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RESEARCH ARTICLE

PREVALANCE OF TEMPOROMANDIBULAR JOINT DISORDERS IN PROFESSIONAL STUDENTS

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ABSTRACT

Background and Aim: This study aimed to assess the prevalence of temporomandibular disorders and associated variables among adolescent. This concept admits the possibility of non-existence of a direct relationship between tissue damage and pain and emphasizes the subjectivity in interpretation of painful phenomenon. Due to high prevalence and variability of the complaints, TMD is diagnosed by associating signs and symptoms. This study is based on questionnaire proposed by Fonseca, used to classify TMD severity in the study population because it is highly efficient in obtaining epidemiological data. The Fonseca's questionnaire follows the characteristics of a multidimensional evaluation. Results were analyzed using the frequency distribution of the questionnaire answers according to the Fonseca's anamnestic index. Based on the results of interim analyses, the subjects were divided into 2 groups: with and without, the TMD. Positive answers in both groups were analyzed by the total percentage.

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INTRODUCTION

The human masticatory system is an extremely complicated mechanism consisting of jaw basal bone, ligaments, muscles and teeth. Temporomandibular disorders (TMD) is an all-inclusive term referring to a heterogeneous group of psychophysiological disorders with the common characteristics of orofacial pain, masticatory dysfunction, or both. It is widely accepted that the etiology of temporomandibular joint disorders (TMDs) is multifactorial and commonly related to a number of dental, medical and mental conditions; such as occlusion, posture, parafunctional habits, restorations, orthodontic treatment, emotional stress, trauma, anatomy of the disk, pathophysiology of the muscles, genetic and psychosocial factors (especially stress), age, and gender (Jensen, 1999; Cooper and Kleinberg, 2007). Carlsson reported that 93% of the general population showed some kind of TMD, with 5% to 13% of the patients exhibiting clinically significant symptoms such as pain or severe dysfunction (Goodman and McGrath, 1991). Even though no clear causal relationship between TMD and a particular risk factor has been identified, several factors have been reported to be associated with TMD. The most common subtypes of temporomandibular disorders in clinic populations appear to be myofascial pain and arthralgia, followed by disc displacements with reduction (Truelove *et al.*, 1992). Although epidemiologic research on specific subtypes of temporomandibular disorders is in its

infancy, historically these conditions were considered part of a single disease entity, and were investigated as such (Morinushi *et al.*, 1991). MacNamara *et al.* reported that some morphologic malocclusions could increase the risk of TMD. Malocclusion has been associated with morphologic changes in the temporomandibular joint (TMJ), particularly when combined with age (MacNamara *et al.*, 1995). In children and adolescents, investigations have shown a significant association between emotional factors and signs and symptoms of TMD. Adolescence is characterized by young people's need to become part of the adult world. It has in fact often been characterized as a time of confusion and ambiguity. It is therefore important that the individual with recurrent pains be carefully evaluated and offered access to treatment to prevent the development of long-term pain, emotional problems, or disabilities in adulthood (List *et al.*, 2001; Vanderas *et al.*, 2001; Choi *et al.*, 2002; Sieber *et al.*, 2003). Due to the high prevalence and variability of the complaints, TMD is diagnosed by associating signs and symptoms, as some characteristics may be frequent even in a non-patient population (Burns, 2006). Thus, this study aimed to evaluate prevalence as well as severity of TMD in different clinical professionals.

MATERIALS AND METHODS

Volunteers

A total of 308 individual from different clinical professional have been included in the study which has been categorized

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into Dental Postgraduate, Dental Undergraduates, Bachelor of Physiotherapy and Bachelor of Pharmacy. Prior to that, the volunteers received proper instructions about the goals of the research and experimental procedures, risks and benefits.

Exclusion Criteria

All subjects diagnosed as having stomatognathic system impairments, being under TMD treatment, presenting orofacial pain or clinical alterations were excluded.

Procedures

The questionnaire proposed by Fonseca (Table 1) was utilized in this study to determine the prevalence as well as classify TMD severity in the study population because it is highly efficient in obtaining epidemiological data. The Fonseca's questionnaire follows the characteristics of a multidimensional evaluation. It is composed of 10 questions, which include checking for the presence of pain in temporomandibular joint, head, back, and while chewing, parafunctional habits, movement limitations, joint clicking, perception of malocclusion, and sensation of emotional stress. The volunteers were informed that the 10 questions should be answered with "yes", "no" and "sometimes" and that only one answer should be marked for each question. There was no time limit for completion. That way, there would be no reasons for the subjects to give induced answers (Bevilaqua-Grossi *et al.*, 2006).

Table 1. Fonseca's questionnaire

Questions	No	Sometimes	Yes
1- Is it hard for you to open your mouth?			
2- Is it hard for you to move your mandible from side to side?			
3- Do you get tired /muscular pain while chewing?			
4 - Do you have frequent headaches?			
5- Do you have pain on the nape or stiff neck?			
6- Do you have earaches or pain in craniomandibular joints?			
7- Have you noticed any TMJ clicking while chewing or when you open your mouth?			
8- Do you clench or grind your teeth ?			
9- Do your feel your teeth do not articulate well?			
10- Do you consider yourself a tense (nervous) person?			

Table 2. Clinical index classification – Fonseca

Total between 0 and 15 points	No TMD
Total between 20 and 40 points	Mild TMD
Total between 45 and 65 points	Moderate TMD
Total between 70 and 100 points	Severe TMD

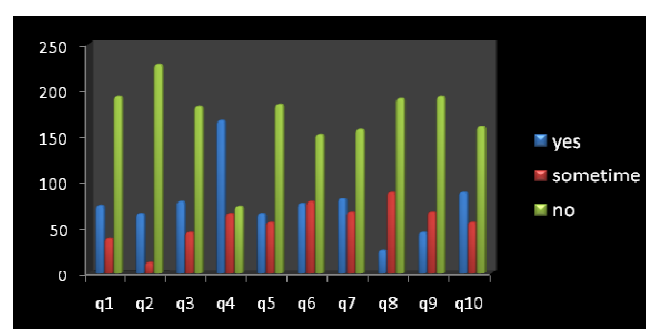
Data Analysis

The Fonseca's questionnaire contains an anamnestic index, and the volunteers were classified accordingly as having mild TMD, moderate TMD, severe TMD or no-TMD. For analysis, the answers "yes", "no" and "sometimes" from each questionnaire were tallied and the total was multiplied by the value attributed to each answer: ten, five, and zero, respectively. The final value was compared to the clinical index and the volunteers were classified per TMD degree, (Table 2). Results were analyzed using the frequency distribution of the questionnaire answers according to the Fonseca's anamnestic index. Positive answers ('yes' and 'sometimes') were summed. The final results obtained determine the prevalence of undiagnosed TMD as well as the severity level in the prevalent individuals (Bevilaqua-Grossi *et al.*, 2006).

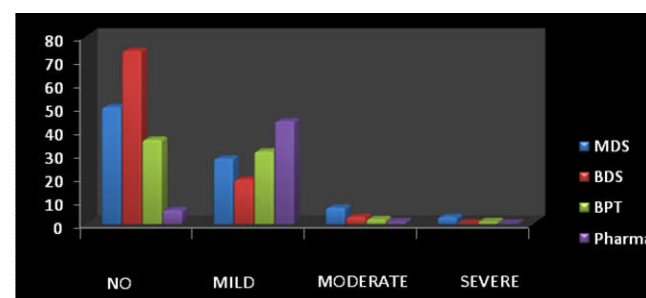
RESULTS

The anamnestic data from the TMD questionnaire revealed that 45.57% of the sample presented TMD and 54.43 % were free of TMD. It was found that the highest prevalence of TMD's have been found in the Dental Postgraduate about 88.24 % followed by Physiotherapy Undergraduates about 48.57% prevalent rate followed by Pharmacy Undergraduates having about 43.18% of prevalence and least in Dental Undergraduates about 22.92%. On the basis of severity rate, it was found that the highest number of severe and moderate cases of TMDs are found in Dental Postgraduate followed by highest mild cases of TMD's found in Pharmacy undergraduates with almost negligible prevalence seen in Dental Undergraduates.

Categories	Observed	Percentage	95% CI
Dental postgraduate	88	88.24	76.13-95.56
Dental undergraduate	96	22.92	14.95-32.61
Bachelor of physiotherapy	70	48.57	36.44-60.83
Bachelor of pharmacy	51	43.18	32.66-54.17
Overall	305	45.57	39.89-51.35



Graph 1. Question –wise distribution of responses



Graph 2. Prevalance and severity of tmd in different clinical professionals

DISCUSSION

The Fonseca's questionnaire allows collecting a large quantity of information in a relatively short period and at low cost, it is easy to understand and has almost no influence from the examiner. Epidemiologic studies about TMD show that using a simplified questionnaire, unnoticed symptoms that could lead to a wear or a greater disorder of the stomatognathic system can be recognized. The individuals presenting signs and symptoms followed preventive measures, making treatment easier. Garcia et al. obtained similar results. Using the same questionnaire, they found that 61% of the 200 undergraduates evaluated had some sign of TMD (Garcia *et al.*). Pedroni *et al.*, (2003) found a prevalence of 68% of the evaluated volunteers, which is in agreement with the present study. It is estimated that approximately six million Brazilians present TMD signs and symptoms and that most of them do not know they have the disorder, or if treatment is possible and what is the prognosis. The Fonseca's questionnaire allows collecting a large quantity of information in a relatively short period and at low cost, it is easy to understand and has almost no influence from the examiner. Numora *et al.*, (2007) conducted a study on 218 Dental undergraduates and found that over 50% of the interviewed dental undergraduates had TMD. Women (63.11%) were the more affected than men (40.62%). Considering only severe TMD, women were approximately 9 times more affected than men. The high prevalence of TMD in women may be related to their different physiological characteristics, such as regular hormonal variations, muscle structures and different characteristics of the connective tissue (Bevilaqua-Grossi *et al.*, 2006; Celic *et al.*, 2004). Students with any level of TMD showed marked characteristics: 76.72% considered themselves as tense people; 71.55% reported to clench or grind their teeth; 65.52% reported TMJ clicking; 64.66% reported frequent headache and 61.21% neck pain. These data are of great importance for the early diagnosis of TMD. In the present study, over 45% of the interviewed individual had TMD. Although the Postgraduate individuals have shown more prevalence than the other group individuals and may be attributed to changes in the work environment, psychological aggravation resulting from duties in the workplace, interpersonal relations and achievement oriented climate.

Conclusion

A simplified anamnestic index allows identifying a TMD patient and, simultaneously, classifies the patient according to disorder severity. Public health and screening services should adopt the questionnaire, as the anamnestic index may be obtained by technical personnel, in a relatively short period and at low cost, and it has wide population coverage. With proper diagnosis and treatment, this could manage orofacial pain in a large contingent of people.

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