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Clinical Aspects of Temporomandibular Disorders

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Abstract: Temporomandibular disorders are common problems in populations presenting signs and symptoms of muscle and joint pain on palpation, limitations in mandibular motion, joint sounds, pain and locking on mandibular function as well as dental, periodontal, occlusal and psychosocial variables. Problems that involve the temporomandibular joint and related structures include myofascial pain-dysfunction, various internal disarrangements of the joint space and degenerative joint diseases.

The aim of this study was to evaluate the distribution of age and sex, the frequency of parafunctions, deviations and the cardinal symptoms related to specific disorders of the TMJ.

Patients seeking treatment for temporomandibular disorders were reviewed retrospectively. The data were analysed using the Chi-square test and Kappa coefficient. Clinical evaluations and subsequent patient management are discussed.

The prevalence of temporomandibular disorders was highest in the age range 20 to 49. Although women had a higher incidence of positive findings when the types of TMD were analysed, statistically no differences between the sexes were found ($p < 0.001$).

Key Words: Temporomandibular joint, Joint disorders, Epidemiology.

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Introduction

Since the beginning of the seventies, an increasing number of epidemiological studies of temporomandibular disfunctions have been reported, attracting interest world wide. Test studies have revealed that the prevalence of signs and symptoms of TMDs are considerably higher for a given population than has previously been thought (1-8).

Lundeen et al. (9) characterised a population of dental patients with a variety of TMJ disorders and determined that clinician ratings were a useful and valid method for providing clinically relevant data. When Koidis et al. (10) studied the effect of age and sex in craniomandibular disorders, they found significant differences between the severity of symptoms in younger and older women. Investigating the prevalence and distribution of the common complaints of various TMJ diseases may guide management options, timing and certain features of the given population seeking treatment. As epidemiological

studies describe the relationship of various factors determining the frequency and distribution of a disorder in a community, it would be helpful to find the best solution for eliminating the problems that population suffers (11). The aim of this study was to evaluate the distribution of age and sex, the frequency of parafunctions, deviations and the cardinal symptoms related to specific disorders of the TMJ.

Materials and Methods

One hundred and thirty-two patients, 32 men (24.2%) and 100 women, (75.8%) with a mean age of 30 years, ranging from 10 to 64 years, were evaluated for TMD and orofacial pain. This group of patients was drawn from files of patients who were examined between January 1996 and December 1997, and reviewed retrospectively. Patients with missing information or radiodiagnostic details as well as those who failed to

attend the evaluation following therapy were excluded from the study.

The anamneses of the patients were reviewed and all the subjects were examined by the same clinician for clinical signs. This clinical examination included inspection and palpation of the related structures. Range of motion was measured in the sagittal and horizontal planes and noted for symmetry. The patients were asked to open their mouths as wide as possible. This procedure was repeated more than once and the measurement of the greatest opening was recorded with a millimeter gauge positioned between the incisal edges of the maxillar and mandibular incisors. While the patients were opening their mouths, mandibular deflection on opening was viewed from the front and recorded. TMJ noise was identified by palpation and the patients were asked whether there was pain during mouth opening.

Imaging techniques for TMJ were also used. These included plain film, arthrography and MRI in various combinations for this group of patients. The distribution of TMDs in respect of sex, age distribution, the prevalence of signs and symptoms were evaluated and the data were analysed using the Chi square test and Kappa coefficient.

Results

Women made up 75.8% of the entire sample, and the remaining 24.2% were men. As can be seen in Table 1, 55.2% were patients younger than 30 years of age, 27.2% were 30-39 years of age, and 12.8% were 40-49 years of age. Patients over 50 years of age comprised 4.8% of the group. The distribution of TMDs is shown in Table 2. While only 9% of the patients showed hypermobility, almost 67% of the cases exhibited internal darangement. This prevalence was greater than that of muscle disorders, which was significant statistically (p<0.001). However, when the types of TMDs were clinically judged, no differences between the sexes were found (Table 3).

An examination of the cardinal symptoms of the evaluated group of patients showed that pain elicited upon palpation of the musculature occurred in over 60% of the patients. No significant differences were obtained between males and females (Table 4). Although less crepitation was encountered, 64% of the patients presented clicking, but the relation between clicking and crepitation was not significant (Table 5). As can be seen in Table 6, limited opening of the mouth was less frequent in male subjects than in females and 28% of the subjects showed deviations (Table 7).

Table 1. Age Distribution

Age groups	n	(%)
10-19	10	8
20-29	59	47.2
30-39	34	27.2
40-49	16	12.8
50-59	3	2.4
60-69	3	2.4

$\chi^2=115.29$ (p<0.001)

Table 2. The Distribution of TMDs

Type of Disorders	n	(%)
MPD	49	37.1
HYPER	12	9.1
WR	52	39.4
-WR	37	27.3

$\chi^2=26.48$ (p<0.001)

- MPD : Myofacial Pain Dysfunction Syndrome
- HYPER : Hypermobility
- WR : Anterior Disc Displacement with Reduction
- WR : Anterior Disc Displacement without Reduction

Discussion

The results of this study show that the prevalence of TMDs was higher in women than in men. Several related studies (10, 12) have reported comparable results. However, Al-Hadi (13) did not find any difference between men and women in a study conducted on an asymptomatic population. This difference can be attributed to different study methods but many studies (5, 10, 14) that have used not only questionnaires but also clinical examination and dental casts have found the rate of TMDs in women to be higher than that in men. The ratio of women to men in this group of patients with TMDs was 4:1, which is similar to the findings of Koidis et al. (10). Temporomandibular dysfunction is a

Type of Disorder	MALE		FEMALE		p
	n	(%)	n	(%)	
MPD (0)	20	62.5	63	63	NS
MPD (1)	12	37.5	37	37	
HYPHER (0)	29	90.6	91	91	NS
HYPHER (1)	3	9.4	9	9	
WR (0)	21	65.6	59	59	NS
WR (1)	11	34.4	41	41	
-WR (0)	24	75	72	72	NS
-WR (1)	8	25	28	28	

Table 3. The Distribution of TMDs with Regard to Sex

MPD : Myofacial Pain Dysfunction Syndrome
 HYPHER : Hypermobility
 WR : Anterior Disc Displacement with Reduction
 -WR : Anterior Disc Displacement without Reduction
 0 : The Absence of The Disorder
 1 : The Presence of the Disorder
 NS : Not Significant

Type of Disorder	MALE		FEMALE		TOTAL	
	n	(%)	n	(%)	n	%
ABSENCE	13	39.3	32	32	45	34.09
PRESENCE	19	60.7	68	68	87	65.91

Table 4. Pain Distribution in TMD Patients

$\chi^2=2.27$ (p>0.05)

CLICKING	None	CREPITATION		TOTAL	
		Unilateral	Bilateral	n	%
None	40	4	3	47	35.6
Unilateral	51	2	0	53	40.2
Bilateral	31	0	1	32	24.2
n	122	6	4	132	
Total					
%	92.4	4.5	3		

Table 5. TMJ Sounds in Jaw Movement

Kappa: -0.045 (p>0.05)

multifactorial disorder involving physical, psychological, emotional, social and local factors and this study was probably carried out on a population that was similar to the one examined in the present study.

The age range of 20-49 years is clinically relevant in this study as most TMJ patients coming for treatment are part of this group (12, 14). Although the types of disorder are not distributed with regard to sex, the most common problems are related to internal derangements.

Clinical signs of TMJ internal derangement were present in nearly 20% of the non-TMJ patients, so the higher frequency in this study was due to the fact that this study dealt with TMD patients (12).

Conclusions

The prevalence of TMDs was highest in the age range 20 to 49 in the group of patients evaluated (p<0.001).

	MALE		FEMALE		TOTAL	
	n	(%)	n	(%)	n	%
0-25 mm	2	6.25	6	6	8	6.06
26-35 mm	8	25.0	28	28	36	27.27
36-45 mm	7	21.87	36	36	43	32.58
46-55 mm	6	18.75	21	21	27	20.45
55<mm	5	15.62	0	0	5	3.79
Unknown	4	12.5	9	9	13	9.85

Table 6. Range of Mouth Opening in TMD Patients

$\chi^2=19.61$ ($p<0.001$)

Table 7. Deviation in TMD Patients

	PATIENTS	
	n	%
WITHOUT DEVIATION	95	71.97
WITH DEVIATION	37	28.03

Women had a higher incidence of positive findings than men: about 76% in this study.

When the types of TMD were clinically assessed no differences between the sexes were found ($p>0.05$).

While only 9% of the patients showed hypermobility, almost 67% of the cases exhibited internal derangement. This prevalence was greater than that of muscle disorders, which was significant statistically ($p<0.001$).

Pain elicited upon palpation of the musculature occurred in over 60% of the patients. No significant differences were obtained between males and females ($p>0.05$). Although less crepitation was encountered, 64% of the patients presented clicking, but the relation between clicking and crepitation was not significant ($p>0.05$). Limited opening of the mouth was less frequent in male subjects than in females ($p<0.01$). 28% of the subjects showed deviation.

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