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Research Article

CLINICAL CHARACTERISTICS OF TEMPOROMANDIBULAR DISORDERS AMONG CHILDREN

Dr. Iram Rashid¹, Dr Bilawal Nawaz², Dr Emaan Kamal³

¹ BDS de' Montmorency College of Dentistry, Lahore., ² BDS Hamdard College of Medicine and Dentistry. Karachi., ³ BDS Islam Dental College, Sialkot.

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Abstract:

Aim: This study was conducted to record the prevalence of signs and symptoms of temporomandibular disorders (TMD) and to compare the results with the results of other groups.

Place and Duration: In the dental department of Punjab Dental Hospital, Lahore for one-year duration from March 2019 to March 2020.

Methods: Data obtained from the TMD questionnaire and physical examination of signs and symptoms of TMD on 2,157 randomly selected children who presented to dental department. The sample was divided into three groups: 527 (251 men, 276 women) with primary, 1076 (522 men, 554 women) with mixed and 554 (272 men, 282 women) with permanent dentition.

Results: Symptoms of TMD were found (19.1%), and the most common symptom of TMD was shared sounds (12.4%). Limited mouth opening (7.0%) was the second most common symptom. Pain in the muscles and the temporomandibular joint (TMJ), as well as deviations in the opening of the jaw, were rare. The sounds of the temporomandibular joints increased significantly with age ($P < 0.001$). Parent-reported TMD symptoms were evident in (24.3%) of the questionnaires returned (1,338). The most common symptoms were chewing pain (12.4%) and headache (11.9%). The incidence of headache was found to increase from primary to permanent dentition ($P < 0.001$). There was no difference between the sexes in the occurrence of any symptoms.

Conclusion: Data obtained from the physical examination and questionnaire showed a high frequency of signs and symptoms of TMD in children. It has been concluded that the importance of screening for symptoms and signs of TMD should not be underestimated in the clinical evaluation of pediatric patients.

Key words: signs, symptoms, temporomandibular joint disorders, children.

Corresponding author:**Dr. Iram Rashid,**

BDS de' Montmorency College of Dentistry, Lahore.

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INTRODUCTION:

Temporomandibular diseases have been recognized as frequent pain in the face and mouth. The American Dental Association in 1983 suggested that the term temporomandibular disorder (TMD) refers to a group of disorders characterized by pain in the temporomandibular joint (TMJ), periapical region, or masticatory muscles [1-3]. TMJ can make sounds while human drawbar function; and deviations or restriction of the range of motion of the mandible [4]. The diagnosis and treatment of temporomandibular disorders (TMD) in children and young adults has gained more attention in the last 20 years. A number of epidemiological studies have been published on the incidence of TMD in children and adolescents from different populations, where the incidence of TMD varied in the literature from 16% in children with primary dentition to 90% in children with mixed dentition [5-7]. The prevalence of TMD is still not well known and further research and comparisons are needed to allow a better understanding of pathological aspects in order to apply effective preventive and therapeutic measures [8]. There are no other studies that describe the occurrence of signs and symptoms of TMD in Pakistani children. The aim of this study was to record the frequency of signs and symptoms of TMD in children of different age groups and to compare the results with the results obtained in other populations.

METHODOLOGY:

Patients were randomly selected from dental department of Punjab Dental Hospital, Lahore for one-year duration from March 2019 to March 2020. Parents and children were informed about the purpose of the study. The study included children meeting the following criteria:

- All children who were eligible
- Parental consent for their child to participate in the study
- The child should be in good general condition
- The child cooperates with the examination.

In total, 2,157 children aged 3 to 15 were examined.

Figure 1 shows the distribution of the sample population by age. The sample was divided into three groups: 527 (251 men, 276 women) with deciduous teeth, 1076 (522 men, 554 women) with mixed teeth, and 554 (272 men, 282 women) with permanent dentition.

Clinical examination:

The clinical examination included: muscle tenderness (temporal, masseter and sternocleidomastoid),

tenderness of the temporomandibular joints when opening and closing, the sounds of the temporomandibular joints when opening, mandibular deviation when opening and the maximum range vertical opening. The muscles and TMJ were touched on both sides with two fingers while the child opened and closed his mouth. Pain responses were recorded as "present or absent". The sounds of the temporomandibular joint were assessed on opening and closing by palpating and / or audibly through the examining ear 5 cm from the TMJ. TMJ sounds were recorded as clicking (single irregularity) or crepitus (multiple irregularities). A deviation during opening of more than 2 mm to the right or left of an imaginary vertical line when the mandible has reached about half of its vertical opening is considered positive. The move was repeated several times for confirmation. The maximum opening was measured with a Boley gauge from the maxilla to the medial edges of the mandibular incisors adjacent to the midline of the teeth. The patient was asked to open as wide as possible and the measurement was recorded. The measurement of the upper bite was added to the maximum incisal distance to obtain the maximum vertical opening value. The measurement was performed twice and the highest value was recorded. 35 mm for children with primary dentition and 40 mm for children with mixed and permanent dentition were assumed as the lower limit of normal mouth opening. Any child with at least one positive symptom in the muscles, temporomandibular joint, or on opening was classified as having TMD symptoms. Parents were asked to complete a history questionnaire for acute periapical chewing pain, difficulty opening the mouth, hearing TMJ sounds, frequent headaches (at least once or twice a week), and jaw blockage. The SPSS statistical package (version 19) was used. The frequency and form of signs and symptoms of TMD were analyzed in relation to the total number of subjects, separately for men and women. Frequency differences were tested using Pearson's chi-square statistic and supplemented with Fisher's exact test when expected values were <5. The significance level was set at $P < 0.05$.

RESULTS:

The frequency of different TMD symptoms in different dental age groups is presented in Table 1. In the entire sample of 268 children (12.4%), TMJ sounds were the most common symptom, while muscle tenderness was the least frequent. Only 71 children (3.2%) were registered. A total of 413 children (19.1%) had at least one symptom of TMD.

TABLE 1: DISTRIBUTION OF TMJ SIGNS ACCORDING TO SEX AND DENTAL AGE

	Primary Dentition				Mixed Dentition			
	Male	Female	Total	P-value*	Male	Female	Total	P-value*
	N=251	N=276	N=512		N=523	N=554	N=1076	
	N=(%)	N=(%)	N=(%)		N=(%)	N=(%)	N=(%)	N=(%)
TMJ sounds	23(9.2)	27(9.8)	50(9.5)	118	80(15.3)	89(16.1)	169(15.7)	ns
Muscle Tenderness	12(4.8)	14(5)	26(4.9)	118	13(2.4)	15(2.7)	28(2.6)	ns
TMJ Tenderness	9(3.6)	10(3.6)	19(3.6)	118	22(4.2)	19(5.2)	41(3.8)	ns
Restricted Opening	11(4.4)	13(4.7)	24(4.6)	118	49(9.4)	48(8.7)	97(9.0)	ns
Deviation	11(4.4)	10(3.6)	21(4)	118	26(5.0)	31(5.6)	57(5.3)	ns
At Least One Sign	34(13.7)	40(14.5)	74(14)	118	112(21.5)	119(21.4)	231(21.5)	ns

Permanent Dentition				Total	P-value**
Male	Female	Total	P-value*		
N=272	N=282	N=554		N=2157	
N=(%)	N=(%)	N=(%)	N=(%)	N=(%)	
22(8.9)	27(9.5)	49(8.5)	ns	268(12.4)	<0.001
4(1.4)	13(4.6)	17(3.10)	<0.05	71(3.2)	NS
8(2.9)	10(3.5)	18(3.2)	NS	78(3.6)	NS
12(4.4)	19(6.7)	31(5.6)	<0.05	152(7.0)	NS
7(2.6)	7(2.4)	14(2.5)	NS	92(4.7)	NS
47(17.3)	61(21.7)	108(19.5)	<0.05	413(19.1)	<0.05

Regarding gender differences, the presence of joint sounds was significantly higher in women than in children with permanent dentition ($p < 0.05$). This difference was not significant in the other two age groups. There was no difference between the sexes in the frequency of muscle tenderness in any age group. Pain in the temporomandibular joint was significantly greater in women than in men in the group with permanent dentition. Among children with permanent

dentition, the frequency of jaw narrowing after opening the muscle soreness and the presence of at least one symptom was significantly higher in women than in men ($p < 0.05$). As for the difference in dentition age, TMJ sounds and the presence of at least one sign were considered to be a significant increase in the incidence from the deciduous to permanent dentition phase ($p < 0.001$ and $p < 0.05$, respectively).

TABLE 2: DISTRIBUTION OF TMJ SYMPTOMS ACCORDING TO SEX AND DENTAL AGE

	Primary Dentition			Mixed Dentition		
	Male	Female	Total	Male	Female	Total
	N=171	N=182	N=353	N=288	N=376	N=664
	N=(%)	N=(%)	N=(%)	N=(%)	N=(%)	N=(%)
Pain on Chewing	18(10.5)	25(13.7)	43(12.2)	22(7.6)	53(14.1)	75(11.3)
Headache	3(1.7)	7(1.9)	10(1.9)	13(4.5)	47(12.5)	60(9.1)
Opening Difficulty	6(3.5)	11(6.0)	17(4.8)	4(1.4)	5(1.3)	9(1.4)
Hearing TMJ Noises	2(1.2)	2(1.1)	4(1.1)	0(2.1)	8(2.1)	14(2.1)
Locking of the jaws	0(0.0)	1(0.5)	1(0.28)	2(0.59)	2(0.53)	4(0.6)
At least one symptom	17(9.9)	26(14.3)	43(12.2)	63(21.9)	92(24.5)	155(23.3)

Permanent Dentition			Total sample	P-value**
Male	Female	Total		
N=143	N=118	N=321	N=1338	
N=(%)	N=(%)	N=(%)	N=(%)	
1(4.9)	42(23.6)	19(15.3)	167(12.4)	ns
23(16.1)	66(37.1)	89(27.7)	159(11.9)	<0.00*
3(2.1)	5(2.8)	8(2.5)	34(2.5)	ns
1(4.5)	10(5.6)	17(5.3)	35(2.6)	ns
1(0.70)	0(0.0)	1(0.31)	6(0.45)	ns
51(35.7)	76(43.7)	127(39.6)	315(24.3)	<0.05

Out of 2,157 parents, 1,338 parents returned the questionnaires, giving a response rate of 62%. Table 2 shows the frequency distribution of various TMD symptoms depending on the parents' responses to the questionnaire. Chewing pain was the highest among TMD symptoms. This was reported by 167 (12.4%) children. The lowest incidence was jaw locking, which was found in 6 (0.45%) children. While gender was not a significant factor in the occurrence of TMD symptoms, dental age appeared to be significantly related. Headache and the presence of at least one symptom were reported with a significantly greater frequency in the solid phase than in the milk or mixed dentition with P values of 0.001 and <0.05, respectively.

DISCUSSION:

Some studies on the prevalence of TMD in children that have been published in different parts of the world. The purpose of this study was to evaluate the frequency of signs and symptoms of TMD in school-age children through a clinical study and subjective data obtained from questionnaires, and to compare the results with other and international studies. The present study showed that the incidence of clinical symptoms was 19.1% and 24.3%, respectively, with women being statistically higher than men. These

results are in line with similar results presented by some researchers⁸⁻¹⁰. The current results were also lower than some previously reported studies, but slightly higher than others. While the dispute may reflect differences between samples that are drawn from populations with different racial, social and cultural characteristics, it can also be attributed to differences in survey methodology. In line with previous studies in children of different age groups, the frequency of TMJ sounds seems to increase from the deciduous to the permanent dentition stage¹¹⁻¹². This can be attributed to the longer duration of muscle tension in the older age groups, causing intracapsular changes and, consequently, TMJ sounds. Some doctors have suggested that joint problems may precede muscle disorders. In addition, the state of development of the dentition may contribute to the relatively frequent occurrence of TMJ sounds in mixed and permanent dentition. The high rates of occlusive disturbance and occlusal instability reported by Malmgren during mixed and early permanent teeth support the previous assumption. The next common single sign was limited opening¹³. It was found in 7.0% of children. A maximum mouth opening of 35 mm was reported to be the acceptable minimum limit in children. A mouth opening smaller than 40mm was considered

by others to be restricted opening when they used 40mm as the intersection point for the normal mouth opening limit and found that 10% of 7-year-old children had restricted opening. While in the same study, while 3% mm was considered the minimum limit, only 1% of the children had restricted opening. In this study. The cut point for the normal margin of mouth opening in young children with primary dentition was 35 mm. Meanwhile, 40 mm was used in children with mixed and permanent dentition. The current result showed no significant differences in the occurrence of a limited opening between different groups of dentitions. TMD symptoms were higher in women than in men¹⁴. This is in line with the results of previous studies. Physical differences and possible greater social pressure may explain this gender difference. 24.3% of children had at least one TMD symptom with the highest incidence of 39.6% among children with permanent dentition. This result is consistent with that reported by Abdel-Hakim, Alsalem, and Khan (1996), who found that 32% of their Saudi adolescents had at least one symptom of dysfunction. The most common symptom was pain while chewing. It was stated by 12.4% of parents. This result is similar to that reported by Esposito et al., 2000, where muscle pain followed by headache was identified as the most common symptom. The headache increased significantly with age. A possible explanation is that changes in the pattern of the headache can occur in the older age group due to hormonal changes¹⁵. The result regarding the frequency of TMD symptoms, not lower in men than in women, is similar to Widmalm et al. He found only a slight difference in the distribution between the sexes, but a large difference between the races. The current results contradict other reports that have found a higher incidence of symptoms in women.

CONCLUSIONS:

Data obtained from the physical examination and questionnaire showed a high frequency of signs and symptoms of TMD in children. TMD symptoms were found in 19% of children with the most common TMJ sounds. TMD symptoms were reported by 24.3% of parents, and pain during chewing was the most common symptom. More research is needed to assess the prevalence of signs and symptoms in TMD in the older age groups in the Pakistani population.

REFERENCES:

1. Alrashdan, Mohammad S., Amjad Nuseir, and Mahmoud K. AL-Omiri. "Prevalence and correlations of temporomandibular disorders in Northern Jordan using diagnostic criteria axis I." *Journal of investigative and clinical dentistry* 10, no. 2 (2019): e12390.

2. Chuinsiri, Nontawat, and Paiboon Jitprasertwong. "Prevalence of self-reported pain-related temporomandibular disorders and association with psychological distress in a dental clinic setting." *Journal of International Medical Research* 48, no. 9 (2020): 0300060520951744.
3. Poluha, Rodrigo Lorenzi, Giancarlo De la Torre Canales, Leonardo Rigoldi Bonjardim, and Paulo César Rodrigues Conti. "Clinical variables associated with the presence of articular pain in patients with temporomandibular joint clicking." *Clinical Oral Investigations* (2020): 1-8.
4. Alfawzan, Ahmed Ali. "An Assessment of the Prevalence and Severity of Temporomandibular Disorders among Undergraduate Dental Students at Qassim University." *World* 11, no. 2 (2020): 135.
5. Iodice, Giorgio, Roberta Cimino, Stefano Vollaro, Frank Lobbezoo, and Ambra Michelotti. "Prevalence of temporomandibular disorder pain, jaw noises and oral behaviours in an adult Italian population sample." *Journal of Oral Rehabilitation* 46, no. 8 (2019): 691-698.
6. Reyad, Jaradat Mohammed, Jarbawi Maher Mohammed, and Rahhal Ahmad Abdallah. "Prevalence of temporomandibular disorders among Palestinian medical students." *World Journal of Advanced Research and Reviews* 6, no. 1 (2020): 146-152.
7. Amin, Mezzgan, Asifullah Khan, and Mohammad Adnan Khan. "Frequency of common signs of temporomandibular disorders in patients with reduced occlusal support due to partial edentulism." *Pakistan Oral & Dental Journal* 39, no. 2 (2019): 206-211.
8. Alyessary, Akram S., Adrian Ujin Yap, and Ali Almousawi. "The Arabic Fonseca Anamnestic Index: Psychometric properties and use for screening temporomandibular disorders in prospective orthodontic patients." *CRANIO®* (2020): 1-8.
9. Irsan, Nadhira Dewi Hanana, Ira Tanti, and Pinta Marito. "Relationship Between Occlusal Support Zones and Temporomandibular Disorders in the Elderly Population." *Journal of International Dental and Medical Research* 13, no. 3 (2020): 1041-1046.
10. Banafa, Aisha, Anna Liisa Suominen, and Kirsi Sipilä. "Factors associated with signs of temporomandibular pain: an 11-year-follow-up study on Finnish adults." *Acta Odontologica Scandinavica* 78, no. 1 (2020): 57-63.
11. Zwiri, Abdalwhab MA, Zuryati Ab Ghani, Adam Husein, Khoo Suan Phaik, Nur Karyatee Kassim,

- and Siti Aishah Zainal. "Obstructive sleep apnea and its relation with temporomandibular disorders: A narrative review." *Journal of International Oral Health* 12, no. 1 (2020): 8.
12. Al Hayek, Samar O., Mashael F. Al-Thunayan, Amjad M. AlGhaihab, Reem M. AlReshaid, and Aamir Omair. "Assessing stress associated with temporomandibular joint disorder through Fonseca's anamnestic index among the Saudi physicians." *Clinical and Experimental Dental Research* 5, no. 1 (2019): 52-58.
 13. Merle, Cordula Leonie, Robin Hoffmann, Jan Schmickler, Michael Rühlmann, Nadia Challakh, Rainer Haak, Gerhard Schmalz, and Dirk Ziebolz. "Comprehensive Assessment of Orofacial Health and Disease Related Parameters in Adolescents with Juvenile Idiopathic Arthritis—A Cross-Sectional Study." *Journal of Clinical Medicine* 9, no. 2 (2020): 513.
 14. Alzyoud, Raed, Motasem O. Alsuweiti, Heba Q. Almaaitah, Bushra N. Aladaileh, Mohammad K. Alnoubani, and Adel M. Alwahadneh. "Juvenile Idiopathic Arthritis in : Single-Center Experience." (2020).
 15. Lypka, Michael, Karina Shah, and Jones. "Prosthetic temporomandibular joint reconstruction in a cohort of adolescent females with juvenile idiopathic arthritis." *Pediatric Rheumatology* 18, no. 1 (2020): 1-7.