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Original Article

Prevalence of musculoskeletal symptoms and their relationships with occupational performance among public high school teachers

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Abstract: Objectives: To investigate the frequency of musculoskeletal symptoms and to identify their relationships with functional capacity for daily living and working activities among public high school teachers in Ceilândia/DF. **Methodological procedures**: This was a cross-sectional study with 61 teachers from four different schools. An initial questionnaire covering sociodemographic, clinical and occupational characteristics was used for initial assessment, with the Nordic Musculoskeletal questionnaire (musculoskeletal disorders) and the Disabilities of the Arm, Shoulder and Hand questionnaire (upper limb disorders). Descriptive and comparative statistics were used for data analysis. **Results**: The body areas most affected by musculoskeletal symptoms in the last 12 months were: upper back (42.6%), lower back (41.7%) and neck (39.3%). Greater impairment in the daily activities performance was observed among teachers who had some musculoskeletal symptom in the neck (p=.0001), shoulders (p=.001), back (p=.002), elbows (p=.002) or wrist and hand (p=.018). Additionally, it was observed greater interference in work activities among teachers who had some musculoskeletal symptom in the shoulders (p=.023) or elbows (p=.003). **Conclusion**: This scenario highlights the importance of including regular programs of health promotion and disorders prevention in high schools for correct orientation and maintain these professionals functional capacity.

Keywords: *Teachers, Occupational Diseases, Cumulative Trauma Disorders, Musculoskeletal Pain.*

Prevalência de sintomas osteomusculares e suas relações com o desempenho ocupacional entre professores do ensino médio público

Resumo: Objetivos: Investigar a frequência de sintomas osteomusculares e identificar suas relações com a capacidade funcional para atividades de vida diária e de trabalho entre professores do Ensino Médio público de Ceilândia-DF. **Procedimentos metodológicos**: estudo transversal realizado com 61 professores de quatro diferentes escolas. Para investigação, utilizou-se um questionário inicial (características sociodemográficas, clínicas e ocupacionais), o Nórdico de Sintomas Osteomusculares (QNSO) (sintomas osteomusculares) e o *Disabilities of the Arm, Shoulder and Hand* (DASH) (disfunções em membros superiores). Para análise dos dados, utilizou-se estatística descritiva e comparativa. **Resultados**: As regiões corporais mais acometidas pelos sintomas osteomusculares, nos últimos 12 meses, foram: superior das costas (42,6%), inferior das costas (41,7%) e pescoço (39,3%). Observou-se maior comprometimento na realização das atividades cotidianas entre os professores que apresentaram algum sintoma osteomuscular em pescoço (p=0,0001), ombros (p=0,001), costas (p=0,002), cotovelos (p=0,002) ou punho e mão (p=0,018). Adicionalmente, observou-se maior interferência nas atividades de trabalho entre professores que apresentaram algum sintoma osteomuscular em ombros (p=0,023) ou cotovelos (p=0,003). **Conclusão**: Esse cenário salienta a importância de inserir programas periódicos de promoção de saúde e prevenção de disfunções nas escolas de Ensino Médio, para correta orientação e manutenção da capacidade funcional desses profissionais.

Palavras-chave: *Docentes, Doenças Ocupacionais, Distúrbios Osteomusculares Relacionados ao Trabalho, Dor Osteomuscular.*

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1 Introduction

The development and introduction of technological and organizational innovations in the production process have created positive expectations on workers; however, they have also favored the extension of working hours, increasing duties and responsibilities, imposition of rhythms and production goals (LANCMAN, 2004; MAENO et al., 2006). This scenario generates changes in labor relationships, overload, pressure and competitiveness (LANCMAN, 2004; MAENO et al., 2006) that may produce "occupational diseases" and compromise physical and mental health of workers (DEJOURS, 1998).

These changes in the work process have also permeated the school environment (ROCHA; FERNANDES, 2008), along with causing aspects of health problems (CRUZ; LEMOS, 2005), related to largest demand of production, low wages, poor working conditions and fragile interpersonal relationships (CRUZ; LEMOS, 2005). For teachers, there are mental efforts to cognitive demands at work and physical efforts to carry out the activities in the classroom, such as transportation of weights, inadequate postures, repetitive movement and writing in class records and blackboards lifting upper limbs for long time, with considerable energetic and caloric loss for the teacher (CRUZ; LEMOS, 2005; NUNES; DURAN, 2011). These static and dynamic overload effects in the musculoskeletal system can range from a temporary disability to chronic pain syndromes with functional disability (PICOLOTO; SILVEIRA, 2008; RIBEIRO, 2009; NUNES; DURAN, 2011; MINSON; MENTZ-ROSANO, 2010).

Some studies indicate that teachers are part of the professional categories most affected by musculoskeletal symptoms (SERAFIM; SANDHI, 1998; CARDOSO et al., 2009; BRANCO et al., 2011), affecting from 40.9% to 91.9% of teachers of different educational levels (BARROS et al., 2007; FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009; BRANCO et al., 2011; SOUZA, 2007; CARVALHO; ALEXANDRE, 2006; MELO; CAIXETA; CAIXETA, 2010; NUNES; DURAN, 2011), being among the three main classroom causes of absence (GASPARINI; BARRETO; ASSUNÇÃO, 2005). The most common musculoskeletal signs and symptoms among teachers are: pain, paresthesias, functional limitations, decreased muscle strength, tension and muscle retractions, limitations, joint, muscle cramps, headache, circulatory problems and general irritability (MANGO et al., 2012). According to findings of previous studies made with teachers from different educational levels, the most affected regions by these symptoms are: spine (79.9%) (BRANCO et al., 2011.), upper back (15.3% to 58.7%) (MELO; CAIXETA; CAIXETA, 2010; FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009), shoulders (16% to 58.3%) (MELO; CAIXETA; CAIXETA, 2010; SOUZA, 2007), lower back (53.7%) (FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009) and lower limbs (38% to 67.7%) (NUNES; DURAN, 2011; SOUZA, 2007).

Therefore, researchers (BRANCO et al., 2011; MANGO et al., 2012; NUNES; DURAN, 2011) have been dedicated to the study of the functional impact of musculoskeletal symptoms among teachers. In this line of research, Branco et al. (2011) found that 36.6% of teachers who reported musculoskeletal symptoms had also changes when performing activities of daily life. Mango et al. (2012) found some reports of difficulties when performing household chores, work and leisure in 26.9% of elementary school teachers with back pain, 19% of those with pain in the upper back and 18.2% of participants affected by pain in wrists, hands and fingers. Besides, neck and upper limbs pain have been reported as responsible for compromising the performance of daily activities in the study of Nunes and Duran (2011).

Although there is high evidence of musculoskeletal symptoms in teachers from all levels of education, more studies are needed in order to investigate the links between musculoskeletal symptoms pictures and functional capacity (CARVALHO; ALEXANDRE, 2006; DELCOR et al., 2004), especially in the high school scenario, allowing the study and identification of preventive strategies. In this context, the objectives of this study were (i) to describe the conditions of health and work; (ii) to investigate the frequency of musculoskeletal symptoms by checking the segments with greater frequency of pain, tingling and numbness; and (iii) to identify musculoskeletal symptoms relationships of the upper limbs with functional capacity for daily and work activities, among public high school teachers.

2 Methodological procedures

2.1 Study design and ethical aspects

This research was designed as a cross-sectional study. The study protocol was approved by the Ethics Committee on Human Beings Research of the Health School of the University of Brasília (Opinion

Number 365,904/13). All participants agreed to participate and signed the informed consent form.

2.2 Sample

Participants were recruited for convenience in four daytime high schools (morning or evening) of the Ceilândia Regional Education, located in four distinct regions of this administrative region of the Federal District (P. Sul, Guariroba, P. Norte and Setor O). In these four schools, there were 114 teachers. Teachers excluded were because (i) they were absent at the time of the questionnaires (n=26), (ii) they were absent from activities in the classroom to do coordination activities (n=5) and (iii) they were with a history of trauma in the musculoskeletal system, diagnosis of rheumatic and/or neurological diseases before the musculoskeletal complaints (n=22). Thus, the final sample consisted of 61 teachers (53.5% of the total initially estimated).

2.3 Study variables and measurement instruments

A questionnaire was elaborated to evaluate the sociodemographic, clinical and occupational teachers' characteristics. Through this instrument, the following aspects were investigated: gender, age, marital status, education (FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009; COELHO et al., 2010), occurrence, time and service absence cause, health complications and regular physical exercise practice – about 150 minutes per week in the last four weeks before this questionnaire (FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009; COELHO et al., 2010). In addition, the activities developed at school, the materials used to teach, the working hours, the position adopted to teach, the number of students in the classroom and the working time were identified (CARVALHO; ALEXANDRE, 2006; FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009; COELHO et al., 2010).

To measure the musculoskeletal symptoms, the Nordic questionnaire of Musculoskeletal Symptoms was used (QNSO) (KUORINKA et al., 1987), a reliable instrument, translated and validated for the Brazilian population (PINHEIRO; TROCCOLI; CARVALHO, 2002; BARROS; ALEXANDRE, 2003). The Nordic questionnaire is self-administered, having a picture of the back of the human body divided into nine anatomical regions: (i) cervical region, (ii) shoulders, (iii) thoracic region, (iv) elbow, (v) wrist/hand (vi) lumbar region, (vii) hips and thighs, (vii) knee (ix) ankles and feet (BARROS; ALEXANDRE, 2003). In this picture, the participant should indicate the pain or discomfort experienced in the last 12 months before the interview, and specifically in the last seven days, the functional disability in everyday activities, and the need for consultation with a healthcare professional in the last 12 months due to musculoskeletal symptoms. This instrument enabled the frequency analysis of these events in the sample.

For evaluation of shoulder, arm and hand dysfunction, the questionnaire Disabilities of the Arm, Shoulder and Hand – DASH was used. This instrument, translated and validated for the Brazilian population (ORFALE, 2003), contains 30 self-administered questions about (i) the daily activities (DASH 1) and two optional modules for (ii) sports and musical activities (DASH 2) and (iii) work activities (DASH 3) (CHENG, 2006). The participant answers about the previous week, on his level of difficulty to perform activities, the intensity of symptoms in the upper limbs, psychological impairments and social activities, and sleeping difficulty. This instrument is structured on a Likert scale of five points and its score can range from zero (without dysfunction) to 100 (severe dysfunction); thus the higher the total score, the greater functional impairment in the activities investigated. The final score is obtained by the sum of the 30 initial questions, subtracting 30 from the result and dividing by 1.2. The optional modules, after the sum of the questions, are subtracted by 4 and divided by 0.16 (ORFALE, 2003; CHENG, 2006).

2.4 Research place and general procedures

This study was conducted in the selected public schools. Teachers from each selected school were gathered in the coordination office of their schools to clarify the objectives and research procedures. Teachers who agreed to participate received the questionnaires and had time for about one hour to answer them during the period for pedagogical and complementary activities and planning.

2.5 Data analysis

Data were descriptively analyzed using average and standard deviation for continuous variables, and frequency and percentages for categorical variables. The Kolmogorov-Smirnov test showed no normal distribution of data. The Nordic questionnaire data

enable to divide the teachers sample into two groups: (i) teacher without musculoskeletal symptoms and (ii) teachers with musculoskeletal symptoms in the last 12 months in each body segment of upper limbs and upper back. With this division, an inter-group comparison analysis of the level of disability in daily activities was performed (DASH 1) and work activities (DASH 3), using the nonparametric Mann-Whitney test. The significance level of 5% was considered. The results of the questionnaires were processed using SPSS program version 16.0.

3 Results

3.1 Sociodemographic, clinical and occupational characteristics of the participants

The participants in this study had an average age of 40.23 ± 8.39 years old. Most of the sample were men (57.1%), married (51.7%), with higher education (100%), trained in 16 different areas and without predominance of a specific area of higher education. Teachers reported an average working time of 13.84 ± 9.37 years and an average of working hours of 40.03 ± 4.73 hours per week during the research period. Most of them informed teaching only in regular classrooms (93.4%), for an average of 38.07 ± 4.68 students, and predominantly use the standing position (98.4%). The most used resources to teach were the marker pens, whiteboard, computer and multimedia projector (32.8%).

Regarding the clinical and occupational health, 47.5% of teachers reported some previous clinical diagnosis, but half of them (50.8%) denied regular physical exercise practice and 32.8% reported a history of absence from work. Table 1 shows the self-reported diagnosis, the number of absences and the reasons mentioned by the teachers.

3.2 Musculoskeletal symptoms and upper limbs dysfunctions

Table 2 was created based on the original structure of the Nordic questionnaire of Musculoskeletal Symptoms showing the frequency of these symptoms among the evaluated teachers. The presence of pain was more often in the last 12 months before the interview, in the upper and lower back, and neck. The presence of pain in the upper back had a greater number of teachers to seek professional help and had a higher prevalence of interference in the functional capacity. When questioned the presence of pain in the last seven days, the upper and lower regions of the back and neck had again more frequency.

Teachers had an average score of 8.92 ± 12.97 in the DASH 1 and 8.41 ± 17.41 in the DASH 3. Table 3 shows the results obtained by intergroup comparisons of the level of disability in activities measured by DASH 1, and Table 4, by DASH 3, between groups of teachers with symptoms and groups of teachers without musculoskeletal symptoms in each body segment investigated in the Nordic questionnaire.

The results for the optional module DASH 2 (sports and playing musical instrument) have not been described in this study due to the number of answers in this module: out of the 61 participants, only 12 answered them, not being enough for statistical analysis.

Table 1. Number and reasons of absences by teachers.

Variables	% (n)
Absence from work report (yes)	32.8 (20)
Reason of absence in the last 12 months	
Mental and behavioral disorders	6.7 (4)
Respiratory disease	6.7 (4)
Musculoskeletal system and connective tissue diseases	1.7 (1)
Cardiovascular diseases	1.7 (1)
Nervous system disorders	1.7 (1)
Endocrine, nutritional and metabolic diseases	1.7 (1)
Respiratory and SN disease	1.7 (1)
Vocal cord problems	3.3 (2)
Eye surgery	1.7 (1)
Others	1.7 (1)
Regular Physical Practice Exercise report (yes)	49.2 (29)

Table 2. Prevalence of Musculoskeletal Symptoms, functional disability and demand for professional help in the health area.

	Symptoms in the last 12 months % (n)	Impediment to perform daily, work and leisure activities because of symptoms in the last 12 months% (n)	Consultation with a professional of health in the last 12 months because of symptoms % (n)	Symptoms of the last 7 days % (n)
Neck	39.3 (24)	8.3 (5)	8.3 (5)	10.2 (6)
Shoulders	30.4 (21)	5.0 (3)	10.0 (6)	15.0 (9)
Upper back	42.6 (26)	11.7 (7)	11.7 (7)	21.7 (13)
Elbows	14.8 (9)	3.3 (2)	3.3 (2)	6.8 (4)
Wrists/Hands	27.9 (17)	5.0 (3)	5.0 (3)	6.8 (4)
Lower back	41.7 (25)	6.8 (4)	8.5 (5)	19.0 (11)
Hip/thigh	18.6 (11)	3.4 (2)	3.4 (2)	8.6 (5)
Knee	20.3 (12)	1.7 (1)	5.1 (3)	8.6 (5)
Ankles/Feet	15.3 (9)	3.4 (2)	6.8 (4)	3.4 (2)

Table 3. Comparison of the level of disability for daily activities (DASH 1) according to the presence of musculoskeletal complaints in different body segments evaluated by the Nordic questionnaire.

Body segment	Medium level of disability for activities(DASH 1)		p-value	Test power
	Presence of musculoskeletal complaints	Absence of musculoskeletal complaints		
Neck	14.21 ± 14.83	5.49 ± 10.44	0.0001	70%
Should	15.86 ± 17.81	5.27 ± 7.52	0.001	79%
Upper back	13.93 ± 16.03	5.19 ± 8.64	0.002	71%
Elbows	20.49 ± 14.96	6.91 ± 11.62	0.002	77%
Wrist and hand	13.60 ± 13.34	7.11 ± 12.51	0.018	39%

Average ± standard deviation values of the score in the questionnaire DASH 1. Mann-Whitney U.

Table 4. Comparison of the level of incapacity by work activities (DASH 3) according to the presence of musculoskeletal complaints in different body segments evaluated by the Nordic questionnaire.

Body segment	Medium level of disability for activities(DASH 1)		p-value	Test power
	Presence of musculoskeletal complaints	Absence of musculoskeletal complaints		
Neck	10.00 ± 16.02	7.42 ± 18.41	0.123	8%
Shoulders	15.97 ± 23.79	4.41 ± 11.36	0.023	53%
Upper back	11.31 ± 19.32	6.45 ± 16.01	0.051	15%
Elbows	20.31 ± 20.25	6.25 ± 16.17	0.003	48%
Wrist and hand	10.71 ±16.15	7.56 ±17.98	0.120	9%

Average ± standard deviation values of the score in the questionnaire DASH 3. Mann-Whitney U.

4 Discussion

Most of the sample of this study were male teachers, with an average age of 40 years old. Unlike this finding, studies indicate that teachers are usually women because they are living a continuous and gradual integration into the labor market, and the school has historically considered an extension of their domestic responsibilities (to take care and guide the children) (CARVALHO; ALEXANDRE, 2006; MANGO et al., 2012; RIBEIRO, 2009; CARDOSO et al., 2009; ARAÚJO; CARVALHO, 2009). The average age of the evaluated teachers was similar to other studies (BRANCO et al., 2011; FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009; MELO; CAIXETA;

CAIXETA, 2010). All teachers had higher education, meeting the requirements of the Law of Guidelines and Bases of National Education (LDB) (CARVALHO; ALEXANDRE, 2006). There was similar time teaching experience (13.84 ± 9.37 years) to previous studies (MELO; CAIXETA; CAIXETA, 2010; MANGO et al., 2012; CARDOSO et al., 2009). Most teachers taught only in the regular classroom, with working hours of 40 hours per week. This finding differs from study of Ribeiro (2009), who identified a more intense working hours (>40 hours) from most of the 4,495 teachers in the municipal area of Salvador. According to Reis et al. (2006), a working journey superior of 35 hours per week may be associated with mental fatigue and nervousness, and dedication of 40 hours, with minimum rest intervals, features a risk factor for health complications of teachers (MARCHIORI; BARROS; OLIVEIRA, 2005).

The average number of students in a classroom was 38.07 ± 4.68, indicating an approach with values from other studies (CARVALHO; ALEXANDRE, 2006; RIBEIRO, 2009). The recommendation of the International Labor Organization (OIT) is not exceeding 25 students, since it will increase the materials for the teacher as well as an increase in the time that static positions will be adopted and repetitive movement for the correction of tests and papers (RIBEIRO, 2009; CARDOSO et al., 2009).

As for the materials used in the classroom, teachers mainly listed marker pens, whiteboard, computer and multimedia projector. The 62 teachers evaluated by Souza (2007) also mentioned predominant use of whiteboard (98.38%), followed by video/TV/DVD (70.96%), overhead projector (29.03%) and multimedia projector (4.83%). The use of these materials can be justified by the reform schools have been going through to achieve better standards of education and jobs for these teachers, occurring, for example, a replacement of blackboards for whiteboards, particularly in high schools and gradual technological advances in order to boost the teaching process.

The use of these resources is linked to the standing position adopted mainly by teachers of the sample, confirming findings of previous studies (MELO; CAIXETA; CAIXETA, 2010; GASPARINI; BARRETO; ASSUNÇÃO, 2005; NUNES; DURAN, 2011). Barros et al. (2007) indicated that teachers spend about 95% of class time standing. According to Ribeiro (2009), the standing position is closely linked to back pain, with overload on the intervertebral discs. Added to this, there is a not proportional relationship between the anthropometric characteristics and measurements of chairs and tables, demanding teachers increased flexion of the spine, hip and knee at the time of take attendance and correcting tests.

Most teachers denied their need of work absence in the last 12 months. Among those mentioned absences, the main causes were mental and behavior disorders, and complications in the respiratory system. In this context, Rocha and Fernandes (2008) investigated the quality of life of elementary school teachers of Jequié-BA and also found characteristic findings of regular mental health. Lima and Lima-Filho (2009) identified high prevalence of psychosomatic complaints in university teachers and highlighted the symptoms of mental fatigue (53.9%), stress (52.4%), anxiety (42.9%), forgetfulness (42.9%), frustration (37.8%), nervousness (31.1%), anguish (29.3%), insomnia (29.1%) and depression (16.8%). The stressors factors are possible determinants of mental health and can lead to physical and emotional exhaustion of a professional (ROCHA; FERNANDES, 2008). As for respiratory complications, they mention previous periods in which the teachers used only the blackboard and chalk. Exposure over long periods to chalk powder is indicated as a factor influencing the high prevalence of rhinitis and respiratory and skin allergies (LIMA; LIMA-FILHO, 2009).

In this study, only 49.2% of teachers reported physical exercise practice regularly, corroborating findings of the study of Mango et al. (2012), which indicated that only 55.5% of teachers were not sedentary. The hard work, the double workday, the socioeconomic issues, home and family care, and the lack of directed guidance are indicative of lower adherence to physical activity.

Among the teachers participating in this study, 60.5% (37) indicated some musculoskeletal symptom in the last 12 months and 32.7% (20) in the last seven days before the interview. The study of Branco et al. (2011), with 355 teachers, showed a prevalence of musculoskeletal symptoms of 89.7% over the last 12 months and 68.4% in the last seven days. The literature suggests a range between 40.9% and 100% for prevalence of musculoskeletal symptoms (MANGO et al., 2012; BARROS et al., 2007; NUNES; DURAN, 2011). The high prevalence of these symptoms among teachers, especially in the cervical., scapular and thoracolumbar muscles (BRANCO et al., 2011; NUNES; DURAN, 2011), has been described as a consequence of anthropometric characteristics and biomechanical problems of repetitive movements, inadequate postures with a high upper

limb (MENDONÇA JÚNIOR; ASSUNÇÃO, 2005) trunk rotation and neck tilt (BRANCO et al., 2011), weight transportation (MENDONÇA JÚNIOR; ASSUNÇÃO, 2005), teaching resources installation (NUNES; DURAN, 2011) and standing position for long periods (NUNES; DURAN, 2011), whether in correcting tests, either in the dynamics adopted to teach. There are also environmental factors – poor condition of classrooms, including lighting, floor space, inadequate height and comfort of the chairs and tables (NUNES; DURAN, 2011) – enhancing health complications (MELO; CAIXETA; CAIXETA, 2010; RIBEIRO, 2009; FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009).

Corroborating findings of previous studies (MELO; CAIXETA; CAIXETA, 2010; FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009; RIBEIRO, 2009), this study showed that the body regions most affected in the last 12 months were the upper back (42.6%), the lower back (41.7%), neck (39.3%) and shoulder (30.4%). When they were asked about the prevalence of symptoms in the last seven days, these regions were again identified. Specifically in painful symptoms in teachers of municipal elementary schools, Dutra et al. (2005) found that 76% complained of shoulder pain, and Carvalho and Alexandre (2006) found 63.1% complained of back pain, 62.4% of chest pain and 59.2% cervical region pain. In higher education, Coelho et al. (2010) observed among teachers, a frequency of 36.5% of the painful shoulder syndrome, and Lima and Lima-Filho (2009) found that, among the teachers who reported WMSDs, 55.9% reported back pain, 38 8% pain in the legs and 32.2% pain in the arms.

It is important to highlight that persistent pain causes adaptations of musculoskeletal and psycho-behavioral mechanisms that may extend to the extracurricular life and interfere with functional capacity for activities of daily living (ADLs) (AGNOLON; SANTOS; ALMEIDA, 2006), domestic and leisure activities, decreasing motivation and self-esteem to carry out the work activities (SALVETTI; PIMENTA, 2005) and compromising workers´ quality of life (FUCHS; CASSAPIAN, 2012; OLIVEIRA; GAZETTA; SALIMENE, 2004). A study of eight patients from the occupational therapy department of the University of São Paulo identified that seven of them (87.5%) reported being affected in domestic activities because of musculoskeletal pain (ALENCAR; TERADA, 2012). Additionally, a study identified recurrent disability in 1,213 patients with intense pain complaints, of which 80% reported limitations in daily activities, 18% have become unfit for work and 37% were absent from work (ALCÂNTARA, 2008). According to Alcântara (2008), the mechanisms that explain the installation of a disability and the interaction of factors that promote a limitation in functional capacity are not yet fully known. However, there is strong relationship between the presence of some musculoskeletal symptoms and functional disability (MANGO et al., 2012). In this context, it was noted a small level of difficulty in activities of daily living and working investigated among teachers of this study. However, it was observed that the presence of musculoskeletal symptoms in the last 12 months was accompanied by a reduction in functional capacity. The investigation of the level of difficulty in performing functional activities, according to the presence of musculoskeletal symptoms (pain, tingling or numbness) in the last year, showed that asymptomatic teachers showed better functional ability than those who reported any symptoms in the neck ($p=0.0001$), shoulders ($p=0.001$), upper back ($p=0.002$), elbow ($p=0.002$) and wrist and hand ($p=0.018$). Moreover, it was observed that teachers with musculoskeletal symptoms specifically on shoulders and elbow had more difficulty to work activities ($p=0.023$ and $p = 0.003$, respectively) that asymptomatic teachers. According to Ribeiro (2009), the adoption of bipedal posture by teachers with continuous lifting and repetitive movements of the upper limbs can compress the shoulder joint and decrease the blood supply in the region, causing functional limitations in activities that require the use of arms. In the study of Melo, Caixeta and Caixeta (2010), 19% of teachers reported involvement in carrying out household activities, work and leisure due to pain in the upper back. Branco et al. (2011) identified 36.6% of teachers with performance changes in daily activities due to musculoskeletal symptoms.

Regarding the searching for professional help, the results of this study showed low demand for health professionals among the sample teachers, even with recurrent musculoskeletal symptoms. This finding contradicts the findings of Melo, Caixeta and Caixeta (2010), showing that 96% of 45 evaluated teachers reported the search for professional help, motivated by the appearance of musculoskeletal symptoms. Teachers can conform to the musculoskeletal picture installed, ignoring acute episodes of symptoms and their own health needs (FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009) and may increase the professional help searching frequency only with the worsening of disabilities after the installation of a chronic illness or on the direct interference in

occupational performance (MELO; CAIXETA; CAIXETA, 2010). However, it should be noted that if not properly diagnosed, musculoskeletal affections could generate micro-lesions in tendons and joint structures accumulated over time and installing a chronic condition, causing disabilities and increased spending on health treatment (FERNANDES; ROCHA; COSTA-OLIVEIRA, 2009).

The use of cross-sectional studies limits the analysis of the results, hindering to identify the cause-effect relationship. The non-random inclusion of schools and teachers and the exclusion of absent teachers at the time of collection also limit the generalizability of the results. Considering the functional capacity is a result not only physical, but also from the interaction of emotional and social health, it is suggested that future studies include assessments of family organization, work and other social contexts in which the teacher is inserted. It is also recommended to research the relationship between musculoskeletal disorders of the lower limbs and the functional difficulties of teachers.

5 Conclusions

This study identified, high frequency of painful symptoms, tingling and numbness, especially in the trunk and upper limbs among high school teachers. Additionally, it showed that teachers who reported these symptoms had poorer functional capacity for daily activities. And those who reported symptoms specifically on shoulders and elbows also reported greater difficulties in work activities. Given this scenario, it is highlighted the importance of inserting periodic health promotion and disease prevention in high schools for proper orientation and maintain the functional capacity of these professionals.

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Marcos Ferreira Calixto: delineation methodology, data collection and analysis, text editing. Patrícia Azevedo Garcia: data analysis, statistical treatment and text editing. Daniela da Silva Rodrigues: data analysis and text editing. Pedro Henrique Tavares Queiroz de Almeida: delineation methodology, data analysis and text editing. All authors approved the final version.