

Sintomas Osteomusculares em Cirurgiões-Dentistas: Um Estudo Piloto

Osteomuscular Symptoms in Dentists: a Pilot Study

Augusto Henrique Alves de Oliveira^{a*}; José Duarte Saraiva Neto^a; Maurício Novais Almeida^a; Letícia Stefenon^{bc}

^aCentro Universitário Doutor Leão Sampaio, Programa de Pós-Graduação Stricto Sensu em Clínicas Odontológicas. CE, Brasil.

^bCentro de Pesquisas São Leopoldo Mandic, Programa de Pós-Graduação Stricto Sensu em Clínicas Odontológicas. CE, Brasil;

^cFaculdade Especializada na Área de Saúde do Rio Grande do Sul. RS, Brasil.

*E-mail: augustohenrique@leaosampaio.edu.br

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Abstract

Dentists are more likely to develop occupational diseases due to the routine use of arms and shoulders with the same patterns of movement. Musculoskeletal disorders encompass several pathologies that are the main cause of early worker withdrawal and can lead to symptoms that hinder professional activity, such as pain, fatigue and even the spine functional impairment. The aim of this study was to evaluate the prevalence of musculoskeletal symptoms related to the dentists' professional activity. This is a cross-sectional quantitative study. Data collection was performed at the Dental Specialties Centers in the cities of Crato, Juazeiro do Norte and Mauriti in the state of Ceará. To collect the data an interview script and the Nordic questionnaire - adapted NMQ were used. Of those interviewed, 83.33% reported pain in the last 12 months; 46.66% reported some pain in the last 7 days; 36.66% reported that pain was an obstacle to work; 53.33% sought a health professional for consultation related to pain in the last 12 months; and 90% correlated the pain experienced with work. The anatomical regions that most professionals reported were pain in the lower back, neck, hands, shoulders and upper back. Given the severity of musculoskeletal symptoms and their consequences on the health of dentists, it is fundamental to adopt practices that aim to prevent their onset.

Keywords: Ergonomics. Cumulative Trauma Disorders. Musculoskeletal. Signs and Symptoms. Pain.

Resumo

Cirurgiões-dentistas estão mais propensos a desenvolver doenças ocupacionais devido ao uso rotineiro dos membros superiores com os mesmos padrões de movimento. Os "distúrbios osteomusculares" abrangem diversas patologias, que configuram a principal causa do afastamento precoce do trabalhador e podem se traduzir em sintomas que dificultam a atividade profissional, como dores, fadiga e até comprometimento funcional da coluna vertebral. O objetivo deste estudo foi avaliar a prevalência dos sintomas osteomusculares relacionados à atividade profissional dos cirurgiões-dentistas. Trata-se de um estudo transversal de abordagem quantitativa. A coleta de dados foi realizada nos Centros de Especialidades Odontológicas nas cidades de Crato, Juazeiro do Norte e Mauriti no estado do Ceará. Para a coleta dos dados foi utilizado um roteiro de entrevista e o questionário nórdico – NMQ adaptado. Dos entrevistados, 83,33% relataram dor nos últimos 12 meses; 46,66% relataram alguma dor nos últimos 7 dias; 36,66% alegaram que a dor foi motivo de impedimento para exercer seu trabalho; 53,33% procuraram algum profissional de saúde para consulta relacionada às dores nos últimos 12 meses; e 90% correlacionaram as dores sentidas com o trabalho. As regiões anatômicas que os profissionais mais relataram dor foram a lombar, pescoço, mãos, ombros e região dorsal. Diante da gravidade dos sintomas osteomusculares e de suas consequências sobre a saúde dos cirurgiões-dentistas, torna-se fundamental a adoção de práticas que objetivem prevenir o seu aparecimento.

Palavras-chave: Ergonomia. Transtornos Traumáticos Cumulativos. Sinais e Sintomas. Dor.

1 Introduction

Work and the conditions in which it is performed are topics of discussions that have gained increasing attention in recent years. The insertion of new technologies, such as the automation of work processes, associated with the absence of environments adaptation and professionals capacitation to act in this new reality may be triggering factors of health aggravations of professionals¹.

Among the large number of professionals who suffer with these problems, dentists are among those more prone to develop occupational diseases²⁻⁴. The practice of dentistry is considered an activity physically and mentally exhaustive⁴ in

which the quotidian is permeated of situations susceptible to damage to health⁵, due to repeated movements, inadequate posture and stress^{1,3}. The workers although exercise less effort in the performance of their activities, perform movements, most of the times, static, requesting the excessive work of the same muscle group and inadequate posture for long periods. Factors such as the mechanization of tasks, the expertise and the highest repetition, as well as the posture, incorrect use of instruments and the poor implementation of activities have a direct relationship with the appearance on a large scale of these lesions¹.

The preservation of the professionals physical integrity of dentistry has as its better ally the prevention of musculoskeletal

symptoms development. The overload of working days, in most cases exceeding 40 hours per week, increases the importance of correct adequacy of physical space for the developed activities, being singled out as a protective factor of pain in the lumbar spine. Fact still observed among undergraduate students of dentistry by overload of probationary periods⁶. The help of an assistant in the implementation of labor activities is cited as another measure to avoid repetitive strain injuries - RSI and Work-Related Musculoskeletal Disorders - WRMD in surgeon dentists^{4,6,7}.

Several conditions can be associated to this reality. Such diseases are manifested through symptoms that may hamper or prevent the exercise training as muscle fatigue and headache^{2,8,9}. WRMDs are directly related to occupational activities and working conditions, with a trend to significant increase in Brazil and in several countries and constitute the main cause of early leave of the employee, due to temporary or permanent incapacitation^{2,10}.

The health aggravations understood as Work-Related Musculoskeletal Disorders - WRMD may affect muscles, muscle fascias, tendons, ligaments, joints, nerves, blood vessels, and teguments. RSI/WRMD are clinically manifested by pain and by temporary or permanent functional disability¹¹. A factor to be taken into consideration is the presence of muscular fatigue as the beginning of RSI/WRMD that is often overlooked being the differential diagnosis inaccurate¹².

The musculoskeletal lesions correspond to 30% of the causes of premature abandonment of the profession in dentistry. The grievances arising out of these lesions involve carpal tunnel syndrome, cervical root pain, shoulder pain, Thoracic Outlet Syndrome, Lateral Epicondylitis, tendonitis, tenosynovitis, myosites and bursitis^{1,13}. In view of the difficulty of diagnosis and treatment of problems when developed by professionals, awareness policies in the prevention are important factors to be taken into consideration regarding this problem³.

Faced with this reality, studies are considered such as this one of great importance, in order to know the signs and musculoskeletal symptoms presented by professionals, correlating them with the occurrence of occupational diseases, as the RSI/WRMD. More diffuse and extensive knowledge about these deleterious effects resulting from the completion of an inadequate way of labor activity brings contributions that will assist in the adoption of a correct posture by professionals, minimizing the related negative effects, thereby providing, preservation of the physical conditions of work and reduction of the nuisances during its implementation, as well as an increase in longevity of professional activity.

The objective of this study was to assess the prevalence of musculoskeletal symptoms related to professional activity of dental surgeons of Centers of Dental Specialists - CEO of

the cities of Crato, Juazeiro do Norte and Mauriti, in the state of Ceará.

2 Material and Methods

This was a cross-sectional study, with descriptive and analytical purposes. This study model was chosen since it enables to gather data in a single moment, determine the studied factors and the realization of the counting of results obtained from the responses¹⁴. This study was approved by the Committee for Ethics in Research - CEP Opinion no. 1,400,865).

Data collection occurred through standardized personal interview, in which the interviewee had the opportunity to discuss the proposed theme. The interview was applied by two trained researchers for this procedure. The data were collected between the months of March and April 2016. The data collection instrument used was divided into two parts: Part I - socio demographic profile in which information was collected regarding gender, age, weight, height, the dominant side, level of training, practice area, hours worked, if the individuals has another professional activity and, if he or she practices physical activity on a regular basis (at least 3 times a week); Part II - characterization of musculoskeletal symptoms, along with the use of the Nordic questionnaire - NMQ - adapted¹⁵.

The Nordic Questionnaire - NMQ has been increasingly frequent, translating into an efficient way to identify musculoskeletal disorders, being an instrument for diagnosis of work environment¹⁵. In Brazil, the NMQ questionnaire was validated by Pinheiro *et al.* and is characterized by being a questionnaire that divides the human body into parts and so it is possible to assess effectively the reported symptoms, the specific location in which it is manifested, the occurrence in the past seven days and in the last twelve months, as well as the suspension of normal activities during the year^{15,16}. Thus, it analyzes in a general way the manifestation of musculoskeletal symptoms related to praxis.

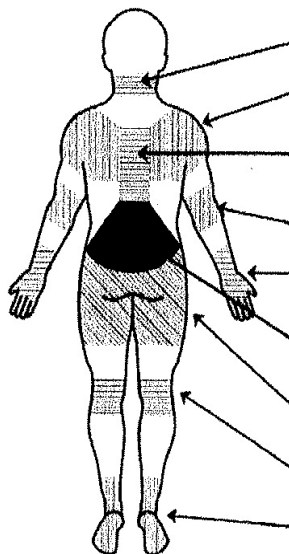
The technique of research by means of interview allows the interviewer to repeat or clarify questions, formulate differently, specify any meaning as a guarantee of being understood, offer the opportunity to evaluate attitudes, behaviors, and the interviewee is observed in what he or she says and how he or she says, record of reactions and gestures, provides more accurate information, which can be proven, immediately, disagreements, and allows data to be quantified and subjected to statistical treatment¹⁷.

To reach the proposed objectives in research, it was opted for the quanti-qualitative approach. The results were typed and organized in spreadsheets of the program Microsoft Excel version 2010, and presented in Charts.

Figure 1 - Musculoskeletal symptoms questionnaire (NMQ).

Please answer the questions by placing an “X” in the appropriate box _ an “X” for each question. Please answer all the questions, even if you have never had problems in any part of your body.

This figure shows how the body was divided. You must decide for yourself, what part is or was affected, if any.



	In the last 12 months, you had problems (such as pain, tingling/ numbness) in:		In the last 12 months, you have been prevented from performing normal activities (for example: work, chores and leisure) because of this problem in:		In the last 12 months, you consulted a health professional (doctor, physiotherapist) because of this condition in:		In the last 7 days, you had any problem in:	
	No	Yes	No	Yes	No	Yes	No	Yes
NECK	No	Yes	No	Yes	No	Yes	No	Yes
SHOULDERS	No	Yes	No	Yes	No	Yes	No	Yes
PART UPPER BACK	No	Yes	No	Yes	No	Yes	No	Yes
ELBOWS	No	Yes	No	Yes	No	Yes	No	Yes
WRISTS/HANDS	No	Yes	No	Yes	No	Yes	No	Yes
PART LOWER BACK	No	Yes	No	Yes	No	Yes	No	Yes
HIPS/THIGHS	No	Yes	No	Yes	No	Yes	No	Yes
KNEES	No	Yes	No	Yes	No	Yes	No	Yes
ANKLES/FEET	No	Yes	No	Yes	No	Yes	No	Yes

Source: The authors.

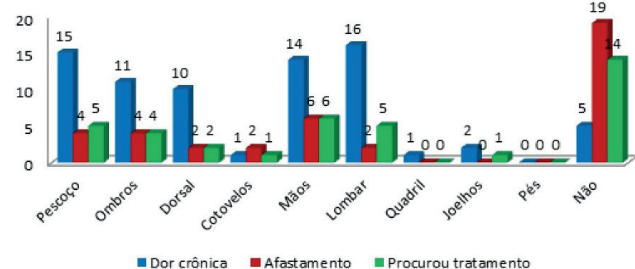
3 Results and Discussion

30 professionals were interviewed, being 14 of the municipality of Crato, 13 of Juazeiro do Norte and 3 of Mauriti, all in the state of Ceará. In relation to sex 16 (53.33%) were male and 14 (46.66%) were female, mean age of 35.6 (±5 years), mean weight of 71.85 (±15) Kg and average height of 1.68 (±0.09) m. In relation to the grip, 14 declared to be right-handed, 2 left-handed and 1 ambidextrous 1. In relation to their major 27 were specialists and 3 masters. The average hours of work per day was 8.4 (± 2), on whether these professionals were engaged in another type of activity only 5 stated that they were. About whether they practice physical activities 14 said they did and 16 said that they did not. Regarding the specialization, dental prosthesis was the most prevalent (10; 24%); followed by orthodontics (8; 19%); endodontics (6; 14%); patients with special needs, Maxillo facial surgery and traumatology and dental implant (4; 10% each); Pediatrics (3;7%); stomatology, periodontics and “laser therapy” (1; 2% each).

On the musculoskeletal pain presented (NMQ questionnaire), 25 (83.33%) of the interviewees reported having felt some pain in the last 12 months (*chronic pain*). The anatomical regions that the professionals most reported were lumbar pain (16; 53.33%), neck (15; 50%), hands (14; 46.66%), shoulder (11; 36.66%) and the dorsal region (10;

33.33%). Of the 25 professionals who reported having felt pain in the last 12 months, 11 (36.66%) claimed that such pain was reason of impediment to exert their work (*leave*). The causes of impediment to perform their activities in the last 12 months were the pain felt in higher prevalence, in the hands (6; 54%), neck (4; 36%), and shoulders (4; 36%). When asked if they sought some health care professional for consultation related to pain in the last 12 months, 16 professionals (53.33%) reported that did. Among the reasons that led the professional dental surgeons to seek a health professional, it is highlighted the pains in the hands (6; 37%), in the lumbar region (5; 31%), neck (5; 31%) and shoulders (4; 25%).

Figure 2 - Graph of number of interviewees according to the prevalence of pain in the last 12 months (chronic pain in blue); respondents prevented from exercising their labor activities due to these pains (leaves in red); and interviewees who sought a health care professional for consultation related to pain (sought treatment in green).



Source: Research data.

When questioned about any pain present in the last 7 days, 14 (46.66%) of the professionals have claimed to feel some pain. To analyze the distribution of painful symptoms felt in the last 7 days, it was found that the regions most referred to by the professionals were the shoulders (6; 20%), hands (6; 20%), neck (5; 16.66%), and the dorsal region (4; 13.33%), and to a lesser prevalence the lumbar region (2; 6.66%), hip (1; 3.33%), and elbow (1; 3.33%).

Upon questioning if the pains felt could be related to work, 27 of the 30 professionals interviewed indicated that they could be. The anatomical regions in which the professionals reported having felt pain and related to performing their professional activities, were predominantly the lumbar region (23; 76.66%) followed by the neck (19; 63.33%), hands (15; 50%), the dorsal region (11; 36.66%) and shoulders (10; 33%).

The role that the surgeon-dentist performs, induces him or her to adopt attitudes of vicious character as, for example, lean laterally, perform movements of flexion and extension of the column during the work day, and remain seated for long periods. Musculoskeletal symptoms indicate the presence, in the initial phase or advanced, of occupational diseases. Although, these pathologies have become increasingly frequent among the general population, with rates of 62%, in dentists have a prevalence of 93%¹⁸. The dentistry professionals occupy the first places in relation to the work leaves on a temporary or permanent basis due to these problems. Such reality has driven research focused on the identification of symptoms presented by professionals and their relationship with the form with which the labor activities are developed¹⁸⁻²⁰.

The research was conducted in three Centers of Dental Specialists - CEO of the municipalities of Crato, Juazeiro do Norte Mauriti, all in the state of Ceará. These centers meet the demand of the municipality and all its area of coverage, according to the pact made among neighboring municipalities and the regional health cell. These institutions are prepared to offer the people the following services: oral stomatology with emphasis on diagnosis and detection of mouth cancer, specialized periodontics, minor oral surgeries of soft and hard tissues, endodontics and care for people with special needs.

It was found in the present study, that the prevalence of painful symptoms was considerably high, since 83.3% of the professionals participants reported pain in some part of the body in the last 12 months (chronic pain), corroborating study of Scopel and Oliveira²¹ in which 89.7% of professionals reported musculoskeletal symptoms; in research carried out by Silva and Jesus⁴¹⁰⁰ % reported pain, having the cervical as the most often cited region. The fact that 83.3% of professionals presenting pain in some part of the body in the last 12 months is worrisome, since this symptom represents foreshadowings of diseases related to work and that can affect their job performance, can prevent them definitively to perform their professional functions^{1,2}.

The anatomical regions that the professionals most reported

the symptoms were lumbar pain (16; 53%), neck (15; 50%), hands (14; 47%), and shoulders (11; 44%). Similar to these, the results of the study of Fracon et al.²⁰ on the prevalence of musculoskeletal symptoms in dental surgeons in activity show that the regions that most reported pain symptoms were the cervical, lumbar spine, shoulder, and wrist/hand. A possible explanation for the high prevalence of pain in these regions would be the workload of daily work of these professionals, on average 8.4 (± 2), since they spend the majority of time with the limbs suspended generating some degree of muscle fatigue¹. The extensive labor day, double work shift, the lack of breaks, the number of visits increasingly due to charges for productivity, are aspects that, currently, have been haunting the work of surgeon-dentist and that in association may be impairing these professionals health⁴.

Of the 25 professionals who reported having felt pain in the last 12 months, 11 (44%) reported that these pains were a cause of hindrance in the performance of their work, and that 16 (53.33%) agreed to seek a health care professional for consultation. Gobbi¹⁹ reports that 54.5% of the dental surgeons with WRMD stopped performing their activities normally, and also reported having sought a health care professional due to pain. In the study of Silva and Jesus⁴ only the demand for professional physiotherapists was analyzed that corresponded to 65% of the participants.

In this study, 14 (46.6%) participants also reported prevalence of pain in the last seven days, and the regions in which these symptoms occurred the most were the shoulders, hands, neck and back. The osteomuscular symptoms were related to clinical work by 27 (90%) of the participants. Siqueira *et al.*⁶ in research with scholars of Dentistry, reported that 39% of participants stated that the pain manifested itself occasionally in the course of the journey of service providing at the clinic, and for 9.3% these pains occurred frequently during their providing the services. The authors also reported that 41.9% of the participants reported that the work of dentistry was the main activity responsible for triggering the pain.

It is worrying, the fact that the association of clinical work of dental surgeons and the occurrence of musculoskeletal symptoms, since this type of work has ergonomic limitations that have few possibilities of solution, mainly in what concerns the postural question. During work, these professionals begin to adopt inappropriate postures under the ergonomic point of view, even when they have at their disposal tools ergonomically appropriate. Working together with an auxiliary is an important aspect for prevention of the WRMD development⁴. It is, therefore, essential the adoption of effective measures for the prevention of these symptoms, and to lessen their impact on the dental surgeons' health.

In the professional activity, the conditions under which it is carried out the work are paramount in the professional's state of health, configuring a precursors aspect of the development of occupational diseases when exercised without

a proper ergonomics². In dentistry, the working environment must be ergonomically arranged in such a way as to bring comfort in the realization of the activities and avoid the stress and excessive wear of both professionals and patients²², at the same time that favors the realization of the odontological practice²³. The ergonomics of the working space involves factors such as adequate and well-distributed equipment handy to the professionals, maintaining a correct posture and the division of tasks with an auxiliary²⁴.

The concern with the dentists ergonomics has been the basis for the development of adaptations during the odontological practice in an attempt to minimize the negative effects on these professionals. Therefore, being responsible, including the change in posture of working standing up to sitting, in an attempt to better adapt to the physical needs of each professional. However, only this measure was not sufficient to reduce damage to which these professionals are more prone to develop, since, in this new practice, the movements require a greater effort and are more difficult to be performed and the sitting position, although take the weight out of the feet, increases the pressure in the spine²⁵.

In addition to the ergonomic structuring of dental clinics, the adoption of correct posture should be emphasized. The non adoption of proper posture can be linked to a lack of physical preparation or prior knowledge about the ergonomic principles²¹. These precautions are not always observed generating since posture problems as the slope of the vertebral spine to reach the labor instruments, the erroneous motion of the forearm, causing lesions in the joints and the inadequacy of the stool, causing the spine non-accommodation and the incorrect position of the legs²³. An inappropriate posture, associated to excessive loads of work and little time to rest have triggered complaints and discomforts, which can result in symptoms such as pains, fatigue and even the impairment of the functional capacity of the vertebral spine^{2,8,9}.

It is verified, in this study, the severity of the problem that permeates the occurrence of these symptoms and their consequences on the health of professional dental surgeons, which justifies the high percentage of demand for other health professionals to treat these symptoms. The changes in some habits of routine, better organization of work, are some measures that can be adopted for the prevention of musculoskeletal symptoms in dental surgeons and can assist in improving their quality of life.

4 Conclusion

The osteomuscular symptoms are very common among professional dental surgeons, due to bad posture adopted by these professionals during their clinical work. It should be emphasized that these symptoms can be the cause of leave and preventing the achievement of professional activities.

It is concluded that the osteomuscular symptoms in dental surgeons are reason for concern, due to the seriousness of their

repercussions. It is imperative that the policies for the worker health adopt and implement strategies aimed at the prevention and reduction of the consequences of these symptoms.

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