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# Synovitis and tenosynovitis in Brazil: analysis of sickness benefit claims

## *Sinovite e tenossinovite no Brasil: uma análise dos benefícios auxílio-doença*

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**ABSTRACT:** *Objective:* To analyse the personal and occupational factors associated with the prevalence and duration of sickness benefit claims due to synovitis and tenosynovitis (CID10 M65). *Methods:* Cross-sectional study regarding sickness benefit claims due to synovitis and tenosynovitis granted to employees by National Institute of Social Security in Brazil in 2008. Data on economic activity (Economic Activities National Classification – CNAE division, class), sex, age, type and duration of benefits were collected from the Unified Benefit System. The study's population consists of the average monthly employment contracts declared to the National Register of Social Information. *Results:* In 2008, 35,601 employees were granted sickness benefits due to synovitis and tenosynovitis, with a prevalence of 10.9/10,000 employments. Sickness benefits showed higher prevalence rates (PR) for work-related claims (PR 1,2), mostly made by females (PR 3.3) and by workers older than 39 years (PR 1,4). The CNAE 37-Sewage (55.4) and 60-Broadcasting Activity (47.1) had the highest overall prevalence. However, the 64-Financial service activities, except insurance and pension funding and 6422-Multiple banks with commercial service had the highest rates of work-related claims (RP 3.2 and 3.8, respectively), and the longer duration (70 and 73 days, respectively). Workers older than 39 years had the highest durations of work disability claims. Both the CNAE-division 60-Broadcasting Activity, and the CNAE-class 6010-Radio showed a high activity ratio of females (PR 8.1 and 10.8, respectively). *Conclusion:* The work disability due to synovitis and tenosynovitis presents prevalence and duration associated with economic activity, sex, age and kind of benefit (non work-related and work-related claims).

**Keywords:** Synovitis. Tenosynovitis. Occupational risks. Sick leave. Occupational health. Insurance benefits.

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**RESUMO:** *Objetivo:* Analisar os fatores pessoais associados à prevalência e duração dos benefícios auxílio-doença decorrentes de sinovite e tenossinovite (CID10 M65). *Método:* Estudo transversal referente aos benefícios auxílio-doença decorrentes de sinovite e tenossinovite concedidos pelo Instituto Nacional de Seguro Social aos empregados no Brasil em 2008. Dados sobre o ramo de atividade econômica (Classificação Nacional de Atividades Econômicas – CNAE divisão, classe), sexo, idade, espécie e duração dos benefícios foram coletados do Sistema Único de Benefícios. A população corresponde à média mensal dos vínculos empregatícios declarados ao Cadastro Nacional de Informações Sociais. *Resultados:* Em 2008 foram concedidos 35.601 benefícios auxílio-doença decorrentes de sinovite e tenossinovite, com prevalência de 10,9/10.000 vínculos empregatícios. No conjunto dos benefícios auxílio-doença houve maior razão de prevalência (RP) acidentária (RP 1,2), sendo esta maior em mulheres (RP 3,3), e em trabalhadores com idade acima de 39 anos (RP 1,4). As CNAE 37-Esgoto (55,4) e 60-Atividade de rádio e TV (47,1) apresentaram as maiores prevalências, no entanto, 64-Atividade de serviços financeiros e 6422-Bancos múltiplos caracterizaram mais acidentes de trabalho (RP 3,2 e 3,8, respectivamente) e maior duração (70 e 73 dias, respectivamente). A maior duração de benefício ocorreu entre trabalhadores com idade superior a 39 anos. Tanto a CNAE-divisão 60-Atividade de rádio e TV, quanto a CNAE-classe 6010-Atividade de rádio apresentaram elevadas razões de feminilidade (RP 8,1 e 10,8, respectivamente). *Conclusão:* A incapacidade para o trabalho por sinovite e tenossinovite apresenta associação tanto da prevalência quanto da duração com o ramo de atividade, sexo, idade e espécie de benefício (previdenciário/acidentário).

*Palavras-chave:* Sinovite. Tenossinovite. Riscos ocupacionais. Licença médica. Saúde do trabalhador. Benefícios do seguro.

## INTRODUCTION

The inability to work has a large impact on society, on the economy, labor and health<sup>1</sup> and, among the most common causes, are synovitis and tenosynovitis, work-related or not<sup>2-4</sup>.

Data on disability vary greatly between countries as a result of legislation, working conditions and insurance coverage<sup>5</sup>. The annual report on the causes of work-related chronic diseases by the Department of Labor of Connecticut, United States, showed that, in 2008, there was a prevalence of musculoskeletal disorders, and among these, 10% were due to tenosynovitis<sup>3</sup>. In Denmark, a study on musculoskeletal disorders conducted with workers in industry and services showed that shoulder tendonitis is common in repetitive and monotonous activities, such as in slaughterhouses and sewing workshops<sup>6</sup>. In Brazil, research with social security data revealed that, in 2008, musculoskeletal disorders accounted for 22.0% of cases of sickness benefits (SB)

granted to employees with a formal contract governed by the Brazilian Consolidation of Labor Laws (CLT). Among these, synovitis and tenosynovitis represented 11.6%<sup>2</sup>. When considering only sickness beneficiaries who had an accident and are female, synovitis and tenosynovitis were both the most prevalent<sup>2</sup> and more durable causes<sup>4</sup>, predominantly in manual occupations<sup>5</sup>.

The inability to work should not be considered only in terms of morbidity, but also behavior, because workers often avoid getting sick leaves, even when they are sick<sup>5</sup>. This approach may be convenient to the employer. However, it contributes to the worsening of their clinical picture and subsequent chronicity. Some studies have called attention to the presence of socioeconomic filters<sup>2,4,5,7</sup>, such as the lack of strong unions, fear of dismissal after returning to work in pension cases, the high unemployment rates in the industry and the lower value of wage replacement as a contributory factor in the decision by workers asking for SB.

Several studies have shown the influence of individual (gender, age and psychological profile)<sup>2,4-6</sup> and external factors (exposure to occupational hazards such as violence related or unrelated to work, physical and psychological occupational stressors)<sup>8-10</sup> in rates of incapacity for work. Work-related diseases that are similar to those unrelated present some difficulty in establishing a causal association between certain aspects of the job and the health problem, especially when it comes to chronic processes<sup>7</sup>. Several pieces of evidence have been presented in this sense, particularly related to problems of the upper limbs (UL)<sup>11</sup>. In this context, the use of computers, tools and machines<sup>7</sup>, whether or not associated to psychosocial factors in the work environment<sup>8</sup>, can be highlighted as occupational risk factors. In some activities, such as automobile manufacturing<sup>11</sup>, food processing and clerical jobs<sup>8</sup>, physical exposure is evident, especially for the upper extremities<sup>11</sup>, reinforcing the importance of studying the association of the economic activity with sick leave due to synovitis and tenosynovitis.

This study aims to analyze the association of variables such as gender, age, economic activity (class and division levels) and the type of benefit to the prevalence and duration of SB due to synovitis and tenosynovitis (ICD10 – M65), granted to workers employed in Brazil in 2008.

## METHODS

This is a cross-sectional study of analytical nature, in which all SB were studied in the period from 01/01/2008 to 12/31/2008, granted by the Brazilian Institute of Social Security (INSS) to workers employed<sup>12</sup> in Brazil in 2008, whose clinical diagnosis of incapacity for work was the M65 code (ICD10), corresponding to synovitis and tenosynovitis and its derivations. For this study, the inability to work was regarded

as the time during which the worker was granted the benefit; in this case, sickness benefit (temporary disability).

Data are from the Unified System of Benefits (SUB) of the Brazilian Social Security Institute and the National Social Information Database (CNIS), both managed by the Ministry of Social Security (MSS). Information concerning the type of benefit, gender, age, duration, diagnosis of disability (ICD10) were extracted from the SUB; and, from CNIS, the amount of employment relationships stratified according to the National Classification of Economic Activities (NCEA version 2.0, division and class)<sup>13</sup>, gender and age. The classification of the NCEA is an instrument of national standardization of economic activity codes and the criteria for eligibility used by the various tax administration bodies of the country<sup>13</sup>.

The study population was established by the average monthly employment relations declared to the Guarantee Fund for Time of Service<sup>2,4,5</sup> in Brazil in 2008 (32,590,239 employment relations).

Employed worker is one who has an employment relationship with an employer agent, whether individuals with profit purposes or a legal person (company) with an employment contract governed by the Labor Code<sup>12</sup>. The SB is granted to the insured who is incapacitated for work for more than 15 consecutive days, proven by medical examination by social security. This category can be subdivided into the pension sickness benefit (in which the health problem is not work-related) and work accident benefit (in which the relationship between the health problem and work is legally established)<sup>14</sup>.

All SB cases granted in the period from 01/01/2008 to 12/31/2008 as a salary replacement due to synovitis and tenosynovitis (M65) and its derivations (M65.0, M65.1, M65.2, M65.3, M65.4, M65.8, M65.9) were considered.

The inability to work due to synovitis and tenosynovitis was analyzed from the estimated prevalence, prevalence ratio (PR) and duration of the SB.

The analysis of the prevalence of incapacity for work was stratified by age group (< 40 and ≥ 40 years), gender (male and female), type of benefit (accident-B91 and pension-B31) and NCEA (division: classification with 2-digits code, and class: 4 digits). All prevalence rates were presented as benefits/10,000 employments. The PR was calculated by dividing the prevalence between genders, age groups and types of benefits.

The probability for the inability to work was estimated by PR. Analyses were conducted for each gender individually, aiming to detect specific associations between them in every field of activity.

The duration of incapacity for work in this context was considered as the duration in days of the SB. The duration was calculated according to NCEA division and class, and evaluated by measures of central tendency (median and 25% and 75% quartiles).

Depending on the specificity of cases, the NCEA with higher total prevalence rates were selected for individual analysis, and those with fewer than 100 benefits and total CNIS with less than 5,000 workers were excluded. Analyzes were performed using Microsoft Office Excel 2007 and PASW Statistics programs.

The protocol was approved by the Research Ethics Committee of the School of Health Sciences, Universidade de Brasilia, Federal District.

## RESULTS

In Brazil, in 2008, INSS recorded a monthly average of 32,590,239 employees in the private sector, of which 35,601 were granted SB with clinical diagnosis of synovitis and tenosynovitis (ICD10 – M65). Overall, the prevalence of this condition was 10.9/10,000 employments, with a predominance of accident SB (B91 with PR = 1.2 among benefit types), provided mainly to women (PR = 3.3 among the genders) and workers aged  $\geq 40$  years (PR = 1.4 among the expanded age groups).

The prevalence and the RP for incapacity for work due to synovitis and tenosynovitis are presented according to the economic activity (NCEA-division), the type of benefit and age in Table 1.

The highest prevalence rate for incapacity for work for synovitis and tenosynovitis was presented by NCEA 37-Sewage (55.4) and 60-Activities related to radio and TV (47.1) compared with the number of workers in Brazil. As for the type of benefit, the accident SB prevailed (B91) in most of the NCEA. The NCEA 64-Activities of financial services registered 3.2 times more accident benefits than pension benefits, followed by NCEA-division 10-Manufacture of food products (PR = 2.1).

When analyzing the influence of age on the inability to work by synovitis and tenosynovitis, there was a predominance of workers over 39, regardless of the type of benefit. The NCEA 64-Financial services activity (PR = 2.2) presented more accidents in this age group. The high prevalence of benefits granted to workers under 40 years in NCEA-60 Activities related to radio and TV in both types (Pension benefits-B31 = 27.9 and Accident benefits-B91 = 33.4) is noteworthy. As for the potential influence of gender on incapacity for work due to synovitis and tenosynovitis (Table 2), a higher rate of females is observed in all NCEA, regardless of the type of benefit. Among female workers, the highest prevalence and PR was observed in NCEA 60-Activities related to radio and TV (122.5), in which women were granted 8.1 times more SB when compared to men.

The distribution of the duration according to the quartiles (Table 2) shows that, overall, 50% of workers returned to work within 56 days, and the benefits that were 25% smaller

Table 1. Prevalence and prevalence ratio of sickness benefits for synovitis and tenosynovitis according to the National Classification of Economic Activity-division, type of benefit and age. Brazil, 2008.

NCEA-division	Total prevalence	Total prevalence		PR B91/B31	B91 prevalence		B31 prevalence		Total prevalence		PR ≥ 40/< 40
		B91	B31		≥ 40	< 40	≥ 40	< 40	≥ 40	< 40	
37-Sewage	55.4	29.2	26.2	1.1	32.6	28.7	32.6	23.7	65.2	52.4	1.2
60-Activities related to radio and TV	47.1	27.1	20.0	1.4	18.6	33.4	8.1	27.9	26.7	61.3	0.4
26-Manufacture of computer, electronic and optical products	37.7	24.4	13.3	1.8	31.9	24.1	14.5	13.7	46.4	37.9	1.2
64-Activities of financial services	33.1	25.1	8.0	3.2	40.5	16.6	10.9	6.5	51.5	23.1	2.2
62-Activities of information technology services	25.3	15.8	9.5	1.7	10.1	18.0	5.7	10.9	15.8	28.9	0.5
30-Manufacture of other transport equipment except motor vehicles	22.8	11.7	11.2	1.0	12.1	12.0	9.3	12.3	21.4	24.2	0.9
87-Activities of home care to human health	22.8	9.0	13.8	0.7	11.4	7.7	22.6	8.0	34.0	15.7	2.2
27 Manufacture of electrical machinery and devices	22.6	14.3	8.2	1.7	15.5	14.7	8.1	8.7	23.6	23.3	1.0
14-Manufacture of apparel and accessories	22.4	13.4	9.0	1.5	19.8	12.1	13.7	8.0	33.6	20.2	1.7
63-Activities of provision of information services	21.5	14.5	7.1	2.0	17.4	14.3	10.3	6.4	27.8	20.7	1.3
73-Advertising and market research	20.7	12.0	8.7	1.4	27.2	9.8	14.7	8.0	41.9	17.8	2.3
10-Manufacture of food products	19.7	13.4	6.3	2.1	14.4	13.9	8.7	5.8	23.1	19.8	1.2
29-Manufacture of motor vehicles	19.6	11.9	7.7	1.5	14.0	11.6	9.3	7.4	23.4	19.0	1.2
82-Clerical services, administrative support and other business services	19.1	10.0	9.1	1.1	12.1	10.1	11.6	9.0	23.6	19.1	1.2
15-Preparation of leather and manufacture of leather goods, travel items and footwear	19.0	11.5	7.5	1.5	14.3	11.8	11.7	7.0	26.0	18.8	1.4
65-Insurance and reinsurance, supplementary pension and health plans	18.4	10.4	8.0	1.3	9.9	10.9	5.5	9.0	15.4	20.0	0.8
22-Manufacture of rubber and plastic	18.1	11.6	6.5	1.8	14.2	11.4	8.6	6.2	22.7	17.6	1.3
31-Manufacture of furniture	18.0	11.2	6.8	1.7	16.8	10.2	10.4	6.1	27.2	16.3	1.7
96-Other personal service activities	17.9	8.9	9.0	1.0	15.4	6.9	13.9	7.7	29.3	14.6	2.0
Brazil	10.9	5.9	5.0	1.2	7.3	5.6	6.9	4.5	14.2	10.1	1.4

NCEA-division: National Classification of Economic Activity, division level; PR: prevalence ratio. Number of workers obtained from the National Social Information Database. Number of benefits obtained in the Unified System of Benefits.

Table 2. Prevalence, prevalence ratio and duration of sickness benefits due to synovitis and tenosynovitis according to the National Classification of Economic Activities-division, type of benefit and gender. Brazil, 2008.

NCEA-division	B91 prevalence		B31 prevalence		PR	Quartile
	Female	Male	Female	Male	Female/Male	2 [1;3]
37-Sewage	78.7	22.2	95.8	15.8	4.6	57 [38;83]
60-Activities related to radio and TV	70.6	8.6	51.8	6.4	8.1	51 [31;77]
26-Manufacture of computer, electronic and optical products	50.2	7.3	25.9	5.0	6.2	63 [44;89]
64-Activities of financial services	35.0	17.2	10.4	6.1	1.9	70 [45;108]
62-Activities of information technology services	33.6	4.4	19.8	2.9	7.3	51 [34;76]
30-Manufacture of other transport equipment except motor vehicles	19.7	10.9	16.6	10.8	1.7	54 [39;84]
87-Activities of home care to human health	12.3	2.4	18.5	4.3	4.6	57 [38;81]
27 Manufacture of electrical machinery and devices	38.6	6.3	17.4	5.3	4.8	54 [35;84]
14-Manufacture of apparel and accessories	17.8	3.5	11.8	2.8	4.8	56 [37;87]
63-Activities of provision of information services	25.5	4.3	11.6	3.0	5.1	58 [33;83]
73-Advertising and market research	19.9	4.5	13.3	4.5	3.7	57 [39;82]
10-Manufacture of food products	33.9	6.7	13.4	4.0	4.4	51 [33;79]
29-Manufacture of motor vehicles	21.8	10.6	11.7	7.3	1.9	51 [31;80]
82-Clerical services, administrative support and other business services	16.9	3.7	14.8	3.9	4.2	53 [34;79]
15-Preparation of leather and manufacture of leather goods, travel items and footwear	19.7	5.5	12.6	3.7	3.5	48 [32;76]
65-Insurance and reinsurance, supplementary pension and health plans	14.7	4.3	10.6	4.3	2.9	57 [36;82]
22-Manufacture of rubber and plastic	26.9	6.6	14.4	4.0	3.9	61 [39;89]
31-Manufacture of furniture	31.4	6.6	14.9	5.1	4.0	56 [36;76]
96-Other personal service activities	13.0	3.3	13.0	3.7	3.7	55 [41;86]
Brazil	11.0	3.1	9.0	2.9	3.3	56 [36;85]

NCEA-division: National Classification of Economic Activity, division level; PR: prevalence ratio. Number of workers obtained from the National Social Information Database. Number of benefits obtained in the Unified System of Benefits.



lasted less than 36 days, whereas 25% larger benefits lasted over 85 days. The NCEA 64-Financial services division had the highest median duration (70 days).

For the individual analysis of NCEA-class, 16 economic activities (Table 3) were selected, with the prevalence and PR of SB due to synovitis and tenosynovitis according to the type of benefit and age. The NCEA, 4757-Retailer specialized in parts and accessories for household electronics, except computers and communication devices (186.8) and 4222-Construction of water supply and sewage networks (175.2) had the higher rates of prevalence and likelihood for incapacity to work due to synovitis and tenosynovitis when compared to the group of workers in Brazil. The accident benefit type predominated in most industries. The NCEA-class 6422-Multiple banks with commercial portfolio (PR = 3.8) and 1011-Slaughtering and manufacturing of meat products (PR = 3.3) had the highest rates of workplace accidents.

As for age groups, workers aged 40 or more years had the highest rates of inability for synovitis and tenosynovitis in most of the NCEA. In this context, the NCEA 4757-Retailer specialized in parts and accessories had the highest probability in the age group  $\geq 40$  years (PR = 3.4), in contrast with the NCEA 6010-Activities related to radio, which had the lowest probability (0.3).

The analysis of the influence of gender on the prevalence of SB for synovitis and tenosynovitis (Table 4) in NCEA-class was similar to the NCEA-division, in which a high rate of females was observed throughout the NCEA; however, with great variability among types of benefits. The NCEA-class 6422-Multiple banks with commercial portfolio had the highest median duration (73 days).

## DISCUSSION

This study showed that the prevalence SB for synovitis and tenosynovitis in Brazil was 10.9/10,000 employments, with a median duration of 56 days. These rates represented 2.6% of all cases of SB, with 11.7% of those resulting from musculoskeletal and ligamentous disorders recorded in Brazil in 2008<sup>2</sup>. In relation to Brazil in 2008, synovitis and tenosynovitis was the second most common type among all musculoskeletal disorders (second only to back problems)<sup>2</sup>, with median duration period of 62 days. Comparisons of these rates with those presented by the various countries becomes a challenge, since the studies found treated generically occupational chronic diseases<sup>7</sup> or musculoskeletal disorders of the upper limbs<sup>8</sup>, or those related to specific activities such as industry and services, such as sewing, clerical work<sup>6</sup> and manufacturing of automobiles<sup>11</sup>.

Considering the area of capital-labor relations, some studies pointed to the occurrence of underreporting of worker health problems<sup>2-5,7,10</sup>, especially those related to work<sup>8,10</sup>.

Table 3. Prevalence, and prevalence ratio of sickness benefits due to synovitis and tenosynovitis according to the National Classification of Economic Activities-class, type of benefit and age. Brazil, 2008.

NCEA-division	Total	B91 prevalence		B31 prevalence			PR	Prevalence		PR	
	prevalence	≥ 40	< 40	Total	≥ 40	< 40	Total	B91/B31	≥ 40	< 40	≥ 40/< 40
4757-Retailer specialized in parts and accessories for household electronics, except computers and communication devices	186.8	189.0	61.4	81.2	267.4	74.7	105.5	0.8	456.4	136.1	3.4
4222-Construction of water supply and sewage networks	175.2	106.8	67.9	79.3	153.2	67.9	95.9	0.8	259.9	135.7	1.9
4741-Retailer of building materials	101.7	104.4	31.9	43.9	121.5	45.9	57.8	0.8	225.9	77.8	2.9
6010-Activities related to radio	96.0	32.3	74.1	56.0	13.8	58.8	40.0	1.4	46.1	132.9	0.3
2640-Manufacture of reception, playback, recording and audio and video amplification apparatus	75.0	72.0	50.0	50.9	19.4	26.7	24.1	2.1	91.4	76.7	1.2
6209-Technical support, maintenance and other services in information technology	61.1	16.0	44.8	38.0	9.9	27.2	23.1	1.6	25.8	72.0	0.4
7810-Selection and agency of labor	55.9	33.4	26.3	27.0	47.8	23.6	28.9	0.9	81.2	49.9	1.6
1011-Slaughtering and manufacturing of meat products	49.9	37.3	40.2	38.2	13.0	11.9	11.7	3.3	50.3	52.1	1.0
8711-Activities of assistance to the elderly, disabled, convalescent and immunocompromised, infrastructure and support provided to patients in private and collective homes	48.7	25.2	12.6	18.1	47.3	17.1	30.6	0.6	72.5	29.7	2.4
6422-Multiple banks with commercial portfolio	46.4	65.1	22.6	36.7	14.6	7.5	9.8	3.8	79.7	30.1	2.6
1411-Manufacturing of clothing articles and accessories (underwear)	45.5	33.1	25.8	26.0	27.7	18.5	19.5	1.3	60.8	44.2	1.4
8299-Activities of service provided mainly to businesses other than administrative, photocopying and teleservice	36.2	16.6	20.6	18.8	16.3	18.7	17.4	1.1	32.9	39.2	0.8
2910-Manufacture of cars, trucks and utilities	35.2	24.9	19.6	20.9	15.9	13.9	14.3	1.5	40.8	33.5	1.2
2063-Manufacture of cosmetics, perfumery and toiletries	31.8	36.0	21.0	23.4	6.4	9.3	8.4	2.8	42.5	30.3	1.4
2610-Manufacture of electronic components	31.6	14.7	22.3	20.0	18.0	11.0	11.5	1.7	32.7	33.3	1.0
4722-Retailer of meats and fish, butchers and fishmongers	30.7	22.2	12.6	14.4	30.1	12.6	16.3	0.9	52.3	25.1	2.1
Brazil	10.9	7.3	5.6	5.9	6.9	4.5	5.0	1.2	14.2	10.1	1.4

NCEA-class: National Classification of Economic Activity.

Sources: National Social Information Database (CNIS) and Unified System of Benefits (SUB).

Table 4. Prevalence, prevalence ratio and duration of sickness benefits due to synovitis and tenosynovitis according to the National Classification of Economic Activities-class, type of benefit and gender. Brazil, 2008.

NCEA-class	Female	Male	PR	B91 prevalence		B31 prevalence		Quartiles
	prevalence	prevalence	Female/ Male	Female	Male	Female	Male	2 [1; 3]
4757-Retailer specialized in parts and accessories for household electronics, except computers and communication devices	421.2	91.8	4.6	190.5	36.5	230.7	55.3	62 [36;91]
4222-Construction of water supply and sewage networks	197.0	179.4	1.1	98.5	80.0	98.5	99.5	57 [34;89]
4741-Retailer of building materials	182.2	81.7	2.2	74.7	36.5	107.5	45.2	46 [30;74]
6010-Activities related to radio	269.2	25.0	10.8	156.0	15.1	113.3	9.9	51 [31;78]
2640-Manufacture of reception, playback, recording and audio and video amplification apparatus	137.1	34.4	4.0	92.8	23.5	44.2	10.9	62 [42;83]
6209-Technical support, maintenance and other services in information technology	128.6	16.4	7.8	80.4	9.8	48.2	6.6	52 [34;75]
7810-Selection and agency of labor	91.8	33.1	2.8	45.0	15.4	46.8	17.6	59 [37;90]
1011-Slaughtering and manufacturing of meat products	107.2	31.4	3.4	84.9	22.9	22.3	8.4	48 [29;77]
8711-Activities of assistance to the elderly, disabled, convalescent and immunocompromised, infrastructure and support provided to patients in private and collective homes	57.5	22.2	2.6	22.4	4.4	35.1	17.8	62 [43;92]
6422-Multiple banks with commercial portfolio	60.3	34.6	1.7	48.3	26.6	12.0	8.0	73 [46;111]
1411-Manufacturing of clothing articles and accessories (underwear)	58.6	7.5	7.9	33.9	2.5	24.7	5.0	51 [38;82]
8299-Activities of service provided mainly to businesses other than administrative, photocopying and teleservice	76.2	11.7	6.5	40.3	5.6	35.9	6.1	53 [33;79]
2910-Manufacture of cars, trucks and utilities	56.1	34.1	1.6	35.8	20.0	20.3	14.1	47 [29;77]
2063-Manufacture of cosmetics, perfumery and toiletries	58.1	6.7	8.7	43.2	4.4	14.9	2.2	61 [40;98]
2610-Manufacture of electronic components	59.7	6.5	9.2	38.7	3.3	21.0	3.3	62 [44;88]
4722-Retailer of meats and fish, butchers and fishmongers	77.2	16.0	4.8	35.9	7.6	41.3	8.4	53 [37;80]
Brazil	20.0	6.0	3.3	11.0	3.1	9.0	2.9	56 [36;85]

NCEA-class: National Classification of Economic Activity.

Sources: National Social Information Database (CNIS) and Unified System of Benefits (SUB).

Report by the American Congress reveals that, in the period 1995-2001, the number of cases of musculoskeletal disorders was six times greater than reported to the Bureau of Labor Statistics Survey of Occupational Injuries and Illnesses (SOII)<sup>3</sup>. Despite the differences of existing social security coverage systems between the United States and Brazil, several factors associated with underreporting in that country can be extended to the Brazilian context, such as socioeconomic filters<sup>2,4,5,7,10</sup>.

The establishment of the Technical Epidemiological Social Security Technical Nexus (NTEP) in Brazil in 2007<sup>17</sup> helped to correct, on a large scale, the issue of underreporting of work-disease relationship. However, companies have observed indicatives of establishment of measures to contribute to the pension underuse, and so companies would get a more favorable relaxation of occupational accident insurance, regulated by the Accident Prevention Factor (FAP)<sup>4,5</sup>. Even in a context of possible underreporting, in 2008, the majority of SB due to synovitis and tenosynovitis were due to work accidents.

To better understand the possible causes and determinants of prevalence and duration of synovitis and tenosynovitis, one needs to consider the occupational, personal (gender, age and psychological profile) and socioeconomic factors<sup>8-10</sup>. In relation to occupational factors, it is likely that the economic activities analyzed in this study exhibit elevated risks related to work organization, inadequate furniture for the tasks undertaken by the employee or the relationship between co-workers or supervisors.

The higher prevalence of incapacity for work presented in NCEA-division 37-Sewage can stem from both occupational and socioeconomic factors. Due to this NCEA-division consisting mostly of mixed enterprises, the workers feel more freedom to request SB when sick without fear of dismissal after their return to work<sup>5</sup>. On the other hand, in the more specific context (NCEA-class), in essentially private activities, such as NCEA-class 4757-Retailer specialized in parts, accessories and electronic devices, the higher prevalence occurs predominantly due to occupational factors. In these cases, it is common, due to limitations imposed by the health problem, for the employee to be away from work, because it is impossible not to do so.

The high prevalence of accident SB in NCEA-division 64-Activity of financial services and 10-Manufacture of food products, as well as the NCEA-class 6422-Multiple banks with commercial portfolio and 1011-Slaughtering and manufacturing of meat products can be justified by the recognition of the high physical and psychological demands in the labor environment. The structural and technological changes in banking in recent decades have increased the physical (local) and cognitive demands, as well as the pressure to fulfill goals. These factors may contribute to the development/worsening of specific clinical conditions<sup>2,10</sup>.

The high PR of accidents in NCEA-division 10-Manufacture of food products and class 1011-Slaughtering and manufacturing of meat products derives largely from the recognition of overloading of the muscles and tendons imposed by the need to stabilize the upper limbs while hands exert force and repetitiveness<sup>18</sup>.

The high prevalence of SB identified among workers with more than 40 years can be explained in part by decreased muscle strength and the loss of flexibility and agility common in people with increasing age, as in certain health problems, especially chronic ones<sup>15</sup>. Some studies show that age delays the recovery of an injury<sup>6,7,15,16</sup>. Data from this study suggest an association between age and the duration of SB. The longer duration found in older workers, both in NCEA-division 64-Activities of financial services and in NCEA-class 6422-Multiple banks with commercial portfolio, which also presented a higher prevalence of SB in older workers, strengthen the contribution of age to these results, since these NCEA classes divisions also had the highest prevalence of SB in this age group.

The high ratio of females found in this study may be related to several factors, such as double shifts, differences in biological and subjective responses and characteristics of repetitive and monotonous work<sup>6,8,19,20</sup>. The greater occurrence of SB in young women in NCEA 60-Activities related to radio and TV and 6010-Activities related to radio may be associated with the presence of risks arising from the execution of highly repetitive precision tasks, requiring minimization of errors and work in shifts that favor working on stereotyped postures<sup>2</sup>. Moreover, the workers in this activity receive better wages than the average worker, which allows greater access to health services.

This study presents particularities and limitations that must be considered for proper understanding of its results. The ICD-10 M65, used as the study parameter, can refer both to synovitis and tenosynovitis of upper and lower limbs. Therefore, there might have been an excess in estimations when compared to studies limited to upper limbs.

Data from this study refer to SB granted to workers employed, excluding individual taxpayers, domestic workers, special insured workers, optional, public servants and informal workers. One has to consider the age of the study population, workers employed over 16 years old. Thus, these results should not be extrapolated to the general population.

One of the strengths of the study is the representativeness of the study population, considering that SUB is one of the largest databases of social security in the world under a single administration. This factor brings advantages to the homogeneity of the information, since the granting of benefits follows standardized procedures and protocols that enhance the consistency and reliability of the information.

## CONCLUSION

In short, the prevalence and duration of SB due to synovitis and tenosynovitis are associated with the branch of economic activity, with females, advancing age and the type of benefit. These data suggest the need to further investigate the relationship of the branch of economic activity in the inability to work process.

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