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EVALUATE OF THE PREVALENCE AND SEVERITY OF SYMPTOMS OF TEMPOROMANDIBULAR JOINT DYSFUNCTION (TMJD).

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ABSTRACT… Objectives: The objective of this study is to evaluate the prevalence and severity of TMJD and distribution of associated symptoms with respect to gender and age among the patients visiting Dental Clinic of a Rural Health Centre (RHC). **Study Design:** Descriptive cross-sectional study. **Setting:** Dental Clinic of Rural Health Centre (RHC) Nasirabad, District Kambar Shadadkot, Sindh, Pakistan. **Period:** December 2018 to May 2019. **Material & Method:** The study sample comprises of total 132 patients meeting the inclusion and exclusion criteria. Fonseca's questionnaire and Fonseca's Anamnestic Index are employed to assess the subjective response and severity of TMJD symptoms. **Results:** The results are arranged and statistically evaluated. Overall 43% answered positive to questions with respect to symptoms. Majority of patients reported positive for neck pain or stiff neck (15%) and muscular fatigue while chewing (15%). 50 % of patients suffering from TMJD symptoms belong to Age Group 1 (15 – 35 years). 94.3 % female patients suffer from some degree of TMJD. Based on Fonseca's Anamnestic Index of severity, 65.9% of patients have Mild TMJD symptoms, 18.9% with Moderate severity and 1.5% with severe symptoms of TMJD. **Conclusion:** This study concludes that TMJD are more common in females with age group of 15 – 35 years of age. The most prevalent symptom is muscular pain / tiredness of jaws during chewing and stiffness of neck. In this study sample, majority of patients suffer from Mild TMJD symptoms.

Key words: Anamnestic Index, Fonseca's Questionnaire, Prevalence of TMD, Temporomandibular Joint Disorder.

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INTRODUCTION

The temporomandibular joint is the articulation between the lower and upper jaws. The teeth form the contacts between the lower and upper jaws while muscles move the mandible.[1]

Temporo–Mandibular Joint Disorders cause pain in the jaws and / or surrounding muscles, leading to significant pain, distress and functional disturbance / limitations.[2,3] TMJD is the most prevailing musculoskeletal condition after chronic low back pain.

For clinical and research settings, current diagnostic criteria for Temporomandibular Disorders (DC/TMD)[4] defines 12 common TMD including but not limited to Arthralgia, Myalgia, Local Myalgia, Myofascial pain, Myofascial pain with referral, four-disc displacement disorders, Degenerative joint disease, Subluxation and Headache attributed to TMD.[5,6]

Common symptoms present in patients of TMD are toothache, facial pain, TMJ joint sounds, earache and limited jaw movements. Often these patients present in dental clinics with complain of toothache because they naturally assume that tooth is causing the problem. Consequently, it is imperative for the dentist to recognize these patients, diagnose the actual cause of the symptoms, ascertain their needs and select appropriate treatment / intervention options.[7]

The etiology of TMJD is fairly complex and

multifactorial, including structural abnormalities of TMJ, stress induced muscle hyperactivity and overuse of joint.[8] In 1973, a research study proposed four (4) foremost theories underlying the etiology of temporomandibular disorders (TMDs), whereby two of these were psychological and psycho-physiologic.[9]

Diagnosis of TMJD is carried out by evaluating patients' history with subsequent physical examination.[10] Additionally, diagnostic TMJ imaging methods provide an assessment of TMJ components' integrity and their functional association which confirm the extent and/ or progression of existing disease.[11] These disorders are most common among the 20-45 years age group with an increasing tendency in female gender. Following are the symptoms of temporomandibular joint syndrome.[12]

- Chronic pain described as dull ache, routinely unilateral in the muscles of mastication.
- Pain is worsened when chewing and may radiate to the jaw and ear.
- Locking of jaws when he/she attempts to open the mouth.
- Ear (preauricular) clicking or popping, typically when displacement of the articular disk is present.
- Headache and/ or neck ache. In some cases, patient complains headache without localized pain in the temporomandibular joint.
- An uncomfortable or different from typical bite.[13]
- Neck pain with shoulder involvement with accompanying back pain.
- Bruxism i.e. involuntarily or unconsciously clenching or grinding the teeth, typically during sleep
- Pain intensifies over the course of the day.
- History of trauma to the jaw (upper / lower).

TMJDs have the potential to cause severe mental and physical handicaps in patients. Early diagnosis of TMJDs is vital in limiting long-term harm and disability in patients. Its etiology includes several contributing factors which can be eliminated or largely reduced by instituting various preventive measures.[14] Therefore, along with early diagnosis, patients must be educated about preventive measures to decrease the burden of this disease among the local population.[15]

The objective of this study is to evaluate the prevalence and severity of TMJD and distribution of associated symptoms with respect to age and gender among the patients visiting Dental Clinic of a Rural Health Centre (RHC). This study is first of its kind, conducted in rural areas of Sindh. It provides data on the prevalence and severity of temporomandibular joint disorders in the subject population.

MATERIAL & METHODS

This is a descriptive cross-sectional study carried out at Dental Clinic of Rural Health Centre (RHC) Nasirabad, District Kambar Shadadkot (Sindh, Pakistan) from December 2018 to May 2019. The study sample comprises of total 132 patients meeting the inclusion and exclusion criteria. Along with patient history, a thorough clinical examination is carried out to establish the prevalence and severity of temporomandibular joint disorders using Fonseca's Questionnaire and Fonseca's Anamnestic Index (IAF). Patients are categorized on basis of presenting symptoms and frequencies for various categorical variables like gender, age group etc are calculated.

Inclusion Criteria

- Patients of both genders with age ranging from 15 to 70 years.
- All patients diagnosed with TMD having symptoms of pain, clicking and limited mouth opening.
- Patients who have previously received treatment for TMDs.

Exclusion Criteria

- Patients with organic dental disease and other disorders which may mimic TMJD pain.
- Patients with bone diseases like Osteoporosis, osteopetrosis or osteomalacia.
- Patients with debilitating diseases including rheumatoid arthritis, poliomyelitis or chronic obstructive pulmonary disease.
- Patients with neurological disease including Dyskinesia (Abnormality in performing voluntary muscle movements).

- Female patients with pregnancy.
- Patients with any previous history of Orthodontic treatment, Cleft surgery or Orthognathic surgery.

Data Collection Procedure

A detailed history is obtained from each patient based on Fonseca's Questionnaire (Table-I). Follow-on oral examination is carried out to evaluate and rule out any other organic or dental condition which may mimic symptoms of TMD.

Patients are assessed on basis of symptoms such as facial pain, TMJ tenderness, locking / stiffness or tenderness of jaw muscles, joint sounds, limitations in mandibular movement and difficulty in chewing. Patients presenting with one or more of these symptoms are included in the study. The severity is assessed and diagnosis of type of TMD is carried out using Fonseca's Anamnestic Index (IAF) (Table-II). Data collected from patients is entered in SPSS ® version 16.0 for statistical analysis.

RESULTS

Out of total 132 patients, 88 (67%) are females while remaining 44 (33%) patients are male (Figure-1). The age of patients is categorized into 3 Groups as shown in Table-III with 50% patients belonging to Age Group 1, 27.3% in Group 2 and 22.7% in Group 3 with mean age of ~38 years. Gender Distribution with respect to Age group is shown in Table-IV. The distribution of patients based on their response to Fonseca's Questionnaire is presented in Table-V. 43 % answers are positive for subjective symptoms based on "Yes" and "Sometimes" Due to normative population, the prevalence of "No" answer is high. The frequency of positive responses to Fonseca's Questionnaire (Table-VI) reveals that majority of patients reports positive for neck pain or stiff neck (15%) and muscular fatigue while chewing (15%). 14% of patients complains of frequent headaches while 12% reports clicking or popping during opening of mouth. Other 12% considers themselves tense or nervous.10% of patients complains of earache or pain at TMJ area together with 9% giving positive history of clenching or grinding of their teeth. 5% are positive for discomfort while chewing their food with side to side movement of their jaws, while only 4% patient's think that their teeth do not articulate well and 4% finds it difficult to open their mouth.

Figure-2 shows the distribution of patients with respect to TMJD severity according to Fonseca's Anamnestic Index. Data shows 65.9 % patients have Mild TMJD, 18.9 % patients have Moderate TMJD, while only 1.5 % patients present with Severe TMJD.

Table-VII shows the distribution of patients' response to Fonseca's Questionnaire according to Gender. From the answers to the Fonseca's Questions, the severity of TMJD symptoms with respect to gender and age group is evaluated and is presented in Table-VIII and Table-IX respectively. A total of 94.3 %.females suffer with some degree of TMD An analysis of cross tabulation between Fonseca Anamnestic index with respect to gender shows that there is no case of Severe TMJD in males whereas 02 females present with symptoms of Severe TMJD 19.3 % females shows Moderate TMJD symptoms while 18 % males have Moderate TMJD 72.7 % females showed symptoms of Mild TMJD while 52.7 % males have Mild TMJD. Results showed that overall prevalence of Mild TMJD symptoms is common in Age Group 1(15 – 35 years).

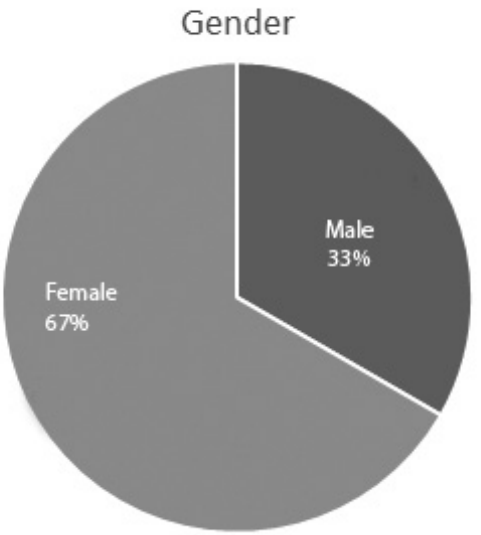

Figure-1. Gender distribution of patients

Question	Yes	No	Sometimes
Is it difficult for you to open your mouth?			
Is it difficult for you to move mandible from side to side?			
Do you get tired or have pain during chewing food?			
Do you have recurrent headaches?			
DO you have any pain on the nape or stiff neck?			
Do you have recurrent earaches or pain in craniomandibular joints?			
Have you noticed any TMJ clicking when you open your mouth or during chewing?			
Do you clench or grind your teeth?			
Do you feel your teeth do not articulate well?			
Do you consider yourself an anxious / nervous / tense patient?			

Table-I. Fonseca's questionnaire

Points	Severity of TMJD
0-15	No TMJD
20-40	Mild TMJD
45-65	Moderate TMJD
70-100	Severe TMJD

Table-II. Fonseca's anamnestic index (IAF)

Age Group	Age (Years)	Frequency of Patients	Mean Age
1	15 – 35	66 (50.0%)	37.98
2	36 – 50	36 (27.3%)	
3	51 – 70	30 (22.7%)	

Table-III. Age distribution of patients

Gender	Age Group			Total
	1	2	3	
Male	29	6	9	44
Female	37	30	21	88

Table-IV. Gender distribution with respect to age group

Question	Yes	No	Sometimes
Is it difficult for you to open your mouth?	9 (6.8%)	111 (84.1%)	12 (9.1%)
Is it difficult for you to move mandible from side to side?	11 (8.3%)	104 (78.8%)	17 (12.9%)
Do you get tired or have pain during chewing food?	55 (41.7%)	48 (36.4%)	29 (22.0%)
Do you have recurrent headaches?	43 (32.6%)	53 (40.2%)	36 (27.3%)
Do you have any pain on the nape or stiff neck?	57 (43.2%)	45 (34.1%)	30 (22.7%)
Do you have recurrent earaches or pain in craniomandibular joints?	21 (15.9%)	74 (56.1%)	37 (28.0%)
Have you noticed any TMJ clicking when you open your mouth or during chewing?	29 (22.0%)	65 (49.3%)	38.8%)
Do you clench or grind your teeth?	24 (10.6%)	83 (62.9%)	25 (18.9%)
Do you feel your teeth do not articulate well?	16 (12.1%)	108 (81.8%)	8 (6.1%)
Do you consider yourself an anxious / nervous / tense patient?	31 (23.5%)	64 (48.5%)	37 (28.0%)

Table-V. Patients' response to fonseca's questionnaire

Question	Frequency of Positive Answers (Yes and Sometimes)	Frequency (%)
Is it difficult for you to open your mouth?	21	4%
Is it difficult for you to move mandible from side to side?	28	5%
Do you get tired or have pain during chewing food?	84	15%
Do you have recurrent headaches?	79	14%
Do you have any pain on the nape or stiff neck?	87	15%
Do you have recurrent earaches or pain in craniomandibular joints?	58	10%
Have you noticed any TMJ clicking when you open your mouth or during chewing?	67	12%
Do you clench or grind your teeth?	49	9%
Do you feel your teeth do not articulate well?	24	4%
Do you consider yourself an anxious / nervous / tense patient?	68	12%

Table-VI. Frequency of Positive Responses to Fonseca's Questionnaire

Question	Response	Gender		P-Value
		Male	Female	
Is it difficult for you to open your mouth?	Yes	4	5	0.360
	No	38	73	
	Sometime	2	10	
Is it difficult for you to move mandible from side to side?	Yes	3	8	0.280
	No	38	66	
	Sometime	3	14	
Do you get tired or have pain during chewing food?	Yes	13	42	0.002
	No	25	23	
	Sometime	6	23	
Do you have recurrent headaches?	Yes	11	32	0.404
	No	19	34	
	Sometime	14	22	
Do you have recurrent headaches?	Yes	13	44	0.64
	No	20	25	
	Sometime	11	19	
Do you have recurrent earaches or pain in craniomandibular Joints?	Yes	5	21	0.91
	No	31	43	
	Sometime	8	29	
Have you noticed any TMJ clicking when you open your mouth or during chewing?	Yes	8	21	0.451
	No	26	39	
	Sometime	10	28	
Do you clench or grind your teeth?	Yes	10	14	0.545
	No	25	58	
	Sometime	9	16	
Do you feel your teeth do not articulate well?	Yes	7	9	0.385
	No	35	73	
	Sometime	2	6	
Do you consider yourself an anxious / nervous / tense patient?	Yes	8	23	0.111
	No	27	37	
	Sometime	9	28	

Table-VII. Distribution of patients' response to fonseca's questionnaire according to gender

Gender	Fonseca's Anamnestic Index				Pearson Chi Square	P-Value
	No TMJD	Mild TMJD	Moderate TMJD	Severe TMJD		
Male	13	23	8	0	15.132	0.002
Female	5	64	17	2		
Total Patients	18 (13.6%)	87 (65.9%)	25 (18.9%)	2 (1.5%)		

Table-VIII. TMJD severity classification with respect to gender

Age Group	Fonseca's Anamnestic Index				Total	Pearson Chi Square	P-Value
	No TMJD	Mild TMJD	Moderate TMJD	Severe TMJD			
1	6	47	11	2	66	8.556	0.200
2	4	23	9	0	36		
3	8	17	5	0	30		
Total	18	87	25	2	132		

Table-IX. TMJD Severity Classification with Respect to Age

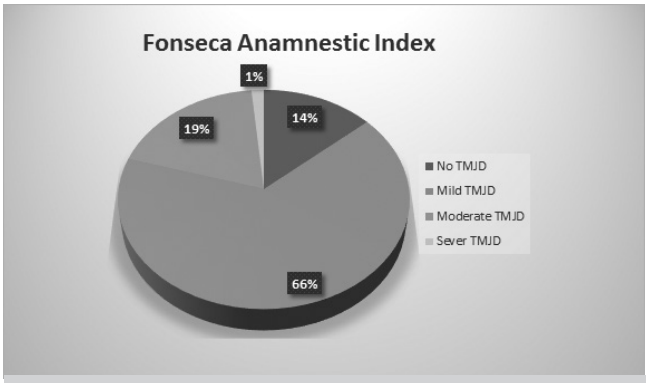

Figure-2. Distribution of patients with respect to TMJD severity according to fonseca's anamnestic index

DISCUSSION

This cross-sectional descriptive study carried out amongst the patients visiting Dental Clinic of RHC Nasirabad, provides an outline of prevalence of TMD's symptoms in Nasirabad. This study is first among rural areas of Sindh to evaluate the presence of TMDs symptoms which are often misdiagnosed by inexperienced dental clinicians. In this study, 43 % answers are positive for subjective symptoms based on "Yes" and "Sometimes", while Agerberg and Carlsson[16] and Szentpetery et al[17] found that 57% and 20.6% patients have reported subjective symptoms respectively. The results of this study suggest overwhelming female predilection which corroborate the previous finding of Pedroni et al[18], Garcia et al[19], and Otuyemi et al.[20] Nevertheless, it is recommended that a detailed clinical examination and mental health assessment of female patients in these settings be carried out to elicit reasons of high prevalence in female gender.

Nomura et al[21] had found that 35.78% of patients have mild TMJD, 11.93% of patients had moderate TMJD and 5.5% of patients had severe TMJD. Wänman and Agerberg[22] had determined that 13% and 7% patients had moderate and severe TMJD respectively. Yet another study conducted by Rieder et al[23] had determined that 10.3% individuals suffered from advanced and severe TMJD. Although the results of this study corroborate with previous findings, it further establishes that mild TMJD is 65.9%, moderate TMJD is 18.9% and severe TMJD is only 1.5% in rural population of Sindh. This can be explained by the fact that people in rural areas are inherently having little rest due extensive manual work in agricultural fields. Other reason could be inability of clinicians to diagnose initial concealed symptoms which can be prevented from further aggressiveness.

With respect to gender, the results of this study, 94.3%, corroborate the findings of Garcia et al.[24], Solberg et al.[25] Shiau and Chang.[26] Higher prevalence of signs associated with mandibular disorder have been reported in female gender in these studies. The higher prevalence of women diagnosed with some degree of TMD may be related to physiologic differences in female

gender e.g. regular variations in hormone levels, muscular structure and characteristics of the conjunctive tissue etc. Further investigations are recommended to elicit the limitations of this study such as smaller sample size and inability to evaluate the cause of TMDs.

Some investigators[27] suggested that TMJDs were most prevalent after 30 years of age. Our sample showed 15 – 35 years of age is more affected with Mild TMJD symptoms.[28] This could be from the fact that these ages face many social pressures or other socioeconomics issues which result in development of anxiety or stress leading to TMJD symptoms.

CONCLUSION

This study concludes that TMJD are more common in females with age group of 15 – 35 years of age. The most prevalent symptom is muscular pain / tiredness of jaws during chewing and stiffness of neck. In this study sample, majority of patients suffer from Mild TMJD symptoms.

This study is only fraction of epidemiological investigation required to provide basis for understanding these disorders. Further studies using similar methods need to be evaluated in other selected populations.

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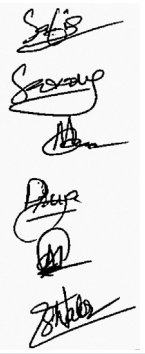
1	Safia Khatoon	Idea, Data collection.	
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