

Original Research

A perception and awareness of orthodontist, general practitioners and fraternity of other dental specialities on TMDS: A questionnaire study

¹Shaheen Hamdani, ²Wanjari Rakshanda, ³Gandhi Sumit, ⁴Sodawala Javed, ⁵Harsha Malhotra, ⁶Nikita Chhabria

^{1,5}Reader, ^{2,6}Postgraduate Student, ³Head of Department, ⁴Professor, Department of Orthodontics and Dentofacial Orthopedics, Rungta College of Dental Sciences, Hospital and Research Center, Bhilai, Chhattisgarh, India

Received: 19 April, 2023

Accepted: 21 May, 2023

Corresponding author: Shaheen Hamdani, Reader, Department of Orthodontics and Dentofacial Orthopedics, Rungta College of Dental Sciences, Hospital and Research Center, Bhilai, Chhattisgarh, India

This article may be cited as: Hamdani S, Rakshanda W, Sumit G, Javed S, Malhotra H, Chhabria N. A perception and awareness of orthodontist, general practitioners and fraternity of other dental specialities on TMDS: A questionnaire study. J Adv Med Dent Scie Res 2023;11(6):39-46.

INTRODUCTION

The Temporomandibular joint is an atypical synovial joint that is dynamic in structure. A delicate balance between the musculature, the condylar cartilage and the bony structures is maintained for harmonious functioning of the joint. When the mouth is opened or closed, temporal mandibular joint disorder can cause pain and discomfort.¹

As defined by the American Academy of Orofacial Pain, temporomandibular disorder (TMD) encompasses a number of clinical problems involving the masticatory muscles and/or associated structures, such as the temporomandibular joint (TMJ), as well as pathologies not related to the TMJ.²

Non-dental orofacial pain can be attributed to TMDs, a common cause which is often encountered by health care practitioners. Diagnosis, treatment, and prognosis of this disease are the most challenging aspects of modern society.³

TMDs can be due to a variety of factors, including muscle hyperfunction or parafunction, traumatic injuries, hormonal influences, and changes to the articular surfaces within joints. The correlation between occlusion and TMJ symptoms has been found in several studies.⁴

AIM

To evaluate the perception and awareness of orthodontists, general practitioners & fraternity of

other dental specialities on temporomandibular disorders.

OBJECTIVES

1. To evaluate the perception and awareness of orthodontist regarding TMDs and its treatment
2. To compare the perception & awareness of general practitioners regarding TMDs and its treatment.
3. To evaluate the perception and awareness of fraternity of other dental specialities regarding TMDs and its treatment.
4. To compare the perception and awareness of orthodontist, general practitioners and fraternity of other dental specialities regarding TMDs and its relation with orthodontic treatment.

MATERIAL AND METHOS

A questionnaire were developed using Google forms consisting of 15 questions (Appendix-1) and initially sent to orthodontist, general dentist and fraternity of other dental specialities, in addition to the questionnaire, a message explaining the procedure and a link to the website were sent via e-mail (https://docs.google.com/forms/d/e/1FAIpQLSdMn0rJUW0qtTj5N_76G3yph4pN9-ZwNNxbVAcj5rpPoal0mw/viewform?usp=sf_link). In addition to the link, a message was posted on social networks asking respondents to forward it to their contacts to increase the number of participants when

the survey was launched. Participants were informed about the study's purpose and assured that their responses would be kept confidential. Participants were free to contact the authors if they had any questions during the survey. Participants were asked questions about their basic information and their knowledge of the tempo-mandibular joint, orthodontic treatment and TMDs. Other questions regarding etiology, symptoms, diagnosis, and treatment were also asked.

STATISTICAL ANALYSIS

The SPSS statistical package was used for data analysis (IBM SPSS Statistics for Windows, Version 16.0, Chicago, SPSS Inc) and chi-square test was performed to assess associations between variables. A *p*-value < 0.05 was considered significant.

RESULTS

A total participants involved in the study were 126, among them 54 were orthodontists, 33 were general practitioners and 39 were the fraternity of other dental specialities (ANNEXURE 02). Practitioners were asked to provide their opinions on the etiologic factors, signs and symptoms, investigations and

management of TMD, and they came up with the following outcomes. About 92% orthodontist, 97% general practitioners and 94% fraternity of other dental specialities were well versed with relationship between orthodontic treatment and TMDs (Table 1, graph1).

98% orthodontist, 90% general practitioners and 89% fraternity of other dental specialities agreed that orthodontists can treat patients with TMDs and skeletal malocclusions (Table 4, graph 4). 98% orthodontist, 87% general practitioners and 89% fraternity of other dental specialities suggested that the severity of malocclusion can cause TMDs and orthodontic intervention or using occlusal splints for treating TMDs can be helpful. (Table 3&6, graph 3&6). But, 42% orthodontist, 33% general practitioners and 51% fraternity of other dental specialities reported that the symptoms of temporomandibular joint disorder may be exacerbated by orthodontic treatment (Table 5, graph 5). 63% orthodontist, 57% general practitioners and 74% fraternity of other dental specialities thought that, wide open mouth and yawning are some of the factors that contribute to TMDs (Table 7, graph 7).

ANNEXURE 1

QUESTIONS:	
1. Do you know what temporomandibular joint is?	
2. Do you think there is a relation between orthodontic treatment and TMDs?	
3. Can occlusal and psychological disturbances cause TMDs?	
4. Do you consider deviation of jaw as manifestation of TMDs?	
5. Can parafunctional habits be considered as etiologic factor for TMDs?	
6. Do you think occlusal splints can be useful to treat TMDs?	
7. Can treatment of TMDs be a multidisciplinary approach?	
8. Are orthodontists capable of treating patients with TMDs and skeletal malocclusions?	
9. Do you think orthodontic treatment may increase symptoms of temporomandibular joint disorder?	
10. Do think counselling and behavioral therapy are the treatment options in treating patients with TMDs?	
11. Do you think malocclusion can cause TMDs and orthodontic intervention can prevent it?	
12. Do you think yawning, swallowing and wide opening of mouth can cause TMDs?	
13. Are you aware that stress can induce TMDs?	
14. Do you think an individual with MPDS (Myofascial pain dysfunction syndrome) need orthodontic treatment?	
15. Do you think pain killers are effective in the treatment of TMDs?	

ANNEXURE 2: TABLES AND GRAPHS

Table 1. Do you think there is a relation between orthodontic treatment and TMDs?					
			Q2		Total
			Yes	No	
Designation	MDS Orthodontist	Count	50	4	54
		% within Designation	92.6%	7.4%	100.0%
	General Dentist	Count	32	1	33
		% within Designation	97.0%	3.0%	100.0%
	Any other speciality	Count	37	2	39
		% within Designation	94.9%	5.1%	100.0%
Total		Count	119	7	126
		% within Designation	94.4%	5.6%	100.0%

Table 2. Can parafunctional habits be considered as etiologic factor for TMDs?					
		Q5			Total
		Yes	No		
Designation	MDS Orthodontist	Count	54	0	54
		% within Designation	100.0%	.0%	100.0%
	General Dentist	Count	30	3	33
		% within Designation	90.9%	9.1%	100.0%
	Any other speciality	Count	37	2	39
		% within Designation	94.9%	5.1%	100.0%
Total		Count	121	5	126
		% within Designation	96.0%	4.0%	100.0%

Table 3. Do you think occlusal splints can be useful to treat TMDs?					
		Q6			Total
		Yes	No		
Designation	MDS Orthodontist	Count	52	2	54
		% within Designation	96.3%	3.7%	100.0%
	General Dentist	Count	26	7	33
		% within Designation	78.8%	21.2%	100.0%
	Any other speciality	Count	36	3	39
		% within Designation	92.3%	7.7%	100.0%
Total		Count	114	12	126
		% within Designation	90.5%	9.5%	100.0%

Table 4. Are orthodontists capable of treating patients with TMDs and skeletal malocclusions?					
		Q8			Total
		Yes	No		
Designation	MDS Orthodontist	Count	53	1	54
		% within Designation	98.1%	1.9%	100.0%
	General Dentist	Count	30	3	33
		% within Designation	90.9%	9.1%	100.0%
	Any other speciality	Count	35	4	39
		% within Designation	89.7%	10.3%	100.0%
Total		Count	118	8	126
		% within Designation	93.7%	6.3%	100.0%

Table 5. Do you think orthodontic treatment may increase symptoms of temporomandibular joint disorder?					
		Q9			Total
		Yes	No		
Designation	MDS Orthodontist	Count	23	31	54
		% within Designation	42.6%	57.4%	100.0%
	General Dentist	Count	11	22	33
		% within Designation	33.3%	66.7%	100.0%
	Any other speciality	Count	20	19	39
		% within Designation	51.3%	48.7%	100.0%
Total		Count	54	72	126
		% within Designation	42.9%	57.1%	100.0%

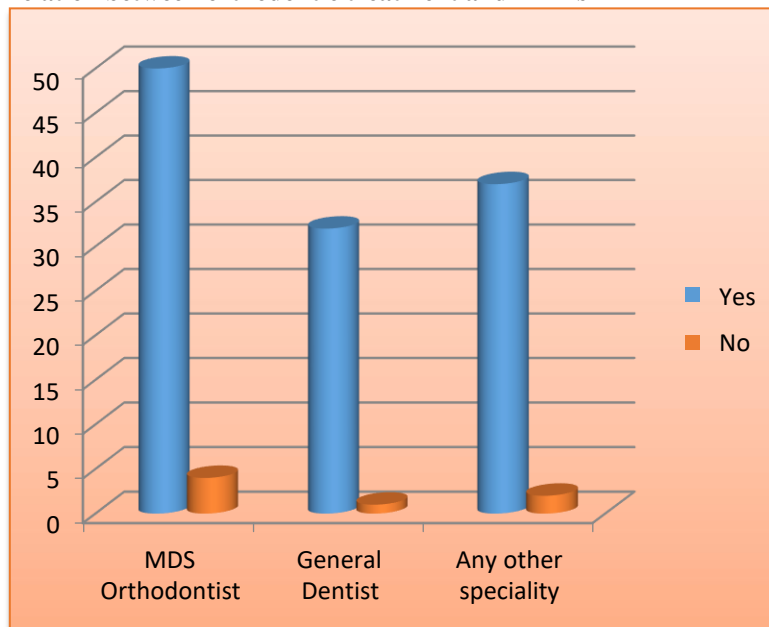
Table 6. Do you think malocclusion can cause TMDs and orthodontic intervention can prevent it?					
		Q11			Total
		Yes	No		
Designation	MDS Orthodontist	Count	53	1	54
		% within Designation	98.1%	1.9%	100.0%
	General Dentist	Count	29	4	33
		% within Designation	87.9%	12.1%	100.0%
	Any other speciality	Count	35	4	39
		% within Designation	89.7%	10.3%	100.0%

		% within Designation	89.7%	10.3%	100.0%
Total		Count	117	9	126
		% within Designation	92.9%	7.1%	100.0%

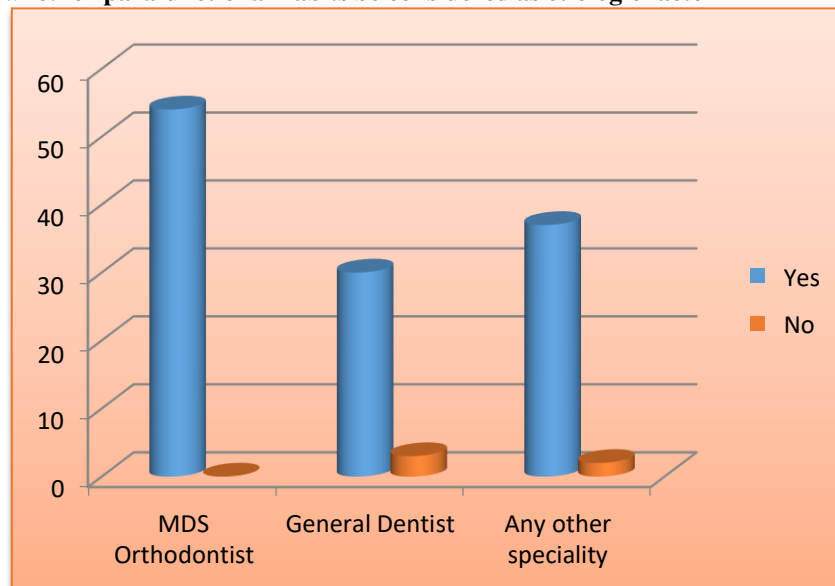
Table 7. Do you think yawning, swallowing and wide opening of mouth can cause TMDs?

		Q12		Total	
		Yes	No		
Designation	MDS Orthodontist	Count	34	20	54
		% within Designation	63.0%	37.0%	100.0%
	General Dentist	Count	19	14	33
		% within Designation	57.6%	42.4%	100.0%
	Any other speciality	Count	29	10	39
		% within Designation	74.4%	25.6%	100.0%
Total		Count	82	44	126
		% within Designation	65.1%	34.9%	100.0%

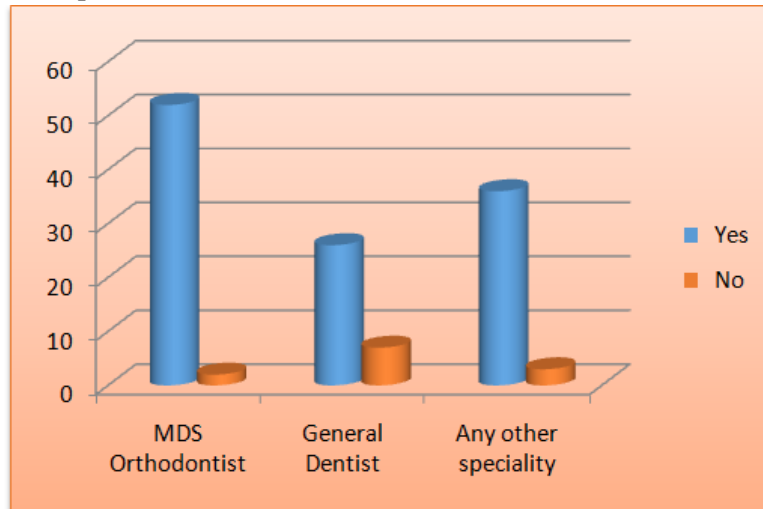
Graph 1 shows the relation between orthodontic treatment and TMDs



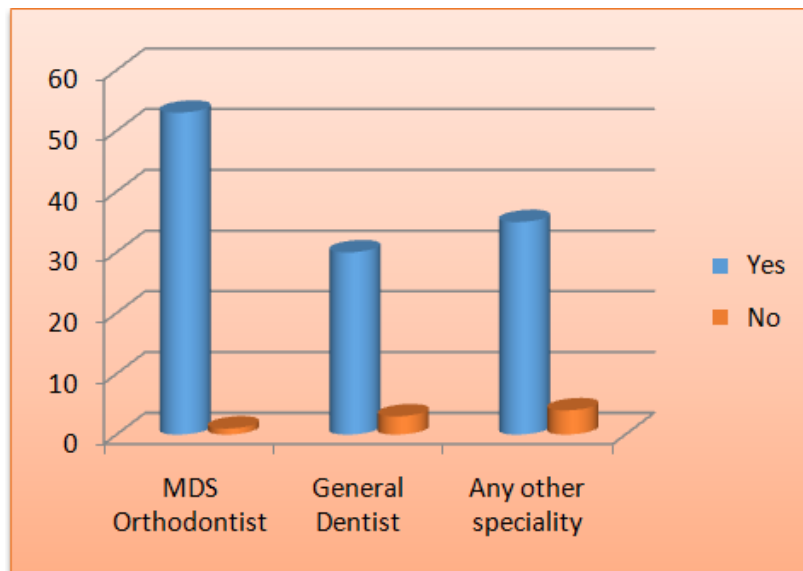
Graph 2 shows whether parafunctional habits be considered as etiologic factor



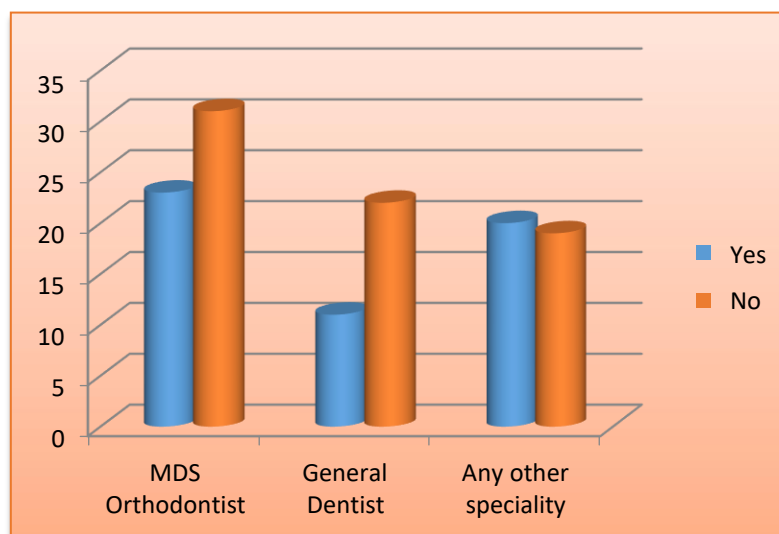
Graph 3 Shows occlusal splints can be useful to treat TMDs



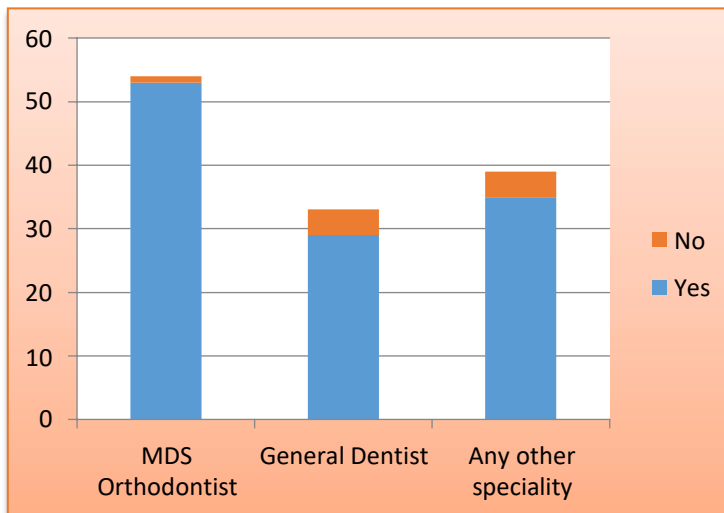
Graph 4 shows whether orthodontists are capable of treating patients with TMDs and skeletal malocclusions.



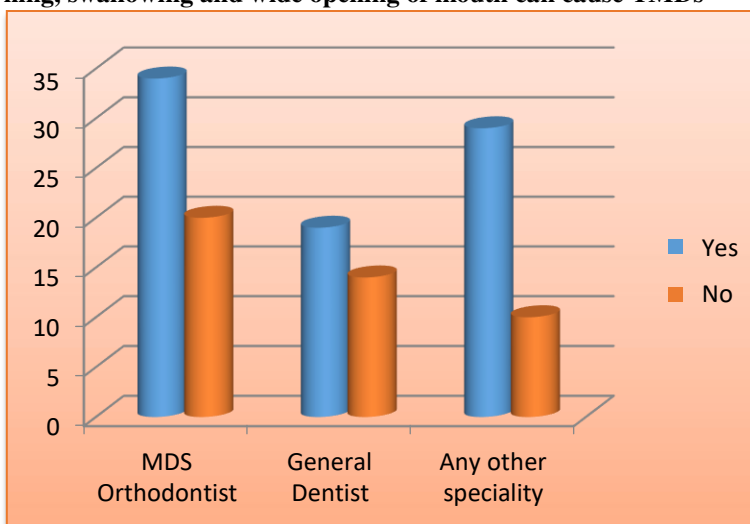
Graph 5 shows whether orthodontic treatment may increase symptoms of temporomandibular joint disorder.



Graph 6 shows whether malocclusion can cause TMDs and orthodontic intervention can prevent it?



Graph 7 shows yawning, swallowing and wide opening of mouth can cause TMDs



Test Statistics															
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
Chi-Square	1.220E2 ^a	99.556 ^a	1.181E2 ^a	1.143E2 ^a	1.068E2 ^a	82.571 ^a	1.105E2 ^a	96.032 ^a	2.571 ^a	64.286 ^a	92.571 ^a	11.460 ^a	73.143 ^a	11.460 ^a	3.841 ^a
df	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
P value	.001	.001	.001	.001	.001	.001	.001	.001	.109	.001	.001	.001	.001	.001	.050

DISCUSSION

Multiple theories have been suggested to examine the TMD’s etiology, however, no single nor specific factor was detected. As far as developing, preventing, and treating TMD is concerned, orthodontics remains controversial.⁵ In the present study, it was found that 92% orthodontist, 97% general practitioners and 94% fraternity of other dental specialities, also, it was

believed that orthodontic treatment had a relationship with TMD (Table 1).

Fernández-González et al⁶ reported in a systematic review that orthodontic treatment does not directly or obviously correlate with TMD, nor does it improve or prevent the condition. In a literature review, Leite et al⁷ reviewed a previously published study within the last 15 years, evaluating the impact of orthodontic treatment on signs and symptoms of TMD, as well as

whether orthodontic treatment should be recommended for treating or preventing TMD symptoms. It was concluded that orthodontic treatment, regardless of whether extractions were done during treatment, did not affect the signs and symptoms of TMD and was not associated with any risk for its development.

However, when we inquired whether orthodontic therapy was an adjunct to increased TMD, approximately 42% orthodontist, 33% general practitioners and 51% fraternity of other dental specialities believed that orthodontic therapy may increase symptoms of the TMD (Table 5). On the other hand, a study conducted in South Korea by Hwang and Park⁸ compared two groups, one of them went through the experience of orthodontic treatment where 95% felt that orthodontic treatment made it worse.

The study was conducted in order to evaluate the perception of orthodontists, general dentists, and other speciality members on TMDs. The questionnaire based survey, reported that 100% orthodontists, 90% general practitioners and 94% fraternity of other dental specialities had knowledge about the etiological factors responsible for TMD. While 98% orthodontist, 87% general practitioners and 89% fraternity of other dental specialities said that occlusal disturbances were responsible for TMD and occlusal splints can be useful in treating TMDs. Other factors, such as parafunctional habits, trauma, and psychological factors, are also believed to play a role in TMD.

Based on a study by Jamalpour et al.⁹, 36% of dental practitioners considered occlusal splints as the first line of treatment for TMD, while 80% recommended physical therapy. The majority of participants believe that orthodontic treatment can be initiated in patients with temporomandibular joint disorders. Although there are conflicting views expressed in the literature, it is observed that there is a positive correlation between orthodontic treatment and decreased signs and symptoms of temporomandibular joint disorders.¹⁰ There have been a few studies that found improvement in joint and muscle pain, but not in joint noise treatment. Malocclusion can be treated with orthodontics by reshaping the TMJ, which overrides new functional needs and allows normal function to continue.

It was reported by Varga et al.¹¹ that orthodontic treatment may be initiated in patients who exhibit symptoms such as painful clicking and deviation. However, he found that pain and dysfunction needs to be corrected before orthodontic therapy. As reported by Patil et al.¹², the majority of respondents felt that TMD patients shouldn't undergo orthodontic treatment.

TMD includes masticatory muscle disorders, TMJ disorders, and other clinical problems associated with this condition. TMD is caused by parafunctional habits and trauma, with stress and mental health problems as secondary aggravating factors.¹³ 63% orthodontist, 57% general practitioners and 74% fraternity of other dental specialities erroneously

believed that wide mouth opening, yawning, can cause TMD. Patients with TMDs often complain of pain originating from the muscles of mastication rather than the TMJ.¹⁴

CONCLUSION

1. There is general agreement among participants in this study that orthodontic treatment is associated with TMD treatment or prevention, which is consistent with the most widely accepted concept regarding orthodontic treatment and TMD.
2. Most orthodontists, however, disagree with current scientific evidence when they believe orthodontic treatment may cause TMD when they believe orthodontic treatment can cause TMD
3. This study concludes that orthodontist, general dentist and other speciality members are well versed with the relationship between orthodontic treatment and TMDs and orthodontist are capable of treating TMDs and skeletal malocclusions.

REFERENCES

1. Mishra S, Tandon R, Chauhan A, Chandra P, Mishra A. Temporomandibular joint and orthodontics –A contemporary review. *Ind J Orthod Dentofac Res.* 2021;7(2):123–127.
2. American Academy of Orofacial Pain. De Leeuw R. (Ed.). Orofacial pain. Guidelines for assessment, diagnosis and management. 4th Ed. Chicago: Quintessence Publishing Co 2008;129–204.
3. Liu, Frederick, Steinkeler, Andrew. Epidemiology, Diagnosis, and Treatment of Temporomandibular Disorders. *Dent Clin North Am.* 2013;57:465–79.
4. De Leeuw R, editor. Temporomandibular Disorders. In: Orofacial pain: guidelines for assessment, diagnosis, and management. 4th ed. Chicago: Quintessence; 2008. p. 129-204.
5. Gnauck M, Magnusson T, Ekberg E. Knowledge and competence in temporomandibular disorders among Swedish general dental practitioners and dental hygienists. *Acta Odontol Scand.* 2017;75(6):429–36.
6. Fernández-González FJ, Cañigral A, López-Caballo JL. Influence of orthodontic treatment on temporomandibular disorders. A systematic review. *J Clin Exper Dentist.* 2015;7(2):e320-7.
7. Leite RA, Rodrigues JF, Sakima MT, Sakima T. Relationship between temporomandibular disorders and orthodontic treatment: a literature review. *Dent J Orthodon.* 2013;18(1):150-7.
8. Hwang SH, Park SG. Experience of Orthodontic Treatment and Symptoms of Temporomandibular Joint in South Korean Adults. *Iran J Pub Health.* 2018;47(1):13-17.
9. Jamalpour MR, Biglarkhany M, Rabiei A, Mirzaei Z. Knowledge and beliefs of general dental practitioners regarding temporomandibular disorders in Sanandaj, Iran. *DJH.* 2011;3:27-33.
10. Moss ML, Salentijn L. The primary role of functional matrices in facial growth. *Am J Orthod.* 1969;55:566 – 77.
11. Varga ML. Orthodontic therapy and temporomandibular disorders. *Med Sci.* 2010;34:75–85.

12. Patil S, Iyengar AR, Ramneek. Assessment of knowledge, attitude and practices of dental practitioners regarding temporomandibular joint disorders in India. *J AdvClin Res Insights* 2016;3:64 - 71.
13. Navi F, Motamedi MH, Talesh KT, Lasemi E, Nematollahi Z. Diagnosis and management of temporomandibular disorders. *A Textbook of Advanced Oral and Maxillofacial Surgery*. New Delhi: Jaypee Brother Medical Publishers; 2008. 831-58.
14. De Leeuw R. American Academy of Orofacial Pain. *Guidelines for Assessment, Diagnosis, and Management*. 4th ed. Chicago: Quintessence Publication Co.; 2008.