involvement of the temporal, occipital and frontal

areas, head and ear has also been reported [11,12]. Depression may occur as well [13]. Initial symptoms of TMD include earache, tinnitus, vertigo and hearing loss. Tinnitus has been reported by most patients with TMD [12,14,15]. Vertigo has a prevalence of 40-70% in patients with TMD [12]. Earache is a common dysfunction [13] in TMD and anatomical and neuromuscular association of TMJ and the middle ear has been mentioned in many studies [15,16].

The TMD is categorized as a psychological disease associated with chronic pain. This condition is multi-factorial and caused by physical and psychological factors alone or in combination with each other [17, 18]. Unilateral or bilateral TMJ pain, mouth opening limitation, limitation in lateral and protrusive movements of the mandible, clicking, facial deformities [19, 20], headache, tinnitus, earache, and ear fullness are among other common symptoms of TMD [21]. TMD is also known as a primary cause of headache [22]. Chronic pain in TMD may be associated with headache, neck pain and shoulder pain [23,24].

Headache is a common heterogeneous disorder, which can be primary (due to no other cause) or secondary (secondary to other diseases) [22]. It is a common major symptom of TMD [25]. Several types of headaches have been reported in association with TMD, the most common forms include cluster headache, tension headache and migraine headache; 80-90% of these headaches are episodic but 13% are chronic. One-third of TMD patients develop episodic headaches. Cluster headaches are often mistaken for trigeminal neuralgia, sinus pain or toothache [26] and 45% of these patients are first recognized by dentists [27]. In one previous study, 23% of such patients had a primary diagnosis related to teeth or jaws [28]. One retrospective study evaluated 14 patients with cluster headaches and showed that six had dental problems, four had tooth extraction, three had occlusal problems and two had failed endodontic treatment [29]. Diagnosis of TMD may be delated for three to five years [30,31]. Patients with chronic headaches are treated with different medications for long periods of time and many of them do not improve. The origin of these pains may be TMD. These patients may be treated after correct diagnosis. In case of finding an association between headache and TMD, it may be recommended to refer patients with chronic headaches to a dentist for TMJ examination. Thus, this study aimed to assess the prevalence of TMD in patients with chronic headache.

Materials and Methods

This cross-sectional study assessed the prevalence of TMDs in patients with chronic headache in headache clinic of Imam Khomeini Hospital. Since we used regression analysis in our study and a minimum of 10 samples were required per each independent variable and also the fact that maximum level of independent variable in our study was 12, sample size was calculated to be 120. The inclusion criteria were patients with headache for over six months and patients whose headache did not improve with medications. The exclusion criteria were systemic diseases such as rheumatoid arthritis, joint problems, lupus erythematosus and unwillingness for participation in the study. Patients signed informed consent forms prior to participation in the study. To assess TMD, the research diagnostic criteria for temporomandibular disorders (RDC/TMD) standard questionnaire was used (confirmed by a neurologist). The RDC/TMD (axis I and II) was designed in 1992. A more recent version of it was introduced in 2001 (DC/TMD). It is based on physical examination and complete medical history and is used to determine TMD and facial pain. Questions in this questionnaire cover the following topics:

-Patients' demographic information including age, gender, occupation, patients' general health status and oral and dental health.

-Pain in the maxillofacial region, TMJ, anterior to ears or temporal area in the past one month.

-History of pain, severity of pain, impaired daily activities, pain of the joints.

-History of any medical intervention or visiting a physician.

-Jaw opening limitation, locked jaw, limitations in eating, clicking during mastication.

-Parafunctional habits (bruxism, clenching) during the day or night.

-Systemic joint disease, rheumatoid arthritis, lupus erythematosus, family history of disease, pain in any other joint.

-History of joint trauma.

-History of migraine, tension headache, or any other type of headache in the past six months.

The second phase of RDC/TMD axis I is physical examination of patients. Pain was assessed by bilater-

al palpation of the face. Each patient was requested to show the painful areas. For TMJ examination, the patients were asked to open their mouth as wide as they can and the distance between the incisal edges of the maxillary and mandibular incisors was measured by a ruler. If this distance was less than 40mm, the patient was diagnosed with mouth opening limitation. Tenderness was evaluated during mouth opening. Clicking was also determined by touching the area with fingers. Masticatory muscles including the masseter, lateral and medial pterygoids and temporalis were also palpated. Level of stress, anxiety and concern was verbally questioned and recorded in a questionnaire (RDC/TMD (axis II)). Panic, Tremor, fear for no reason, irritability, hyper-sensitivity, restlessness, fear of the future and negative thoughts were all questioned. We calculated the frequency and percentage of TMD and headache. Independent t-test was applied to assess the correlation of TMD with age. Chi square test was used to assess the correlation of TMD with gender.

Results

This study was conducted on 119 patients including 36 males and 83 females. Figure 1 shows the frequency of different types of chronic headache in patients.

Of 119 patients with chronic headache, 70% were females and 30% were males. The mean age of patients was 36.14±10.86 years (range 18-65 years). A total of 79 patients (66%) had TMD; out of which, 28 (35.4%) were males and 51 (64.6%) were females.

Our results showed that the most and the least common types of chronic headache in patients were combination headache and cluster headache, respectively. Considering the 66.4% prevalence of TMD in patients with chronic headache, the most common symptom in patients with TMD was pain with a prevalence of 15.1%, followed by clicking (10.1%). Trismus was only seen in 5% of patients with chronic headache and 95% of patients had mouth opening over 40mm, which was normal.

Table 1 shows the prevalence of clicking, clenching, trismus, muscle involvement and TMJ pain in TMD patients.

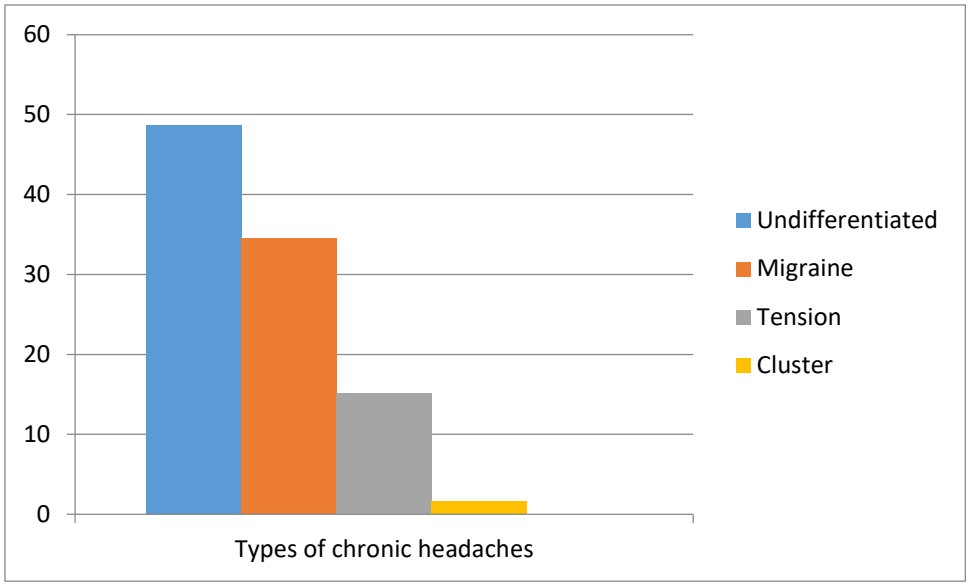

Figure 1. Frequency of different types of chronic headache in patients.

Disorder	TMD Percentage/number		Clicking Percentage/ number		Clenching Percentage/ number		Trismus Percentage/ number		MPDS Percentage/ number		Pain Percentage/number	
No	33.6	40	88.9	107	95.8	114	95	113	89.1	106	84.9	101
Yes	79	66.4	10.1	12	4.2	5	5	6	10.9	13	15.1	18
Total	100	119	100	119	100	119	100	119	100	119	100	119

Table 1. Prevalence of clicking, clenching, trismus, muscle involvement and TMJ pain in TMD patients,

Discussion

This study assessed the prevalence of TMD in patients with chronic headache. The results showed that about 66% of those with headache had TMD. The prevalence of TMD was 64.6% in females while this rate was 35.4% in males. These results showed that chronic headache and TMD in females was 2.3 and 1.8 times higher than that in males. The prevalence of TMD in our study (66.4%) was in line with the results of many previous studies such that Okason et al. reported the prevalence of TMD in patients with headache to be 50-60% in general population [32]. However, Solberg et al. reported the prevalence of TMD to be 76% [32]. This rate was reported to be 88% in a Finish population by Helkimo et al, [32] and 60% in dental assistants [32]. The reason for differences in prevalence of TMD may be different diagnostic criteria used for screening of patients [33].

In our study, the prevalence of TMD was 65% in females while this rate was 35.4% in males. These results showed that chronic headache and TMD in females was 2.3 and 1.8 times higher than those in males [34]. Locker reported that TMD was more prevalent in those younger than 45 years [35]. Our results were in line with those of others and it may be concluded that age can affect the occurrence of TMD. Similarly, Pedroni et al, in 2003 reported that TMD was four times more prevalent in females [34]. The same results were obtained in our study and it may be concluded that gender affects the occurrence of TMD and chronic headache. Similarly, Crystal (2010), Manfredini (2011), Rasmussen (1991), Sahler (2012) and Slade (2013) reported the prevalence of TMD to be 45.3% and estimated the prevalence of headache to be 32%. The oldest age range for the occurrence of TMD has been reported to be 30-40 years and incidence of headache has been in the age of 30-39 years. The prevalence of TMD (myofascial type) in females was 3.3 times higher than that in males. Tension headache was 1.6-3 times more prevalent in females. Statistical differences in values may be due to differences in the study population or assessment of a specific type of headache, TMD or specific population group who may have a higher prevalence of TMD or headache [36]. In contrast to the results of most previous studies, Yatani and List and Gray found no significant difference in occurrence of TMD between males and females [35,37]. On the other hand, the prevalence of TMD and tension headache in headache patients was 66% and 15%, respectively. Ariovaldo Alberto da Silva Junio e al, in 2013 showed that muscular TMD occurred in 55% of 92 patients with headache. This rate was 66% for TMD out of 119 patients in our study. Slight difference in values may be due to different types of disorders evaluated. Moreover, the mean age of patients with chronic headache was 16-68 years in their study, which was close to our age range (18-65 years). Occurrence of chronic daily headache in their study was 92% in females and 8% in males while chronic headache had a prevalence of 70% in females and 30% in males in our study. Thus, difference in values may be due to different sample size, type of population and type of headache [38].

Conclusion

TMD had a relatively high prevalence in patients with chronic headache. Pain and clicking had a higher prevalence among TMD symptoms. Thus, further examination of TMJ is recommended in patients with chronic headache to start diagnostic workup and treatment in case of TMD and prevent further complications, pain and related cost and increase the quality of life of patients. Similar studies with larger sample sizes are required to better elucidate this topic. Also, the correlation of pain intensity in TMD patients with chronic headache should be evaluated.

References

[1] Dworkin SF. Temporomandibular Disorder (TMD) pain–related disability found related to depression, nonspecific physical symptoms, and pain duration at 3 international sites. Journal of Evidence Based Dental Practice. 2011;11(3):143-4.

[2] De Leeuw R, Klasser GD. Orofacial pain: guidelines for assessment, diagnosis, and management: Quintessence Chicago; 2008.

[3] Dworkin SF, Huggins KH, LeResche L, Von Korff M, Howard J, Truelove E, et al. Epidemiology of signs and symptoms in temporomandibular disorders: clinical signs in cases and controls. The Journal of the American Dental Association. 1990;120(3):273-81.

[4] Arendt-Nielsen L, Graven-Nielsen T. Central sensitization in fibromyalgia and other musculoskeletal disorders. Current pain and headache reports. 2003;7(5):355-61.

[5] Graven-Nielsen T, Arendt-Nielsen L. Peripheral and central sensitization in musculoskeletal pain disorders: an experimental approach. Current rheumatology reports. 2002;4(4):313-21.

[6] Mense S. Pathophysiologie des Rückenschmerzes und seine Chronifizierung. Der Schmerz. 2001;15(6):413-7.

[7] Benjamin S, Morris S, McBeth J, Macfarlane GJ, Silman AJ. The association between chronic widespread pain and mental disorder: a population-based study. Arthritis & Rheumatism. 2000;43(3):561.

[8] Gureje O, Von Korff M, Kola L, Demyttenaere K, He Y, Posada-Villa J, et al. The relation between multiple pains and mental disorders: results from the World Mental Health Surveys. PAIN®. 2008;135(1):82-91.

[9] Linton SJ. A review of psychological risk factors in back and neck pain. Spine. 2000;25(9):1148-56.

[10] Jacobs T, Sawaengkit P. National Institute of Dental and Craniofacial Research efficacy trials of bionator Class II treatment: a review. The Angle orthodontist. 2002;72(6):571-5.

[11] Lam DK, Lawrence HP, Tenenbaum HC. Aural symptoms in temporomandibular disorder patients attending a craniofacial pain unit. Journal of orofacial pain. 2001;15(2).

[12] Parker WS, Chole RA. Tinnitus, vertigo, and temporomandibular disorders. American Journal of Orthodontics and Dentofacial Orthopedics. 1995;107(2):153-8.

[13] Kuttila S, Kuttila M, Le Bell Y, Alanen P, Jouko S. Aural symptoms and signs of temporomandibular disorder in association with treatment need and visits to a physician. The Laryngoscope. 1999;109(10):1669-73.

[14] Rubinstein B. IS THERE A LINK? 1993.

[15] Cox KW. Temporomandibular disorder and new aural symptoms. Archives of Otolaryngology–Head & Neck Surgery. 2008;134(4):389-93.

[16] Tuz HH, Onder EM, Kisnisci RS. Prevalence of otologic complaints in patients with temporomandibular disorder. American Journal of Orthodontics and Dentofacial Orthopedics. 2003;123(6):620-3.

[17] Dworkin SF, Massoth DL. Temporomandibular disorders and chronic pain: disease or illness? The Journal of prosthetic dentistry. 1994;72(1):29-38.

[18] Suvinen TI, Reade PC, Kemppainen P, Könönen M, Dworkin SF. Review of aetiological concepts of temporomandibular pain disorders: towards a biopsychosocial model for integration of physical disorder factors with psychological and psychosocial illness impact factors. European journal of pain. 2005;9(6):613.

[19] Catanzariti J-F, Debuse T, Duquesnoy B. Chronic neck pain and masticatory dysfunction. Joint Bone Spine. 2005;72(6):515-9.

[20] Vélez A, Restrepo C, PELÁEZ-VARGAS A, Gallego G, Alvarez E, Tamayo V, et al. Head posture and dental wear evaluation of bruxist children with primary teeth. Journal of oral rehabilitation. 2007;34(9):663-70.

[21] Uemoto L, Macedo MEG, Alfaya TA, Souza FNd, Barcelos R, Gouvêa CVD. Impact of supportive therapy for otological changes in patients with temporomandibular joint disorders. Revista Dor. 2012;13(3):208-12.

[22] Silberstein S, Olesen J, Bousser M, Diener H, Dodick D, First M, et al. International Headache Society. The International Classification of Headache Disorders, (ichd-ii)—revision of criteria for 8.2 Medication-overuse headache. Headache. 2005;45(10):1424-5.

[23] Kitsoulis P, Marini A, Iliou K, Galani V, Zimpis A, Kanavaros P, et al. Signs and symptoms of temporomandibular joint disorders related to the degree of mouth opening and hearing loss. BMC Ear, Nose and Throat Disorders. 2011;11(1):5.

[24] Wright EF, Clark EG, Paunovich ED, Hart RG. Headache improvement through TMD stabilization appliance and self-management therapies. CRANIO®. 2006;24(2):104-11.

[25] Vierola A, Liisa Suominen A, Ikävalko T, Lintu N, Lindi V, Lakka H-M, et al. Clinical signs of temporomandibular disorders and various pain conditions among children 6 to 8 years of age: the PANIC study. Journal of orofacial pain. 2012;26(1):17.

[26] Balasubramaniam R, Klasser GD, Delcanho R. Trigeminal autonomic cephalalgias: a review and implications for dentistry. The Journal of the American Dental Association. 2008;139(12):1616-24.

[27] Bahra A, Goadsby P. Diagnostic delays and mismanagement in cluster headache. Acta neurologica scandinavica. 2004;109(3):175-9.

[28] Van Alboom E, Louis P, Van Zandijcke M, Crevits L, Vakaet A, Paemeleire K. Diagnostic and therapeutic trajectory of cluster headache patients in Flanders. Acta Neurologica Belgica. 2009;109(1):10.

[29] Bittar G, Graff-Radford SB. A retrospective study of patients with cluster headaches. Oral surgery, oral medicine, oral pathology. 1992;73(5):519-25.

[30] Rozen TD, Fishman RS. Cluster headache in the United States of America: demographics, clinical characteristics, triggers, suicidality, and personal burden. Headache: The Journal of Head and Face Pain. 2012;52(1):99-113.

[31] Van Vliet J, Eekers P, Haan J, Ferrari M. Features involved in the diagnostic delay of cluster headache. Journal of Neurology, Neurosurgery & Psychiatry. 2003;74(8):1123-5.

[32] Okeson JP. Management of temporomandibular disorders and occlusion: Elsevier Health Sciences; 2014.

[33] Wright EF. Referred craniofacial pain patterns in patients with temporomandibular disorder. The Journal of the American Dental Association. 2000;131(9):1307-15.

[34] Pedroni C, De Oliveira A, Guaratini M. Prevalence study of signs and symptoms of temporomandibular disorders in university students. Journal of oral rehabilitation.2003;30(3):283-9.

[35] Kamisaka M, Yatani H, Kuboki T, Matsuka Y, Minakuchi H. Four-year longitudinal course of TMD symptoms in an adult population and the estimation of risk factors in relation to symptoms. Journal of orofacial pain. 2000;14(3).

[36] Conti P, Costa Y, Gonçalves D, Svensson P. Headaches and myofascial temporomandibular disorders: overlapping entities, separate managements? Journal of oral rehabilitation. 2016;43(9):702-15.

[37] List T, Wahlund K, Larsson B. Psychosocial functioning and dental factors in adolescents with temporomandibular disorders: a case-control study. Journal of orofacial pain. 2001;15(3).

[38] Silva Junior AA, Krymchantowski AV, Gomes JBL, Leite FMG, Alves BMF, Lara RP, et al. Temporomandibular disorders and chronic daily headaches in the community and in specialty care. Headache: The Journal of Head and Face Pain. 2013;53(8):1350-5.

Please cite this paper as:
Najafi Sh, Tafakhori A, Kharrazi Fard M, Radfar L; Prevalence of temporomandibular disorder in patients with chronic headache. J Craniomaxillofac Res 2017; 4(1): 301-306