



PREVALENCE OF TEMPOROMANDIBULAR JOINT DYSFUNCTION AMONG DENTATE AND EDENTULOUS DENTURE WEARER PATIENTS

Dental Science

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ABSTRACT

Background and Aim: Results of various epidemiological prevalence studies have shown that approximately 50% of the general population may experience symptoms or signs of TMD but only 3% to 7% of the general population reported to seek treatment. Present study was performed with an aim to compare the prevalence of TMD in dentate and edentulous denture wearer patients. **Material and Methods:** Present study was done at territory care institute for the period of one year. one hundred and fifty completely edentulous patients in the age group of 20-75 years who did not complain of any TMD and were denture bearers with a varied denture wearing span, were examined for the existence of TMD signs and symptoms were included in the study. The subjects were examined by a single trained clinician for the specific study. **Results:** Out of total subjects examined, majority of the patients fell in the age group of 50–60 years. Around 62% of the males out of the total male subjects and 64% females out of total female subjects showed the presence of signs. The difference was found to be statistically insignificant. Majority of the subjects, showed limited mouth opening as a sign of TMD followed by jaw deviation the signs which are least shown were crepitus and clicking. **Conclusion:** Incidence and intensity of TMD are higher in subjects with greater tooth loss in supporting zone. The most common finding was limited mouth opening while crepitus and clicking were least encountered.

KEYWORDS

Edentulous, Incidence, Mouth opening, Temporomandibular disorders

INTRODUCTION

Temporomandibular disorders (TMD) are a group of conditions characterized by pain or dysfunction in the temporomandibular joint (TMJ) and/or the muscles of mastication.¹ Temporomandibular disorders have become topic of interest in dentistry over the past two decades. Results of various epidemiological prevalence studies have shown that approximately 50% of the general population may experience symptoms or signs of TMD but only 3% to 7% of the general population reported to seek treatment.^{2,3} Review of existing literature confirms that majority of people who seek treatment are women in second – third decade of life.⁴ Signs and symptoms of TMD seem to decrease with increasing age as reported by various authors and this can be another reason why elderly patients don't seek treatment as often as expected.^{5,6}

Some predisposing factors which have been highlighted in recent studies are female gender and being edentulous for a long span of time without denture.^{7,8,9} It has additionally been demonstrated that TMD changes over time, and no reasonable denouement has been arrived yet about its natural progression or about the factors contributing to the evolution of TMD. In addition, the quantity of individuals who see subjective manifestations or signs of TMD is more than the quantity of individuals looking for treatment, and females will probably look for treatment than male partners.^{10,11} There are some controversial issues such as over closure of the jaws in persons with natural dentition which can predispose to TMD whereas long-standing edentulous span individuals without dentures rarely develop TMDs despite over closure. However, it is observed that edentulous individuals who do not gripe about TMD on an arbitrary examination may hint at least one or more signs of TMD, which may later form into a conspicuous joint dysfunction.³ Some signs of TMDs are facial pain, headache, pain over the joint, pain which aggravates while opening the mouth, muscle tenderness of musculature, pain which is to the angle of lower jaw and cervical muscles, restricted mouth opening, deviation of jaw while opening the mouth, crepitus, and clicking sounds in joint region. These signs may appear in various combinations and degrees.^{12,13} The role of occlusion to produce muscle spasm which may result in the above-mentioned signs does not apply to CD patients since malocclusion in dentures cannot trigger any proprioceptive response. Or maybe, quick

after effect of centric prematurity is displacement of the denture which acts as a buffer to secure the TMJ.

Thus, with this hypothesis the authors planned the following study to compare the prevalence of TMD in dentate and edentulous denture wearer patients.

Material and Methods

Present study was done at Territory care institute for the period of one year. one hundred and fifty completely edentulous patients in the age group of 20-75 years who did not complain of any TMD and were denture bearers with a varied denture wearing span, were examined for the existence of TMD signs and symptoms were included in the study.

Inclusion criteria were: Healthy asymptomatic TMD patients. Completely edentulous, Patients wearing CD, Exclusion criteria Patients with a single CD with opposing natural teeth, Patient with partially edentulous arch.

Methodology

After taking informed consent detailed history was taken from the Participant. one hundred and fifty completely edentulous patients in the age group of 20-75 years who did not complain of any TMD and were denture bearers with a varied denture wearing span, were examined for the existence of TMD signs and symptoms were included in the study. The subjects were examined by a single trained clinician for the specific study.

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results

Out of total 150 subjects examined, majority of the patients that is fell in the age group of 50–60 years, followed by 40-50 years. There was no statistically significant association between different genders and age

groups. 62% males out of the total male subjects and 64% females out of total female subjects showed the presence of signs. The difference was found to be statistically insignificant. 42% of the subjects had 1-3 years of edentulous span followed by 32% with more than 5 years of edentulous span and 26% of the subjects showed 3-5 years of edentulous span. 34% of the subjects showed limited mouth opening as a sign of TMD followed by jaw deviation which is shown by 27% of the subjects. The signs which are least shown were crepitus and clicking with respective 3% and 4%.

Table 1: Age and gender distribution of patients

Age In years	Male	Female	Total
Below 30	7	5	12
30-40	15	10	25
41-50	18	13	31
51-60	24	17	41
61-70	12	11	23
Above 70	10	8	18
Total	86	64	150

Table 2: Distribution of patients based on edentulous span

Edentulous span (Years)	Number of subjects (%)
1-3	63 (42)
3-5	39 (26)
>5	48 (32)

Table 3: Distribution of TMD signs in CD wearers

Signs	Males (%)	Females (%)	Total (%)
Jaw Deviation	24 (26.6)	17 (27.8)	41 (27)
Tenderness of masticatory muscles	15 (16.6)	9 (15)	24 (16)
Tenderness in joint	13 (15.5)	11 (17.1)	24 (16)
Crepitus	3 (3.3)	2 (4.2)	5 (3)
Clicking	3 (3.3)	3 (3.3)	6 (4)
Limited mouth opening	28 (35)	22 (32.5)	50 (34)
Total	84	64	150

DISCUSSION

Temporomandibular disorders (TMD) are a collective term given to "variety of clinical problems that include the masticatory musculature, the temporomandibular joints and associated structures, or both."^{1,2} Owing to the multifactorial aetiology, myriad clinical presentation and high prevalence, TMD has attained a top rank among dental disorders which are difficult to treat. Temporomandibular dysfunction syndrome as described by Schwartz, "is characterized by tenderness of the joint and the muscles, increasing dull pain on mouth opening, reduced mouth opening, referred pain to the angle of mandible and muscles of the neck, deviated mouth opening, head ache and joint sounds."¹⁴ Various epidemiological studies have presented different opinions on the prevalence of TMD signs in dentate population.^{3,5} Despite prevalence of TMD in elderly population is 15-25% edentulous subjects generally do not present with TMD symptoms.^{15,16} Few studies have concluded even higher prevalence of TMD symptoms among CD wearers than those with natural dentition.^{17,18} Predisposing factors are change of the rest position, reduction of vertical dimension of occlusion and resultant shift in the vertical and horizontal mandibular positions; positional drifting of the condyles in the mandibular fossae.¹⁹ Moreover, loss of teeth results in cessation of proprioceptive feedback from teeth to TMJ. These factors coupled with emotional factors and advancing age predisposes to increased TMD's in edentulous patients²⁰

It has been documented that patients with few remaining natural teeth may have a higher incidence of TMJ dysfunction signs.⁶ However, there is no sufficient evidence of an association between TMJ dysfunction and partial loss of teeth.⁷

This study was conducted to determine the prevalence of temporomandibular disorders (TMD) in healthy without any symptoms completely edentulous patients wearing CD and to accomplish the relationship of TMD signs with edentulous span. Some studies have found that cases with CD with an increased prevalence of TMD symptoms in patients wearing CD than the individuals with natural dentition.^{21,22} The present study showed that majority of the subjects have limited mouth opening which is in accordance with the

studies done by researchers which have also found the lesser prevalence of TMD in CD wearers.^{23,24} Our study showed that there was no significant difference between the number of males and females showing signs of TMD, however, some studies assessing TMD in dentate individuals, partial denture wearers, and CD wearers have found significantly more severe TMD signs and symptoms in females than in males.²⁵⁻²⁸ The present study showed more percentage of patients 42% with two signs of TMD followed by patients presenting with one sign 31%. Which is in accordance with the studies conducted by Shetty and Al Zarea.^{24,25} This study has also shown that majority of the subjects, i.e., 34% showed limited mouth opening as a sign of TMD. Similar results were shown by some studies stating the reason of the muscular coordination needed to counteract relocation of the lower denture amid this exercise.²⁶ In our study, the least common finding was crepitus 3% and clicking 4%, however, Kirov and Krastev showed contradictory results and found joint sounds (11.54%), muscle tenderness (7.69%), joint tenderness (5.77%), deviation of mandible (3.85%), and limitation on mouth opening (2.88%) in decreasing order of frequency²⁸

Future studies with larger study groups and standardized methods and instruments should be done to achieve proper conclusions.

CONCLUSION

Owing to greater number of geriatric population using complete denture, it is prudent for dental care providers to be aware of the consequences of denture use over anatomy and physiology of temporomandibular joint. There are some evidence to show that there is an association between TMJ dysfunction and partial edentulism. Incidence and intensity of TMD are higher in subjects with greater tooth loss in supporting zone. The most common finding was limited mouth opening while crepitus and clicking were least encountered.

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