

Original articles

Prevalence of otological symptoms and parafunctional habits in patients with temporomandibular dysfunction

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Conflict of interests: Nonexistent



ABSTRACT

Objective: to verify the relationship between otological symptoms and parafunctional habits in individuals with temporomandibular joint dysfunction.

Methods: evaluations were based on the clinical records of 768 patients treated at a temporomandibular joint diagnostic center from 2010 to 2016. The inclusion criteria were completely filled out charts of adult patients (> 18 years of age) and the final sample comprised 516 clinical records. The presence/absence of parafunctional habits and otological symptoms (tinnitus, hearing impairment, dizziness, the sensation of plugged ears and imbalance) was recorded.

Results: statistically significant associations were found between otological symptoms and both sex and the presence of parafunctional habits, as otological symptoms were more prevalent among women and individuals with at least one parafunctional habit.

Conclusion: in the present sample, otological symptoms were positively associated with parafunctional habits in individuals with temporomandibular joint dysfunction.

Keywords: Ear; Habits; Temporomandibular Joint; Tinnitus; Temporomandibular Joint Dysfunction Syndrome

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INTRODUCTION

The American Academy of Orofacial Pain defines temporomandibular joint dysfunction or temporomandibular disorders (TMD) as a set of clinical conditions that affect the masticatory muscles, the temporomandibular joint and associated structures. The most frequent symptoms reported by affected individuals are facial pain, pain in temporomandibular joint and masticatory muscles, and headache. The auditory system can also be affected and variety of otological symptoms are reported.¹⁻³ TMD has a multifactor etiology, which includes trauma, degenerative problems, parafunctional habits, an abnormal position of the condyle and joint disc, excessive activity of the masticatory muscles as well as social and psychological variables.⁴

Otological symptoms are frequent in individuals with TMD, and the most commonly cited in the literature are tinnitus (ringing in the ears), dizziness, vertigo, earache and a sensation of ear fullness.^{1,5-7} Some theories state that hyperactivity of the masticatory muscles generates problems in the stomatognathic system and, due to the anatomical proximity, the inner ears can be affected.^{2,8}

Parafunctional habits are defined as any nonfunctional neuromuscular activity of the stomatognathic system resulting from the repetition of an action that is considered pleasant by the individual exercising it. A parafunctional habit may be a response to an emotional need and causes hyperactivity of the masticatory muscles. When such activity surpasses the level of physiological tolerance, a negative impact on the stomatognathic system can occur.⁹

The relationship between otological symptoms and parafunctional habits should be evaluated to assist in the correct diagnosis and treatment of individuals with TMD. Therefore, the aim of the present study was to determine the relationship between otological symptoms and parafunctional habits in individuals with TMD.

METHODS

This study received approval from the Human Research Ethics Committee of *Universidade Tuiuti do Paraná* (certificate number: 2.131.007) in 2016. Evaluations were performed of the clinical charts of 768 patients treated between 2010 and 2016 at a temporomandibular joint diagnostic center of a private university in the city of Curitiba, Brazil. The inclusion criteria were completely filled out charts of adult patients (> 18 years of age). Among the 768 charts analyzed, 252 did not meet the inclusion criteria. Therefore, the sample was composed of 516 clinical charts of patients

The following data were recorded: sex, age, presence/absence of patient-reported parafunctional habits (biting the tongue, cheeks, lips, nails or objects, chewing gum, clenching/grinding the teeth) and presence/absence of patient-reported otological symptoms (tinnitus, hearing impairment, dizziness, sensation of plugged ears and imbalance). The results were tabulated and submitted to descriptive statistics (calculation of frequencies) and bivariate analysis with the aid of SPSS 20.0 Statistics IBM®.

RESULTS

Analyzing the 516 medical records 421 (81.58%) of whom were women, and 95 (18.41%) were men. Mean age was 42.03 years (range: 18 to 84 years). A total of 494 (95.7%) patients reported having at least one parafunctional habit, and 393 (76.16%) reported having at least one otological symptom, the most common of which was tinnitus, reported by 138 (26.74%) patients. Statistically significant associations were found between otological symptoms and both sex and the presence of parafunctional habits, as otological symptoms were more prevalent among women and individuals with at least one parafunctional habit (Table 1).

A significant association was also found between age and otological symptoms, as those with such symptoms had a higher mean age compared to those without symptoms (Table 2).

Table 1. Distribution of habits and otological symptoms (n=516), Curitiba, Paraná, 2017

		Absence of otological symptoms (%)	Presence of otological symptoms (%)	p*
Sex	Males	33 (6.39%)	62 (12.01%)	0.011
	Females	90 (17.44%)	331 (64.14%)	
Presence of habits	No	11 (2.13%)	11 (2.13%)	0.005
	Yes	112 (21.70%)	382 (74.03%)	

*chi-square

Table 2. Distribution of patients in relation to age and the presence of otological symptoms (N=516), Curitiba, Paraná, 2017

Otological symptoms	Freq (%)	Mean (SD)	Age			p*
			Median	Min.	Max.	
Presence	377 (75.40%)	42.81 (15.43)	42	16	84	0.049
Absence	123 (24.60%)	39.64 (14.59)	39	16	72	

*Mann-Whitney Freq = Frequency; SD = standard deviation; Min = lowest value found; Max = Maximum value found.

DISCUSSION

In the present study, the mean age was higher among the individuals with a greater prevalence of otological symptoms compared to those without such symptoms. This finding is in agreement with data reported in a previous study involving a sample of individuals aged 60 years or older, in which the risk of otological symptoms increased with age.² Similar evidence is reported in studies involving the general population, in which all forms of otological symptoms were found to increase proportionally with the advance in age.^{2,10-12} This may be explained by anatomic and physiological factors. Anatomic and physiological factors may explain this. Physiological ageing may be linked to a degenerative process of the cochlea, which is one of the structures of the inner ear, explaining the greater incidence of otological symptoms in older individuals.^{13,14}

A statistically significant association was found between otological symptoms and the presence of parafunctional habits in the present study, as otological symptoms were more prevalent among the individuals who reported having at least one parafunctional habit. Similar results are reported in a previous study, in which the majority of individuals had at least one otological symptom and at least one parafunctional habit, and an association was also found between the symptom of ear fullness and number of parafunctional habits.^{15,16}

The authors of a study conducted in 2016 found a statistically significant association between TMD and

parafunctional habits, the most prevalent of which was nail-biting.¹⁷ Another study also found a high prevalence of parafunctional habits in the population studied and found a relationship between parafunctional habits and temporomandibular joint dysfunction, which are similar to the present findings.¹⁸

The authors of a systematic review point out that TMD can cause harm to the auriculotemporal nerves and intra-tympanic pressure; the authors also report that trigger point mechanisms may be related to these otological symptoms.¹⁹

Tinnitus is a clinical symptom commonly found in patients with TMD. This condition is reported to stem from external ear disorders, such as otosclerosis, chronic otitis, the side effects of medications and abnormal conductivity of the nerve of the neural tube.^{19,20} According to the literature, the high prevalence of tinnitus among studies may be related to the motor activity of the stapedius muscle, which, when undergoing spasms, causes vibrations in the ossicles of the middle ear, or tinnitus may stem from intra-capsular disorders of the temporomandibular joint due to its connection to the middle ear.^{13,21} In the present study, tinnitus was the most prevalent otological symptom, reported by 122 of the patients.

In the present study, otological symptoms and parafunctional habits were more prevalent in women than in men. This is in agreement with findings described in previous studies, in which the larger portion of the sample was composed of women.^{6,7,12,20,22-27} To explain

this finding, some authors have proposed a possible relationship between TMD and mechanisms of pain modulation, since women exhibit greater sensitivity to pain, as well as environmental, social and cultural factors.^{16,22,27,28}

CONCLUSION

A positive association was found between otological symptoms and parafunctional habits in patients with temporomandibular joint dysfunction. These symptoms may be directly related to the parafunctional habits practiced by these individuals and have been described as predisposing or even triggering factors for TMD. Dentists should take prevention measures and provide counseling on parafunctional habits to patients presented with TMD. The awareness of these habits should be addressed, in order to avoid future systemic, psychological and social consequences.

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