RISK ASSESSMENT FOR RSI / WMSD RELATED TO WORK OF DENTAL SURGEONS

AVALIAÇÃO DE RISCO PARA LER/DORT RELACIONADA AO TRABALHO DE CIRURGIÕES DENTISTAS

EVALUACIÓN DEL DIESGO DE RSI / TRASTORNOS MUSCULOSQUELÉTICOS RELACIONADOS CON EL TRABAJO DE CIRUJANOS DENTISTAS

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ABSTRACT

Objectives: to analyze the occurrence of Reading - caused WMSD in working with dentists and the influence of sociodemographic factors. Method: an exploratory study with a quantitative approach, performed at the Center for Dental Cross Arms (COCA), located in the city of João Pessoa, Brazil, with 27 dentists. The data collection instrument was a questionnaire specifically the Ministry of Health to assess the prevalence of RSI and risk factors in the profession. The data were processed using a statistical package (SPSS) Statistical Packaget for Social Sciences, version 10.0. Results: We observed that 44.4% of dentists who work in COCA also perform activities in private practice (14.8%) and PSF or health centers (7.4%). It was observed that the average working time as a dentist was about 25 years (SD = 7; Md = Mo = 26), since first employment. No (s) stand (s) present (s) working for nearly 18 years (SD = 7; Md = 21, Mo = 15/25/26). Conclusion: working conditions favor the onset of pain among professionals studied, and that this has a significant association with various aspects related to work. It is therefore required an interdisciplinary, multidisciplinary and intersectoral in order to positively affect the work process and occupational health. Descriptors: occupational Health; dentists; professional practice.

RESUMO

Objetivos: verificar a prevalência de LER-DORT nos cirurgiões dentistas que trabalham no Centro Odontológico de Cruz das Armas; fazer levantamento dos fatores de risco percebidos durante a atividade desses profissionais. Método: estudo exploratório, com abordagem quantitativa, realizado no Centro de Odontologia de Cruz das Armas (COCA), localizado no município de João Pessoa-PB, Brasil, com 27 odontólogos. O instrumento de coleta dos dados foi o questionário do Ministério da Saúde específico para avaliar a prevalência de LER-DORT e os fatores de risco no exercício da profissão. Os dados foram tratados por meio do Statistical Packaget for Social Science (SPSS), na versão 10.0. Essa pesquisa teve o projeto submetido e aprovado pelo Comitê de Ética do Centro de Ciências da Saúde da Universidade Federal da Paraíba (CCS/UFPB), protocolo nº 0289. Resultados: foi constatado que 44,4% dos dentistas que atuam no COCA exercem também atividades em consultório particular (14,8%), e em PsF ou posto de saúde (14,8%) e outras instituições (7,4%). Observou-se que o tempo médio de trabalho como dentista foi de aproximadamente 25 anos (DP=7; Md=Mo=26), desde o primeiro emprego. No(s) posto(s) atual(is) trabalham há aproximadamente 18 anos (DP=7; Md=21; Mo=15/25/26). Conclusão: as condições laborais propiciam o aparecimento de dor entre os profissionais estudados, e que essa possui associação significativa com vários aspectos relacionados ao trabalho. Sendo, portanto, necessária a atuação interdisciplinar, multidisciplinar e intersectorial, de forma a interferir positivamente no processo de trabalho e na saúde do trabalhador. Descritores: saúde do trabalhador; odontólogos; prática profissional.

RESUMEN

Objetivos: analizar la incidencia de la Lectura - causados trastornos musculoesqueléticos en el trabajo con los dentistas y la influencia de factores sociodemográficos. Método: un estudio exploratorio con un abordaje cuantitativo, realizado en el Centro de Armas de la Cruz dentales (COCA), ubicado en la ciudad de João Pessoa, Brasil, con 27 dentistas. El instrumento de recolección de datos fue un cuestionario específicamente el Ministerio de Salud para evaluar la prevalencia de RSI y factores de riesgo en la profesión. Los datos fueron procesados utilizando el paquete estadístico (SPSS) Package para Ciencias Sociales, versión 10.0. Resultados: se observó que el 44,4% de los dentistas que trabajan en Coca también realizan actividades en la práctica privada (14,8%), y de fibras discontinuas de poliéster a centro de salud (14,8%) y otros (7,4%). Se observó que la duración media del trabajo como dentista era de unos 25 años (DE = 7; Md = Mo = 26), desde el primer empleo. No (s) base (s) presente (s) trabajando durante casi 18 años (DE = 7; Md = 21 Mo = 15/25/26). Conclusion: las condiciones de trabajo favorecen la aparición del dolor entre los profesionales estudiados, y que esto tiene una asociación significativa con los distintos aspectos relacionados con el trabajo. Por consiguiente, se requiere una orden interdisciplinar, multidisciplinar e intersectorial para influir positivamente en el proceso de trabajo y salud ocupacional. Descriptores: salud laboral; dentistas; la práctica profesional.
INTRODUCTION

The occupational diseases involve professionals from various fields of various characteristics. The socioeconomic impact of occupational musculoskeletal disorders is growing worldwide alarmingly, and the prevalence of this pathology is reaching epidemic proportions. One such disease is the RSI, occupational disease that is characterized by repetitive strain, which affects muscle groups during the performance of work, characterized by severe pain arising from the use of certain muscles, for many hours of work.

The repetitive strain injury (RSI) are occupational diseases that affect the upper limbs, neck and scapular region, resulting in muscle wasting tendon, joint and neurological, caused by the inadequacy of human labor, and result in a combined or not, the repeated use and/or stressed muscle groups, as well as maintenance of inadequate posture. Work in inadequate conditions may lead to involvement of tendons, synovial, muscles, nerves, fascia, ligaments, in isolation or in association with or without tissue degeneration, especially affecting the fingers, wrists, arms and forearms, elbows, shoulders, neck and scapular regions.

The studies have been conducted to analyze the relationship between development activities and professional development of musculoskeletal problems, the results show that some tasks contributes most significantly to the emergence of such disturbs. These tasks involve risk factors related to work, among which are considered inappropriate postures and movements, repetition, vibration, static and dynamic overload, insufficient rest breaks and environmental factors as noise, lighting and temperature. These tutors are considered important in the emergence of painful situations.

The conditions are of cumulative character, evolving from nagging pains to loss of movement, being responsible for most of the absences from work due to disability and functional costs by payments indemnity.

There are significant numbers of dentists suffering from RSI / WMDS's. This occurs as a result of professional practice which leads them to perform tasks with the same pattern of movement of the upper and adjacent structures, on an ongoing basis, beyond the posturing inadequate. 5 6

The dentists who fall between the professionals, who are exposed to this risk, perform prolonged activities, by conducting some large movements, quickly and repetitively. Practitioners who perform this type of service have a high incidence of pain and discomfort, which is inflammation, most often related to incorrect techniques and lack of compliance with ergonomics, beyond the excessive addition of journey. Some positions are due to the lack of ergonomics as a result of a poorly designed work station, causing a mismatch operator/equipment/instrument. 8

Another factor that present influence on the generation of WMDS's is the psychosocial. The World Health Organization (WHO) has indicated that psychosocial factors are at least as important as many physicists in the prevention of WMDS's. 9 Therefore, dentistry is a profession that generates a great deal of stress because of the nature and working conditions in the dental clinic. 10

The movements performed by the dentist are basically five: the fingers, the fingers and wrists, fingers, wrists and elbows; movements of the entire upper limb, the body twists and displacements within the clinic. It appears that among the incorrect postures, the most constant is the adoption of a kyphotic position, with correction of cervical and lumbar curvatures, abduction of upper limbs, anterior-drive shoulder, flexion of the forearm, wrist and fingers, a slight adduction of the hand coupled with a lower limb abduction, and rotations of the lumbar column. 11

Among the injuries of the locomotor system and neural-related WMDS's are detected in dentists more often Syndrome Carpal Tunnel, Thoracic Outlet, Channel Guyon, the pronator teres and the cubital tunnel, tenosynovitis of the extensor or flexors of fingers and carpal of DeQuervain, the supraspinatus, the portion of the Long Biceps, epicondylitis, Trigger Finger, and Neck Pain Syndrome Miofascial. 12

These disorders may be responsible for temporary or permanent removal of the dentist of their activities, both social and job. Thus, it is very important to give due attention to preventive measures and early treatment of these disturbs. 13

The effectiveness of any health measure depends directly on its ability to achieve, eliminate or minimize the factors triggering the disease, and can not do without the knowledge and analysis of these factors. In this context, it becomes necessary to study this group of professionals working in the
Santos MFO dos, Vieira ELR, Souza EHA de et al.

Dental Center of Cruz das Armas (COCA), located in the city of João Pessoa, Paraíba.

Once configured, this research aims to determine the prevalence of RSI in dentists working in the Dental Center of Cruz das Armas, besides seeking to do survey of risk factors observed during the activity of these professionals.

METHOD

An exploratory study with a quantitative approach. Data collection was performed at the Center of Dentistry, Cross Arms (COCA), located in the city of João Pessoa, Brazil, with 27 dentists.

As the data collection instrument used was questionnaire of the Ministry of Health, specifically to assess the prevalence of RSI and risk factors in the profession. The instrument has closed questions with dichotomous items or scales 3 or 6 points, as well as open questions. We approached from the general characteristics of the work until the positions, movements and sensations experienced during the same.

The selection of dentists in the study obeyed the following inclusion criteria: they were dentists with work activity in COCA. Researchers seeking to intervene as little as possible in the answers of the participants were directed to it, you clarified about the purpose of the research and requesting their cooperation. It was explained how he would respond to the instrument, emphasizing the lack of correct or incorrect, and the participant will ensure the anonymity of their responses.

Data were recorded and analyzed using the statistical analysis program, Statistical Package for Social Science (SPSS) version 10.0. Parameters were used descriptive statistics (frequency, percentage, mean, standard deviation), adopting the usual measures of central tendency and dispersion, and calculations of simple and relative frequencies, with the construction of tables for the evaluation and interpretation of data.

The variables studied were: sex, age group, labor requirements, features the work and efforts of the upper limbs and trunk. The job demands variables were compared with time pressure, repetitive movements and need for speed. In characteristic variables of the study analyzed the comparative levels of force required attention and monotony. Variables on the efforts of the upper limbs and trunk, the categories were analyzed: the intensity of strength in upper limbs and trunk.

This research had its project approved by the Ethics Committee of the Center for Health Sciences, Federal University of Paraíba (CCS / UFPB), Protocol No. 0289, according to the established by Resolution 196/96 the Ministry of Health.

RESULTS

The average age of study participants was approximately 51 years (SD (standard deviation) = 9; Md (average) = 53; Mo (mode) = 55), ranging from 30 to 66 years, of which 9 (33%) male and 18 (66%) were female. According to the survey results, 44.4% of participants said that besides acting in COCA, also worked in private practice (14.8%), PSF or health center (14.8%) and others (7%, 4%). Participants work in this profession for about 25 years (SD = 7; Md = Mo = 26), since first employment. No (s) stand (s) present (s) working for nearly 18 years (SD = 7; Md = 21, Mo = 15/25/26).

- General Characteristics of Work

When asked about the degree of pressure during the work time, was obtained a mean of 2.50 (SD = 1.67) in a 6-point scale, ranging from nonexistent to unbearable. The frequency of repetitive movements are carried out in 6-point scale, ranging from very never was obtained 5.56 mean (SD = 1.17). Referring to the need for speed during the study, participants had an average of 2.72 (SD = 1.72) in 6-point scale, varying from mild to unbearable. It is observed that the amount of pressure and time requirement of the job speed is low, since the obtained averages are below the midpoint of the range. However, the frequency of repetitive movements is very high, since the average is made very close to the point of maximum scale, which can be seen in table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>DP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time pression</td>
<td>2,50</td>
<td>1,67</td>
</tr>
<tr>
<td>Repetitive Gestures</td>
<td>5,56</td>
<td>1,17</td>
</tr>
<tr>
<td>Requirements of speed</td>
<td>2,72</td>
<td>1,72</td>
</tr>
</tbody>
</table>

Source: Research data; 2008.

Asked if they consider themselves more or less strong than his job requires about 45% of dentists reported having strength compatible with the 37% reported having a higher power...
required for their work and 11.1% said work requires more strength than they have. With respect to attention in 3-point scale, ranging from little to much, 85% of dentists said the practice of their business requires a lot of attention and concentration, while 14.8% attributed the average level of concentration. Similarly, 77.8% of participants rated their work as little monotonous, 22.2% said the average level of monotonous in Table 2.

**Table 2. Characteristics of work**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Levels</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force required</td>
<td>Superior</td>
<td>10</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Compatible</td>
<td>12</td>
<td>44,4</td>
</tr>
<tr>
<td></td>
<td>Inferior</td>
<td>3</td>
<td>11,1</td>
</tr>
<tr>
<td></td>
<td>Much</td>
<td>23</td>
<td>85,2</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>4</td>
<td>14,8</td>
</tr>
<tr>
<td>Attention</td>
<td>Little</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Much</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>6</td>
<td>22,2</td>
</tr>
<tr>
<td>Monotony</td>
<td>Low</td>
<td>21</td>
<td>77,8</td>
</tr>
</tbody>
</table>

Source: Research data, 2008.

When asked about the existence of something that bothered them at work, 59.3% responded positively. The factors identified were lack of infrastructure, equipment and instruments damaged or insufficient, some ergonomic chairs that harmed posture, lack of material consumption, stress, nervous patients, complaints of the attendants, low wages, excessive number of visits and lack trained auxiliaries.

As to the difficulty of gestures performed during labor, 55.6% of participants said the existence of gestures difficult to perform at specific times, such as fillings and root canal molars, sweeps and extractions.

**• Efforts Upper Limb and Trunk**

Regarding the magnitude of the force held by the upper muscle during operation, there was obtained 4.27 mean (SD = 2.01), 6-point scale, ranging from mild to very severe. Because the amplitude of the dispersion is important to consider that the median value was equal to 5 and 6 the same fashion.

The dentists were asked about the frequency with which they work resting on the elbows (M = 1.72, SD = 1.46), forearms (M = 1.50, SD = 1.22) and palms (M = 1.83, SD = 1.71). The answers were given in 6-point scale ranging from never to constantly. The frequency with which they perform fine movements had a mean (M = 5.22, SD = 1.50) and pinch gestures with his thumb got mean (M = 5.72, SD = 0.89). Fatigue is felt in the upper limbs with a mean rate (M = 4.35, SD = 1.89) in Table 3.

**Table 3. Efforts of the upper limbs and trunk**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Variable</th>
<th>M</th>
<th>DP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper limbs</td>
<td>Magnitude of</td>
<td>4.27</td>
<td>2.01</td>
</tr>
<tr>
<td></td>
<td>force</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limbs elbows</td>
<td>1.72</td>
<td>1.46</td>
</tr>
<tr>
<td></td>
<td>Support forearm</td>
<td>1.50</td>
<td>1.22</td>
</tr>
<tr>
<td></td>
<td>Support hands</td>
<td>1.83</td>
<td>1.71</td>
</tr>
<tr>
<td></td>
<td>Short movements</td>
<td>5.22</td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td>Pinch gestures</td>
<td>5.72</td>
<td>0.89</td>
</tr>
<tr>
<td></td>
<td>Fatigue</td>
<td>4.35</td>
<td>1.89</td>
</tr>
<tr>
<td></td>
<td>Posture fixed</td>
<td>4.65</td>
<td>1.95</td>
</tr>
<tr>
<td>Trunk</td>
<td>Twists</td>
<td>5.54</td>
<td>1.17</td>
</tr>
<tr>
<td></td>
<td>Shifts</td>
<td>5.13</td>
<td>1.54</td>
</tr>
<tr>
<td></td>
<td>Fatigue</td>
<td>4.88</td>
<td>1.17</td>
</tr>
</tbody>
</table>

Source: Research data, 2008.

A total of 74% of participants reported having to change positions at times, to work due to pain in the neck, shoulders and / or arms. This occurs mainly during the care of patients in the last days, and perform procedures that require very long or constant effort, such as surgery, extractions and treatment of 3rd molars.

As to the participants, using a 6-point scale ranging from never to constantly on the frequency with which their work demanded certain postures of the trunk. The fixed postures of the trunk had average frequency of 4.65 (SD = 1.95), the twisting of the trunk, got an average of 5.54 (SD = 1.17), the displacement reached the average of 5.13 (SD = 1.54) flexing the neck and reached an average of 5.46 (SD = 1.17). The average frequency with which dentists felt fatigue in the back was 4.88 (SD = 1.84).

**• Physical Implications of the Activities**

Approximately 78% of respondents said...
they felt exhausted at work. To these, if asked how they felt exhausted, on a scale ranging from 1 = none to 6 = very, yielding an average of 4.11 (SD = 2.44) Said they felt tired especially the close of business 67% of participants. When asked about the felt fatigued at that time of day, the average score was 3.70 (SD = 1.96).

Participants were asked if there was one day a week, month or one week a month in the year that they felt more tired than the other. They said they were more tired on certain days of the week 77% of respondents, of whom 33.3% voted to Friday and 22.2% to Thursday. With respect to weeks of the month, 55.6% reported feeling more tired in weeks specific, such as the 3rd (14.8%) and 4th (29.6%) weeks of the month. Referring to the months of the year, 70.4% reported greater fatigue at specific times, the months were cited in December (22.2%), January (18.5%) and November (14.8%).

**DISCUSSION**

Each type of occupational activity causes wear on the body during the production process, generating specific diseases and different types of occupational diseases, whose characteristics are also directly related to the type of executed work. 14

The dentists constitute one of the professional categories that have more muscle-esqueléticas. While the prevalence of discomfort and musculoskeletal pain reaches a rate of 62% of the population in general surgeons in their percentage reaches 93%. These professionals are feeling the need to acquire strategies to adapt to work due to symptoms that develop because of RSI / WMSD.

According to the Brazilian Institute for Research and Socio-economic (INBRAPE), most dental professionals (45.5%) have up to 30 years of age. 16 This finding goes against the results of this study, since it was observed an average age of 51 years, ranging from 30 to 66 years.

It is found greater predisposition to LER / DORT in dentist women in diverse studies. 17-22 Furthermore, the female muscle does not have the same potential for development of males. The professionals have been practicing for about 25 years, thus, are exposed, in principle, a relatively long period of time to get some sort of RSI/WMSD. This data to be confirmed when there is a higher prevalence of RSI/WMSD in professionals with over 20 years of work. 23

In routine work, the dental professional makes constant use of the upper limbs, especially hands, performing movements considered repetitive. 5,14,24 As seen in this study, in which the individuals surveyed reported performing repetitive movements with an average of 5.56. The frequency of repetitive movements was very high, very close to the maximum point of the scale (6 points), which explains the presence of RSI / WMSD in the population studied. However, it is clear that the amount of pressure and time requirement of the job speed is low, since the obtained averages are below the midpoint of the range.

Psychosocial factors related to work organization and individual psychological factors may be present and immersed between the special conditions of exposure, in this case related to the demands of the working process of the dentists. 25 Little ergonomic equipment and instruments, lack of infrastructure, low wages, stress, among others, were cited by 59.3% of participants as uncomfortable situations at work.

Some studies have identified as predictors of pain dissatisfaction with the condition of wage and the payment. 26-7 Although these factors were not reported by respondents.

The intensity of muscle strength carried by upper, there was a mean of 4.27. It is noticed that the muscle strength required for these body parts is very high, since the measures of central tendency are close to or equal to the maximum scale value.

This discomfort can be explained, since the sitting posture, however good, imposes significant biomechanical load on the intervertebral discs, especially the sitting lumbar. 28 When work provides little handling, occurs as a consequence, static charge on certain body segments which, though not necessarily intense, very long and the inertia associated with musculo-ligamentous, can produce fatigue.

It was found that dentists rarely work supported in the upper limbs, but are very frequent movements and gestures fine pinch with the thumb, and fatigue in those parts of the body.

The results indicate that some dentists are required to work for long hours with their arms hanging, almost motionless, with some rotation of the trunk, head and neck tilted slightly, forcing the entire scapular neck muscles and thoracolumbar 29 . Since this posture, repetitive, tends to cause muscle fatigue and tendon, causing in some cases,
Santos MFO dos, Vieira ELR, Souza EHA de et al.

acute or chronic lesions in the muscle groups and other soft tissue structures that make up the joints of the upper limbs.

Regarding the trunk postures can see that all respondents had high mean movements, including the frequency of fatigue in the back, all located between the 3rd and 4th quartile of the curve.

The activities resulting from the profession deplete professionals, especially at the end of the day, the last day of the week in the last week of the month and, in general, in recent months. In this context, the World Health Organization says the prevention of damage to the musculoskeletal system to be performed by means of quality in work. 10

Dentists participating in the research show symptoms characteristic of the profession as a pain in the wrist, back and spine. They claim that dentistry is manual labor that is beyond the mind, tired muscles. They say that the profession is tiresome and repetitive stress that leads to disease and leaves sequelae.

CONCLUSION

The practice of dental surgeons presents characteristics of the activities carried out by dentists that predispose these occupational hazards due to habits and attitudes, gaining work-related diseases such as RSI/WMSD. Thus, the work became a source of pain due to posture and the implementation mechanistic work, so these actions together, require very professional.

Most dentists surveyed adopts incorrect work postures, not making breaks between the sessions and exercising a long day's work, which tends to favor the emergence of such conditions.

A broader range of studies with larger samples is needed to confirm the findings that, if confirmed, may provide the basis for the imposition of policies that primary care population, in order to avoid the physical and mental which is subject, and thus ensure the quality of life and good performance of the activities.

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Santos MFO dos, Vieira ELR, Souza EHA de et al.

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