

ORIGINAL ARTICLE

**Musculoskeletal symptoms in Primary Health Care professionals**

*Sintomas osteomusculares em profissionais da Atenção Primária à Saúde*  
*Síntomas musculoesqueléticos en profesionales de Atención Primaria de Salud*

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**ABSTRACT**

**Background and Objectives:** musculoskeletal diseases affect the musculoskeletal system and have multifactorial causes, with a higher risk of developing in some work activities. This study aimed to analyze the occurrence of musculoskeletal symptoms in Primary Health Care professionals. **Methods:** a comparative study among healthcare professionals from two municipalities. A structured questionnaire containing sociodemographic and professional variables and the Nordic Musculoskeletal Questionnaire were applied. **Results:** a total of 429 healthcare professionals have participated; 85 (19.8.2%) from municipality A and 344 (80.2%) from municipality B. There was no difference in the percentage of professionals with musculoskeletal symptoms between the municipalities ( $p>0.05$ ). The main pain complaints in the last 12 months were for the lumbar region (56.2%), neck/cervical (48.4%), shoulders (44.7%), back/thoracic region (35.3%) and ankles/foot (31.7%). The lowest rates of pain complaints were for elbows (10.5%) and forearms (14.6%). In the last 12 months, 203 (48.7%) professionals avoided their daily activities of working, at-home service or leisure/pastime due to musculoskeletal problems/symptoms. **Conclusion:** Primary Health Care professionals from the studied municipalities reported main complaints of musculoskeletal symptoms, in the last 12 months, in the lumbar region, neck/cervical, shoulders, dorsal/thoracic region and ankles/foot. The regions with the fewest complaint rates were elbows and forearms. There were no significant differences in the number of professionals with complaints of musculoskeletal symptoms between the municipalities. This study provides new knowledge by contributing with information that can guide the planning and implementation of actions to promote health and prevent musculoskeletal disorders in Primary Health Care workers.

**Keywords:** Cumulative Trauma Disorders. Prevalence. Healthcare Personnel. Primary Health Care. Family Health Strategy.

## RESUMO

**Justificativa e Objetivo:** as doenças osteomusculares afetam o sistema osteomuscular e possuem causas multifatoriais, com maior risco de desenvolvimento em algumas atividades laborais. Este estudo objetivou analisar a ocorrência de sintomas osteomusculares em profissionais da Atenção Primária à Saúde. **Métodos:** estudo comparativo entre profissionais de saúde de dois municípios. Foi aplicado um questionário estruturado contendo variáveis sociodemográficas e profissionais, e o Questionário Nórdico de Sintomas Osteomusculares. **Resultados:** participaram 429 profissionais, sendo 85 (19,8,2%) do município de pequeno porte e 344 (80,2%) do município de grande porte. Não houve diferença nos percentuais de profissionais com sintomas osteomusculares entre os municípios ( $p>0,05$ ). As principais queixas de dor, nos últimos 12 meses, foram para a região lombar (56,2%), pescoço/cervical (48,4%), ombros (44,7%), região dorsal/torácica (35,3%) e tornozelos/pés (31,7%). Os menores índices de queixas de dor foram para os cotovelos (10,5%) e antebraços (14,6%). Nos últimos 12 meses, 203 (48,7%) profissionais evitaram as atividades diárias de trabalho, serviço doméstico ou lazer/passatempo, em decorrência de problemas/sintomas osteomusculares. **Conclusão:** os profissionais da Atenção Primária à Saúde relataram queixas de sintomas osteomusculares, nos últimos 12 meses, na região lombar, no pescoço/cervical, ombros, região dorsal/torácica e tornozelos/pés. As regiões com menores queixas foram os cotovelos e antebraços. Não houve diferenças significativas do número de profissionais com queixas de sintomas osteomusculares entre os municípios. O estudo agrega novos conhecimentos, ao contribuir com informações capazes de direcionar o planejamento e a implementação de ações de promoção da saúde e prevenção de lesões osteomusculares nos trabalhadores da Atenção Primária à Saúde.

**Descritores:** *Transtornos Traumáticos Cumulativos. Prevalência. Pessoal de Saúde. Atenção Primária à Saúde. Estratégia Saúde da Família.*

## RESUMEN

**Justificación y Objetivos:** las enfermedades musculoesqueléticas afectan al sistema musculoesquelético y tienen causas multifactoriales, con un mayor riesgo de desarrollarse en algunas actividades laborales. Este estudio tuvo como objetivo analizar la aparición de síntomas musculoesqueléticos en profesionales de Atención Primaria de Salud. **Métodos:** un estudio comparativo entre profesionales de la salud de dos municipios. Se aplicó un cuestionario estructurado que contiene variables sociodemográficas y profesionales, y el Cuestionario Nórdico de Síntomas Musculoesqueléticos. **Resultados:** participaron 429 profesionales; 85 (19,8,2%) del municipio A y 344 (80,2%) del municipio B. No hubo diferencias en el porcentaje de profesionales con síntomas musculoesqueléticos entre los municipios ( $p>0,05$ ). Las mayores quejas de dolor, en los últimos 12 meses, fueron para la región lumbar (56,2%), el cuello/cervical (48,4%), los hombros (44,7%), la espalda/región torácica (35,3%) y los tobillos/pies (31,7%). Las tasas más bajas de quejas de dolor se dieron en los codos (10,5%) y los antebrazos (14,6%). En los últimos 12 meses, 203 (48,7%) profesionales evitaron las actividades diarias de trabajo, servicio doméstico u ocio/pasatiempo debido a problemas/síntomas musculoesqueléticos. **Conclusión:** los profesionales de la Atención Primaria de Salud de los municipios estudiados relatan las mayores quejas de síntomas osteomusculares, en los últimos 12 meses, en la región lumbar, cuello/región cervical, hombros, región dorsal/torácica y tobillos/pies. Las regiones con menos quejas fueron los codos y los

antebrazos. No hubo diferencias significativas en el número de profesionales con quejas de síntomas musculoesqueléticos entre los municipios. El estudio añade nuevos conocimientos al contribuir con información capaz de dirigir la planificación y la implementación de acciones para promover la salud y prevenir los trastornos musculoesqueléticos en los trabajadores de la Atención Primaria de Salud.

**Palabras Clave:** *Trastornos Traumáticos Acumulativos. Prevalencia. Personal de Salud. Atención Primaria de Salud. Estrategia de Salud Familiar.*

## INTRODUCTION

The Brazilian National Primary Care Policy (PNAB - *Política Nacional de Atenção Básica*) establishes that Primary Health Care (PHC) or Primary Care (PC) is considered the first level of care, and encompasses individual and collective health actions, focused on the “promotion and protection of health, disease prevention, diagnosis, treatment, rehabilitation and health maintenance”.<sup>1</sup>

In PHC services, the overload of worker activities to guarantee assistance based on care that is more articulated to the context of people’s lives adds to the traditional occupational risks in the health field (chemical, physical, ergonomic and biological).<sup>2</sup> In this context, healthcare professionals’ routine, which is normally tiring, becomes even more intense, leading workers to experience situations of pain, distress, illnesses and deaths in their work routine. Therefore, professionals can develop Burnout syndrome, characterized by physical and emotional signs and symptoms, which have implications for their health and can trigger mental illness and physical musculoskeletal problems.<sup>2,3</sup>

Musculoskeletal disorders are injuries that affect healthcare professionals, in the performance of their duties, as a consequence of movements and efforts to which they are subjected during the performance of their duties, especially those that require repetitiveness or continued efforts. Above all, they occur due to the imposition of positions that are not recommended on the body and that require spinal torsion, taking it away from the center of balance of the muscular system and causing strong pressure and twisting in its fibers. As a result of these efforts, more than one symptom may appear, characterizing musculoskeletal disorders.<sup>2-4</sup>

These disorders involve disorders of tendons, nerves, synovium (joint linings), ligaments, muscles and fascia (muscle envelope), in isolation or in combination, with tissue degeneration possible, and are associated with pain and paresthesia. These morbidities can also be defined as repetitive strain injuries (RSI), musculoskeletal disorders (MSD) and cumulative trauma injuries (CTI), generally affecting the upper limbs, the scapular region around the shoulder and the cervical region, causing tendinitis, low back pain, neck pain and back pain.

They can also affect the lower limbs and are often responsible for temporary or permanent work disabilities.<sup>2,5</sup>

Musculoskeletal morbidities are among the main occupational diseases arising from the industrialization process. It is believed that this condition is among the main public health problems, causing several negative impacts on the social and economic environment of a country. In general, the symptoms gradually develop and, when they are noticed, they are already systematically installed, leading to loss of productivity and compromising workers' production capacity, who begin to present high rates of absenteeism.<sup>2,6-7</sup>

Healthcare professionals are very vulnerable and subject to musculoskeletal disorders, due to the high workload and lack of effort that goes beyond the work activity itself. Added to this is the lack of specific training to perform the role, incorrect physical postures, inappropriate lifting, repetitive movements and other issues related to body postures.<sup>2,7-8</sup>

Therefore, the work process and the work environment have a strong influence on the process of musculoskeletal illness in healthcare professionals, who perform repetitive activities and under overload conditions, capable of causing irreversible physical injuries.<sup>2-3,9</sup> In this context, this study aimed to analyze the occurrence of musculoskeletal symptoms in PHC professionals.

## **METHODS**

This is a cross-sectional study, carried out in two municipalities in the state of São Paulo, with a non-probabilistic, convenience sample, which included 429 professionals from the Basic Health Units teams.

The first municipality (municipality A) is located in western state, 596 km from the capital, São Paulo. It is a small municipality, with a population of 33,707 inhabitants. The municipality is a reference center in health for municipalities in the *Nova Alta Paulista* region. When structuring the local health model, during the study period, PHC was carried out by four Basic Health Units, with ten Family Health teams and coverage of 100% of the municipality's population.<sup>10</sup>

The second municipality (municipality B) is in northwestern São Paulo, 452 km from the capital. It is a large municipality, with an estimated population of 438,354 inhabitants. The municipality is the headquarters of Regional Health Division XV, the largest in the state of São Paulo, in addition to being a reference in healthcare.<sup>11</sup>

During the study period, the municipality had a restructuring of its geographic division and began to be organized into ten health regions (previously there were five health regions),

according to Decree 18,073 of June 29, 2018. PHC was responsible for 27 municipal services, three of which were Basic Health Units with teams from the Community Health Workers Strategy (EACS) and 24 Basic Health Units that comprised 58 Family Health teams and 21 Oral Health teams, responsible for covering 61.2% of the municipality's population.<sup>12</sup>

The study population was made up of all professionals who made up the minimum team of the Family Health Strategy (doctors, nurses, nursing assistants/technicians, community health workers), including professionals from oral health teams (dentists and dental assistants), from all Basic Health Units in both municipalities. This choice aimed to equate the professionals assessed in both municipalities. Professionals who were on vacation during the data collection period and/or away from professional activities for any other reason were excluded.

Data were collected in the first half of 2018 using two self-administered instruments: the first was a questionnaire containing closed questions about training, age, sex, marital status, income, education, type of employment (Consolidation of Labor Laws (CLT - *Consolidação das Leis do Trabalho*), statutory), type of care unit/service, if has other employment relationships, practice physical activity, smoke/drink, if is satisfied and/or if has thought about giving up the profession/function, if has been away in the last year (reasons and number of times); the second was the Nordic Musculoskeletal Questionnaire (NMQ), translated and adapted into Portuguese, which allowed assessing symptoms of work-related musculoskeletal disorders (WMSD) and their relationship with musculoskeletal morbidity, demographic and occupational variables and personal habits. This questionnaire is simple to apply, and the Portuguese version was validated in Brazil.<sup>13</sup> The NMQ contains two parts. The first has a human figure divided into nine anatomical regions, such as cervical, shoulders, arms, elbows, forearm, wrists/hands/fingers, dorsal region, lumbar region, hips/lower limbs. Participants identify, on this body map, the presence of pain, discomfort or numbness in the indicated regions, during the last 12 months. For symptomatic regions, participants indicate whether or not the symptoms are related to the work they perform.

Data collection was previously scheduled with nurses and managers of health units and carried out, preferably, during team meeting. After presenting the study to professionals from the team(s) and collecting signature on the Informed Consent Form, the researchers delivered the questionnaires to professionals, who were able to answer them immediately or within a week. After answering, the professionals delivered the questionnaires to the unit managers in sealed, unmarked envelopes. After receiving the completed instruments, managers contacted the researchers to collect the questionnaires.

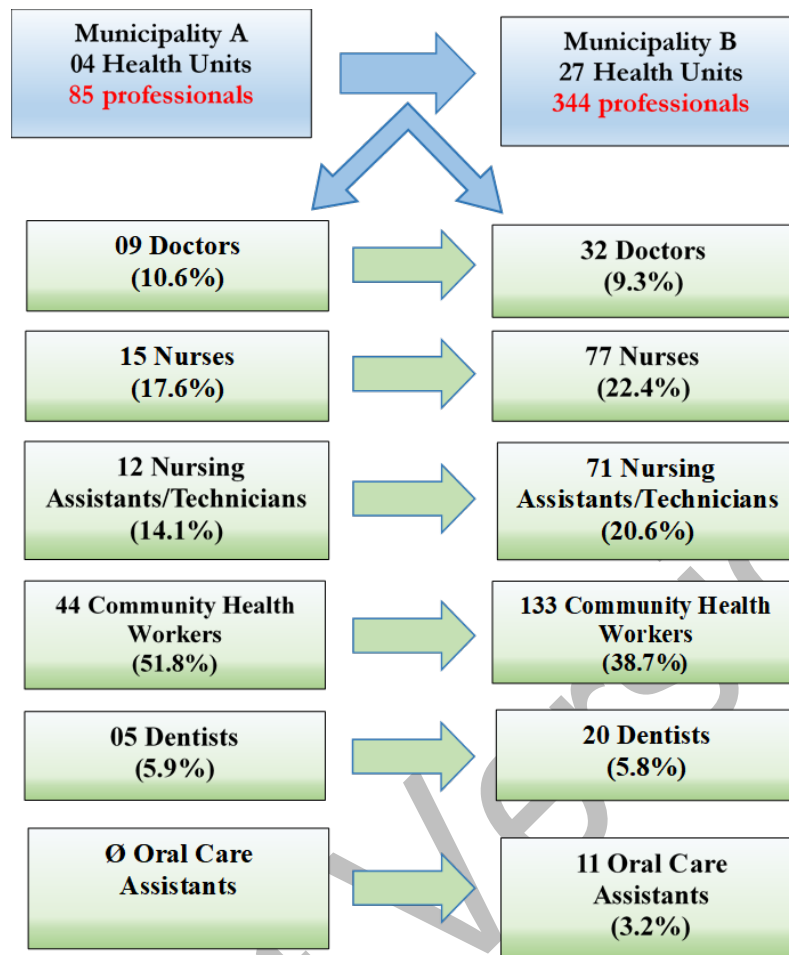
The data obtained was stored in a database, using a Microsoft Excel® spreadsheet. Analysis was performed with Statistical Package for the Social Sciences (SPSS) version 23.0.

Sociodemographic and professional variables were used to characterize the study population. To assess the symptoms of musculoskeletal disorders, initially, the NMQ answers were categorized into occurrence and non-occurrence of musculoskeletal symptoms in the last 12 months. Different body parts were considered (neck/cervical, shoulders, dorsal/thoracic, lumbar, elbows, forearms, wrists/hands/fingers, hips/thighs, knees and ankles/feet). Then, the answers were grouped by body regions, considering the upper trunk (neck/cervical and dorsal/thoracic), lower trunk (lumbar region), upper limbs (shoulders, elbows, forearms, wrists/hands/ fingers) and lower limbs (hips/thighs, knees, ankles/feet). Finally, the answers were grouped considering body parts (neck/cervical, shoulders, back/thoracic, lumbar, elbows, forearms, wrists/hands/fingers, hips/thighs, knees and ankles/feet) to assess whether, during the last 12 months, professionals had to avoid daily activities (work, domestic service or leisure/hobby) due to musculoskeletal problems/symptoms. Comparisons were made using the chi-square test, considering a significance level of 5% ( $p \leq 0.05$ ).

This study is part of a matrix project entitled “*Qualidade de vida, engajamento, comprometimento e entrenchamento com a carreira, estresse, estratégias de enfrentamento e queixas de distúrbios osteomusculares entre trabalhadores da Atenção Básica*”. In compliance with current ethical aspects regarding research involving human beings (Resolutions 466/2012 and 510/2016 of the Ministry of Health), the project was approved by the *Faculdade de Medicina de São José do Rio Preto* (FAMERP) Research Ethics Committee on December 4, 2017, under Opinion 2,412,726 and Certificate of Presentation for Ethical Consideration (CAAE - *Certificado de Apresentação para Apreciação Ética*) 59604116.0.0000.5415.

## RESULTS

The sample was defined by convenience and consisted of 429 professionals who answered the instruments, 85 (19.8.2%) from municipality A and 344 (80.2%) from municipality B. Among the professionals assessed, 41 (9.6%) were doctors, 92 (21.4%), nurses, 25 (5.8%), dentists, 83 (19.3%), nursing assistants/technicians, 177 (41.3%), community health workers, and 11 (2.6%), oral care assistants. Figure 1 shows the distribution of study professionals according to municipality and professional category. Professionals’ mean age was 42.6 years, ranging from 20.9 to 75.4 years.



**Figure 1.** Study sample distribution

As shown in Table 1, there was a predominance of female professionals (79.7%), married (63.4%), aged between 36 and 50 years (42.9%), with a 40-hour working day weekly (87.6%) and family income of two to five minimum wages (59.9%). It was observed that 34.7% of professionals were overweight; 60.4% did not practice physical activity; 60.1% had leisure activities; 80.7% had no other paid activity; and 79.7% slept six to eight hours a night. In relation to the length of professional experience, it is noteworthy that 40.3% of professionals had worked for five years or more in PHC services.

**Table 1.** Distribution of sociodemographic and professional characteristics of Primary Health Care workers assessed in the study

Variables	Municipality A	Municipality B	Total
	n (%)	n (%)	n (%)
<b>Total</b>	85 (100.0)	344 (100.0)	429 (100.0)
<b>Sex</b>			
Male	23 (27.1)	60 (17.4)	83 (19.3)
Female	61 (71.8)	281 (81.7)	342 (79.7)
Did not answer	1 (1.2)	3 (0.9)	4 (0.9)
<b>Marital status</b>			
Married	51 (60.0)	221 (64.2)	272 (63.4)
Single	28 (32.9)	86 (25.0)	114 (26.6)

Separate	3 (3.5)	28 (8.1)	31 (7.2)
Widow	2 (2.4)	9 (2.6)	11 (2.6)
Did not answer	1 (1.2)	221 (64.2)	1 (0.2)
<b>Age group</b>			
From 21 to 35 years	28 (32.9)	90 (26.2)	118 (27.5)
From 36 to 50 years	31 (36.5)	153 (44.5)	184 (42.9)
From 51 to 65 years	20 (23.5)	86 (25.0)	106 (24.7)
Over 65 years	6 (7.1)	3 (0.9)	3 (0.7)
Did not answer	-	12 (3.5)	18 (4.2)
<b>Weekly workload</b>			
20 hours	6 (7.1)	20 (5.8)	26 (6.1)
30 hours	15 (17.6)	8 (2.3)	23 (5.4)
36 hours	1 (1.2)	-	1 (0.2)
40 hours	62 (72.9)	314 (91.3)	376 (87.6)
Did not answer	1 (1.2)	2 (0.6)	3 (0.7)
<b>Family income*</b>			
Up to a minimum wage	14 (16.5)	23 (6.7)	37 (8.6)
From two to five minimum wages	57 (67.1)	200 (58.1)	257 (59.9)
Six to ten minimum wages	8 (9.4)	66 (19.2)	74 (17.2)
More than ten minimum wages	6 (7.1)	47 (13.7)	53 (12.4)
Did not answer	-	8 (2.3)	8 (1.9)
<b>BMI classification</b>			
Under weight	2 (2.4)	3 (0.9)	5 (1.2)
Normal weight	22 (25.9)	97 (28.2)	119 (27.7)
Overweight	35 (41.2)	114 (33.1)	149 (34.7)
Grade I obesity	14 (16.5)	56 (16.3)	70 (16.3)
Grade II obesity	2 (2.4)	20 (5.8)	22 (5.1)
Grade III obesity	3 (3.5)	6 (1.7)	9 (2.1)
Did not answer	7 (8.2)	48 (14.0)	55 (12.8)
<b>Practices physical activity</b>			
Yes	37 (43.5)	129 (37.5)	166 (38.7)
No	48 (56.5)	211 (61.3)	259 (60.4)
Did not answer	-	4 (1.2)	4 (0.9)
<b>Has leisure activities</b>			
Yes	55 (64.8)	205 (59.6)	258 (60.1)
No	28 (32.9)	132 (38.4)	160 (37.3)
Did not answer	2 (2.4)	7 (2.1)	11 (2.6)
<b>Daily hours of sleep</b>			
Less than six hours	14 (16.5)	64 (18.6)	78 (18.2)
Between six and eight hours	70 (82.4)	272 (79.1)	342 (79.7)
More than eight hours	-	5 (1.5)	5 (1.2)
Did not answer	1 (1.2)	3 (0.9)	4 (0.9)
<b>Length of experience in PHC</b>			
Less than two years	21 (24.7)	126 (36.6)	147 (34.3)
From two to five years	30 (35.3)	61 (17.7)	91 (21.2)
Between five and ten years	12 (14.1)	69 (20.1)	81 (18.9)
More than ten years	20 (23.5)	72 (20.9)	92 (21.4)
Did not answer	2 (2.4)	16 (4.7)	18 (4.2)
<b>Has another paid activity</b>			
Yes	21 (24.7)	54 (15.7)	75 (17.5)
No	64 (75.3)	282 (82.0)	346 (80.7)
Did not answer	-	8 (2.3)	8 (1.9)

\*Minimum wage value: R\$937.00; BMI – Body Mass Index; PHC – Primary Health Care.

The results did not show statistically significant differences in the percentages of professionals with musculoskeletal symptoms between the municipalities (Table 2). It was observed that the main complaints of pain, in the last 12 months, involved the lumbar region (56.2%), neck/cervical (48.4%), shoulders (44.7%), dorsal/thoracic region (35.3%) and



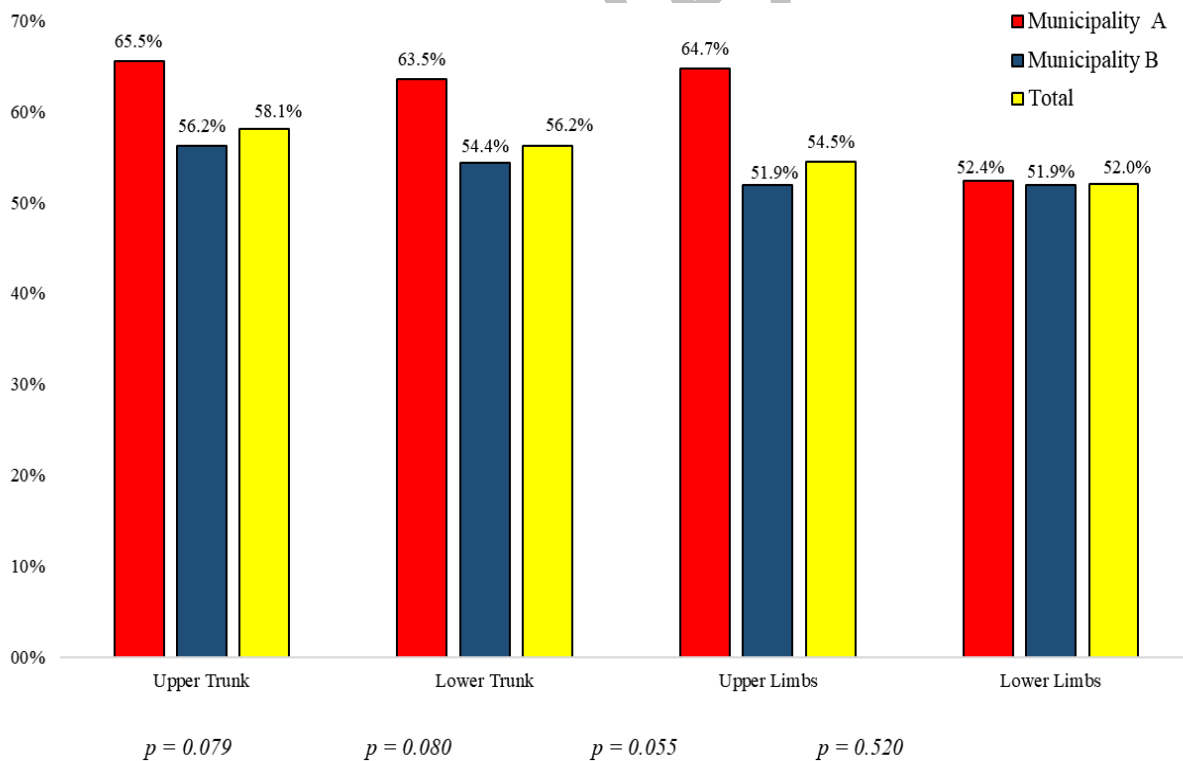
ankles/feet (31.7%). The lowest rates of pain complaints were for elbows (10.5%) and forearms (14.6%).

**Table 2.** Percentage of complaints of musculoskeletal symptoms by body parts among Primary Health Care professionals

Variables	Municipality A n (%)	Municipality B n (%)	Total n (%)	p-value*
<b>Occurrence of musculoskeletal symptoms</b>				
Lumbar region	54 (63.5)	181 (54.4)	235 (56.2)	0.080
Neck/cervical	46 (54.8)	157 (46.9)	203 (48.4)	0.195
Shoulders	40 (47.1)	148 (44.0)	188 (44.7)	0.352
Dorsal/thoracic region	25 (29.8)	121 (36.7)	146 (35.3)	0.146
Ankle/feet	25 (29.8)	115 (34.4)	140 (33.5)	0.249
Knees	27 (32.1)	105 (31.6)	132 (31.7)	0.512
Wrist/hands/fingers	29 (34.5)	92 (27.5)	121 (28.9)	0.127
Hip/thighs	15 (17.9)	56 (17.2)	71 (17.3)	0.498
Forearms	10 (12.0)	51 (15.2)	61 (14.6)	0.294
Elbows	7 (11.0)	37 (8.4)	44 (10.5)	0.320

\*Chi-square test.

In municipality A, there was a slightly higher percentage of professionals complaining of musculoskeletal pain than in municipality B, but without statistical significance (Figure 2).



**Figure 2.** Distribution of percentages of complaints of musculoskeletal symptoms by body regions among Primary Health Care professionals (chi-square test)

Table 3 shows that 203 (48.7%) professionals reported that, in the last 12 months, they had to avoid daily work, domestic service or leisure/hobby activities due to musculoskeletal problems/symptoms.

**Table 3.** Distribution of professionals who, in the last 12 months, reported having avoided daily activities due to musculoskeletal symptoms

	<b>Municipality A</b>	<b>Municipality B</b>	<b>Total</b>	<b>p-value*</b>
<b>Avoided daily activities in the last 12 months</b>				
Yes	43 (51.2)	160 (48.0)	203 (48.7)	0.347
No	41 (48.8)	173 (52.0)	214 (51.3)	

\*Chi-square test.

## DISCUSSION

The profile of the participants in this study is consistent with other studies carried out with PHC workers,<sup>2-3,14-16</sup> and the professional structure of the teams complies with PNAB regulations in relation to the composition of the Family Health Strategy minimum teams.<sup>1</sup>

The percentage of PHC professionals with complaints of musculoskeletal symptoms found in this study is much higher than that reported in the Brazilian population, whose prevalence of musculoskeletal diseases is approximately 2.5%.<sup>16</sup> The appearance of these symptoms in healthcare professionals is due to several factors and is generally related to work characteristics, such as strenuous working hours, double employment, inadequate furniture and posture.<sup>2,3</sup>

In the case of community health workers, long distances covered, often with excessive weight, in strong heat or inadequate postures, are risk factors for the emergence of injuries and musculoskeletal symptoms.<sup>3</sup> Among nursing professionals, doctors and oral healthcare professionals, risk factors for the appearance of musculoskeletal symptoms can be considered: double shift work or night work, common among these professionals; performing repetitive movements; the adoption of inappropriate postures; lack of breaks, due to high demand or demands for productivity; exposure to work stressors, such as lack of training and professional autonomy; and insufficient time to carry out work activities.<sup>17-19</sup>

In addition to work overload and inadequate professional sizing, emotional involvement also leads to dissatisfaction that can cause health problems for team professionals,<sup>20</sup> showing that social and psychological factors can contribute to worsening the clinical condition of workers affected by musculoskeletal injuries/symptoms.<sup>21</sup> A study with Family Health Strategy professionals showed that workers with high levels of perceived stress were more likely to develop musculoskeletal diseases.<sup>22</sup>

The predominance of complaints of musculoskeletal symptoms in the lumbar region, neck/cervical region, shoulders, dorsal/thoracic region and ankles/feet, observed among the PHC professionals studied, is reported in other studies<sup>2-3,19</sup>, showing that the work process in PHC services can cause illness among professionals, compromising the physical conditions of workers, who begin to present musculoskeletal symptoms.

A study with nursing professionals from a Basic Health Unit pointed out heavy loads, postural problems and uncomfortable chairs as the main ergonomic risks for these workers. Lack of foot support and work overload were also indicated as factors associated with the prevalence of musculoskeletal symptoms. The authors associated work overload with a reduction in the quality of care, considering that overworked professionals are not able to offer care in accordance with the time and quality required expected by users.<sup>23</sup>

Another important consequence related to musculoskeletal symptoms is absenteeism or absence from work, which causes discontinuity in care processes and the relationship with the patient, in addition to staff being absent due to frequent leaves of absence. Furthermore, pain makes it difficult to carry out work efficiently, directly affecting the quality of care provided to patients.<sup>20</sup>

The high rates of professionals complaining of musculoskeletal symptoms in the thoracic region support the literature, which indicates the existence of a high role and work overload among healthcare professionals, the consequences of which are the high prevalence of back pain and ergonomic problems.<sup>24</sup> Given this scenario, it is necessary to implement regular training, with programs aimed at worker health and safety and that seek to prevent complications caused by work overload, such as workplace gymnastics, training courses on ergonomic issues at work, implementation of pre-established breaks and weight control programs.<sup>20</sup>

Regular physical activity is seen as a great ally in improving or maintaining professionals' health conditions and quality of life. The inclusion of physical activity practices, such as workplace gymnastics, in the workplace has contributed significantly to improving physical health and the perception of quality of life. Therefore, simple and low-cost measures, such as assessing the level of physical activity and monitoring workers, can contribute to preventing musculoskeletal problems and reducing absenteeism, favoring an increase in work performance and the quality of service provided to the population.<sup>25</sup>

In this context, it is essential that managers monitor and to know their teams, understand their needs and encourage actions to prevent damage (physical and/or mental) professionals, i.e., it is important that they identify factors that lead to imbalances in workers' health and act on them.<sup>20</sup> Encouraging physical activity by PHC workers is an important prevention and health promotion strategy, seeking to minimize or avoid the illness of these healthcare professionals.

This study has limitations related to convenience sampling, which reduces the potential for generalizing the results and restricts the representativeness of the population, and

data analysis, which does not allow inferring the existence of a direct relationship between musculoskeletal symptoms and the current work activity of assessed professionals. However, the results contribute important information for planning and implementing actions to promote health and prevent musculoskeletal injuries in PHC workers.

As demonstrated, PHC professionals in the municipalities studied reported complaints of musculoskeletal symptoms, mainly in the lumbar region, neck/cervical region, shoulders, dorsal/thoracic region and ankles/feet in the last 12 months. The regions with the lowest rates of complaints were the elbows and forearms. There was no significant difference in the number of professionals complaining of musculoskeletal symptoms between the municipalities. However, there was a slightly higher percentage of professionals with complaints of musculoskeletal symptoms in the small municipality (municipality A) compared to the large municipality (municipality B). These results show that musculoskeletal symptoms are an important problem for PHC workers' health, since almost half of the professionals studied reported having avoided daily work, domestic service or leisure/hobby activities in the last 12 months, due to musculoskeletal problems/symptoms. For this reason, it is necessary to implement actions to promote PHC workers' health, especially the prevention of work-related injuries and treatment/rehabilitation of professionals suffering from musculoskeletal injuries/complaints.

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#### **Authors' contributions:**

**Luciano Garcia Louren o** and **Cl udia Eli Gazetta** contributed to the project design and administration. **Luciano Garcia Louren o**, **Cl udia Eli Gazetta** and **Fabio Ribeiro da Silva** contributed to writing the manuscript and approving the final version. **Carlos Leonardo Figueiredo Cunha**, **Nat lia Sperli Geraldes Marin dos Santos Sasaki**, **Vagner Ferreira do Nascimento** and **Daniele Alcal  Pompeo** contributed to the critical review of the manuscript and approval of the final version.

All authors are responsible for all aspects of the work, including ensuring its accuracy and integrity.