

Prevalence Study of Signs and Symptoms of Temporomandibular Disorders in a Turkish Population

Fatih Özkan, DDS; Serkan Polat, DDS, PhD; İsa Kara, DDS;
Dervishan Küçük, DDS; Hidayet B. Polat, DDS



Abstract

Aim: The aim of this study was to evaluate the prevalence of signs and symptoms of temporomandibular disorders (TMD) in a population of 792 Turkish adults ranging in age from 15- to 72-years-old.

Methods and Materials: Subjects were examined objectively and subjectively for signs and symptoms of TMD through the distribution of frequency of the data obtained from a questionnaire and a physical examination using a similar methodology of previous studies.

Results: This study determined the prevalence of signs and symptoms of TMDs in subjects from male and female subgroups in a Turkish adult population. Both signs and symptoms of TMDs were generally more prevalent in females than in males.

Conclusion: The prevalence of signs and symptoms were generally greater than in previous studies of other populations.

Keywords: Temporomandibular disorders, TMD, Turkish population

Citation: Özkan F, Polat S, Kara I , Küçük D, Polat HB. Prevalence Study of Signs and Symptoms of Temporomandibular Disorders in a Turkish Population. J Contemp Dent Pract 2007 May;(8)4:035-042.

© Seer Publishing

Introduction

The primary difficulty of identifying temporomandibular disorder (TMD) arises from its complex relationship with other structures of the head and neck and the wide variety of signs and symptoms related to the temporomandibular joint (TMJ) by these structures. A variety of combinations of signs and symptoms may be present, including joint sounds and/or pain, headache, difficulty with mastication, muscle pain, and limited mouth opening.

The clinical signs and symptoms of TMD can be grouped into three categories according to structures affected which include the muscles, the TMJ, and the dentition.¹ It is important when evaluating a patient to identify both signs and symptoms clearly.

The aim of the present study was to determine the frequency of signs and symptoms of TMD in a Turkish adult population with no previous clinical diagnosis of TMD using an analysis of subjective data obtained from a questionnaire and a clinical examination.

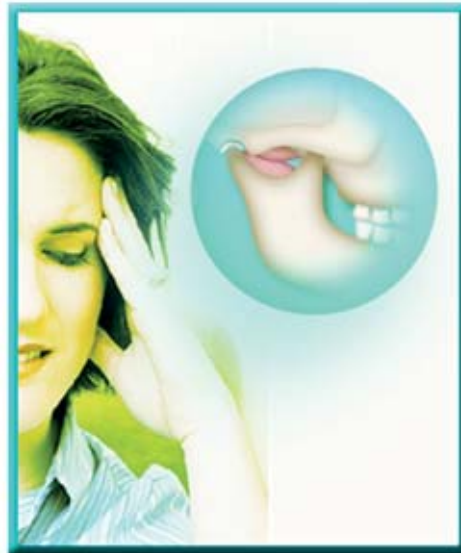
Methods and Materials

The 792 volunteer subjects consisted of police officers, high school students, and patients who attended the Cumhuriyet University Faculty of Dentistry Department of Oral and Maxillofacial Surgery. The subjects consisted of 361 females and 431 males ranging from 15 to 72 years-of-age with no history of systemic, musculoskeletal, or neurological disorders. All interested volunteers were informed about the objectives of the study, and those who had a clinical diagnosis of TMD with or without treatment were excluded.

Clinical History

Data were collected by questionnaire. Physicians provided any information to patients about the questions as needed. The questionnaire included the following questions:

1. Do you have difficulty opening your mouth wide?
2. Do you have any pain when opening your mouth wide?
3. Do you hear any clicking or noise from the joint when you open your mouth wide?
4. Do you have any TMJ pain?



5. Do you have headaches?
6. Do you have any neck pain?
7. Do you ever have pain in your ears or in front of your ears?

Clinical Examination

Pain or tenderness of the TMJs were determined by digital palpation of the joints when the mandible was both stationary and during dynamic movement. Tenderness or pain in the TMJs were determined by placing the fingertips over the lateral aspects of both joint areas simultaneously. The lateral poles of the condyles passing downward and forward across the articular eminences were felt by the examiner's fingertips. Once the position of the fingers over the joints had been verified the subjects were asked to relax and medial force was applied to the joint areas. The subjects were asked to report any symptoms. Upon opening the mouth maximally the examiner's fingers were rotated posteriorly to allow the application of force to the posterior aspect of the condyle.

The presence of a click was recorded if the sound was heard or if a sudden movement of the mandibular condyle occurred during opening or closing of the mouth. In addition, click and crepitus were recorded as unilateral and bilateral.

The temporalis, masseter, pterygoid, sternocleidomastoid, and trapezius muscles were palpated on both sides, and the subject was asked whether palpation caused pain. Any specific muscle causing pain was noted.

Statistical Analysis

Differences between genders were determined by using a Chi-square test. All data management and statistical analysis were performed using SPSS® version 10.0.1 (SPSS, Chicago, IL, USA). The level of statistical significance was set at $p=0.05$.

Results

Among the 792 subjects included in the study, the mean age of the 361 females was 28 ± 12 and the mean age of the 431 males was 27 ± 10 years. There was no significant difference ($P>0.05$) between the mean ages.

Clinical History

The subjective findings are presented in Table 1. According to subjective findings there were significant differences ($P<0.05$) between genders presenting all symptoms except hearing a clicking noise ($p=0.05$). A significant difference was not found between genders associated with a symptom of a clicking noise in the joints.

Physical Examination

The prevalence of recorded joint sounds and tenderness to palpation of the TMJ and the muscles of mastication are shown in Table 2. There were no significant differences ($P>0.05$) between clicking and crepitus in terms of sounds from the TMJs. On the contrary, there were significant differences ($P<0.05$) between the tenderness of the TMJs and the tenderness of at least one muscle of mastication. Muscles were not separated according to their names, only muscle pain was taken into consideration.

Discussion

The purpose of this study was to evaluate the prevalence of signs and symptoms of TMD in a Turkish adult population. There have been no previous studies on the prevalence of signs and symptoms of TMD in a Turkish population. Subjects included in the study varied in their occupations such as: nurses, students, teachers, police officers, housewives, and retired persons. These different environments affect lifestyles and, therefore, different stressors for individuals. However, since the purpose of the present study was only to determine the prevalence of signs and symptoms of TMD in a Turkish population, life style dependent factors were not considered.

It is possible some of the subjective and objective findings existed because of orofacial disorders other than TMD. This would result in an overestimation of the prevalence of TMD.



Table 1. Subjective findings.

Sign or Symptom	Female n=361			Male n=431			Significance
	Yes	No	Don't know	Yes	No	Don't know	
Difficulty opening mouth wide	88	253	20	34	368	19	$\chi^2=47.353; p<0.05$
Pain on opening wide	78	258	25	39	366	16	$\chi^2=26.210; p<0.05$
Hear clicking of noise	119	220	21	103	305	23	$\chi^2=10.708; p=0.05$
TMJ pain	82	278	1	42	387	2	$\chi^2=24.906; p<0.05$
Headache	74	263	24	40	371	20	$\chi^2=23.563; p<0.05$
Neck pain	104	240	17	66	347	18	$\chi^2=23.563; p<0.05$
Pain in front of ears	136	202	13	100	300	31	$\chi^2=24.245; p<0.05$

Table 2. Objective findings.

	Female n=361	Male n=431	Significance
	n	n	
Crepitus			
Unilateral	12	12	
Bilateral	9	4	
Total	21	16	$\chi^2=1.452$; $p>0.05$
Click			
Unilateral	60	64	
Bilateral	35	23	
Total	95	87	$\chi^2=2.326$; $p>0.05$
Tenderness or Pain of TMJ			
Yes	98	73	$\chi^2=13.719$; $p<0.05$
No	242	344	
Tenderness of at Least One Muscle of Mastication			
Yes	198	121	$\chi^2=58.542$; $p<0.05$
No	163	310	

Within the study group, there was a greater prevalence of difficulty opening the mouth, pain on opening, hearing a clicking noise, and pain in the front of the ears compared with other studies, but headaches were reported less than other studies.²⁻³

It is possible since our study group consisted of a majority of subjects with tiring and stressful jobs, such as nursing, police work, and student study, the results showed a high prevalence of musculatory system problems. Since other studies did not clarify subject occupations, it was not possible to compare job dependent factors between different populations.

Within the total study group women have a greater prevalence of all subjective symptoms (Table 3). Women were reported to have signs of TMDs more than men with as much as a 10-15% greater frequency of TMJ clicking and more mandibular osteoarthritis.⁴⁻⁶ It is suggested this may be in part a manifestation of a greater overall joint laxity in women. An epidemiological study of an African population by Beighton et al.⁷ showed female TMJs are more mobile than men at any age and general joint mobility is age-dependent and diminishes most rapidly in childhood. Our findings are in agreement with other results as showed in Table 3.

Examinations detected great differences between male and female populations by signs of TMDs (Table 4). Compared to Scandinavian and Arab populations the tenderness or pain in the TMJ was higher while joint sounds were shown to be of a lower prevalence, and there is a greater prevalence of tenderness of the muscles of mastication.²⁻³

In this study the prevalence of TMD was found to be higher in women than men. Previous studies reported the occurrence of a higher prevalence of signs associated with mandibular disorder among women.⁸⁻⁹ The highest prevalence of women classified with some degree of TMD may be related to typical physiologic differences between females and males such as regular hormonal variations, muscular structure, and different characteristics of the conjunctive tissue.

Conclusion

This study has determined the prevalence of the signs and symptoms of TMDs in a group of men and women in a Turkish adult population. Signs and symptoms of TMDs are common in a Turkish adult population, and the prevalence of signs and symptoms was generally greater than in previous studies of other populations. Both signs and symptoms of TMDs were generally more prevalent in women than men.

Table 3. Comparison of subjective results.

Sign or Symptom	Female n=344	Male n=419	Total n=763	Jagger and Wood ³ n=219	Hansson and Nilner ² n=1069
	(%)	(%)	(%)	(%)	(%)
Difficulty opening mouth wide	25.5	8.1	15.9	5	6
Pain on opening wide	22.6	9.3	15.3	8	3
Hear clicking of noise	34.5	24.5	29.3	15	23
Headache	21.5	9.5	14.9	31	18
TMJ pain	23.8	10.0	16.2	*	*
Neck pain	30.2	19.0	22.2	*	*

*= Jagger et al. and Hanson et al. did not reveal these findings

Table 4. Comparison of objective findings.

	Female	Male	Total Turkish	Jagger and Wood ³	Hansson and Nilner ²
	n= 344(%)	n= 419(%)	n=763(%)	n=219 (%)	n=1069 (%)
Tenderness or pain of TMJ (total)	28.4	17.4	22.4	15	11
Tenderness of at least one muscle of mastication (total)	57.5	28.8	41.8	34	37
Sound from TMJ					
Click	27.6	20.7	23.8	21	41
Creptus	6.1	3.8	4.8	10	21

References

1. Okeson JP. Management of Temporomandibular Disorders and Occlusion. 5th edn. St. Louis, London, Philadelphia, Sydney, Toronto: Mosby; 2003.
2. Hansson T, Nilner M. A study of the occurrence of symptoms of diseases of the temporomandibular joint, masticatory musculature and related structures. J Oral Rehabil. 1975;2:313.
3. Jagger RG, Wood C. Signs and symptoms of temporomandibular joint dysfunction in a Saudi Arabian population. J Oral Rehabil. 1992;19:353-9.
4. Solberg WK. Epidemiology, incidence and prevalence of temporomandibular disorders: a review. In: The President's Conference on the Examination, Diagnosis and Management of Temporomandibular Disorders. American Dental Association; pp.30-39, Chicago 1983.
5. Rieder CE, Martinoff JT. The prevalence of mandibular dysfunction. Part I: sex and age distribution of related signs and symptoms. J Prosthet Dent. 1983;50:81-8.
6. Toller PA. Osteoarthritis of the mandibular condyle. Br Dent J. 1973;134:223-31.
7. Beighton PH, Solomon L, Soskolne CL. Articular mobility in an African population. Ann Rheum Dis. 1973;32:413-8.
8. Gray JM, Davies SJ. A clinical approach to temporomandibular disorders. 1. classification and functional anatomy. Br Dent J. 1994;176:429-35.
9. Klineberg L, McGregor N, Burr H. Chronic orofacial muscle pain: a new approach to diagnosis and management. Alpha Omega. 1998;91:25-8.

About the Authors

Fatih Özcan, DDS



Dr. Ozan is a Research Assistant in the Department of Oral and Maxillofacial Surgery of the Faculty of Dentistry at Cumhuriyet University in Sivas, Turkey. He received his dental degree in 2002. His professional interests are orthognathic surgery, herbal medicine, and implantology. He is a member of the Turkish Association of Oral and Maxillofacial Surgeons.

e-mail: fozan@cumhuriyet.edu.tr

Serkan Polat, DDS, PhD

Dr. Polat is an Assistant Professor in the Department of Oral and Maxillofacial Surgery of the Faculty of Dentistry at Cumhuriyet University in Sivas, Turkey. His special interests are impacted teeth and implantology. He is a member of the Turkish Association of Oral and Maxillofacial Surgeons.

İsa Kara, DDS

Dr. Kara is a Research Assistant in the Department of Oral and Maxillofacial Surgery of the Faculty of Dentistry at Cumhuriyet University in Sivas, Turkey. He received his dental degree in 2004.

Dervişhan Küçük, DDS

Dr. Küçük is a Research Assistant in the Department of Oral and Maxillofacial Surgery of the Faculty of Dentistry at Cumhuriyet University in Sivas, Turkey. He received his dental degree in 2003.

Hidayet B. Polat, DDS*

Dr. Polat is a Research Assistant in the Department of Oral and Maxillofacial Surgery of the Faculty of Dentistry at Cumhuriyet University in Sivas, Turkey. He received his dental degree in 2002. His professional interests are distraction osteogenesis and implantology. He is a member of the Turkish Association of Oral and Maxillofacial Surgeons.