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Prevalence of sign and symptoms of TMD among the patients attending Siddhpur dental college and hospital of Gujarat

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Abstract

Background: Objective of this study was to determine the prevalence of sign and symptoms of TMD among the patients attending Siddhpur Dental College and Hospital.

Methods: 435 adult patients attending Siddhpur dental college & Hospital of Gujarat for dental treatment were included in the research. After thorough history taking and clinical examination palpation of masticatory muscles and TMJ was done.

Results: 37% of the participants had sign and symptoms of TMD. Clicking was reported by 28.96%, crepitus by 4.82%, pain or tenderness by 6.20%, Deviation reported by 8.50% and limitation reported by 7.12%

Conclusions: Sign and symptoms of TMD are prevalent in 37% of the patients attending siddhpur Dental college & Hospital. Most common predisposing factor identified was harmful habits and so we can conclude that more emphasis should be given to the patient education to encourage them to abstain from harmful habits.

Keywords: TMD, TMJ, prevalence, bruxism

1. Introduction

According to the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD)^[1], TMD can be defined as a collective term describing a group of conditions affecting either the temporomandibular joint (TMJ), the masticatory muscles, or both^[1]. The signs and symptoms of TMDs can be Pain in the masticatory muscles and/or joint; neck pain , reduced mouth opening , Joint noises (e.g. Clicking, Crepitus) during jaw movement, deviation during opening, spasm of masticatory muscles, headache, poor quality sleep^[1].

According to various Epidemiological studies 50-75% of the population exhibit some signs of TMDs, most of the times which can be subclinical and patient might not be able to relate it to the underlying pathology. These signs become symptoms in less than 20% of the patients for which they will require treatment. Requirement of treatment increase if these symptoms interfere with daily activities^[2]. Therefore it is utmost important to identify the signs of TMD for early diagnosis. Etiology of TMD can be multifactorial and interplay of many factors. It is not always possible to identify etiology of TMD however there are certain conditions which predispose to or accentuate the sign and symptoms of TMD. If we indentify these predisposing factors and conditions like trauma, systemic disease, emotional stress, postural change, masticatory muscle dysfunction, tooth clenching habits then we can prevent and halt the progress of TMD early^[3]. So, this study was carried out to determine the prevalence of signs and symptoms of TMD in patients attending siddhpur dental college & Hospital and to assess the predisposing factors that can lead to the precipitation of Temporomandibular Disorders.

2. Method

This cross-sectional research was carried out at Siddhpur Dental College & Hospital, Gujarat, India. A Sample size of 435 achieved 80% power to detect an effect size (W) of 0.150 using 2 degrees of freedom Chi-square Test with a significance level (alpha) of 0.05
Sample Size N= Chi-square/W^2

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Where,
 $W=0.150$
 $X^2=9.79$
 $DF=4$

In total 514 patients who attended OPD of Siddhpur Dental college & Hospital were inquired to take part in the study out of which 435 patients were enrolled. All the participants were informed about the aim of the study. Inclusion criteria for the study were (1) Patients attending OPD of Siddhpur dental College & Hospital, (2) Patients above 18 yrs of age and (3) Patients who gave informed consent to take part in study. A Random sample of 435 subjects that gave informed consent to take part in the study were examined for the presence of temporomandibular joint pain, clicking, crepitus, limitation or deviation during mouth opening.

In the preliminary examination of TMJ, we relied on the principles based on RDC/TMD. This was done by taking thorough history including h/o trauma, past dental treatment, harmful habits and individually examining each patient by single calibrated prosthodontist. Physical examination was done in two parts; (1) Examination of muscles of mastication and (2) TMJ examination. TMJ examination was done by lateral and posterior palpation methods. Inter incisal opening of <35mm was considered as reduced mouth opening. Data were analysed by Chi-Square test using IBM SPSS 20 software for windows where Probability level of $P<0.05$ was considered statistically significant.

3. Results

Among the randomly collected sample of 435 patients 37% patients showed presence of TMD out of which 54% were females and 46% were male. (Fig 1 Maximum number of Patients were between the age group of 20-29 and minimum patients were between the age group of 60-69 years. (Table 1, Fig 2) Most commonly reported symptom was clicking present in 28.96% followed by Deviation in 8.5%. Restricted mouth opening was present in 7.12% patients. Pain or tenderness was reported by 6.20% patients while crepitus was present in 4.82% participants. (Table 2, Fig 3)

Most commonly identified predisposing factor in the study was harmful habits which was present in 12.18% participants. (Table 3)

Table 4 and Fig 4 summarizes number of patients with harmful habits according to which bruxism was present in 5.05% of participants.

Table 2: number of patients with different sign and symptoms of TMD

Sign & Symptom	Clicking	Crepitus	Pain or tenderness	Deviation	Limitation
Number of patients	126(28.96%)	21(4.82%)	27(6.20%)	37(8.50%)	31(7.12%)

Chi Square Value: 158.331 DF: 4 P Value: <0.001

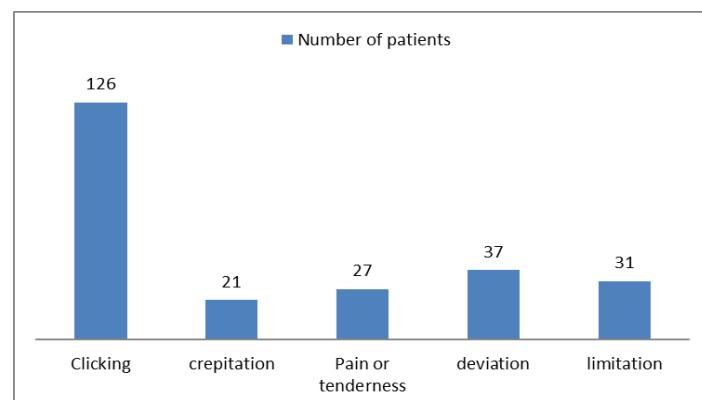


Fig 3: Number of patients with sign & Symptoms of TMD

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Distribution of patients according to RDC/TMD sub classes and their P value is summarized in Table 5 according to which MPDS was present in 4.60% participants, Internal derangement was present in 31.72% and osteoarthritis was present in 0.68% (Fig 5)

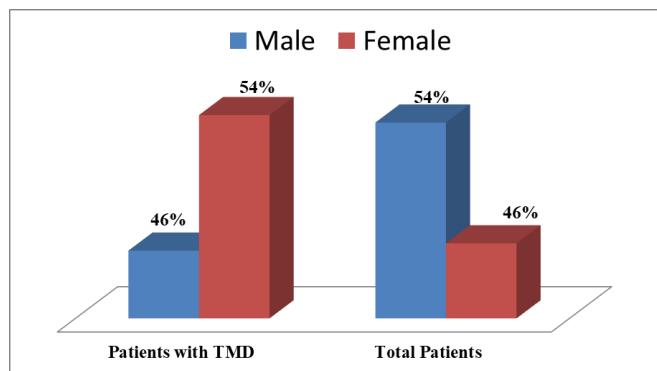


Fig 1: Gender wise distribution of patients with and without sign and symptoms of TMD in percentage

Table 1: Age wise distribution of patients with and without sign and symptoms of TMD

Age range	20-29	30-39	40-49	50-59	60-69	Total
With TMD	68	47	21	24	01	161
Without TMD	93	60	63	50	08	274

Chi-Square test Value: 12.533 DF: 4 P Value: 0.014

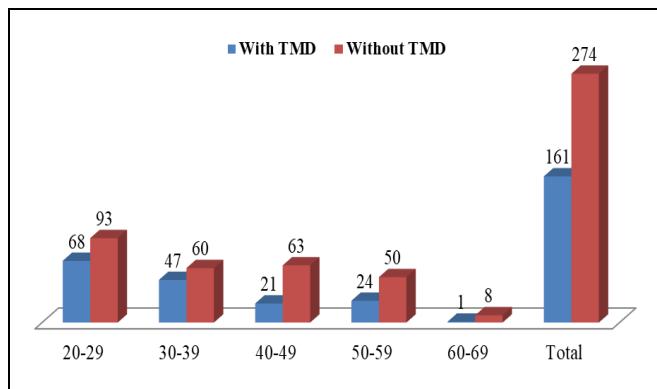


Fig 2: Age wise distribution of patients with and without sign and symptoms of TMD

Table 3: showing predisposing factors and their association with TMD

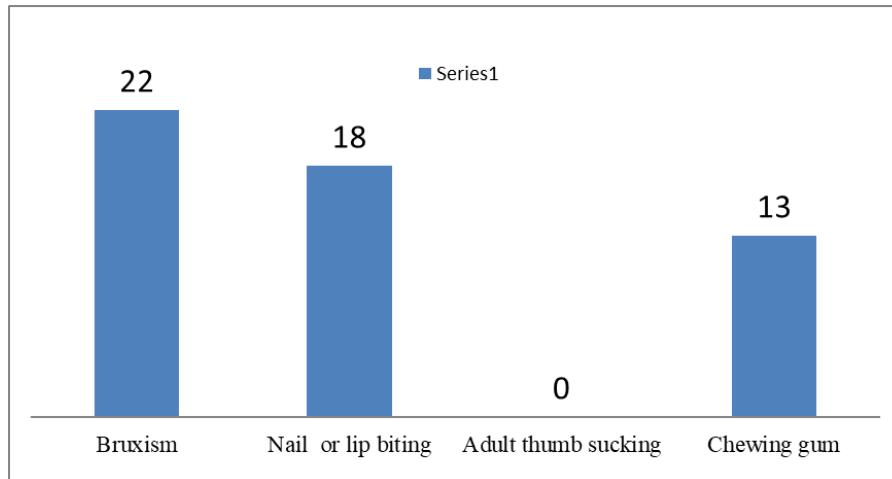
Predisposing Factor	History of Trauma	Past Dental Treatment	Rheumatoid arthritis	Harmful Habits	Occupational habits	Unknown
Number of patients	37(8.50%)	34(7.81%)	03(0.68%)	53(12.18%)	02(0.45%)	32(7.35%)

Chi Square Value: 76.429 DF: 5 P Value: <0.001

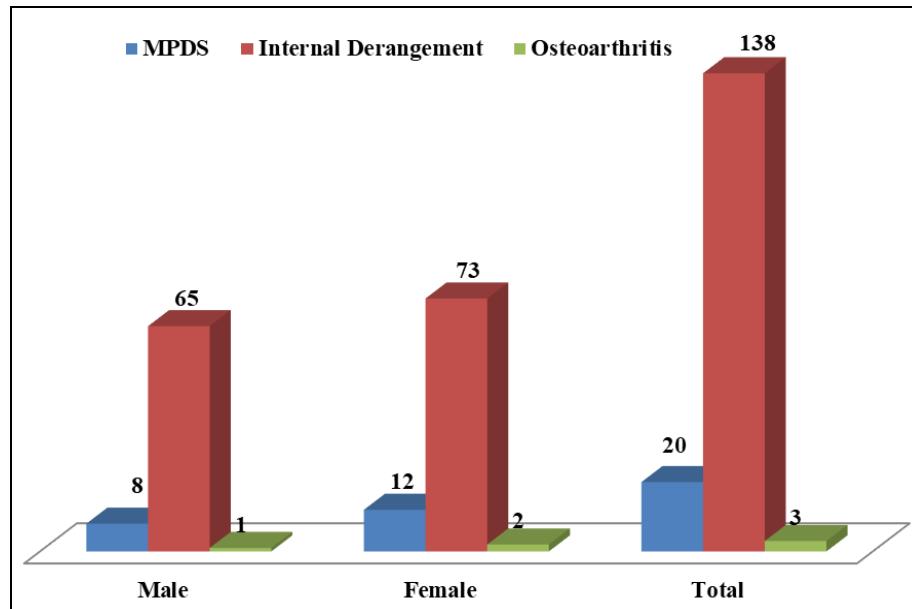
Table 4: showing number of patients with harmful habits

Habits	Bruxism	Nail or lip biting	Adult thumb sucking	Chewing gum
Number of patients	22(5.05%)	18(4.13%)	00	13(2.98%)

Chi Square Value: 2.302 DF: 2 P Value: 0.316

**Fig 4:** showing number of patients with Harmful Habits**Table 5:** summarizes the distribution of patients according to RDC/TMD and their P Value

		Male	Female	Total	Chi Square test	P Value
		n (%)	n (%)	N (%)		
MPDS	Absent	225 (96.57)	190 (94.05)	415 (95.40)	1.550	0.213
	Present	08 (3.43)	12 (5.95)	20 (4.60)		
	Total	233 (100)	202 (100)	435 (100)		
Internal Derangement	Absent	168 (72.10)	129 (63.86)	297 (68.27)	3.393	0.065
	Present	65 (27.90)	73 (36.14)	138 (31.72)		
	Total	233 (100)	202 (100)	435 (100)		
Osteoarthritis	Absent	232 (99.57)	200 (99)	432 (99.32)	0.497	0.481
	Present	01 (0.43)	02 (01)	03 (0.68)		
	Total	233 (100)	202 (100)	435 (100)		

**Fig 5:** Distribution of patients according to RDC/TMD

4. Discussion

Aim of present study was to determine prevalence of sign and symptoms and possible predisposing factors of TMD in patients attending siddhpur dental college and Hospital.

TMD is one of the important cause for orofacial pain [4]. According to literature, prevalence of TMD varies between 28% to 88% depending upon the population type and diagnosis system used [5]. In some studies information regarding sign and symptoms of TMD had been collected by clinical examination and questionnaires whereas some had collected by interviews [6].

In the present study, 37% participants had sign and symptoms of TMD, which was statistically significant. Epidemiologic studies on TMD showed an incidence range of 33-86% for one or more signs/symptoms of TMD [7]. According to study on Dutch population 21.5% had some dysfunction and 44.4% showed clinically assessed signs and symptoms of TMD [8]. In present study, sign and symptoms of TMD were found more in females (54%) as compared to males (46%). Literature also suggests that females are four to seven times more commonly affected by TMD as compared to male and their frequency to seek treatment is also higher as compared to male [2, 9-11]. It is thought to be the presence of estrogen in female TMJ which can modulate the metabolic activity in relation to ligament laxity [12]. However In Contrast to these findings two studies reported predominance of the male with TMD and one had reported that there is no difference between male and female for sign and symptoms of TMD [13-15].

In present study clicking was present in 126(28.96%) patients. There is wide variability regarding prevalence of joint sounds in previous studies [16]. Prevalence of clicking in Japanese study was 46% and prevalence of crepitus was 19% [17]. Jaw deviation was found in 37(8.50%) patients, limitation 31(7.12%), pain or tenderness 27(6.20%) and crepitus 21 (4.82%). According to RDC/TMD¹, clicking sounds that are reproducible on repeated openings and occur in a reciprocal pattern, or on excursive as well as vertical range of motion, are considered to be indicative of disc displacement with reduction [1]. Research diagnostic criteria (RDC) has classified TMD mainly in three categories; Myofascial pain dysfunction syndrome, Internal derangement of TMJ and osteoarthritis [1]. In present study prevalence for sign and symptoms of MPDS was 4.60%. Prevalence of MPDS was higher in females (5.95%) than in males (3.43%). Prevalence of Internal derangement was 31.72%. In female (36.14%) and in males (27.90%). Prevalence of Osteoarthritis was 0.68%. In female it was 1% and in male 0.43%

Most common predisposing factor identified in the study were harmful habits which were present in 12.18% patients which was significant ($P<0.001$). Bruxism was the most common habit identified in (5.05%) patients followed by nail or lip biting (4.13%) and chewing gum (2.98%). Majority of patients were not aware of the effects of these habits on TMJ [18-23].

History of trauma was reported by 8.50% participants and these findings are in accordance with finding of previous studies [18, 19]. History of past dental treatment was present in 7.81% of participants (given particular history of long dental appointment) which are in accordance with previous studies [20]. In 32 (7.35%) participants predisposing factor was unknown.

The psychological stress and conditions play a role in TMJ disorders [14, 26, 27]. Which was not included in this study and so possible limitation of the study. However stress can result in bruxism which increases masticatory load which in turn

manifests by TMD [13].

5. Conclusion

Within the limitation of this study we can conclude that prevalence of sign and symptoms of TMD was 37% in patients attending siddhpur Dental college and Hospital. It affects more commonly young adult population. More commonly present in females as compared to males. Harmful habits were present in 12% of participants.

In the management of TMD more emphasis should be given to the patient education to encourage them to abstain from harmful habits and to reinforce positive habits and behaviour which are essential for harmony between TMJ and surrounding musculature.

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