



A 10-year overview of chronic orofacial pain in patients at an oral medicine center in Iran

Jamile Bigom Taheri, Fahimeh Anbari, Sahba Khosousi Sani, Seyed Mohammad Mirmoezi, Hamid Reza Khalighi

Oral Medicine Department, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Background: Orofacial pain is defined as pain felt in the soft or hard tissues of the head, face, mouth, and neck. Chronic orofacial pain is often challenging to diagnose and difficult to treat. Due to the lack of available information about the prevalence and clinical form of orofacial pain, this study aimed to evaluate the characteristics of chronic orofacial pain in patients presenting at the Department of Oral Medicine of Shahid Beheshti Dental School between 2012 and 2022.

Methods: In this retrospective study, we evaluated the files of 121 patients at the Department of Oral and Maxillofacial Diseases of Shahid Beheshti Dental School, which were completed during 2012–2022. We extracted the required information from these files.

Results: In total, 121 files were included in the study (30 male, 91 female). The mean age of the patients was 43.68 ± 16.79 years. The most common diagnosis in patients with chronic orofacial pain was temporomandibular disorders (TMD) (55.3%). Among pain-related factors, psychological factors showed the highest frequency (30.5%). Opening and closing (43.8%) had the highest frequency among factors that increased pain, and the rest (6.6%) had the highest frequency among the factors that reduced pain. Most patients experienced unilateral pain over the masseter area. Most patients reported their pain intensity to be greater than 7 in the verbal analog scale (VAS). The most common symptom associated with pain was joint noise (37.1%).

Conclusion: A ten-year retrospective evaluation of patient files showed that more than half of the patients with chronic orofacial pain had TMD.

Keywords: Chronic Pain; Facial Pain; Prevalence.



This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.



INTRODUCTION

Orofacial pain is defined as pain felt in the soft or hard tissues of the head, face, mouth, and neck. This pain may originate in the teeth, periodontal tissues, muscles, blood vessels, temporomandibular joint, salivary glands, or bones [1]. This variation in the etiology of orofacial pain causes a wide range of diagnoses. As a distinct clinical entity, orofacial pain can affect up to 7% of the population [2]. The complexity of anatomical structures in the

orofacial area and the extent of the cerebral cortex allocated to these structures makes pain in this area particularly important [3]. Acute oral pain is usually easily diagnosed and treated, but chronic pain in this area is often difficult to diagnose and treat [4].

The ability to diagnose and treat a patient with pain largely depends on the knowledge of the mechanisms and characteristics of pain in its various manifestations [5]. The assessment, diagnosis, and management of orofacial pain is often a complex and multifactorial process because many patients with chief complaints experience other

Received: April 28, 2022 • Revised: July 11, 2022 • Accepted: July 18, 2022

Corresponding Author: Hamid Reza Khalighi, Assistant Professor of Oral Medicine, Oral Medicine Department, School of Dentistry, Shahid Beheshti University of Medical Sciences, Daneshjoo Blvd, Evin, Chamran high way, Tehran, Iran

Tel: +98 9112335621 E-mail: dr.hrk92@gmail.com

Copyright© 2022 Journal of Dental Anesthesia and Pain Medicine

Table 1. Causative agents of pain

Pain cause	Trauma	Dental treatment	Nervous	Others
Frequency	5 (4.1%)	22 (18.18%)	37 (30.5%)	57 (47.1%)

Table 2. Frequency of environmental factors that cause pain

Environmental factors affecting pain	Does not affect	Onset of pain	Increase pain	Reduce pain
Cold	93 (76.8%)	9 (7.4%)	19 (15.7%)	0 (0%)
Heat	108 (89.2%)	5 (4.1%)	5 (4.1%)	3 (2.4%)
Light	119 (98.3%)	0 (0%)	2 (1.6%)	0 (0%)
Pressure	94 (77.6%)	19 (15.7%)	7 (5.7%)	1 (0.8%)
Activity	100 (82.6%)	11 (9%)	5 (4.1%)	5 (4.1%)
Eating	40 (33%)	45 (37.1%)	33 (27.2%)	3 (2.4%)
Opening and closing of the mouth	46 (38%)	53 (43.8%)	22 (18.1%)	0 (0%)
Rest	104 (85.9%)	5 (4.1%)	4 (3.3%)	8 (6.6%)

Table 3. Locations of pain

	Location of pain	Frequency
Single location	Masseter	17 (14%)
	TMJ	21 (17.3%)
	Lip	1 (0.8%)
	Gingiva	10 (8.2%)
	Tongue	8 (6.6%)
	Previously extracted tooth area	2 (1.6%)
	Whole oral cavity	11 (9%)
	Face	3 (2.4%)
	Temporal	3 (2.4%)
	Multiple location	Masseter and temporal
Masseter and temporal and zygoma		5 (4.1%)
Temporal and zygoma		3 (2.4%)
Oral cavity and face		3 (2.4%)
Masseter and TMJ and temporal		6 (4.9%)
Masseter and TMJ		18 (14.8%)
	Temporal and frontal	2 (1.6%)
Total	121 (100%)	

TMJ, temporomandibular joint.

problems that affect their pain. Determining the clinical forms of chronic pain and its various factors strengthens the process of diagnosis and treatment. A comprehensive recording of a patient’s medical history will help clinicians make a proper diagnosis [6]. Therefore, it is necessary to study the characteristics of chronic orofacial pain to improve diagnosis and treatment. Due to the lack of available evidence regarding the prevalence and clinical form of orofacial pain, this study aimed to evaluate the characteristics of chronic orofacial pain in

clients of the Department of Oral Medicine of Shahid Beheshti Dental School between 2012 and 2022.

METHODS

In this retrospective study, all pain patient files in the Department of Oral Medicine of Shahid Beheshti Dental School, which were completed during the years 2012–2022, were evaluated. The following information was extracted from the files: the patient's age and sex, the onset of pain, triggering factors of the pain, factors that aggravate or alleviate the pain, side and location of the pain, emotional perceptual dimension, sensory and pain assessment, pain intensity based on the verbal analog scale, associated symptoms, previous treatments, medications received for the present pain, and the patient's final diagnosis. Incomplete and distorted files, and those outside the mentioned date range, were excluded.

This study was reviewed and approved by the ethics committee of Shahid Beheshti University of Medical Sciences, and the following code of ethics was assigned: IR.SBMU.DRC.REC.1398.060.

RESULTS

In this study, 121 of 151 files were included, and the

Table 4. Dimensions of pain

Pain dimensions	Pain features	Frequency
Pain sensory	Throbbing	8 (6.6%)
	Pricking	36 (29.7%)
	Burning	16 (13.2%)
	Compression	8 (6.6%)
	Hot	3 (2.4%)
	Itching and tingling	10 (8.2%)
	Dull	3 (2.4%)
	Compressive and sensitive	30 (24.7%)
	Burning and dull	2 (1.6%)
	Burning and itching and tingling	3 (2.4%)
Pain affective	Throbbing and compression	6 (4.9%)
	Wretched	7 (5.7%)
	Boring	63 (52%)
	Horrible	8 (6.6%)
	Exhausting	12 (9.9%)
Pain evaluation	None	40 (33%)
	Tiring	25 (30/5%)
	Troublesome	32 (26.4%)
	Annoying	20 (16.5%)
	Miserable	2 (1.6%)
	Intense	8 (6.6%)
Pain miscellaneous	None	26 (31/7%)
	Unbearable	28 (23.1%)
	Radiating	33 (27.2%)
Pain miscellaneous	Numb	3 (2.4%)
	None	30 (24.7%)

remaining 30 files were excluded based on the exclusion criteria. The number of women was more than 3 times that of men (30 male, 91 female), and the mean age recorded in the files was 43.68 ± 16.79 years (male, 58.19 years; female, 33.7 years). Among the factors reported to cause pain in patients, psychological factors showed the highest frequency. Table 1 shows the frequency of pain-causing factors among the patients.

Among the aggravating and alleviating factors of pain, eating and rest had the highest frequency for the former and latter, respectively. Table 2 lists the frequencies of the pain-increasing and pain-reducing factors.

Most patients experienced pain on one side of their face, with 43 (35.5%) experiencing pain on the right side, 37 (30.5%) on the left side, and 41 (33.8%) on both sides. The most common sites of pain in the patients were on the face over the masseter area, front of the ear, and the temporal area. Table 3 shows the frequency of pain areas

Table 5. Pain intensity

Pain intensity (VAS)	Frequency
3	7 (5.7%)
4	2 (1.6%)
5	14 (11.5%)
6	15 (12.3%)
7	16 (13.2%)
8	25 (20.6%)
9	12 (9.9%)
10	30 (24.7%)
Total	121 (100%)

VAS, visual analog scale.

in the patients.

In a study of different dimensions of pain, shooting pains, exhaustion, and diffused pains, were common features reported by the patients. Table 4 shows the frequencies of the different dimensions of pain reported by the patients.

More than 75% of the patients reported their pain intensity to be greater than 6 on the verbal analog scale (VAS: 0–10). Table 5 lists the severity of pain reported by the patients. The most common symptom associated with pain was joint noise. Table 6 shows the frequencies of pain-associated symptoms in the patients; the most common diagnosis was temporomandibular disorders. Table 7 lists the frequencies of the final diagnoses of the included patients.

Evaluation of previous treatments revealed that most patients did not receive appropriate treatment for their pain. Table 8 shows the frequencies of the patients' previous treatments.

DISCUSSION

The results of this study indicate that the number of female patients with orofacial pain was significantly higher than that of male patients (75% vs. 25%). Given that the most common diagnosis among patients in this study was temporomandibular disorders (TMD) (osteogenic or myogenic), our result is consistent with other studies that reported that TMD was seen 3 to 9

Table 6. Symptoms accompanied by pain

Symptoms accompanied by pain	Anesthesia	Drooling	Nasal congestion	Joint sound	Parasthesia	None
Frequency	2 (1.6%)	7 (5.7%)	6 (4.9%)	45 (37.1%)	7 (5.7%)	54 (44.6%)

Table 7. Final diagnosis of chronic pain

	TMD	BMS	Odontogenic	AFP	Herpes zoster	Cluster headache	Neuralgia	Fibro myalgia
Final diagnosis	67 (55.3%)	13 (10.7%)	11 (9%)	14 (11%)	1 (0.8%)	3 (2.4%)	11 (9%)	1 (0.8%)

TMD, temporomandibular disorder; BMS, burning mouth syndrome; AFP, atypical facial pain.

Table 8. Treatment used before referral

	Treatments	Frequency
Previous treatment	Night guard	10 (8.2%)
	Tooth extraction	11 (9%)
	RCT	4 (3.3%)
	None	75 (61.9%)
Previous medication	Prednisolone	2 (1.6%)
	Mouthwash	4 (3.3%)
	Carbamazepine	15 (12.3%)
	Analgesics	20 (16.5%)
	Vitamins	2 (1.6%)
	Diphenhydramine	3 (2.4%)
	Antibiotics	8 (6.6%)
	Propranolol	2 (1.6%)
	Nystatin	2 (1.6%)
	NSAIDs	5 (4.1%)
	Diazepam	7 (5.7%)
	Gabapentin	3 (2.4%)
	Sumatriptan	1 (0.8%)
	Doxepin	1 (0.8%)
	Amitriptyline	1 (0.8%)
Baclofen	1 (0.8%)	

times more often in women than in men [7-9]. There are several possible reasons for the higher incidence of TMD in women, including less tolerance to pain, higher levels of stress, and more frequent psychological disturbances [10]. Some authors believe that differences in social and cultural experiences of pain and in the sexual and hormonal differences in the neurobiology of the brain cause painful disorders to be more common in women [11]. In this study, the number of female patients was higher in all categories of pain, except atypical facial pain and cluster headaches.

In this study, the mean patient age was 43.68±16.78 years. The youngest patient was 15 years old and the oldest was 80 years old. Most patients were between 20 and 40 years of age. Although TMD can occur in all age

groups, our results are consistent with those of Darbandi et al., Madani et al., and Dworkin et al. [7,8,12].

The findings of this study showed that the most common cause of pain in the included patients was eating, and the most common cause of pain relief was rest. Other studies have reported the exacerbation of pain following masticatory muscle function [13-15]. It may be due to the fact that TMD was the most common diagnosis in our patients. In teeth-related pain, cold and heat often affect patients' pain, but in our patients with chronic oral pain, thermal changes showed no effect [16]. This can be used to differentiate toothache and chronic orofacial pain; while taking a thorough history, clinicians can differentiate them easily and prevent unnecessary treatment.

Our patients reported their pain to be unilateral in two-thirds of the cases and bilateral in one-third of the cases, showing a unilateral pattern that is similar between chronic orofacial pain and toothache. This similarity may have led to errors in the diagnostic process. Santana-Mora et al. (2009), examining 50 patients with TMD, reported 25 patients to have pain on the right side and 25 on the left [17]. In a 2004 study by Allerbring et al., 26 out of 50 patients reported orofacial pain on both sides, which was slightly more than that on each side alone [18].

In the present study, joint noise was the most common symptom associated with pain. In a 2002 study by Madani et al., joint noise was the most commonly associated symptom in patients [8]. Furthermore, Karthik and Nguyen, in their 2017 studies, reported a significant relationship between joint noise and TMD problems [19, 20]. In contrast, Manfredini et al.'s 2014 study showed no association between articular sounds and TMD [21]. Temporomandibular joint (TMJ) sounds are probably the

result of changes in the tissues inside the TMJ capsule, which may be one of the signs of rupture of this joint [19].

The most common causes of pain reported in this study were psychological factors. In 2007, Swain et al. reported that anxiety and depression are common causes of pain [22]. In a study by Madani et al., the role of stress among other factors was reported to be the most significant in the incidence of TMD [23]. Rollman and Gillespie showed that people with this disorder have a reduced ability to deal with problems in their daily lives and that psychological stimuli can cause anger, intense and prolonged muscle contractions, and increased pain, leading to distress [24].

In this study, the most common sites of orofacial pain were the masseter (44.6%), TMJ (37.1%), and temporal area (22.3%). In a study by Benoliel et al., of 328 patients with orofacial pain, 120 (36.5%) patients with masseter pain were reported [25]. Considering the differences among methods of examination, collecting, and analyzing data in different studies, the results may show various clinical manifestations in patients with orofacial pain. Moreover, patients' symptoms may vary over time [26].

In this study, 75% of the patients had not received any treatment before a referral. In a 2006 study on Chinese people in Hong Kong with orofacial pain, 79.7% of the patients had not undergone any previous treatment [27]. This condition indicates a lack of awareness about orofacial pain, and so the existence of a center with a specific approach to the diagnosis and treatment of orofacial pain may be necessary.

In conclusion, a ten-year retrospective evaluation of patient files showed that more than half of the patients with chronic orofacial pain had TMD. Clinicians should pay more attention to the TMJ examination and its appropriate treatment because of the importance of early diagnosis of TMD.

AUTHOR ORCIDS

Jamile Bigom Taheri: <https://orcid.org/0000-0003-0955-8468>
Fahimeh Anbari: <https://orcid.org/0000-0002-0601-787X>
Sahba Khosousi Sani: <https://orcid.org/0000-0003-2074-9337>
Seyed Mohammad Mirmoezi: <https://orcid.org/0000-0001-9500-3092>
Hamid Reza Khalighi: <https://orcid.org/0000-0003-2346-8979>

AUTHOR CONTRIBUTIONS

Jamile Bigom Taheri: Supervision
Fahimeh Anbari: Investigation
Sahba Khosousi Sani: Writing - review & editing
Seyed Mohammad Mirmoezi: Validation
Hamid Reza Khalighi: Investigation, Writing - original draft

ACKNOWLEDGEMENTS: This study was based on an undergraduate thesis at the Dental School of Shahid Beheshti University of Medical Sciences. This study did not receive any specific grant.

CONFLICTS OF INTERESTS: The authors have no conflicts of interest to declare.

REFERENCES

1. Napeñas JJ. Intraoral pain disorders. *Dent Clin North Am* 2013; 57: 429-47.
2. Okeson JP. *Bell's oral and facial pain*. 7th ed. Chicago, Quintessence Publishing Company. 2014, pp23.
3. Crandall JA. An introduction to orofacial pain. *Dent Clin North Am* 2018; 62: 511-23.
4. Ziegeler C, Wasiljeff K, May A. Nondental orofacial pain in dental practices—diagnosis, therapy and self-assessment of German dentists and dental students. *Eur J Pain* 2019; 23: 66-71.
5. Racich MJ. Occlusion, temporomandibular disorders, and orofacial pain: an evidence-based overview and update with recommendations. *J Prosthet Dent* 2018; 120: 678-85.
6. Tsukamoto T, Ohira Y, Noda K, Takada T, Ikusaka M. The contribution of the medical history for the diagnosis of simulated cases by medical students. *Int J Med Edu* 2012; 3: 78-82

7. Darbandi A, Jajouei A. Etiology of TMJ disorders in patients referred to Shahed Dental School Tehran-2000. *J Dent Sch Shahid Beheshti Univ* 2003; 21: 36-43.
8. Madani AA, Mahdizadeh F. Prevalence of temporomandibular joint disorders in patients referred to Mashhad dental school. *J Dent Sch Shahid Beheshti Univ* 2002; 20: 242-51.
9. Scrivani SJ, Keith DA, Kaban LB. Temporomandibular disorders. *New Eng J Med* 2008; 359: 2693-705.
10. Bolouri A, Delavarian Z, Mortazavi H, Asl H, Falaki A, Falaki F. The effect of combination therapy with Fluoxetine and Clonazepam in My facial Pain Dysfunction Syndrome. *Aust J Basic & Appl Sci* 2011; 5: 520-5.
11. Mogil JS. Sex differences in pain and pain inhibition: multiple explanations of a controversial phenomenon. *Nat Rev Neurosci* 2012; 13: 859-66.
12. Dworkin SF, Massoth DL. Temporomandibular disorders and chronic pains: disease or illness? *J Prosthe Dent* 1994; 72: 29-38.
13. Hu WL, Chang CH, Hung YC, Tseng YJ, Hung IL, Hsu SF. Laser acupuncture therapy in patients with treatment-resistant temporomandibular disorders. *PloS One* 2014; 9: e110528.
14. Khalighi HR, Mortazavi H, Mojahedi SM, Azari-Marhaba S, Abbasabadi FM. Low level laser therapy versus pharmacotherapy in improving myofascial pain disorder syndrome. *J Lasers Med Sci* 2016; 7: 45-50.
15. Maia ML, Bonjardim LR, Quintans Jde S, Ribeiro MA, Maia LG, Conti PC. Effect of low-level laser therapy on pain levels in patients with temporomandibular disorders: a systematic review. *J Appl Oral Sci* 2012; 20: 594-602.
16. Shephard MK, MacGregor EA, Zakrzewska JM. Orofacial pain: a guide for the headache physician. *Headache* 2014; 54: 22-39.
17. Santana-Mora U, Cudeiro J, Mora-Bermúdez MJ, Rilo-Pousa B, Ferreira-Pinho JC, Otero-Cepeda JL, et al. Changes in EMG activity during clenching in chronic pain patients with unilateral temporomandibular disorders. *J Electromyogr Kinesiol* 2009; 19: e543-e9.
18. Allerbring M, Haegerstam G. Chronic idiopathic orofacial pain. A long-term follow-up study. *Acta Odontol Scand* 2004; 62: 66-9.
19. Chairunnisa R, Sihombing RJ. The association between number of tooth loss, tooth loss quadrants, and occlusal support with temporomandibular disorders in partially edentulous patients. *Adv Health Sci Res* 2017; 8: 255-8.
20. Himawan LS, Kusdhany LS, Ariani N. Temporomandibular disorders in elderly patients. *Med J Ind* 2007; 16: 237-9.
21. Manfredini D, Vano M, Peretta R, Guarda-Nardini L. Jaw clenching effects in relation to two extreme occlusal features: patterns of diagnoses in a TMD patient population. *Cranio* 2014; 32: 45-50.
22. Swain N, Johnson M. Chronic pain in New Zealand: a community sample. *N Z Med J* 2014; 127: 21-30.
23. Madani AA, Mahdizadeh M. Prevalence of etiologic factors in temporomandibular disorder in 100 patients examined in Mashhad Dental School. *J Dent Sch Shahid Beheshti Univ* 2004; 22: 292-301.
24. Rollman GB, Gillespie JM. The role of psychosocial factors in temporomandibular disorders. *Curr Rev Pain* 2000; 4: 71-81.
25. Benoliel R, Birman N, Eliav E, Sharav Y. The international classification of headache disorders: accurate diagnosis of orofacial pain? *Cephalalgia* 2008; 28: 752-62.
26. Dahlström L, Carlsson GE. Temporomandibular disorders and oral health-related quality of life. A systematic review. *Acta Odontol Scand* 2010; 68: 80-5.
27. McMillan AS, Wong MC, Zheng J, Lam CL. Prevalence of orofacial pain and treatment seeking in Hong Kong Chinese. *J Orofac Pain* 2006; 20: 218-25.