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THE PREVALENCE OF TEMPOROMANDIBULAR DISORDER AND CHRONICLE PAIN IN PATIENTS USING FULL AND PARTIAL PROSTHESISS ATTENDED AT UNOESC CLINICS

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ABSTRACT

The temporomandimular disorder (TMD) is considered a set of muscle and joint disorders affecting the orofacialregion. Even with the current development of preventive dentistry you can still find individuals who need rehabilitation with conventional dentures regardless of the cause of tooth loss, TMD can affect edentulous patients, people with uni or bimaxillary dentures. The aim of this study was to determine the prevalence of TMD in patients using dentures, observing the relationship between gender, type of prosthesis, time using dentures, temporomandibular disorders and the presence of chronic pain. The sample consisted of 122 total or partial edentulous patients attended in dental clinics of University of West of Santa Catarina – UNOESC, evaluated through the Research Diagnostic Criteria (RDC). From patients examined, 37.7% presented a diagnosis related to myofascial pain (group I), for group II concerning articular dysfunction index was 68%, and group III, degenerative, was 64.8%, when the data relate with chronic pain we obtained a significant index for females ($p = 0.021$). It was observed that chronic pain was significant for Group I ($p = 0.0001$), for Group III ($p = 0.005$), and removing or not to sleep ($p = 0.023$).We conclude that the TMD is more prevalent in females. However, there was no difference among patients with unimaxilar or bimaxillaryprosthesis, nonetheless when related to TMD with chronic pain was found significance of it due the fact of removing or not the prosthesis to sleep, and for the TMD patients in Group I and Group III.

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INTRODUCTION

The Temporomandibular Articulation (TMA), known as the most complex articulation in the human body, is the only movable articulation in the cranium classified as ginglymoarthrodial joint, allowingrotational and translational movements giving hinge and sliding movements (Ramos, 2004; Maydana, 2010; Okeson, 2013). The Temporomandibular Disorders (TMDs) can be defined as a set of conditions that comprehend the mastication muscles, the Temporomandibular Articulations (TMAs) and the associated structures (Goldstein, 1999; Branco, 2008 and Nunes, 2012).

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These are considered as being a heterogeneous group of health problems and they have origin from plural aspects. They can be divided into two main groups: the ones from articular origin, related to TMA (Carrara, 2005) and the ones from muscular origin in which the indications and symptoms are related to the stomatognathic musculature (Delboni, 2005; Martins, 2008 and Okeson, 2013). In the group of articular disorder (de Leeuw, de Leeuw, 2013), one can come upon a TemporomandibularArticulation degeneration disease or they might be considered a group apart when the patients are evaluated by the RDC/TMD (Dworkin, 2005). The elderly can be more susceptive to this disorder when the physiological degeneration of the TMA is present (Gomes, 2012 and Divaris, 2012a).

Studies about the predominance of Temporomandibular Disorders (TMD) on toothless patients show different results, probably due to differences in the standards for diagnosis and also due to variations among the examined samples (Zavanelli, 2012). It is presumed that toothless patients have functional and morphological alterations in the stomatognathicsystem, which may be contributing factors for appearance of orofacialpain (Lopes Cavalcante, 2004). Given its complexity and origin from plural aspects, it is of fundamental importance an accurate result of diagnosis for the correct therapeutic approach. For that, the functional clinical exam is the first step, where it makes mandatory the standardized evaluation of data from each patient (Lopes Cavalcante, 2004 and Schiffman, 2014). One of the most applied protocols for the surveys, the Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) (Dworkin, 1992), formed by a double axis system. The protocol for Axis I was conceived for the diagnosis of TMD, and classifies the individuals in three groups (miofascial pain, disc dislocation e degenerative alteration), while the Axis II holds instruments for psychological valuation and the inaptitude related to pain and regroups them according to: intensity of chronicle pain and inaptitude, degree of depression, scale of non-specifics physical symptoms and mandibular function limitation. Combined, protocols Axis I and Axis II form a consistent global valuation with the bio-psyco-social health model (Schiffman, 2014; Figueiredo Cavalcanti, 2010 and Vernacci, 2012). It is important to point out that the RDC/TMD excludes some of the conditions such as ankyloses, aplasias or hypertrophies, neoplasm among other pathologies and orofacial pains. The research is based essentially on the description of the observed found ones, that appear in closed groups, rather than etiology mechanisms, allowing to set the standards for methods of gathering indispensable data and make possible comparison of the found ones among several investigators (Schiffman, 2014 and Santos, 2004). Then, already having the diagnosis of each case at hand, arouses a necessity of searching studies to elucidate the agents related to the TMD's etiology in patients using prosthesis, warranting a new patient´s recovering aiming the goal of assuring them an adequate stomatognathic function (Santos, 2004). This present work purposed to stipulate the predominance of temporomandibular disorder in patients using full dental prosthesis attended at University of West of the Santa Catarina odontological clinics, observing the connection within: age, period using full prosthesis, temporomandibular disorder and the carriage of chronicle pain.

MATERIALS AND METHODS

This study was approved by the Research Ethics Committee of the UNOESC / HUST with the number of 826,398 of 10/7/2014. Were selected 205medical records of patients who underwent rehabilitation treatment at the integrated clinics and in the curricular component of Prosthesis II by means of research in the medical records atthe University.

Inclusion Criteria

- Use full denture;
- To be attended in the dental clinics of UNOESC;
- The researcher's invitation to be examined.

Exclusion Criteria

- Do not sign the informed consent form;
- Not having done dental consultation in the integrated clinics III and IV and prosthesis II;
- Not having at least one full denture;
- Have made the last service at UNOESC before 2010.

The sample consisted of 122 patients independent of gender between the ages of 40 and 82,upper or lower total denture wearers or bimaxillary. The content of the survey was explained, its relevance, and requested the signing of the TECLE in two-way document that after signed one way remained in the power of the patient and another of the researcher. As a measuring instrument was used the cross-cultural adaptation to Brazilian Portuguese of the Diagnostic Criteria for Research on Temporomandibular Disorders RDC / TMD - Axis I and Axis II (Dworkin, 2005 and Figueiredo Cavalcanti, 2010).

- How much time of use of total prosthesis;
- Time of use of the current prosthesis;
- The way you use the prosthesis:
- continuous mode;
- take off to sleep.

The questionnaires were applied by a single examiner and the clinical examinations made by the second researcher. The two were previously trained and familiarized with the RDC / TMD application. The researchers were calibrated according to the kappa index with an index of 0.99% and According to the Research Diagnostic Criteria for Temporomandibular Disorders (RDC / TMD) protocols. The collected data were analyzed according to the algorithm of RDC axis I and axis II and after being diagnosed according to Groups I, II and III. Group I - Diagnosis of muscular dysfunction that may be myofascial pain (spontaneous pain or palpation) and myofascial pain with aperture limitation (limited movement and muscular rigidity). Group II - Changes in disk displacement, being displacement with reduction (where reduction in opening or closing often causes noises), or displacement without reduction (the disc remains internalized or lateralized with limited mandibular depression) or full displacement without opening limitation. Group lll - Arthralgia, osteoarthritis, osteoarthrosis:painful process, inflammatory, And degenerative disorders of the temporomandibular joint.

Diagnostics within any group are mutually exclusive. This means that, at first, an individual could receive from a zero diagnosis (without diagnosable conditions), up to five diagnosis, a muscular diagnosis from Group l , one of Group ll, (left and right) and one more for Group lll (SOUZA, 2014). The questioner consists of four parts: (1) historical questioner (previous history; (2) the clinical examination form; (3) specifications for the clinical examination, including verbal instructions to the patient during the physical examination, and; (4) the algorithm protocol for the classification of RDC / TMD axes I and II (Ribeiro, 2002). The previous history questioner consists of 31 questions. The examination form consists of 2 questionnaires on patient complaints, side and area, with scores varying from 0 to 3. Examination of active movements ofopening and closing with restrictions or not, the presence or absence of joint sounds, and side excursions. Furthermore, 10 locations are touched on both sides, being 8 sites in extra mouth muscles and 2 ATM points. During muscle and joint palpation, the specific location was pressed

by the examiner, using the tip of the index finger and the third finger with a standardized pressure of1 kg of pressure for extra oral muscles and 0.5 kg for the joints (Vernacci, 2012). The data collected were analyzed according to the algorithm of the DRC and after being diagnosed according to groups I, (muscular), group II (joint) and III (degenerative)being either right or left side. The results of the algorithm were submitted to bivariate statistical analysis using the chi-square test.

RESULTS

The table 1 shows the percentage that the sample represented according to the questions gender, time of use of prosthesis, the manner prosthesis are used, face pain, masseter and temporal muscle pain from palpation, ATM pain from palpation, type of opening and joint sounds, data collected according to the DRC questionary and clinical examination.

The Table 2 shows how the classification of the sample according to the RDC questionnaire in Group 1 muscular, joint Group 2 and Group 3 degenerative, in relation to axis II regarding the perception of chronic pain. We observed in Table 3 the degree of chronic pain when related to the male gender where 31 patients reported no pain on the face, 10 with low intensity chronic pain and 8 with high intensity pain, and in the female gender the patient number was 30 without pain, 15 with low intensity and 28 with high intensity, which gave a statistical significance of p * 0.021.We also observed statistical significance of p * 0.023to the manner the prosthesis are used, whether it's continuous or not. When comparing if the patient used bimaxillary or unimaxilar total prosthesis,with the questions of the I axis aboutmouthopening, the presence of noise in the ATM,masseter and temporal muscle pain, ATMs pain, or with the classification of Axis I (muscular Group I, joint II Group or degenerative Group III) We observed that there was no statistically significant difference in any of the variables (Table 4).

Table 1. Percentages of the use of prosthesis

		Frequency	Percentage (%)
Genre	Male	49	40,2
	Female	73	59,8
Time of use	Up to 10 years	20	16,4
	More than 10 years	102	83,6
Type of prosthesis	Unimaxilar	61	50
	Bimaxilar	61	50
Face pain	Painless	62	50,8
	With pain	60	49,8
Pain on palpation in the masseter	Painless	44	36,1
	With pain	78	63,9
Pain at palpation in the temporal	Painless	60	49,2
	With pain	62	50,8
Pain at palpation in the ATM	Painless	44	36,1
	With pain	78	63,9
Opening type	With restriction	25	20,5
	Without restriction	97	79,5
Joint sounds	clicks	51	41,8
	Cracking	71	58,2
How to use the prosthesis	Continuous use	99	81,1
	Take off to sleep	23	18,9

Table 2. Degree of chronic pain in relation to the variables Diagnostic Group RDC

		Degree of chronic pain on face			p*
		Painless	Low intensity chronic pain	Chronic high intensity pain	
Group I	Negative	60	7	9	0,000
	Positive	1	18	27	
Group II	Negativo	20	7	12	0.891
	Positivo	41	18	24	
Group III	Negative	30	6	7	0,005
	Positive	31	19	29	

*chi-square

Table 3. Degree of chronic pain X gender, time of use of the prosthesis, time of use of the current prosthesis, mode of use, type of prosthesis

		Degree of chronic pain on face			p*
		Painless	Low intensity chronic pain	Chronic high intensity pain	
Genre	Male	31	10	8	0,021
	Female	30	15	28	
Time of use of prosthesis	Up to 10 years	10	2	8	0,337
	More than 10 years	51	23	28	
Time of use of the current prosthesis	Up to 10 years	49	20	30	0,923
	More than 10 years	12	5	6	
Mannerof use	Continuous use	44	21	34	0,023
	Take off to sleep	17	4	2	
Typeofprosthesis	Bimaxillar	26	16	19	0,183
	Unimaxilar	35	9	17	

Table 4. Type of prosthesis in relation to clinical examination and classification of the algorithm

		Type of prosthesis		p*
		Unimaxilar	Bimaxillary	
Opening	With restriction	49	48	0,823
	Without restriction	12	13	
Presenceof	Clicks	23	28	0,359
Noises	Cracking	38	33	
Temporal	Painless	28	32	0,469
muscle pain	With pain	33	29	
Masseter	Painless	27	29	0,716
muscle pain	With pain	34	32	
Atm Pain	Painless	19	25	0,258
	With pain	42	36	
GroupI	Negative	36	40	0,455
	Positive	25	21	
Group II	Negative	21	18	0,560
	Positive	40	43	
GroupIII	Negative	20	23	0,570
	Positive	41	38	

DISCUSSION

The temporomandibular disorder studies, they indications and symptoms and the lasting chronicle pain are a challenge for the actual scientific community, mainly due to the subjective of symptoms and the variety of subdivisions of these pathologies. The study about toothless patients, prosthesis´ use period of time, as well as the way how it is or not removed for sleeping time associated to the pain from touching the TMA and the mastication muscles, evaluated by the questionnaire RDC/TMD[13] became revealing for patients carrying this kind of pathologies. There are debates about the TMDs on patients wearing prosthesis, some authors believe that the use of prosthesis does not affect the development of TMDs[13,25,26], others believe that the loss of teeth, loss of vertical dimension, occlusioninstability and factors associated to iatrology during the manufacturing of prosthesis can lead to arouse TMDs[12, 27]. The American Academy of Orofacial Pain (AAOP) defines TMD as a set of disorders that comprehend the mastication muscles, the TMA and the associated structures[28]. Besides that, it is pointed as the main cause of pain from non dental source in the orofacial region, including the head, face and connected structures. The results from the current study, where 59,8% were of feminine gender and 40.2% of masculine gender, corroborates with this statements because it was observed from all the sample that 50.8% feel pain in the face, and 63.9% say they feel pain strictly in the TMA.

We observed that the examined patients in this study were in ages between 40 and 82 years old and those with more than 10 years using prosthesis showed a group of 9% with some kind of chronicle face ache, in accordance with Divaris' studies[24] in which were analyzed 873 medical records from geriatric patients with ages between 65 and 95 years old and it was observed that the time for edentulismwas 10.2 years and 11% of those patients were diagnosed with TMD. However, Santos[20], with a sample of 384 patients averaging 73.4 years of old (with ages between 65 and 84), being them 81% feminine gender and observed that only 5% of the patients reported pain to open their mouth and 6% had pain in the TMA, with the pain located in the masseter muscle area for 39% and from joint sounds for 24%. In the studies of Almeida it was observed in 137 old-aged patients, of which 72.3% were women and 27.7% were men, with ages averaging 70.4 (± 7.8years) years old, the edentulism was present in 78.3% of the sample, and of these, 74.4% showed TMD, was still observed that 23.2% were having difficulty to open their mouths, 38% noticed joint sounds in the TMAs. We observed in the present research that 20.5% had difficulty opening their mouths, 41.8% presented click in the TMA, but this data when compared to the time of using full prosthesis weren´t statistically relevant. In their studies[30] demonstrate that 20.5% of patients had limitation in opening their mouths and the joint sounds were present but weren´t statistically relevant. Also agrees with the studies from[31] where the authors observed in their research with 154 old-aged in Mexico City, the feminine gender was more affected by TMD (32.8%) and limitation in opening the mouth was present in 50.0% of the patients. When we refer to the prosthesis type used by the patient dichotomizing the sample into unimaxillary and bimaxillary prosthesis, and compared to the items of opening mouth with or without restriction, presence of joint sounds, masseter and temporal muscular pain, pain in the TMA, or muscular, joint or degenerative disorder, statistically weren´t significant, demonstrating the fact the sample utilizes unimaxillary and bimaxillary doesn't influence these symptoms.

Following the characterization for the diagnosis of TMD, in the present study, TMD and time to edentulism were statistically correlated, with 26.32% (group II) and 47.37% (group III) of the individuals without teeth with TMD where the time of the current prosthesis used dichotomized up to 10 years and more than 10 years in relation to the TMDs weren´t statistically relevant, as well as to the type of prosthesis, if unimaxillary or bimaxillary, they didn't show statistic difference. In the research carried out by Serman[32], the time of use of full prosthesis wasn't statistically relevant compared to the indexes of TMD. Similarly with others studies that affirm no statistically relevant correlation was found between TMD and the time the patient was toothless or wearing any of the two types of denture. Now, the studies of[14] concluded that the frequency of moderate and severe TMD was greater in patients that used full denture for over 45 years (60.0% and 40.0%, respectively) than in patients using full denture between one and five years. In the present study when related to TMD the variables; time of use of prosthesis, time of use of current prosthesis, uses prosthesis while sleeping, or if the prosthesis is bimaxillary or unimaxillary don´t show any relevant statistic result, being in disagreement with the studies from where the time to edentulism (p=0.012) and the current prosthesis using time (p=0.012) also presented significant result[21], and others studies that concluded the full denture and it's condition may be associated to TMD. When we investigate, through the RDC algorithm for the Axis II, the chronicle face ache, and classify it as: without pain, with chronicle pain of low intensity and with chronicle pain of high intensity related to the muscular group, we find relevant statistic results p*< 0.000 demonstrating that the chronicle pain is very present in muscular disorders, now for group II (joints disorders) wasn´t shown any significant statistic result, but when we refer to group III TMA degenerative, we also find relevant statistics with p*= 0.005. When crossing the degree of chronicle pain with the masculine and feminine gender, also the chi-square test presents a significant statistic result of p*= 0.021, validating the studies that show the chronicle pain and the TMDs are much more present in the feminine gender. And the way they use the prosthesis, if taking it off when sleeping or using 24 hours a day, showed a significant statistic result of p*= <0.023 when related to chronicle pain, this information

confirms the studies from Sartoretto, Bello and Bona, in 2012[35], where the most frequent symptoms reported by the patients having TMD are face ache, pain in the articulation and/or mastication muscles, supporting some studies where 100% of the individuals diagnosed with TMD exhibited pain.

Recent epidemiological researches testify women have indications and symptoms of TMD significantly more often and more severe than men. Ribeiro& Ricci, 2002, detected that patients wearing full denture showed symptoms of TMD with the same frequency as normal toothed persons. Al-Shumailan et al., 2010, also didn´t find significant TMD in toothless patients using full denture. Alzarea through his research of recent studies on TMD, shows the prevalence of TMD is more present in the feminine gender than in the masculine, that the indications and symptoms of TMD that are observed in natural teeth patients may also occur in toothless patients or with worn out full dentures, agreeing with the present research where the collected data according to RDC to Axis I and Axis II was statistically more present in the feminine gender.

Conclusion

It follows that patients using full dentures did not show significant statistic relation according to the TMD groupsclassified by the RDC Axis I, but the TMD was greater in patients that use the denture fulltime. Now in Axis II from RDC the patients classified in the Muscular Group (G I) displayed significant statistic relation with the low intensity chronicle pains. The Degenerative Group (G III) displayed a significant statistic for high intensity chronicle pain, besides showing the prevalence relation for the feminine gender.

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