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EPIDEMIOLOGY OF RSI / WRMD IN NORTHWEST CEARÁ, 2009 TO 2016

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ABSTRACT

Objective: To describe the epidemiology of Repetitive Strain Injury and Work-Related Musculoskeletal Diseases (RSI/ WRMD) in Northwestern Ceará. **Method:** A cross - sectional, descriptive and retrospective epidemiological study conducted at the Center of Reference in Occupational Health (COH), Sobral – Ceará, Brazil, with 404 cases of RSI / WRMD, reported in SINAN, between January 1, 2009 and 31 December of 2016. **Results:** 78.7% of the subjects are women; 78% are in the age group of 20 to 59 years; 78.9% are race / color self-declared brown / black; 47.5% are polyvalent workers in the manufacture of footwear; 78.3% registered employees; 64% consider the environment stressful; 94.3% perform repetitive movements; 96% referred pain, followed by exercise limitation (87.6%), strength decrease (82.9%), and movement (81%); 61.9% had some type of temporary incapacity; and in 25.8% of the cases, the risk factor was withdrawn. In most cases there were no changes in work organization (68%). There was also a significant association between movement limitation and the age group of 50 to 79 years (p 0.04). **Conclusion:** The process of alienated work, subjects the worker to work overload, which over time leads to illness, such as the development of RSI / WRMD. **Descriptors:** Descriptive epidemiology; Worker's health; Accidents of Work; Accumulated Trauma Disorders.

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INTRODUCTION

In a historical context of determination or social domination, the health-illness-care-work process presents a close relationship with the conditions (structure and tools) of how the work occurs, with the process of subjectivation and the level of autonomy of the worker, flexibilization of work organization and the political and economic system to which it is inserted / submitted. The worker in the current conjuncture, due to the strengthening of Capitalism and the consolidation of managerial models, such as Taylorism and Fordism, or the current flexible capital accumulation, suffers from the process of expropriation of his knowledge, which has made his process increasingly alienated because of over-control. Allied to this, still has to fulfill a high workload in unhealthy places, often in a precarious way, developing repetitive actions, which contributes to their suffering and consequent illness. This situation, according to Dejours (2013), when associated with the monotony of repetitive work and the lack of space for the exercise of creativity by the worker, leads them to develop defense mechanisms, among them self-acceleration, which causes them to cease thinking and, consequently, the awareness of discomfort, increasing the pace, causing

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pathogenic suffering and, in the long run, bringing complications to their health. The world of work, in times of globalization of the economy and neoliberal policies, is reflected in workers' daily lives, generating significant changes in their physical and mental health, especially those related to musculoskeletal injuries and mental disorders, leading to work-related illness, resulting from metamorphosis in the process of capital production, technological evolution and the management model that directly influence the work process (Merlo and Lapis, 2007; Antunes and Praun, 2015). This situation is exacerbated by the increasing requirements, demands and routines of the labor environment, the process of productive restructuring, the intense competition between companies, the flexibilization of work, with the outsourcing and loss of rights and guarantees historically won by the workers (Merlo and Lapis, 2007; Chaves *et al*., 2003). However, "accidents at work and manifestations of sickness with a work link are not new phenomena, but processes as old as the submission of work to different forms of exploitation" (Antunes and Praun, 2015). In Brazil, in the 1990s, concomitant with classic work-related illnesses and diseases, repetitive stress injuries (RSI) / Work-Related Musculoskeletal Disorders (WRMD) became more visible among workers, representing, in our days, a serious problem of public and socioeconomic health, due to the magnitude and the amplitude, with an extensive population affected and of increasing incidence (Medina and Maia, 2016) The RSI / WRMD epidemic affects not only Brazil, but also England, the Scandinavian countries, Japan, the United States of America and Australia, affecting about 30% of the world population over 25 years old . In Brazil, in 2010, the cases of RSI / WRMD had an incidence of 10.8% of the total cases of work-related diseases. Its high world-wide prevalence is due to the transformations of work, due to the demands of the achievement of goals and productivity, among others, without taking into account the physical and psychosocial limits of each worker (Brasil, 2012a; Saldanha *et al*., 2013). RSI / WRMD result from excessive use of the musculoskeletal system during labor, causes affections of muscles, tendons, synoviums (coatings of the joints), nerves, fascia (wraps of muscles) and ligaments, isolated or combined, with or without the degeneration of tissues. The clinical syndrome is characterized by the occurrence of concomitant symptoms, such as pain, paresthesia, feeling of heaviness and fatigue, mainly in the upper limbs, lower limbs and joints, which are often causes of temporary or permanent incapacities of work. In view of the epidemiological situation of RSI / WRMD and in view of it regional magnitude, this research aims to describe the epidemiology of RSI / WRMD in Northwest of Ceará.

MATERIALS AND METHODS

A cross - sectional, descriptive and retrospective epidemiological study developed at the Center for Occupational Health (COH) in Sobral - Ceará, during the period from May to October 2017, with cases of work - related injuries (RSI / WRMD) reported in the National System of Notifiable Diseases (SINAN), between January 1, 2009 and December 31, 2016. COH, as a supportive scenario for this study, has among its many functions the responsibility to provide matrix support for the development of worker health actions in Primary Health Care (PHC), in the specialized, urgency and emergency services, as well as in the promotion and surveillance in the various points of the Health Care Network (Brasil, 2012b). Ceará has nine COH, one state coverage and eight with regional coverage, located in Fortaleza, Sobral, Horizonte, Juazeiro do Norte, Tianguá, Quixeramobim, Aracati and Limoeiro do Norte. The COH of Sobral, based on the organizational logic of the State Attention Network, covers 47 municipalities of the Sobral Health Macro-region, belonging to the Microregions of Health of Acaraú, Camocim, Crateús and Sobral, totaling 1,299,780 inhabitants; giving technical support to SUS actions, whether they are prevention and surveillance of risks, diseases, injuries and deaths or health promotion, diagnosis, treatment and rehabilitation of urban and rural workers (Brasil, 2012b). In order to collect the data, we initially sought the direction of COH, signing the Term of Faithful Depositary. Secondary data were then extracted from SINAN of the COH's database and organized using spreadsheets generated by the TabWin32® program version 3.6, and finally exported to the latest version of Excel®. The duplicate case records of the same event were eliminated, as well as the inconsistencies in the database considered, such as typing errors, resulting in a total of 404 cases of RSI / WMSD and were distributed by year of occurrence: 2009-3 (0.75%); 2010 - 8 (2%); 2011 - 68 (16.8%), 2012 - 50 (12.3%); 2013 - 37 (9.2%), 2014 - 117 (29%); 2015 - 84 (20.7%); and 2016-37 (9.2%). The results were systematized according to the categories of variables selected in the "Work-Related Disease Investigation Form: RSI / WRMD " of the Ministry of Health (Brasil, 2006) namely: gender, age, race / color, education, occupation workers from the categories of the Brazilian Occupational Classification (BOC), labor market situation, signs and symptoms, workplace environment, dismissal, conduct and evolution of the case. Data are presented in tabular form, with calculations of absolute numbers and simple percent frequencies of the events studied, with stratification by gender and / or age. In order to verify the association between the variables, the Chi-square statistical test was used, for which SPSS® software version 2.0 was used, with a significance level of $p < 0.05$ for rejection of the non-association hypothesis. The sub notification of each variable was excluded from the analyzes (ignored and white data). During the development of the study, the ethical and legal aspects of the research were observed in accordance with Resolution No. 466/2012 of the National Health Council (CNS), with protocol submitted to the Research Ethics Committee (CEP) of the Vale do Estado State University Vale do Acaraú (UVA) under CAE No. 47808515.4.0000.5053, this being approved by the opinion Nº 1.344.066. It should be noted that this study is part of a larger study entitled "Disease, Labor and Work in Ceará's Semi-arid zone: assessment of the profile of accidents and mortality due to work-related causes in the Northeast of Ceará."

RESULTS AND DISCUSSION

Table 1 shows the sociodemographic data of subjects with RSI / WMSD. The study shows the predominance of cases of RSI / WRMD among women, 78.7% (318); in the age group of 20 to 59 years, 78% (315). Although the statistical analysis did not show a significant association between age and gender, X2 (2) = 5.01, (p 0.08), indicating that the predominance in women aged 20 to 59 years may not occur, considering the entire population. Most of the subjects are race / color self-declared brown / black, 78.9% (319). Regarding schooling there is a significant contingent who attended or is in high school, 31.2% (126). The study also shows two adolescents and four elderly people of both genders.

Table 1. Description of sociodemographic data with work-related pain (RSI / WRMD). COH Regional of Sobral - Ceará, Brazil, 2009 to 2016; total number with stratification by gender and age. (n = 404)

Categories			Gender				Age group (years)					
			♂		♀		15 a 19		20 a 59		60 and more	
	N	%	N	%	N	%	N	%	N	%	N	%
Gender												
Female	318	78,7					1	0,25	315	78,0	2	0,5
Male	86	21,3					1	0,25	83	20,5	2	0,5
Total	404	100,0					2	0,50	398	98,5	4	1,0
Age group (years)												
15 a 19	2	0,5	1	0,25	1	0,25						
20 a 29	102	25,3	20	5,0	82	20,3						
30 a 39	134	33,1	24	5,9	110	27,2						
40 a 49	111	27,5	23	5,7	88	21,8						
50 a 59	51	12,6	16	4,0	35	8,6						
60 e mais	4	1,0	2	0,5	2	0,5						
Total	404	100,0	86	21,3	318	78,7						
Race/Colo*												
Brown	286	70,7					1	0,25	283	70,0	2	0,5
White	37	9,2					1	0,25	36	9,0	0	0,0
Black	33	8,2					0	0,0	33	8,2	0	0,0
Yellow	7	1,7					0	0,0	6	1,4	1	0,25
Indígenous	2	0,5					0	0,0	2	0,5	0	0,0
Ign./White	39	9,7					0	0,0	38	9,4	1	0,25
Total	404	100,0					2	0,50	398	98,5	4	1,0
Schooling*												
Incomplete primary education	58	14,3					0	0,0	58	14,3	0	0,0
Complete primary education	34	8,4					0	0,0	34	8,4	0	0,0
Incomplete high school	22	5,5					0	0,0	22	5,5	0	0,0
Hhigh school ompleted	104	25,7					1	0,25	103	25,5	0	0,0
Incomplete higher education	9	2,2					0	0,0	9	2,2	0	0,0
Complete higher education	17	4,2					0	0,0	17	4,2	0	0,0
Illiterate	3	0,8					0	0,0	2	0,5	1	0,25
Ign./White	157	38,9					1	0,25	153	37,9	3	0,75
TOTAL	404	100,0					2	0,5	398	98,5	4	1,0

Source: Sobral. Secretariat of Health. Reference Center on Occupational Health (COH). Information System of Reportable Diseases (SINAN); 2017. * = the requirements of the chi-square were not satisfied for analysis

Studies carried out in 2013 in Bahia with bankers15 and in the COH of Piracicaba - SP, between 1997 and 2007,16 pointed out, respectively, that 67% and 69.2% of subjects presenting with RSI / WRMD symptoms were women. Authors[17] point out that work accidents in general are related to the male gender, while the RSI / WRMD, mental health and moral harassment, to the female gender. As the labor market today is very diversified, and in some cases, no distinction of what is productive process of man or woman, this ends up assuming many tasks that cause greater impact on their musculoskeletal system, becoming more exposed and vulnerable to diseases. It is also worth noting that women in their work spaces are almost always exploited to their limits, as well as having a second working day when they arrive at home, with the domestic chores of home care, food, and family. The research indicates that young adults, 20 to 29 years old, represent 25.3% (102) of the subjects in the sample. This situation leads us to two reflections: a) workers so young that they have just entered the labor market, already manifest disease because of the conditions to which they are subjected in their work environments; b) young workers, at the height of their vitality, may temporarily or permanently withdraw from the labor market, necessitating recourse to Social Security, if they are not removed from the current work environment and the agent of risk, as well as if measures of individual and collective protection are not adopted. A similar reflection can be sent to the two adolescents mentioned in this study who already have signs and symptoms of RSI / WRMD, as the condition of worker will directly affect growth and development, as well as their social condition, because they are victims of child labor. Child labor, as a social condition, exposes and places the adolescent in a system of vulnerability, be it social, familiar, cultural, biological, among others; such a system may provide a greater risk of morbidity and mortality, related to working conditions or in an association with the growth and development of this age group. It should be noted that work accidents with children and adolescents, according to the Ministry of Health, are those that affect workers under the age of 18 at the time of their occurrence (Brasil, 2012b). In the case of accidents that occur with adolescents aged 16 or more, it is mandatory to investigate only fatal or serious cases (Brasil, 2006). Another important age group is the one that goes from 30 to 49 years old, in which there is a predominance of 60.6% (245) subjects affected by RSI / WRMD, similar to that found in a study in the COH of Piracicaba - SP, 67.62% (Negri *et al*., 2014). Table 2 presents the description of occupations and the situation of workers in the labor market. Table 2 shows a predominance in relation to the occupation of polyvalent workers in shoemaking 47.5% (192). The area covered by COH in this study has two footwear poles, with an important local productive activity, employing thousands of workers, staggered in three shifts / periods. In the case of Sobral, designated as a footwear polo city, and the strength of the economy impacted by the presence of such companies, for employing around 15 thousand workers (Jornal Diário do Nordeste, Caderno Regional, Ceará, Brazil, 2017). During work in the production of footwear, workers perform activities in several stages of the production process, be it in the gluing, sewing, painting, conference and packaging, almost always in front of mats, for hours, carrying out a repetitive work process, often under strong pressure of productivity and not always with periods of rest.

Table 2. Distribution of RSI / WRMD cases by occupation and labor market situation. COH Regional of Sobral - Ceará, Brazil, 2009 to 2016; total number with stratification by age. (n = 404)

Categories			Age group (years)					
			15 a 19		20 a 59		60 and more	
	N	%	N	%	N	%	N	%
Ocupation*								
Multi-purpose shoemaker	192	47,5	0	0,0	191	47,3	1	0,25
Domestic servant, janitor	35	8,7	0	0,0	35	8,7	0	0,0
General cook	16	4,0	0	0,0	16	4,0	0	0,0
Machine Operator	12	3,0	0	0,0	12	3,0	0	0,0
Nursing Assistant	12	3,0	0	0,0	12	3,0	0	0,0
Charger (warehouse / land transport vehicles)	11	2,7	0	0,0	11	2,7	0	0,0
Office Assistant in general	11	2,7	0	0,0	11	2,7	0	0,0
Seamstress to order / repair / batch-making	10	2,4	0	0,0	10	2,4	0	0,0
Agricultural workers in general	9	2,2	0	0,0	8	2,0	1	0,25
Manicure	7	1,7	0	0,0	7	1,7	0	0,0
Teacher of basic / university education	7	1,7	0	0,0	7	1,7	0	0,0
Construction worker	8	2,0	0	0,0	7	1,7	1	0,25
Shoe sewing, using machine	6	1,5	0	0,0	6	1,5	0	0,0
Digitizer	6	1,5	0	0,0	6	1,5	0	0,0
Hairdresser	5	1,2	0	0,0	5	1,2	0	0,0
Vehicle driver	7	1,7	1	0,25	5	1,2	1	0,25
Agent to combat endemic diseases	4	1,0	0	0,0	4	1,0	0	0,0
Nurse	4	1,0	0	0,0	4	1,0	0	0,0
Surgeon-Dentist	3	0,8	0	0,0	3	0,8	0	0,0
Carpenter / Joiner	3	0,8	0	0,0	3	0,8	0	0,0
Others	34	8,4	1	0,25	33	8,1	0	0,0
Ign./White	2	0,5	0	0,0	2	0,5	0	0,0
Total	404	100,0	2	0,50	398	98,5	4	1,0
Situation in the Labor Market *								
Registered employee	316	78,3	2	0,5	312	77,3	2	0,5
Autonomous	26	6,4	0	0	24	5,9	2	0,5
Statutory Public Servant	21	5,2	0	0	21	5,2	0	0
Unregistered Employee	13	3,2	0	0	13	3,2	0	0
Public Server under CLT	5	1,2	0	0	5	1,2	0	0
Unemployed	5	1,2	0	0	5	1,2	0	0
Temporary worker	2	0,5	0	0	2	0,5	0	0
Others	5	1,3	0	0	5	1,3	0	0
Ign./White	11	2,7	0	0	11	2,7	0	0
TOTAL	404	100,00	2	0,5	398	98,5	4	1,0

Source: Sobral. Secretariat of Health. Reference Center on Occupational Health (COH) Information System of Reportable Diseases (SINAN); 2017.13 * = the requirements of the chi-square were not satisfied for analysis

The production stages established in the mats add practices of the Taylorist model, and also Fordist, in which the agents work under direct supervision, repetition of movements and requirement of accomplishment of goals. The work in the footwear industry follows the systematic operationalization of the division of labor and its organization based on the monotarefa, aiming at facilitated automation and the reduction of unproductive work (Ramos *et al*., 2010). In the case of the Sobral industry we know of two rest periods of 10 minutes each. A study in the Occupational Diseases Outpatient Clinic of the Porto Alegre Hospital of Clinics (ADT-HCPA), which welcomes a great demand of workers with RSI / WRMD, coming from the footwear industry of the Vale dos Sinos region, with complaints of musculoskeletal pain, shows that workers carry negative symbologies and the process of illness causes a break in their life histories. All these impacts generate feedback for the lives of those involved in the process (Ramos *et al*., 2010). RSI / WRMD are occupational diseases socially produced by the organizational determinants of work and production, associated, mainly, with biomechanical risks factors such as physical effort, static postures, accelerated gestures and repetitive movements, it is to these risks that polyvalent workers of footwear manufactures are continually exposed, as well as psychosocial risks due to work intensity, pressure for production goals, and cognitive fatigue (Ramos *et al*., 2010).

Another significant finding relates to the number of domestic servants / janitors / 8.7% (35). Authors point out that a large part of the domestic work a large part of the domestic work has informal contract, which contributes even more to overload and stress, reducing the availability of time for rest and care (Negri *et al*., 2014). As for the situation in the labor market, 78.3% (316) of the workers in this study are registered, followed by self - employed workers (6.4% - 26), a statutory public servant (5.2% - 21), among others. In the study by Viegas and Almeida21, 82% were workers with a formal employment relationship. The authors' findings and this study show that official statistics on work-related injuries in Brazil have benefited formal workers, to the detriment of informal workers, because the latter are not always released to seek health services, in which case they present their work-related complaints, or to comply with labor obligations, such as the presentation of a medical certificate, among others; despite the National Policy on Workers Health seeking to assist all, regardless of their form of insertion in the labor market and their employment relationship (Brasil, 2012b). Table 3 shows the signs and symptoms of workers with a diagnosis of RSI / WRMD. Concerning the symptomatology presented with the characteristics of RSI / WRMD, pain is present in 96% (387), followed by exercise limitation (87.6% - 354), decreased strength (82.9% - 335) and movements (81% - 327), sensitivity change (55.7% - 225). In a national study, the following results were identified: 80.6% reported pain; 66.8% limitation of the

Table 3. Distribution of RSI / WRMD cases, according to signs and symptoms. COH Regional of Sobral - Ceará, Brazil, 2009 to 2016; total number with stratification by age. (n = 404)

Categories			Age Group (years)						X^2	Gl	Value-p
			15 a 19		20 a 59		60 e +				
	N				N	%	N	%			
Presence of Pain									*	*	*
Yes	387	96,0	2	0,5	381	94,3	4	1,0			
No	4	1,0	0	0,0	4	1,0	0	0,0			
Ign./White	13	3,0	0	0,0	13	3,2	0	0,0			
Total	404	100,0	2	0,5	398	98,5	4	1,0			
Flogistics Signs									0,77	2	0,67
Yes	128	31,8	1	0,25	126	31,2	1	0,25			
No	223	55,2	1	0,25	219	54,2	3	0,75			
Ign./White	53	13,0	0	0,0	53	13,1	0	0,0			
Total	404	100,0	2	0,50	398	98,5	4	1,0			
Sensitivity Changes									0,48	2	0,78
Yes	225	55,7	1	0,25	222	55,0	2	0,5			
No	146	36,1	1	0,25	143	35,4	2	0,5			
Ign./White	33	8,2	0	0,0	33	8,1	0	0,0			
Total	404	100,0	2	0,50	398	98,5	4	1,0			
Motion Limitation									6,29	2	0,04**
Yes	344	85,1	2	0,5	338	83,6	4	1,0			
No	46	11,4	0	0,0	46	11,4	0	0,0			
Ign./White	14	3,5	0	0,0	14	3,5	0	0,0			
Total	404	100,0	2	0,5	398	98,5	4	1,0			
Exercise Limitation									*	*	*
Yes	354	87,6	2	0,5	349	86,4	3	0,75			
No	37	9,2	0	0,0	36	8,9	1	0,25			
Ign./White	13	3,2	0	0,0	13	3,2	0	0,0			
Total	404	100,0	2	0,5	398	98,5	4	1,0			
Decreased Moviment									2,35	2	0,30
Yes	327	81,0	2	0,5	321	79,5	4	1,0			
No	51	12,6	0	0,0	51	12,6	0	0,0			
Ign./White	26	6,4	0	0,0	26	6,4	0	0,0			
Total	404	100,0	2	0,5	398	98,5	4	1,0			
Decrease in Strength									0,85	2	0,65
Yes	335	82,9	2	0,5	329	81,4	4	1,0			
No	46	11,4	0	0,0	46	11,4	0	0,0			
Ign./White	23	5,7	0	0,0	23	5,7	0	0,0			
TOTAL	404	100,0	2	0,5	398	98,5	4	1,0			

Source: Sobral. Secretariat of Health. Reference Center on Occupational Health (COH). Information System of Reportable Diseases (SINAN); 2017.
* = the requirements of the chi-square were not satisfied for analysis.
** = statistically significant association.

exercise; 45.9% decrease in strength; 36.3% change in sensitivity (Viegas and Almeida, 2016). It is noted that pain is also observed in studies developed in Rio Grande do Norte (Pandolphi and Costa, 2016), in São Paulo (Negri *et al*., 2014) and in research carried out by the Ministry of Health regarding technical standards and manuals on pain related to work. The prevalence of pain is due to the fact that it is the result of muscular injuries, resulting from tasks that require repetitiveness and effort, as is the case in most of the reports of these studies. According to the Ministry of Health, the decrease in strength and movements, as well as the limitation of exercise, occur as a result of the insidious evolution of symptoms, due to the worker always looking for ways to maintain their work (Brasil, 2012a). Regarding movement limitation, although its prevalence is higher in the age groups of 15 to 29 years old and 30 to 49 years old, subjects who are in the age range of 50 to 79 years old, affected by RSI / WRMD, present a greater chance of having such a limitation, since there was a significant relationship between the analyzed variables, being unlikely to have occurred due to the sampling error. The fact that subjects in the age group of 50 to 79 years old present a greater chance of presenting such a limitation corroborates with what Barbosa describes (Barbosa LPC 2017. O perfil socioclínico-demográfico de usuários dos Centros de Referência de Saúde do Trabalhador (CEREST) da cidade do Rio de Janeiro. dissertation, Universidade Estácio de Sá, Rio de Janeiro, Brasil) when affirming that "occupational diseases reach workers in the age range of greater productivity and

It is noted that the majority work in a stressful environment (64% - 259), with repetitive movements (94.3% - 381), in a workday of more than six hours (78.5% - 317), without rest breaks (57.2% - 231). Statistical analysis did not indicate a significant relationship between these variables and the age range of the workers. Studies indicate that stress in the work environment can directly influence the psychological domain of workers in general, resulting in feelings such as job dissatisfaction, anxiety, depression and, consequently, developing musculoskeletal symptomatology, associated with RSI / WRMD (Solidak *et al*., 2013; Fernandes *et al*., 2009). In a study carried out with bankers in the city of Pelotas - RS, the problems in the work environment due to stressful events were strongly associated with RSI / WRMD (Brandão *et al*., 2005). Studies by Haeffner (Haeffner R 2014. O perfil dos rabalhadores do Brasil com distúrbios osteomusculares relacionados ao trabalho. dissertation, Universidade Federal do Paraná, Curitiba, Brasil), Pandolphi and Costa (2016) and by Dosea *et al*., (2015) point to the presence of repetitive movements and the workday of more than six hours, and just as in this study, these categories are directly related to the type of occupation, a since, as previously mentioned, polyvalent shoemaking workers develop activities that are characterized by repetitiveness. It should be emphasized that all the categories presented in Table 4 interact with each other and it is important that they are always analyzed in an integrated manner, because of the damage caused to the workers, since, as pointed out in the manual "Work Related Pain: Injuries by

Table 4. Distribution of cases of RSI / WRMD according to the work environment. COH Regional of Sobral - Ceará, Brazil, 2009 to 2016; total number with stratification by age. (n = 404)

Categories			Age Group (years)						X^2	gl	Value-p
			15 a 19		20 a 59		60 and more				
	N	%	N	%	N	%	N	%			
tressful Environment									4,96	2	0,08
Yes	259	64,0	1	0,25	255	63,1	3	0,75			
No	120	29,8	1	0,25	118	29,2	1	0,25			
Ign./White	25	6,2	0	0,0	25	6,2	0	0,0			
Total	404	100,0	2	0,5	398	98,5	4	1,0			
Repetitive Moviments									*	*	*
Yes	381	94,3	1	0,25	376	93,0	4	1,0			
No	13	3,2	1	0,25	12	3,0	0	0,0			
Ign./White	10	2,5	0	0,0	10	2,5	0	0,0			
Total	404	100,0	2	0,50	398	98,5	4	1,0			
Productivity Award									*	*	*
Yes	35	8,6	0	0,0	35	8,6	0	0,0			
No	331	81,9	2	0,0	326	80,7	3	0,75			
Ign./White	38	9,5	0	0,5	37	9,2	1	0,25			
Total	404	100,0	2	0,5	398	98,5	4	1,00			
Break for Rest									3,69	2	0,15
Yes	148	36,6	1	0,25	146	36,1	1	0,25			
No	231	57,2	1	025	228	56,4	1	0,25			
Ign./White	25	6,2	0	0,00	24	6,0	2	0,50			
Total	404	100,0	2	0,50	398	98,5	4	1,00			
Working Hours + 6 hours									5,14	2	0,07
Yes	317	78,5	0	0,0	313	77,5	4	1,0			
No	69	17,0	0	0,0	67	16,5	0	0,0			
Ign./White	18	4,5	2	0,5	18	4,5	0	0,0			
TOTAL	404	100,0	2	0,5	398	98,5	4	1,0			

Source: Sobral. Secretariat of Health. Reference Center on Occupational Health (COH). Information System of Reportable Diseases (SINAN); 2017. * = the requirements of the chi-square were not satisfied for analysis.

Repetitive Efforts (RSI): Work-Related Musculoskeletal Disorders (WRMD) (Brasil, 2012a), organizational factors such as workload and rest breaks are able to control the frequency and intensity of risk factors and symptoms. Dosea *et al*. (2015) also argue that there is no rule for the specific quantity and time of pauses for each performance. However, Mattos *et al*., (2011) point out that for short tasks, but requiring a lot of attention from the professional, short breaks are recommended, often two to five minutes, and for those activities that do not require so much concentration, pauses 10 minutes every two hours make enough. For jobs that require a greater physical effort, the ideal would be breaks proportional to the time of activity (one hour of pause, for one hour of work). For Másculo and Vidal (2011), these are the so-called "compensatory pauses", since they occur during the working period, with a reduction in the time of service offset in the reduction of physical damages. In addition, Silveira (Silveira DCG 2013. A participação dos lucros e resultados um incentivo ao trabalhador. Trabalho de Conclusão de Curso. Universidade Federal do Rio Grande do Sul, Rio Grande do Sul, Brasil) reflect on the practices of awards for productivity or pay per piece, as strategies used for centuries and that until today are being practiced as a viable way that encourages professionals, reinforcing the participatory culture and the work in group. In contrast, the Ministry of Health points to a practice that can cause even more work overload by increasing physical and psychic demands (Brasil, 2012b). Table 5 shows the data related to the withdrawal, conduct and evolution of RSI / WRMD cases. In what refers to the withdrawal from work for treatment, it was observed that 59.6% (241) had this need, but in only 25.8% (104) of the cases, the risk factor was withdrawn. In most cases there were no changes in work organization (68% - 274), nor the adoption of collective protection (72.3% - 292) or individual protection (69.3% - 280); and in 61.9% (250) of the cases, there is some temporary incapacity.

Other studies (Selekler *et al*., 2013; Rodrigues *et al*., 2013) relate the withdrawal directly to RSI / WRMD, mainly to the presence of painful symptoms, as well as to other occupational factors, as in a study carried out in Belo Horizonte - MG34, which associates removal from inadequate working conditions and dissatisfaction which result in pain and loss of motor function, which, in addition to being separated, generates socioeconomic and psychosocial consequences. In spite of this, 35.1% (142) did not move away from the workplace, also revealing the submission of these workers to the work / employer. Even exposed to possible accidents, without the adoption of individual or collective preventive measures, as well as daily stress situations, they continue to perform their duties without taking the necessary measures, often relinquishing their rights for fear of losing their job, which, for the most part, is their only means of livelihood for the worker.

The evolution of the case is an important data to consider, since it indicates the degree of impairment. A study (Haeffner R 2014. O perfil dos trabalhadores do Brasil com distúrbios osteomusculares relacionados ao trabalho. dissertation, Universidade Federal do Paraná, Curitiba, Brasil) indicates that the number of workers with temporary disability was also significant, and, as in the present study, it was possibly the key factor for the high number of removal from treatment. Authors (Viegas and Almeida, 2016), when analyzing the sociodemographic profile of workers in the industry with RSI / WRMD, observe the high prevalence of musculoskeletal symptoms, such as pain, with consequent limitation of movements and decrease of muscle strength, which may have contributed to the evolving into temporary or permanent disabilities. The RSI / WRMD, whether in its acute or chronic phase, are responsible for the removal of countless workers, due to the evolution of temporary or permanent disability. The fact that many workers at the peak of their productive capacity are removed from work, manifests in them the feeling of "disposability", generating other processes and illnesses, such

Table 5. Description of cases of RSI / DORT according to their remoteness, conduct and evolution. COH Regional of Sobral - Ceará, Brazil, 2009 to 2016; total number with stratification by age. (n = 404)

Categories			Age Group (years)						X^2	gl	Value-p
			15 a 19		20 a 59		60 e mais				
	N	%	N	%	N	%	N	%			
Removal from Work for Treatment									2,75	2	0,25
Yes	241	59,6	2	0,5	238	58,9	1	0,25			
No	136	33,6	0	0,0	133	32,9	3	0,75			
Ign./White	27	6,8	0	0,0	27	6,7	0	0,00			
Yes	404	100,0	2	0,5	398	98,5	4	1,00			
Removal of Risk Agent									0,03	2	0,98
Yes	104	25,8	0	0,0	103	25,5	1	0,25			
No	241	59,6	0	0,0	237	58,6	2	0,50			
Ign./White	59	14,6	2	0,5	58	14,4	1	0,25			
Total	404	100,0	2	0,5	398	98,5	4	1,00			
Adoption of Change in Work Organization									2,28	2	0,31
Yes	61	15,0	1	0,25	60	14,9	0	0,0			
No	274	68,0	1	0,25	271	67,0	2	0,5			
Ign./White	69	17,0	0	0,00	67	16,6	2	0,5			
Total	404	100,0	2	0,50	398	98,5	4	1,0			
Adoption of change in work organization									1,64	2	0,44
Yes	36	8,9	0	0,0	36	8,9	0	0,00			
No	292	72,3	0	0,0	287	71,0	1	0,25			
Ign./White	76	18,8	2	0,5	75	18,6	3	0,75			
Total	404	100,0	2	0,5	398	98,5	4	1,00			
Adoption of Individual Protection									0,70	2	0,70
Yes	54	13,4	0	0,0	53	13,1	1	0,25			
No	280	69,3	0	0,0	276	68,3	1	0,25			
Ign./White	70	17,3	2	0,5	69	17,1	2	0,50			
Total	404	100,0	2	0,5	398	98,5	4	1,00			
No Conduct Adopted									0,57	2	0,75
Yes	43	10,6	0	0,0	43	10,6	0	0,00			
No	260	64,4	2	0,5	257	63,6	1	0,25			
Ign./White	101	25,0	0	0,0	98	24,3	3	0,75			
Total	404	100,0	2	0,5	398	98,5	4	1,00			
Removal of the Workplace									2,65	2	0,26
Yes	206	51,0	2	0,5	203	50,2	1	0,25			
No	142	35,1	0	0,0	140	34,7	2	0,50			
Ign./White	56	13,9	0	0,0	55	13,6	1	0,25			
Total	404	100,0	2	0,5	398	98,5	4	1,00			
Evolution of the Case									*	*	*
IncapTemporary Incapacity	250	61,9	0	0,0	245	60,6	3	0,75			
Partial Permanent Disability	51	12,6	0	0,0	50	12,4	1	0,25			
Unconfirmed Healing	15	3,7	2	0,5	15	3,7	0	0,00			
Cure	6	1,4	0	0,0	6	1,4	0	0,00			
Total Permanent disability	3	0,8	0	0,0	3	0,8	0	0,00			
Other	4	1,0	0	0,0	4	1,0	0	0,00			
Ign./Branco	75	18,6	0	0,0	75	18,6	0	0,00			
TOTAL	404	100,0	2	0,5	398	98,5	4	1,00			

Source: Sobral. Secretariat of Health. Reference Center on Occupational Health (COH). Information System of Reportable Diseases (SINAN); 2017. * = the requirements of the chi-square were not satisfied for analysis.

as depression (Ramos *et al*., 2010). For the authors, the "invisibility of a disease that does not shows external signs is often also the invisibility of those who do not work anymore, bringing discouragement, depression and social withdrawal" (Ramos *et al*., 2010). A Study by Siqueira and Couto (2013) points out that the repetitive and tiring work led workers to develop RSI / WRMD, culminating in their removal. This situation was due to the pressure on the work, due to the excess of collections of the immediate bosses, and the necessity of constant mental concentration. For authors (Lelis *et al*., 2012), inadequate working conditions and factors related to work organization and structure lead to illness and removal from work, generating partial or permanent incapacity and losses for both workers and the market. It is worth noting that there was no association of the conditions discussed in Table 5 with the age groups of the study subjects, suggesting that these, of any age group, are equally likely to adopt any posture.

Conclusions

The epidemiological characteristics presented in the present study demonstrate that several factors influence the process of illness of the worker by RSI / WRMD in the Northwest region of Ceará, among them are the working conditions, the environment in which it occurs, the pressure of the bosses and the excess charges for workers to produce more, which leads them to work overload and consequent sickness. In addition, the results still indicate that subjects with RSI / WRMD in the age group of 50 to 79 years old are more susceptible to having movement limitation than younger subjects. As for the other variables analyzed, no significant association with the age group was observed, indicating that, in the population, subjects of all ages are equally prone to all conditions. From this perspective, it is noticed how much the model of capitalist labor of factory production is closely related to the outlined trajectory, that the incessant search for profits ends up being reflected unfavorably in the work environment, with the health conditions of the worker neglected. In fact, all this process involves from production with low costs, the precariousness of work, to the preference of consumers for products with lower prices, all the way the organization is given is inherent in the health issue. It is necessary, therefore, the decentralization and implementation of the National Health Policy of the Worker in the SUS, making possible the guarantee of a dignified and

healthy work environment, in the sense of minimizing the causal effects of suffering and consequent illness.

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