

Signs and symptoms of temporomandibular disorders in partially edentulous patients' dependence of different variables.

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ABSTRACT

Background: Temporomandibular disorders TMDs are recognized as the most common chronic or facial pain condition confronting dentists and other health care providers

Materials and Methods: Temporomandibular disorders (TMDs) investigation was performed on two hundred apparently healthy and partially edentulous individuals (92 males and 108 females) aged between 18-70 year. The study was conducted to estimate the prevalence of TMDs according to age and Gender, and to investigate the role of some possible etiological factors in TMDs.

Results: Subjective symptoms were perceived by 30.5% of the patients. The most common symptom was TMJ sounds. Objective signs were observed in 37.0% of the patients. The most prevalent sign was TMJ sounds. Non-significant Gender and age variations were observed regarding symptoms and signs of TMDs. Significant relationships were found between grinding, clenching, recurrent headache, functional shift and the number of symptoms and signs of TMDs.

Conclusion: The number of missing teeth and dental were positively related to the number of signs only, whereas significant relationships were found between crossbite, unilateral and bilateral loss of molar and premolar teeth and the number of symptoms and signs of TMDs.

Keywords: TMJ, partial edentulous (J Bagh Coll Dentistry 2006; 18(1) 12-16)

INTRODUCTION

Temporomandibular disorders TMDs are recognized as the most common chronic or facial pain condition confronting dentists and other health care providers.⁽¹⁾ Although traditionally they have been viewed as one syndrome, current research supports the view that TMDs are a cluster of related disorders in the masticatory system with many common features.⁽²⁾

Epidemiological studies of TMDs often have not been conducted systematically and have used widely difficult to compare.⁽³⁾ The ultimate aim of epidemiological studies is to provide a scientific basis for efforts to prevent and control disease, illness and disability.⁽⁴⁾

The common occurrence of various symptoms and signs of TMDs has been shown in several epidemiological studies.^(4,5) Although only slight variation have been reported in random population⁽⁵⁾, a recent epidemiological studies among adolescents and young adults reveal a significant over representation of females in the groups with TMDs.^(4,6)

In terms of relation between TMDs and age, high prevalence's of such signs and symptoms have reported among adults⁽⁷⁾ and aged persons.⁽⁸⁾

The results concerning the relation between occlusal state and development of functional disorders are conflicting⁽⁹⁻¹¹⁾

There is only scarce information about the prevalence of TMDs in samples consisting of continuous age groups.^(9,11-15) The lack of an unanimously accepted diagnostic categories and treatment modalities suggest that the role of etiological factors has similarly not been entirely demonstrated, as yet. The present study is conducted to elucidate the prevalence's of symptoms and signs of TMDs by Gender and age in partially edentulous patients and their relationships with some possible etiological factors.

MATERIALS AND METHODS

The patients included in this study were those who attended oral diagnosis and prosthetic departments seeking teeth replacement.

Two hundred apparently individuals (92 males and 108 females) aged between 18-70 years with a mean age of 39.4 years were investigated by means of interview and clinical examinations of masticatory system. The answers of the patients and the records of the

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examiners were registered on an examination form (Appendix 1).

The clinical investigations were carried out with the help of a mouth mirror, a metal ruler and a stethoscope.

Joint sounds (clicking or crepitation) were assessed with a stethoscope. Locking was determined as occasional blocking of short duration of the mandibular movement, whereas luxation was determined as a forward dislocation of the condylar head out of the glenoid fossa combined with fixation in that position. Deviation along the opening path of mandible was stated if it was 2mm or more horizontally.⁽⁷⁾

The TMJs were palpated on both sides laterally and posteriorly through external auditory meatuses. Four masticatory muscle pairs were examined by digital palpation. The inter mesial distance was measured by ruler to the nearest millimeter on opening of less than 40mm was assessed as reduced opening capacity⁽¹⁶⁾. The occlusal status of each patient was also registered (Appendix 1).

A pilot study was performed to ensure a consistent application of the diagnostic criteria. The results revealed non-significant difference concerning interincisal distance measurement (P 0.05) and high agreements regarding the non-parametric variables (85-100%).

The data were processed in the National Center for electronic Computers in Baghdad by means of a standard program. The chi-square test was used at level of significance of 0.05.

RESULTS

Gender and age, distribution of the sample are given in figure 1. Table 1 contains the distribution of the subjective symptoms received by interview. One or more of the subjective symptoms of TMDs (TMJ sounds, tiredness: pain during mastication, locking and stiffness) were perceived by 30.5% of the patients. The most common symptom was TMJ sounds. Females had subjective symptoms more common than males; however the difference is not significant. The subjective complaints of TMDs tend to decrease with increasing age; non-significant variance was observed regarding the complaints.

Table 2 shows the distribution of the clinical signs. At least one sign was in 37.0% of the patients. The most common sign was TMJ sounds; clicking was more common than

crepitating (20.5% versus 1%). Non-significant Gender difference was recognized regarding the clinical signs of TMDs. A tendency for lower percentages of signs with advancing age was demonstrated, however, the clinical signs were higher in the second age group.

Table 3 demonstrates the correlations between the number of symptoms and signs of TMDs and different variables. Significant relationship was found between grinding, parafunctional clenching, recurrent headache, functional shift and the number of symptoms and signs of TMDs, while the number of missing teeth and dental wear has significant relationships with the number of signs only.

DISCUSSION

Prevalence of symptoms and signs of TMDs

This investigation was performed on apparently healthy individuals. In most studies on TMDs different questionnaire forms, different clinical criteria and different sampling methods had been used. Thus comparisons with these studies are not always possible.

Almost thirty percent of the patients were found to have one symptom or more of TMDs. Significantly higher prevalence were quoted in other studies ranged between 57-77^(9-13,15). Whereas another study⁽¹⁴⁾ reported lower prevalence (20%). The most common symptom in this study was TMJ sounds; this finding is in agreement with other studies^(9,12-15). The relative independence of subjective symptoms from age in the current survey can be manifestation of the fact that the old people consider these symptoms natural attributes of aging, not as a pathologic manifestation.

One or more clinical signs of TMDs were recognized in 37.0% of the examined subjects; this figure is lower than those reported in other studies^(9,13-15). The prevalence ranged between 41-88%. Highest frequencies of objective signs were recognized in 28-37 year olds, and this confirmed the impression reached by several clinical investigations regarding age distribution of patients with TMDs. Most studies reported the patients to be mainly between 20-40 years of age.^(17,18)

Correlation between the number of symptoms and signs of TMDs and different variables

The significant relationships between oral parafunctions (grinding and clenching) and TMDs (P 0.001) suggest a remarkable role of

these habits in TMDs. Recurrent headache was found to have a signification relationship with TMDs (P 0.001) which support other clinical reports^(19,20). The previously mentioned findings may suggest the psychogenic factor in the development of TMDs and this suggestion is in agreement with the recent concept.⁽²¹⁾

Although we are able to reveal several correlations between dental- occlusal factors and dysfunction, most of these are rather difficult to explain. So it seems logical, for example that the number of missing teeth and lack of distal supporting zones predispose to TMDs. The results of this study showed non-significant relationship between loss of distal occlusal support and TMDs, which is contrary to the findings of others^(22,23), while another report⁽¹⁰⁾ documented relationship with symptoms and lacking any correlation with the signs of TMDs. It was quoted that the posterior tooth loss, particularly in presence of parafunctions, can predispose to overloading of TMJs⁽²⁴⁾. However, in this study even in the presence of parafunctions, no relationship was found between posterior tooth loss and TMDs. This increase in the number of missing teeth has no effect on the subjective complaints, but a remarkable effect in increasing the number of objective signs was found. The same significant effect was found regarding dental wear, similar had been reported in another study⁽¹⁰⁾. A possible explanation for the effect of the number of missing teeth on the objective signs of TMDs (P 0.001) is that there is insufficient adaptive capacity to maintain adequate oral functions in reduced dentition. This effect however, is subclinical i.e. those patients who have more missing teeth have little complaints

Appendix (1)

Examination form:

Data of examination:

Name

Age (year)

Gender male, female

Functional history interview:

1. Have your jawbones made a noise during opening and closing your mouth or during eating?
2. Have your jaws got tired when masticating tough or hard food; or when opening your mouth wide?
3. Have you felt pain in your joints when masticating tough or hard food; or when opening your mouth wide?

but have more objective signs, however, this sign is not so severe to make them complainers and seek treatment; oral rehabilitation is therefore recommended. The significant role of oral parafunctions in dental wear and in recurrent headache (p 0.001), in addition to the position to the positive relationship between dental wear and objective signs of TMDs may suggest the necessary explanation of the possible cause of masticatory system disturbances and making the subjects alert to their oral habits as first step in prevention and treatment of the disorders.

Functional shift (functional malocclusion) in this study has strong correlations with the symptom and sign of TMDs (p 0.001). This could be a probable result of what had been quoted⁽²⁴⁾ as "repeated microtraumas transmitted from premature tooth contacts to the joints tissues. The presence of these occlusal abnormalities will give rise to symptoms in weakest link of the chain teeth, periodontium, alveolar bones and TMJs⁽²⁶⁾. Posterior crossbite (morphological malocclusion) has no relationships with TMDs. It was found that the high prevalence of TMDs associated with morphological malocclusion might be due to increased presence of functional malocclusion other than morphological malocclusion perse⁽²⁷⁾.

In this study crossbite was not found to have any effect no TMJs even in the presence of functional shift.

4. Have your jaws ever become locked or slipped out of the joints?
5. Have your left stiffness in your mandible in the morning?
6. Are you aware or has anyone told you that you grind your teeth during the night?
7. During the day do you clench your teeth?
8. Do you have unusually frequent headache (at least once/ week)?

Clinical Examination

1. Impaired TMJ function (Absent, Present).
 - a. Clicking
 - b. Crepitation
 - c. Locking
 - d. Luxation
 - e. Deviation 2mm on maximal opening

- f. TMJ pain ((Absent, Present).
- g. TMJ pain Laterally
- h. TMJ pain posteriorly
- 2.Masticatory Muscles pain (Absent, Present).
 - a. Masseter
 - b. Anterior temporalis
 - c. Tateral pterygoid
 - d. Medial pterygoid
- 3.Interincisal Distance (mm)
- 4.Occlusal status
 - a. Dental wear (Absent, Present)
- b. Posterior crossbite (Absent, Present)
- c. Functional shift (Absent, Present)
- d. Number of missing teeth
- e. Occlusal support (Absent, Present)
 - 1. Bounded saddle
 - 2. Unilateral loss of molar and premolar teeth
 - 3. Bilateral loss of molar and premolar teeth.

Table 1: Percentage distribution of subjective symptoms according to Gender and age in 200 patients examined by interview

	Gender		Age					Total
	Male	Female	18-27	28-37	38-47	48-57	58-	
TMJ sounds	17.4	26.9	25.0	30.0	21.4	11.1	17.6	22.5
Tiredness during mastication	10.9	16.7	25.0	15.0	14.3	3.7	0.0	14.0
Pain during mastication	7.6	13.9	19.4	12.0	8.6	7.4	5.9	11.0
Looking	5.6	9.3	13.9	16.0	4.3	0.0	0.0	8.0
Stiffness	3.3	6.5	16.7	10.0	1.4	0.0	0.0	6.0
One symptom on more	22.3	37.0	38.0	36.0	30.0	18.5	17.6	30.5

Table 2: Percentage distribution of objective signs according to Gender and age in 200 patients examined by clinical examination

	Gender		Age					Total
	Male	Female	18-27	28-37	38-47	48-57	58-	
Clicking or crepitation	19.5	23.1	22.2	26.0	22.9	11.1	17.6	21.5
Locking	6.5	7.4	11.1	16.0	2.9	0.0	0.0	7.0
Luxation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deviation on maximal Opening	14.1	14.8	16.7	28.0	8.6	3.7	11.8	14.5
TMJ pain	7.6	15.7	16.7	16.0	11.4	7.4	0.0	12.0
Masticatory musde pain	14.1	25.0	25.0	24.0	20.0	14.8	11.8	20.5
Reduced opening capacity	3.3	6.3	5.6	12.0	2.9	0.0	0.0	5.0
One sign or more	30.4	42.5	38.9	42.0	38.6	25.9	29.4	37.0

Table 3: Correlations between the number of symptoms and signs of TMDs and different variables.

Factors	No. of symptoms	No. of signs
Grinding	XXX	XXX
Clenching	XXX	XXX
Recurrent headache	XXX	XXX
Number of missing teeth	Ns	XXX
Unilateral loss of molar and premolar teeth	Ns	Ns
Bilateral loss molar	Ns	Ns
Dental wear	Ns	XXX
Functional shift	XXX	XXX
Crossbite	Ns	Ns

XXX: P 0.001, Ns : Not significant

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