

MUSCULOSKELETAL DISORDERS IN DENTAL SURGEONS

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Received: 04/09/2016; Accepted: 06/03/2016

ABSTRACT

Research has shown that many cases of diseases interfere with the health of workers in various types of business activities, and its etiology the Work-Related Musculoskeletal Disorders (WMSDS). The Dental Surgeons because of their professional activities are professionals likely to develop musculoskeletal disorders, which added to various harmful factors could expose them to develop some kind of Work-Related Musculoskeletal Disorders. Purpose is to achieve with this article verify the indicative signs of Work-Related Musculoskeletal Disorders and its prevalence related to the work of Dental Surgeons seeking to prove the high probability of Dental Surgeons develop this pathology; evaluate risk behaviors, as well as protective measures listed. To achieve the goal was made a literature review and through field research a questionnaire to thirty Dental Surgeons working in the municipalities of Mendes and Vassouras / RJ, seeking to verify the situation the same with regard to Work-Related Musculoskeletal Disorders.

KEYWORDS: Dental Surgeons, work-related musculoskeletal disorders, Professional practice.

1. INTRODUCTION

It is found that the relationship between work, health and disease has been known since the dawn of human history, being represented through the arts, history, philosophy and literature. However, the authors comment that is relatively recent development of studies that show the damage to physical and mental health of health professionals generated by occupational factors¹.

Dentistry has been considered a "stressful" profession and is often associated with health problems, both physical and psychic order. Systematic studies on musculoskeletal disorders in Dental Surgeons have been made since the 1950s, and are responsible for the first proposals for changes in the dental work process, including the change in the orthostatic position working for the sitting position².

The Dental Surgeons are among the workers most affected by musculoskeletal disorders due to physical origin

factors, chemical, ergonomic biological, mechanical and psychological, in addition to several transformations occurring in the dental labor market and who are bringing negative consequences for the health of this professional class^{3,4}.

Contemporary researchers have shown that activities that require physical exertion combined with mental efforts can cause damage to the worker's health. This fact occurs by direct influence of repetitive movements, rapid, continuous and / or strenuous tasks, beyond the physical and the organization of work environment⁵.

In Brazil, the nomenclature initially adopted for musculoskeletal disorders related to work was Occupational Tenosynovitis and was used by many authors to appointed pain or discomfort in the upper limbs related to work activities. Currently, there are several names for this set of diseases that affect the musculoskeletal system structures, among which is the term Cumulative Trauma Disorder (CTD), Repetitive Strain Injury (RSI) and Work-Related Musculoskeletal Disorders (MSDs)^{6,7}.

The MSDs affect workers from various fields such as, Dental Surgeons, laboratory technicians, writers, typists, among others, which are subjected to long working hours with constant efforts, postures and without breaks rest⁸.

The MSDs have an insidious onset and slow, this way, as the disease progresses and begin to appear fuzzy or unspecific pain in certain body part, the individual often becomes avoid certain movements and modify others, usually by abolishing some activities to minimize pain. Thus, through the experience of this situation the worker will adopt, definitively, postures that will contribute to the development of disease^{9,10}.

The RSI and MSDs have been identified with the same characteristics, which cover several pathologies affecting mainly the upper limbs, but more serious due to the masking process, becoming a problem public health. So, today, are the disorders caused by work more often in the country, killing much of the working population, depriving individuals of the various branches of their health activity and

work capacity^{5,11}.

Dental Surgeons, to achieve the best results, take positions that guarantee them the best of the operative field visibility, accuracy and mobility of hands, including working with the arms raised and without support; such conditions exacerbate the musculoskeletal system disorders. Thus, this search for excellence just becoming more important for the professional to care for their own health, contributing to the development of various pathological changes^{12,13}. Another factor that should be highlighted, for contributing to poor posture during the dental procedure, even though modern and sophisticated equipment is used, is the field of work that, in most cases, is below the eye level of the Dental Surgeon, what makes the professional stay with the head tilted forward with rounded shoulders, such a position can cause weakening and stretching the muscles of the shoulder blades (trapezius, scapula levator, major and minor rhomboids, anterior serratus, minor pectoralis). The scapulas tend to move away from the spine, leading to a posture of rounded shoulders. Furthermore, scalene, sternocleidomastoid and pectoralis become short and tight by pulling the head forward. Ligaments and muscles will adapt to this new situation, making the correct posture becomes uncomfortable. Improper posture of the head and shoulders also increases the force on the upper cervical muscles (upper trapezius and scapula levator) and on the vertebral discs, which may result in ischemia and muscle pain, there is also risk of degeneration of the discs^{14,15,16}.

Since the physical effort required during dental practice is mild, repeated at high speed by the hands and fingers. However, at the same time requires an improper posture and static overloading the remaining segments, which occurs when a limb is maintained, with little or no movement, a position which deviates from the neutral zone of the biomechanical forces relationship, or against gravity, or when the muscular activity cannot revert to zero⁷.

The changes in traditional dentistry labor market made the stressful profession, contributing to the emergence of diseases such as MSDs, health professionals. These changes are caused by the current healthcare system in Brazil, popularity of group dental systems, opening new faculties in the area, increasing the supply of professionals in the labor market and decreased purchasing power. Together, these factors lead the practitioner to an increase in their working hours, exceeding the limits of the body, bringing as a result of a musculoskeletal overload and/ or emotional stress^{10,17,18}.

In order to prevent these problems, we see that the correct posture to the Dental Surgeon during the performance of their duties, is sitting as far back as possible in his seat, looking for a vertical and symmetrical position of the torso, keeping your arms at and next to the trunk. The angle between the thigh and leg to be about 110°, with legs slightly apart from one another. Regarding the visual field,

this should be at a height that allows the formation of an angle of 10° to 25° between the forearm and the ground. The eyes of the Dental Surgeon should meet perpendicular to the operative field, maintaining a distance 35 to 40 centimeters. The chair patient must meet two main requirements: accommodating the patient in a comfortable position, so that it becomes relaxed during treatment and; allow the Dental Surgeon performs his work ergonomically correct way. With regard to the work material, the tools should be at hand, above the waist and below the shoulders level, avoiding flexion and extension movements that favor the development of MSDs. Finally, your back should be supported in the lumbar back of the chair, the height of the upper portion of the pelvis, allowing an upright back^{19,20,21,22,23}.

This article is justified since dentistry as a profession has evolved greatly, especially in recent decades, so the intense practice of dental services provides a very great physical wear to the Dental Surgeon, making it very vulnerable to various musculoskeletal problems, as MSDs. This study aims to determine the indicative signs of MSDs and their prevalence related to the work of Dental Surgeons seeking to prove the high probability of Dental Surgeons develop this pathology; evaluate the risk of conduits, as well as protective measures indicated²⁴.

2. MATERIAL AND METHODS

This is a descriptive epidemiological study aimed to identify the prevalence of musculoskeletal pain in Dental Surgeons who work in Mendes municipalities, Brooms and Barra do Pirai / RJ. The survey was conducted after approval committee of ethics and human research at the University Severino Sombra under number 1.311.439.

The sample size calculation was based on the mean number of Dental Surgeons that are active in the three cities proposed. Established a total sample of 30 distributed Dental Surgeons in proportion to the three cities.

The inclusion criterion was being Dental Surgeon active and live in the cities of Mendes, Vassouras and Barra do Pirai / RJ. The exclusion criterion was not sign the Informed Consent.

The instrument adopted was the "Nordic Questionnaire Musculoskeletal," Portuguese version of Cristina Carvalho Mesquita. The questionnaire is divided into stages: first, it is considered the last 12 months, searching for whether the professional had any problems (such as pain, discomfort or numbness) in the following regions: neck, shoulder, elbow, wrist/ hands, thoracic region, lower back, hips/ thighs, knees, ankles/ feet. In the second stage there is during the last 12 months the respondent had to avoid their normal activities (work, housework or hobbies) because of problems in the above mentioned regions. In the third part there is the dental surgeon interviewed

had any problems in the last 7 days, in the regions mentioned above. It is a constituent part of the questionnaire a scale so that we can shall measure pain, ranging from index "no pain" to "maximum pain".

Initially, it was made an exploratory analysis of data for evidence of possible painful conditions caused by MSDs. Later, there was the descriptive statistics, with prevalence for the following variable: the signs and symptoms of musculoskeletal disorders through the valuation of pain/ discomfort. This analysis was used to check the local prevalence of pain related to the work of the respondents, as well as the time you are going through this discomfort (last twelve months and the last seven days) and the prevalence of pain. Data were condensed and analyzed using Stata version 8.2 software (Stata Corporation, College Station, United States) and SPSS 9.0.

3. RESULTS

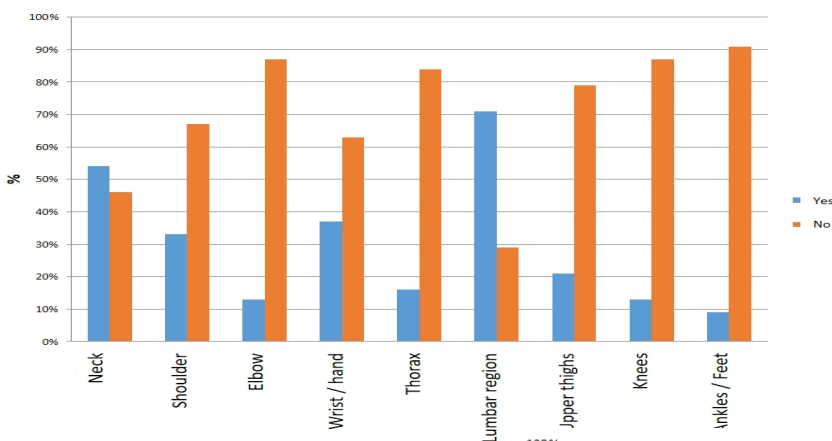


Figure 1. Prevalence of pain, discomfort and numbness in the last 12 months.

When the Dental Surgeons were asked about the prevalence of pain in the last twelve months, all professionals reported symptoms in any anatomical region, and the lower back was the most prevalent (70.8%), followed by the neck, wrists and hands, as can be given in Figure 1.

To be checked if the frequency of pain caused normal activities were affected in the last twelve months, 29.1% of respondents reported that frequent pain in the lower back caused had to avoid activities such as work, housework or pas- times, as can be seen in Figure 2.

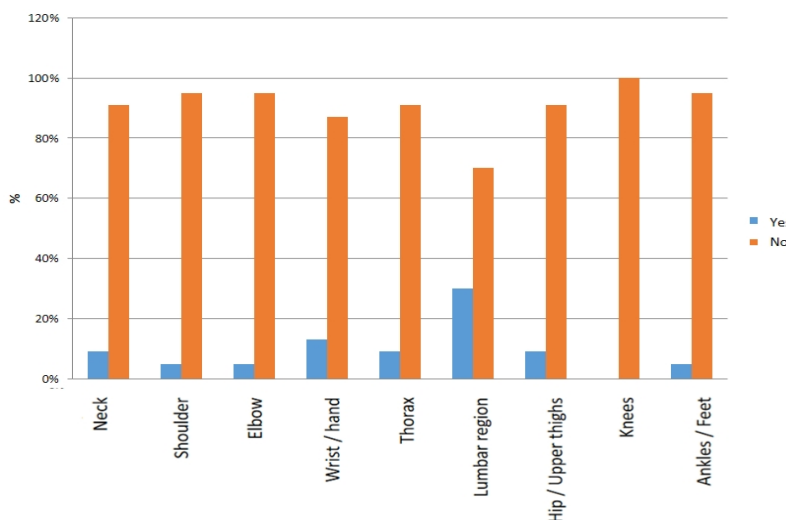


Figure 2. Avoid normal activities because of the frequency of pain in the last 12 months.

As regards the problems related to pain in the last seven days in the cited regions, it is observed that most respondents complained of pain in the neck (33.3%), followed by pain in the lower back (25%), as can be given in Figure 3.

It was found that none of the respondents pointed to be asymptomatic. It was also observed that the correlation, the Spearman test, time profession with the prevalence of musculoskeletal symptoms, there was no association between the variables ($p = 0.450$), ie, the appearance of pain symptoms was inherent the years of professional activity, this actually happens, as all professionals are interviewed in a high productivity period.

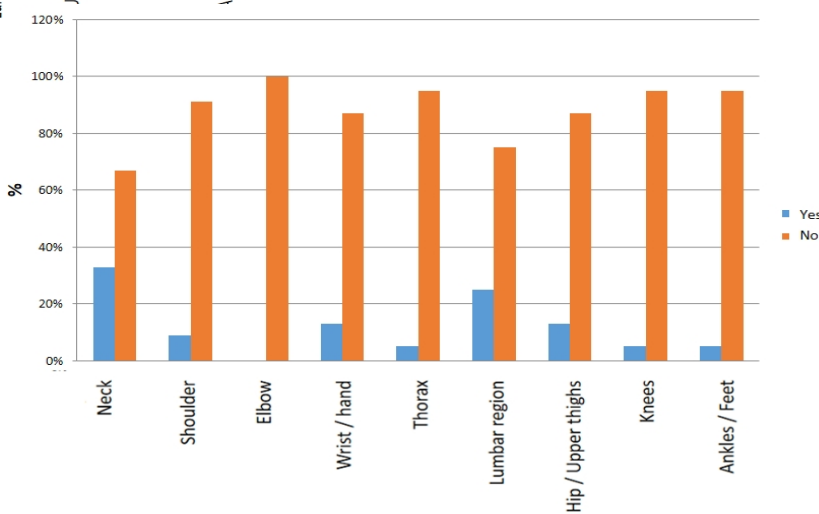


Figure 3. Problems presented in the last seven days.

As regards the intensity of the perceived pain can be seen in Table 1 that:

Table 1. Intensity of pain (n = 24).

Affected region	Pain level	Percentage
Neck	02	16.6%
	04	16.6%
	10	4.1%
	07	12.5%
	01	4.1%
Shoulder	02	8.3%
	06	8.3%
	07	4.1%
	10	4.1%
	04	4.1%
Elbow	06	4.1%
	05	4.1%
Wrist / hand	04	4.1%
	01	4.1%
	05	8.3%
	08	8.3%
	06	4.1%
Thorax	06	4.1%
	10	4.1%
	07	8.3%
Lumbar region	06	8.3%
	02	4.1%
	03	16.6%
	10	4.1%
	05	16.6%
	09	4.1%
Hips/ thighs	03	8.3%
	02	8.3%
	06	4.1%
Knees	03	4.1%
	05	4.1%
	06	4.1%
Ankles / feet	02	4.1%
	03	4.1%

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4. DISCUSSION

It appears that the Dental Surgeon's performance leads him to adopt postures considered as vicious side bends, crunches and extensions during the work, remaining a long sitting. Most often, the way that these positions are made may cause postural changes origin, for example,

scoliosis, lordosis and kyphosis. This statement is evident in this study as shown in Table 1^{1,8}.

Warns that human spine does not have a suitable bio-mechanical model to stay for long periods of sitting, standing, thus, a static posture associated with repetitive motion. Also found in their studies that the relevance, increasing of MSDs in morbidities frame that affect Dental Surgeons, along with the physiological changes that accompany them, may be related to the common practice of these professionals remain seated for long periods. The authors point out that this position generates a pressure increase in vertebral discs, leading to degenerative changes in the spine. The result of these researchers above comes directly against the results of this study and shown in Figure 1^{2,14}.

Discusses that among the Dental Surgeons, the MSDs are mainly due to the physical and visual effort, shifts and movements required for the task to be performed, as well as body position adopted for its realization. They are also often caused because of the use of rotating instruments, since the constant vibration caused by micro motors can propagate by tendons, muscles and bones generating micro lesions.^{25,26}

Psychological factors influence the occurrence of poor posture and ergonomic failures during dental service. The dental surgeons are very concerned about the quality of their work and often do not care about posture and ergonomics, as the realization of an inadequate or defective work causes serious damage to the patient and can also adversely affect the image of the professional and in some cases their own dental profession to society²⁷.

The rise of MSDs is directly linked to the execution of professional work in awkward postures with repetitive movements associated with long working hours. In this sense, the authors put the Dental Surgeons and professionals that most move away from work for incapacity permanent has rary^{4, 14, 25}. The results of the survey for us comes directly against this statement.

The study is evaluating the frequency of MSDs among Dental Surgeons and showed a higher incidence of low back pain among professionals who work mostly sitting than in those who alternate the calls in the sitting position and standing, which led the authors to suggest alternating position in order to avoid this type of damage. However, they found in their studies no significant difference in the prevalence of symptoms among professionals working only sitting (61% with neck pain, 33.3% with shoulder pain, and 88.9% with back pain) those that alternated its position during patient care (58% with neck pain, 52% with shoulder pain and 76% with back pain). This insignificant difference in the results of this study, it was observed by us in our study as can be verified in one table data^{9,22}.

The study, in Caxias do Sul / RS, in 2008, noted that 98% of Dental Surgeons surveyed reported feeling some

pain in the last twelve months in any part of the body. Since, such professionals, the prevalence of symptoms was more musculoskeletal present when compared to the general population (62%)²³.

In this study it was observed that the regions most painful symptoms were lower back (70.8%) followed by cervical region (54.1%), wrists and hands (37.5%), while he was in line with other studies also point to the high frequency of occurrences of pain and discomfort in different areas of the upper body^{2,8,14,25}. However, in another study, it was found that the most affected regions were the cervical (79%), lumbar (73%) and shoulders (70%)²¹.

The studies focused on the age and location of the body where the most MSDs affect the dental surgeon revealed that professionals aged greater than thirty-eight years of age had a higher frequency of pain / discomfort in the neck (44.4 %); shoulders (38.9%), dorsal region (33.3%), arms (27.8%), forearm and lower limbs (22.2%). Already in professionals aged less than 38 years, the highest frequencies were the lower back (47.6%), wrist / hands / fingers (33.3%) and hip (9.5%)⁴.

The research carried out using the cross-sectional epidemiological method to seek evidence of the relationship between the tasks performed by the Dental Surgeon and the RSI and MSDs, revealed the presence of a statistically significant association between the two sexes and conditions. For the authors, women had more injuries than males in proportion, 67.5% of female dental surgeons and 51% of men had symptoms of musculoskeletal pain, and shoulder/ arm (39.4%), wrist/ hand (18.3%) and neck (17.2%) are the most affected regions⁵.

The work environment and musculoskeletal disorders seem to vary by position and gender, corroborating comas ideas was perceived⁵. The prevalence of 94% among women and 86% among men²⁸. In another study there was a report of more pain for women compared to men²⁹. This fact may be because women are more prone to emotional stress caused by several factors: a double shift because, culturally, women beyond their professional performance have to perform household chores, taking care of children, take them to school, among others. Another fact that can be detached and the use of contraceptives and hormonal changes during the menstrual cycle. Biologically, women's musculoskeletal development is inferior to men, women have fewer muscle fibers and are less able to store and convert glycogen into useful energy, and has the lowest density and size of bones⁵.

The most commonly found diseases are degeneration of the intervertebral discs of the cervical and lumbar regions of the spine, bursitis, inflammation of the tendon sheaths and arthritis of the hands. The evidence of any injury can be a feeling of heaviness, numbness, pain in specific movement, loss of sensation, tingling, widespread pain at rest, loss of strength and swelling¹.

5. CONCLUSION

There was a high prevalence of MSDs related work Dental Surgeons Mendes municipalities, Brooms and Barra do Pirai - RJ. There was a high prevalence of musculoskeletal pain, and the lumbar regions, followed by the neck, wrists and hands most affected. It was shown that even before the data presented, the carrying out of further studies on the MSDs that affect this professional category is required. Before the survey results suggest that the Dental Surgeons need information about the mechanisms that contribute to the development of MSDs, so they can choose the best ergonomic equipment, and become aware of the importance of physical exercise to improve the quality life. Without this knowledge dentistry of professionals do not take the basic measures to prevent injuries and cannot thus avoid their incapacitation for the profession.

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