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Incidence Of Missing Teeth In Temporomandibular Disorders- A Retrospective Study

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Abstract

Occlusion or missing teeth as the causative factor of Temporomandibular disorders (TMDs) have been discussed frequently in the literature. Research studies were not conclusive and most of the studies were on the causative factor {partially edentulous(PE)} for disease, not in the disease group {TMD} for causative factor{PE}.

Aims: To evaluate and correlate the incidence of missing teeth in TMDs,and to determine the age and gender influence in TMD patients.

Settings and Design: Retrospective Observational Study

Methods and Material: The clinical records of the TMD patients attended dental OP for TMJ related pain were selected for this study. The data of missing tooth were retrieved from the records and categorized age wise and gender wise for analysis.

Statistical analysis used: The collected data were analysed with IBM.SPSS statistics software 23.0 Version. To describe about the data descriptive statistics frequency analysis, percentage analysis were used .Chi-Square tests used to find the significance in categorical data of age, gender of TMD patients with partially edentulous condition.

Results: The incidence of PE in TMD patients were calculated to be 45.68%, i.e. approximately half the patients were having edentulous condition.

Conclusions: Statistical analysis of the results showed no significant association between the partial edentulism and TMD and no statistically significant variation in age and gender analysis.

Keywords: missing tooth, occlusion, partially edentulous, temporomandibular disorders

Introduction

Temporomandibular disorders (TMD) is a collective term that includes a number of clinical complaints involving the muscles of mastication, the temporomandibular joint (TMJ), or the associated orofacial structures. The clinical presentations are pain in joint, muscles, neck, ear& head, joint sounds, limited mandibular movements etc[1-8].The factors considered to be the cause of TMDs are multifactorial and large in number. Stress and occlusal changes are often considered to be the main reason for changes in temporomandibular joint (TMJ) [2,3,4,5,6,8,9,10,11,]The three main structures of(TMJ) temporomandibular joint are masticatory muscles,maxillary and mandibular teeth in occlusion and the osseous structure. Any discrepancy and malfunction in this trio will produce the effect in orofacial region as symptoms or signs which are wide and unspecific sometimes. The missing tooth, changes in occlusion, non replacement of missing teeth were frequently discussed in the literature as the main cause of TMD.[12]The association between

occlusion/tooth loss and TMD remains controversial.[3,6,12,13]

Aims & Objectives: This study aims to evaluate the incidence of partially edentulous (PE) conditions in temporomandibular disorder patients and correlate the significance. The objectives of this study are

1. To determine the incidence percentage of PE condition in TMD patients
2. To determine the association between the PE condition & the TMD patients
3. To determine the age variation in PE condition in TMD patients
4. To determine the gender variation in PE condition in TMD patients

Subjects and Methods: The present retrospective study was done in patients who attended dental outpatient department in our institution for one year period with the chief complaints of TMJ. Patients diagnosed as having TMD clinically were evaluated for missing teeth from the clinical records. A total of 116 (39 Male and 77 Female) patients have been diagnosed as having TMD clinically based on their signs, symptoms, and the physical examination. Third molars missing were not taken up as partially edentulous condition. In 116 TMD patients, a total of 53 patients were found to be having missing teeth, of which were15 male and 38 were female.

Statistical Analysis: The collected data were analysed with IBM.SPSS statistics software 23.0 Version. To describe about the data, descriptive statistics frequency analysis, percentage analysis were represented in Table -1, and Table -2

TABLE-1 PERCENTAGE ANALYSIS

S.NO	GENDER	TMD	PE	RATIO OF PE IN TMD
1	Male	39	15	38.4%
2	Female	77	38	49.3%
3	Total	116	53	45.68%

TABLE -2 : DESCRIPTIVE STATISTICS – PERCENTAGE ANALYSIS

AGE & GENDER CROSS TABULATION

S.NO	AGE		FEMALE		MALE		TOTAL	
				Ranking		Ranking		Ranking
1	20-30	count	5	D	0	D	5	D
		% within gender	13.2%		0%		9.4%	
2	30-40	count	12	B	5	B	17	A
		% within gender	31.6%		33.3%		32.1%	
3	40-50	count	13	A	3	C	16	B
		% within gender	34.2%		20.0%		30.2%	
4	50-70	count	8	C	7	A	15	C
		% within gender	21.1%		46.7%		28.3%	
5	TOTAL	count	38		15		53	

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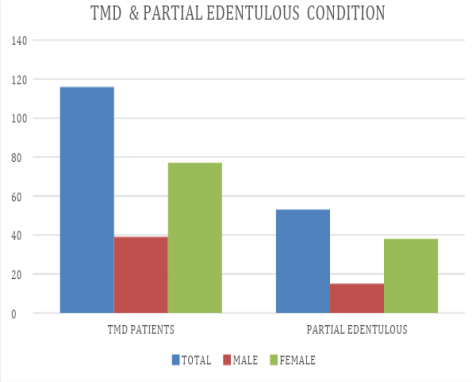
		% within gender	100%		100%		100%	
	Ranking order is given in alphabets , where A is the Highest and D is lowest in ranking							

Graph 1 represents the TMD patients and PE condition present in it. Graph 2 shows the Age and Gender grouping of PE/TMD patients in the study.



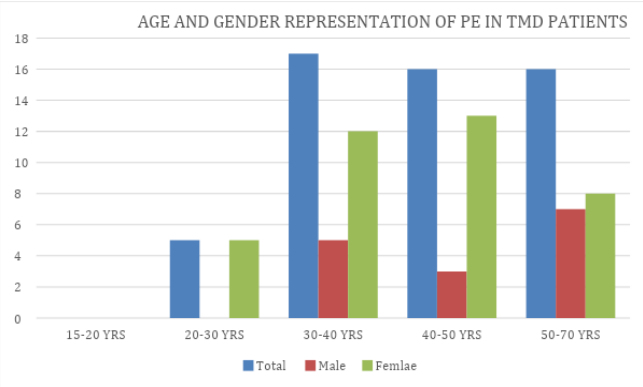


Table -4 presents the results of Chi-Square tests used to find the significance in categorical data of age, gender of TMD patients with partially edentulous condition. In the above statistical tool the probability value .05 is considered as significant level.

TABLE- 4 : CHI SQUARE TESTS			
	VALUE	Degree of freedom	ASYM. SIG (2-SIDED)
PEARSON CHI-SQUARE	5.197	3	.158
LIKELIHOOD RATIO	6.386	3	.094
N OF VALID CASES	53		
a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is 1.42.			
NO STATISTICAL SIGNIFICANCE P = 0.158 >0.05			

Discussion

Occlusion has been conferred as one of the main factors in causing the TMD, as it is one of the part in the mechanical triad of teeth, muscle and bone in TM joint. This study aimed to assess the incidence of missing teeth/ partially edentulous condition in temporomandibular disorder patients, and the influence of age and gender in partial edentulism of TMD patients. The incidence-percentage/ratio of TMD patients having missing teeth was calculated to be 45.68%, i.e. approximately half the patients were having edentulous condition with a slight variation of 10% difference in gender i.e., 38.4% and 49.3% for males and females respectively.

The male and female ratio of the TMD patients were approximately 1:2 in this study (33.3% Male/ 66.6%Female). This is in accordance with studies of [9,12,13]The gender wise evaluation of partially edentulous condition in TMD shows that female preponderance of 71.7% and 28% males. The age group evaluation of partial edentulous condition shows that 30-40 years ranked first in general, but the ranking differs in male and female 50-70 years and 40-50 years respectively The female preponderance and the peak age group of PE condition in TMD patients found in our study is almost similar to that of the TMD patients as reported in the studies[9,12,13].

A positive association between the partial edentulism and TMD were found in these studies [1,3,4,5,7,8,13]. Statistical analysis of our present study indicates no significant association between partial PE condition and TMD, though almost half (45.68%)

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the patients were having partial edentulous condition.. Statistical analysis of age and gender influence of partial edentulous condition in TMD patients reveals no significant relation, similar to the study of Wang Et al .[14] Pullinger et al [15] studied the eleven common occlusal features and five TMD groups to find causative significance and concluded that the contribution of occlusion to the disease groups was not zero and most of the variation in each disease population was not explained by occlusal parameters. Thus, occlusion cannot be considered the unique or dominant factor in defining TMD populations. Marcovic et al [16] discussed about the influence of age in distribution and symptomatology of patients and concluded similar results to that of Pullinger et al .

Maybe a large number of sample is needed to find out and validate the positive significant association between the missing tooth and TMD. All the relevant parameters like the type of partial edentulous condition or Eichener index, drifting of adjacent tooth, supraeruption of opposing tooth and the type of TMD condition, should be studied along with the replacement of missing tooth and the subsequent condition /improvement of TMD. A lone factor may not always be a sufficient cause for TMD. Three factors are liable for TMJ disorders: susceptibility, tissue changes and psychological factors.[14,17] A longitudinal study on this will be an evident based one and should in start TMD patients from onset of symptoms and determine the effect of tooth replacement in treatment success of TMD with a long term follow up.

Conclusion: In this study, the following conclusion were drawn

1. The incidence-percentage/ratio of TMD patients having missing teeth is 45.68%.
2. The association between PE condition and TMD is not statistically significant in this study.
3. Age group evaluation of TMD patients with partially edentulous condition shows that the 30-40 age group ranked higher (32.1%), closely followed by 40-50 years, 50-70 years and the least was observed in 20-30 age group (9.4%)
4. Statistical analysis for the influence of age and gender showed no statistical significance.

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