

Prevalence of Temporomandibular Joint Disorders and its Association with Para Functional Habits in the Patients Attending Tertiary Care Hospital

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ABSTRACT

Background: Temporomandibular disorders is a collective term used to describe problems involving muscles of mastication and temporomandibular joint. The study aimed to evaluate the prevalence of temporomandibular disorders and its association with parafunctional habits in patients visiting department of dentistry, Patan Academy of Health Sciences.

Methods: A cross-sectional study was carried out among 213 patients coming to Patan Academy of Health Sciences. A screening questionnaire recommended by American Association of Orofacial Pain was used to determine the signs and symptoms of temporomandibular disorders.

Results: The prevalence of temporomandibular disorders was 31.9%. The three most common parafunctional habits were chewing gums (32.4%), mouth breathing (19.7%) and biting of objects (14.6%) respectively. Statistically significant association was found between nail biting, grinding of teeth, biting of lips and objects and mouth breathing with signs and symptoms of temporomandibular disorders ($p < 0.05$). Among the signs and symptoms of temporomandibular disorders, getting headaches, neck pain or toothaches often was the most frequent signs of temporomandibular disorders ($n=105$, 49.3%). Feeling of recent change in bite was the second most frequent sign reported by 82 participants (38.5%).

Conclusions: The parafunctional habits between nail biting, grinding of teeth, biting of lips and objects and mouth breathing have statistically significant association with signs and symptoms of temporomandibular disorders.

Keywords: AAOP; parafunctional habits; prevalence; TMDs.

INTRODUCTION

Temporomandibular disorders (TMDs) is defined as pain in the temporomandibular joint (TMJ) region, fatigue of cranio-masticatory muscles, limitation of movement of mandible and presence of clicking sounds in temporomandibular Joint (TMJ). It is a burning issue nowadays due to its deleterious effect on orofacial region.¹

TMDs has multifactorial etiologies such as traumatic injuries, intrinsic and extrinsic changes of TMJ structure, immune-mediated systematic disease bruxism, tooth clenching habits. Studies have shown association between parafunctional habits and TMDs.²

The diagnosis of TMDs is a complex process. The screening

of TMDs has been analysed using different assessment tools in many studies.³ In this study we have used a self-explanatory screening questionnaire recommended by American Association of Orofacial Pain (AAOP). The aim of the study was to evaluate the prevalence of TMDs and its association with parafunctional habits in patients visiting Patan Academy of Health Sciences (PAHS).

METHODS

Descriptive cross-sectional study was designed among the patients coming to Department of dentistry, Patan Academy of Health Sciences, Lalitpur from 15th of Nov 2018 to 15th of Dec 2018. Ethical clearance was obtained from Institutional review committee-Patan Academy of Health Sciences (ref no: drs1811061227).

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Sample size was calculated based on a previous study and using formula $n = Z^2 \times p \times q / d^2$ where p is the proportion (66%), q is 100-p and d is the permissible error of 10% of d. The minimum sample size calculated was 198. However, in the study 213 patients were included.

Patients wished to participate, gave informed consent and who were not undergoing orthodontic treatment were include in the study. The exclusion criteria for the study were patients who had trauma to face either having surgical intervention or under medication and with clinical diagnosis of TMDs. Apart from this patient with surgical intervention to their face and with gross pathology of ear were also excluded.

Data was collected by face to face interview using a self-explanatory screening questionnaire proforma consisting of three sections. In the first section, the demographic data such as age, sex, religion, ethnicity were recorded. In the second section the patients had to answer in yes or no in a list of parafunctional habits. The third section consisted of questionnaires recommended by American Association of Orofacial Pain (AAOP) which had 10 questions with yes/no response. According to the guidelines of AAOP, two or less positive response indicated of 'no TMDs', while three or more positive response indicated 'TMDs'.⁴

The collected data was entered in Microsoft Excel and then transferred to SPSS version 16 (Chicago, SPSS Inc). After proper cleaning of the data, it was analyzed by using descriptive statistics. The association between the various variables was explained by chi-square test. The p-value was calculated under the predetermined level of significance (<0.05).

RESULTS

Out of 213 participants, more than half 132 (62 %) were females and 81 (38 %) were males. The mean age of the patients was (44.80±16.93) years. Fifty-six (26.3 %) of patients reported no signs and symptoms of TMDs while 52 (24.4 %) and 37 (17.47 %) of patients reported having at least one and two signs of TMDs (Table 1).

Participants who gave up to two positive response were put into 'no TMDs' category while participants who gave three or more positive response were categorized as 'with TMDs' category.

A total of 145 (68.1 %) of patients responded yes to at least two statements of AAOP questionnaire and a total of 68 (31.9 %) responded yes to three or more questions. There was no statistically significant difference between

the TMDs group and sex (p=0.141) (Table 2).

Table 1: Socio demographic characteristic and TMD dysfunction of participants (N=213).

Characteristics	Frequency (%)
Mean Age±SD=44.80±16.94 years	
Sex	
Male	81 (38)
Female	132 (62)
Signs and symptoms of TMD	
No signs and symptoms of TMD	56 (26.3)
At least one signs of TMD	52 (24.4)
At least two signs of TMD	37 (17.4)
Three and more signs of TMD	68 (31.9)
TMD dysfunction category	
With TMJ dysfunction (Score >= 3)	68 (31.9)
No TMJ dysfunction (Score <3)	145 (68.1)

Table 2. Association between gender and TMD group.

Sex	TMD Group		Total	p-value*
	With TMJ Dysfunction	No TMJ Dysfunction		
Male	21 (25.9 %)	60 (74.1 %)	81	0.141
Female	47 (35.6 %)	85 (64.4 %)	132	

*Calculated by Pearson's Chi-square test

A total number of 93 (43.7 %) of patients reported they had no parafunctional habits while 65 (30.5 %) and 36 (16.9 %) patients reported having one and two habits respectively. The most common parafunctional habits were chewing gums (32.4 %), mouth breathing (19.7 %) and biting of objects (14.6 %) respectively. Statistically significant association was found between nail biting, grinding of teeth, biting of lips and objects and mouth breathing with signs and symptoms of TMDS (p<0.05) (Table 3).

Getting headaches, neck pain or toothaches often was the most frequent signs of TMDS (n=105, 49.3 %). Feeling of recent change in bite was the second most frequent sign reported by 82 participants (38.5 %) while 54 participants (25.4 %) reported pain in or around ears, temples or cheeks. Statistically significant association was found between the TMDS groups and the presence of signs and symptoms (Table 4).

Statistically significant association was observed between gender and difficulty while opening mouth, getting headaches, neck pain and toothaches often and feeling of recent change in bite (p<0.05) (Table 5).

Table 3. Association between parafunctional habits and signs and symptoms of TMD.

Parafunctional habits	Response	TMJ dysfunction category		Total (Percent)	p-value
		With TMJ dysfunction (Score 3 or more)	No TMJ dysfunction		
Nail biting	Yes	7	4	11 (5.2)	0.04
	No	61	141	202 (94.8)	
Grinding	Yes	12	10	22 (10.3)	0.016
	No	56	135	191 (89.7)	
Biting of lips	Yes	9	6	15 (7)	0.022
	No	59	139	198 (93)	
Biting of objects	Yes	15	16	31 (14.6)	.033
	No	53	129	182 (85.4)	
Chewing gums	Yes	26	43	69 (32.4)	0.212
	No	42	102	144 (67.6)	
Finger sucking	Yes	2	7	9 (4.2)	1
	No	66	138	204 (95.8)	
Mouth breathing	Yes	21	21	42 (19.7)	0.005
	No	47	124	171 (80.3)	

Table 4. Frequency of parafunctional habits according to the presence of signs and symptoms of TMD.

Parameters	Response	TMJ dysfunction category		Total (Percent)	p-value
		With TMJ dysfunction (Score 3 or more)	No TMJ dysfunction		
Difficulty, pain or both when opening your mouth	No	37	142	179 (84)	<0.05
	Yes	31	3	34 (16)	
Jaw get "stuck", "locked" or out of place	No	49	142	191 (89.7)	<0.05
	Yes	19	3	22 (10.3)	
Difficulty, pain or both when chewing, speaking or using your jaws	No	38	142	180 (84.5)	<0.05
	Yes	30	3	33 (15.5)	
Hear sounds in your jaw joints	No	31	136	167 (78.4)	<0.05
	Yes	37	9	46 (21.6)	
Jaws get stiff, tight or tired regularly	No	48	143	191 (89.7)	<0.05
	Yes	20	2	22 (10.3)	
Pain in or around your ears, temples or cheeks	No	25	134	159 (74.6)	<0.05
	Yes	43	11	54 (25.4)	
Get headaches, neck pain or toothaches often	No	15	93	108 (50.7)	<0.05
	Yes	53	52	105 (49.3)	
Suffered recent trauma to your head, neck or jaws	No	62	141	203 (95.3)	0.078
	Yes	6	4	10 (4.7)	
Felt any recent change in your bite	No	24	107	131 (61.5)	<0.05
	Yes	44	38	82 (38.5)	
Recent treatment for an unexplained problem in your jaw joints	No	53	144	197 (92.5)	<0.05
	Yes	15	1	16 (7.5)	

Table 5. Association between gender and signs and symptoms of TMD.

Parameters	Response	Gender		Total (Percent)	p-value
		Male	Female		
Difficulty, pain or both when opening your mouth	No	74	105	179 (84)	0.022
	Yes	7	27	34 (16)	
Jaw get “stuck”, “locked” or out of place	No	72	119	191 (89.7)	0.769
	Yes	9	13	22 (10.3)	
Difficulty, pain or both when chewing, speaking or using your jaws	No	72	108	180 (84.5)	0.166
	Yes	9	24	33 (15.5)	
Hear sounds in your jaw joints	No	62	105	167 (78.4)	0.605
	Yes	19	27	46 (21.6)	
Jaws get stiff, tight or tired regularly	No	74	117	191 (89.7)	0.526
	Yes	7	15	22 (10.3)	
Pain in or around your ears, temples or cheeks	No	65	94	159 (74.6)	0.141
	Yes	16	38	54 (25.4)	
Get headaches, neck pain or toothaches often	No	53	55	108 (50.7)	0.001
	Yes	28	77	105 (49.3)	
Suffered recent trauma to your head, neck or jaws	No	77	126	203 (95.3)	1.000
	Yes	4	6	10 (4.7)	
Felt any recent change in your bite	No	58	73	131 (61.5)	0.018
	Yes	23	59	82 (38.5)	
Recent treatment for an unexplained problem in your jaw joints	No	77	120	197 (92.5)	0.264
	Yes	4	12	16 (7.5)	

DISCUSSION

The primary aim of the present cross/-sectional study was to evaluate the prevalence of TMDs, identify the association of parafunctional habits with the TMDs through the questionnaires among the patients of PAHS.

The prevalence of TMDs have been observed vary in different literatures from 4,9%⁵ to 60%.⁶ In our study around 32 % showed the prevalence of TMDs. In another study from Nepal, Rokaya et al. reported 31% of participants had TMDs.⁷ The participants in the study were medical and dental students with mean age 20.61±1.66 years and the study used Fonseca's Anamnestic Index (FAI).⁷ However, it was a lower than the values reported in previous reports.⁴ The difference in prevalence for TMDs in different studies may be due to the use of different diagnostic tools for TMDs^{3,8,9} presence and absence of clinical examination, taking people of different age groups and from different parts of the world who by themselves differ by origin, culture and ethnicity and in most cases self-reported TMDs signs and symptoms.^{7,10-12}

Differences in gender have been suggested to be associated with the development of TMDs. Studies have shown females exhibit more TMDs symptoms than males.^{1,2,13} Higher prevalence of TMDs have been reported in females after puberty which has been suggested to be associated with the hormonal changes that occur during puberty in females.¹⁴ Other studies have also suggested this higher frequency of TMDs among female to be associated with physiological differences, hormonal variations, pain threshold differences in females.^{1,15} In this study the prevalence of TMDs was higher in females (35.6 %) than in males (25.9 %).

TMDs have many possible etiological factors mainly the parafunctional habits.^{11,16} The parafunctional habits have direct effect on the stomatognathic system.¹³ Association of TMDs and orthodontic treatment,¹⁷ personality trait, anxiety¹² have also been reported. A study by Agarwal et al on TMDs in 407 students observed nail biting followed by clenching and mouth breathing as the most common habits.¹⁶ In another study, leaning of arms for prolonged periods followed by bruxism and lip biting were most common.¹² Similarly, Habib et al reported psychological

stress (30.5 %) and direct restorations (77%) were most common among TMDs patients.¹⁸This study observed chewing gums, mouth breathing followed by biting of objects as the most common parafunctional habits. Statistically significant association was found between parafunctional habits such as nail biting, grinding, biting of lips, biting of objects and mouth breathing and TMDs. This findings are in accordance to the study performed by Moteghare et al.¹³The differences in reporting the most common habits may be due to the variation of the age groups, differences in the variables taken into consideration in the study.

TMDs patients generally experience triad of signs and symptoms with pain in the joint and sound in joint followed by difficulty in opening mouth.^{4, 19} Similar type of result was also reported by Motta et al in 2013.⁴Motghare et al reported headache, neck pain and toothache followed by pain in joint opening and jaw sounds as the most frequent signs and symptoms.¹³In contrast to these findings, the present study observed headaches, neck pain and toothaches in 105 (49.3 %), feeling of recent change in bite pattern in 82 (38.5 %) followed by facial pain among 54 (24.5 %).

In the present study, we used AAOP Questionnaires recommended by American Association of Orofacial Pain to identify the signs and symptoms of TMDs. This tool has been shown to have good reliability and validity^{3, 8} and has been suggested in screening of patients with or without TMDs.³

The limitation of the study is conveniently selected small sample size and a screening questionnaire-based study. We did not examine the patient clinically. The authors suggest the need of long-term study along with the clinical examination of the patients.

CONCLUSIONS

The present study has shown a high prevalence of TMDs among females than males. The results of the present study have revealed a significant association of nail biting, biting of lips and objects and mouth breathing with signs and symptoms of TMD.

ACKNOWLEDGEMENTS

The authors would like to acknowledge Dr. Santosh Timilsina for the statistical analysis, carefully reading the manuscript and giving valuable suggestions at necessary areas of the article.

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