ISSN: 2318-8413 DOI: 10.18554/refacs.v6i0.3126

REFACS
Revista Família, Ciclos de Vida e Saúde no Contexto Social

Disability of workers with upper limb musculoskeletal injuries in a rehabilitation center

Incapacidade em trabalhadores com lesões musculoesqueléticas de membros superiores atendidos num centro de reabilitação

Incapacidad en trabajadores con lesiones músculo-esqueléticas de miembros superiores atendidos en un centro de rehabilitación

Received: 28/11/2017
Approved: 07/07/2018
Published: 27/09/2018

Viviane Gontijo Augusto[1]
Fernanda Maria Franschetto Rocha do Amaral[2]
Ana Cristina Franco da Rocha Fernandes[3]
Patrícia Aparecida Tavares[4]
Kamila Coimbra de Freitas Castro[5]
Marina Massière Pinto Lopes[6]

The aim of this study was to evaluate the disability of workers with musculoskeletal injuries of the upper limbs, users of the Regional Center of Rehabilitation. This is a cross-sectional and observational study, conducted from August to November 2014, the sample was of 50 users. The Scale of Assessment of Disability of the World Health Organization, WHODAS 2.0, short version, was used for assessment of the level of functional disability. The average age was 50.2 years (sd=14.1), and most users presented injuries of traumatic origin (62%). The mean score of disability was 25.2 (sd=7.4) and the high disability score, calculated using the Chi-square test, was associated with women (p=0.038), and nontraumatic injuries(p=0.02). There was a low level of education and income, with a predominance of mothers removed from work and who needed care to reduce pain and disability.
Descriptors: Disabled persons; Rehabilitation; Upper extremity.

O objetivo deste estudo foi avaliar a incapacidade de trabalhadores com lesões musculoesqueléticas de membros superiores, atendidos em um Centro Regional de Reabilitação. Trata-se de um estudo transversal observacional, realizado no período de agosto a novembro de 2014, do qual participaram 50 usuários. Utilizou-se a Escala de Avaliação de Incapacidades da Organização Mundial de Saúde, WHODAS 2.0, versão curta, para avaliação do nível de incapacidade funcional. A média de idade foi de 50,2 anos (dp=14,1) e a maioria apresentou lesão de origem traumática (62%). A média do escore de incapacidade foi 25,2 (dp=7,4) e a alta incapacidade associou-se com mulheres (p=0,038) e lesões não traumáticas (p=0,02) no teste Qui-quadrado. Verificou-se baixa escolaridade e renda, com predomínio de mães de família afastadas do trabalho e que necessitavam de atendimento para redução de dor e incapacidade.
Descritores: Pessoas com deficiência; Reabilitação; Extremidade superior.

El objetivo de este estudio fue evaluar la incapacidad de trabajadores con lesiones musculoesqueléticas de miembros superiores, atendidos en un Centro Regional de Rehabilitación. Se trata de un estudio transversal observacional, realizado en el periodo de agosto a noviembre de 2014, en el cual participaron 50 usuarios. Se utilizó la Escala de Evaluación de nivel de incapacidad funcional. El promedio de edad fue de 50,2 años (dp=14,1) y la mayoría presentó lesión de origen traumática (62%). El promedio del puntaje de incapacidad fue de 25,2 (dp=7,4) y la alta incapacidad se asoció a mujeres (p=0,038) y lesiones no traumáticas (p=0,02) en el test Chi-cuadrado. Se verificó baja escolaridad e ingreso, con predominio de madres de familia alejadas del trabajo y que necesitaban atención para reducción de dolor e incapacidad.
Descriptores: Personas con discapacidad; Rehabilitación; Extremidad superior.

1. Physical therapist. Specialist in Orthopedics and in Sports Injuries. Master degree and PhD in Rehabilitation Sciences. Professor at the University of the State of Minas Gerais (UEMG), Brazil. ORCID: 0000-0001-8906-0875 E - mail: vivianeaugusto2013@gmail.com
2. Physical therapist. Master degree in Education, Culture and Social Organizations. Professor of UEMG, Brazil. ORCID: 0000-0001-6447-9389 E-mail: fernanda.amaral@uemg.br
3. Degree in Mathematics. Master degree in Technology Education. Professor of UEMG, Brazil. ORCID: 0000-0003-4873-8605 E-mail: ana.fernandes@uemg.br
4. Physical therapist, Master degree in Health Sciences. Professor of UEMG, Brazil. ORCID: 0000-0002-3626-5217 E-mail: tavaresaguiar@yahoo.com.br
5. Undergraduate of Physical therapist course at UEMG, Brazil. ORCID: 0000-0002-5973-7942 E-mail: kamilafreitasfreita@gmail.com
6. Undergraduate of Physical therapist course at UEMG, Brazil. ORCID: 0000-0002-6301-0519 E-mail: marinamassiere@yahoo.com.br

INTRODUCTION

The World Health Organization (WHO) is responsible for the classifications in the health area, which represents the conceptual models to be incorporated by health systems, managers, and users, for the use of a common language in this area. In 2001, the WHO adopted the International Classification of Functioning, Disability, and Health (ICF), a classification system for understanding the human functionality and disability[1].

The ICF emphasizes the functionality as a component of health and considers the environment as a facilitator or as a barrier to the performance of actions and tasks. Such classification aims intention to unify and standardize the language through a structure that describes health and the variables related to it, and to assist in the communication and exchange of information between professionals of the area in relation to functionality, in addition to serving as a tool for strategic actions and to improve productivity, work efficiency and the use of financial resources[2].

To adopt a biopsychosocial approach, this classification proposes that the interaction of the health condition of individuals with factors in their contexts can impact on functionality, and this is characterized by aspects related to the structure and function of the body, participation, and activity[3].

The term functionality refers to all body functions, performance, and accomplishment of tasks or daily routine actions, while the disability is related to a negative interaction between the health condition and the context of the individual[4,5]. Therefore, musculoskeletal injuries that affect workers can lead to greater or lesser impairments, depending on contextual factors.

The musculoskeletal injuries of the upper limbs can be classified as traumatic or non-traumatic and may generate costs due to disability, removal from work, treatment, and rehabilitation of workers who have such injuries[6].

In Brazil, the granting of disability benefits presented a significant growth, in particular for temporarily incapacitated patients, where an increase of 138% between the years 2000 to 2008 can be observed[6]. The more prevalent injuries in the year 2009 were in the upper limbs, being of traumatic origin or not[7]. Nontraumatic injuries are responsible for most of the absences from work and for the costs with payments of restitution, treatment and reintegration processes of the individual in the society[8].

Consequently, it becomes important to know the degree of disability of workers with musculoskeletal injuries of the upper limbs, treated at rehabilitation centers, to obtain information that can help planning the treatment, contributing to a more effective rehabilitation, and lead to a consequent return to normal activities. Considering the above, the aim of this study was to evaluate the disability of workers with musculoskeletal injuries of the upper limbs, users of a Regional Center of Rehabilitation.

METHODS

This is a cross-sectional and observational study, conducted with patients already receiving attention in the Regional Rehabilitation Center (CRER) or that began their treatment between August and November 2014 and presented a diagnosis of musculoskeletal injuries in the upper limbs.

The identification of patients for the composition of the sample was carried via a consultation to the medical and treatment records of the unit. The identified patients were approached after their care.

As an instrument for data collection, a protocol that featured questions related to contextual factors, including socio-demographic data, lifestyle habits, work situation, pain intensity, disability, and about the injury of the patient (type of injury, time of injury and duration of treatment), were used. To evaluate the intensity of the pain, a verbal scale was used, classified from 0 to 10, where the higher the score the greater the intensity of the pain. The results can be classified into low (0 to 4), moderate (5 to 7) and intense (8 to 10)[9].

The type of injury was classified according to the diagnosis of traumatic injuries (fractures and dislocations) and nontraumatic ones (bursitis and tendinosis, impingement syndrome). The time of injury (years/weeks) and the treatment duration (in days) were also considered. These data were according to the report of the patient, as not all of the evaluation sheets contained these data.

To assess disability, the Scale of Assessment of Disability of the World Health Organization, WHODAS 2.0, 12-question version, was used. The 12-question version of the WHODAS 2.0 assesses the level of disability in six domains (cognition, mobility, self-care, interpersonal relations, life activities and participation in society)[10].

It is characterized by a scale with a score of 5 points for each item, where 1 indicates no difficulty and 5 indicates extreme difficulty or inability to do the activity[10]. It is a generic instrument that was not elaborated for a specific population or for a particular health condition. It is translated and validated to be used in different languages and cultures, and in different conditions of health, having psychometric robustness in the original version and in the adaptations[10]. The values for the final score of this scale go from 12 to 60 points, where the higher the result, the greater the disability of the individual.

For the characterization of the sample, the data collected about the sociodemographic profile, habits of life and work, were analyzed using descriptive tests, like means, standard deviation frequencies, and percentages. Then, a *Chi-square test* was used for the categorical variables.

The median score of the WHODAS and the scale of pain served as a cutoff point to categorize the disability in the "high" category and the pain in the “low”. To compare averages between the group of traumatic and not traumatic injuries, the unpaired *Student's t*-test was used. The significance level established for all analyses was $\alpha = 0.05$. The analysis of the data was performed using the *Statistical Package for the Social Sciences*® (SPSS), version 15.0.

In respect to ethical aspects and in compliance with Resolution CNS 466/201235, this study was conducted after the approval of the Coordination of the Regional Rehabilitation Center and approval from the Research Ethics Committee of INESP – UEMG, under protocol number 31092814.8.0000.5115.

RESULTS

50 users from 16 to 83 years of age were interviewed, with a mean age of 50.2 years (sd=14.1). All patients approached agreed to participate in the research. Considering this, the sample reached 100% of the patients with musculoskeletal injuries of the upper limbs that were treated at the rehabilitation center in the period of collection.

The female sex was more common, accounting for 60% of the sample. Most participants (54%) live with a partner and have children (76%). Regarding their educational level, only 10% had complete higher education. About the life habit variables, only 18% were found to be smokers and 30% make use of alcoholic drinks.

Only 34% of respondents reported practicing physical activity on a regular basis. About the aspects related to the work, it can be observed that, among the respondents, 58% are removed from work activities, 32% are unemployed and only 10% are still active. Another relevant result is that the majority (88%) have an income of up to 2 salaries (Table 1).

Table 1. Socio-demographic characteristics of patients with musculoskeletal injuries of the upper limbs who are users of CRER. Divinópolis, MG, 2014.

Variables		N	%
Gender	Female	30	60
	Male	20	40
Marital status	With companion	27	54
	Without companion	23	46
Number of children	Up to 3	32	64
	4 children or more	6	12
	Doesn't have children	12	24
Educational level	Did not go to school	1	2
	Elementary School	20	40
	High School	24	48
	College degree	5	10
Income	From 1 to 2 minimum wages	35	70
	Between 2 and 3 salaries	6	12
	Does not have an income	9	18
Work situation	Unemployed	16	32
	Removed from work	29	58
	Active	5	10

About the type of injury, most of the sample presented injuries from traumatic origins (62%), and the most prevalent diagnosis for these patients was fracture (58%). Among the nontraumatic injuries, the most frequent were the impingement syndrome (12%), followed by epicondylitis (8%) and rupture of the tendon and/or ligament (8%) (Table 2).

Table 2. Medical diagnosis of patients with injuries of the upper limbs who are users of CRER. Divinópolis, MG, 2014.

Medical diagnosis	N	%
Adhesive capsulitis	1	2
Epicondylitis	4	8
Fracture	29	58
Dislocation	2	4
Rupture (ligament/tendon)	4	8
Impingement syndrome	6	12
Carpal tunnel syndrome	1	2
Tendinitis of the wrist	3	6

The time of the injury was a variable that presented significant variability, with an average of 60.8 weeks (sd=117.3) or about fifteen months. The treatment duration had an average of 91.4 days (sd=230.4), approximately 3 months. The average score of the pain scale was 6.6 (sd=2.2), and the score of 54% of them were in the high category. The average of the WHODAS 2.0 was 25 points (sd=7,4), and 52% had a low disability level according to the categorization by the median cut off point (Table 3).

Table 3. Characteristics related to the time of injury, time of treatment, pain intensity and disability of patients with lesions in the upper limbs who are users of the CRER. Divinópolis, MG, 2014.

Variables	Average	Median	Standard deviation	Minimum	Maximum
Pain scale	6.6	7.0	2.25	1	10
Time of injury (weeks)	60.8	24.0	117.3	4	768
Treatment duration (days)	91.3	30.0	230.3	1	1440
WHODAS	25.2	24.0	7.4	14	43

To test the association of disability with other variables, the Chi-square test was used. It was found that the category "high disability" was associated significantly with women (p=0.038) and with nontraumatic injuries (p=0.02), showing no association with pain (p=0.55), smoking (p=0,21), alcohol consumption (p=0,62), physical activity (p=0,27) and number of children (p=0.24).

When comparing the average of the variables related to traumatic and nontraumatic injuries, it was found that the only difference was in the time of the injury, this being higher among the nontraumatic injuries (p= 0.04). (Table 4).

Table 4. Comparison between averages according to the type of musculoskeletal injury presented by patients who are users of the CRER. Divinópolis, MG, 2014.

Variables	Traumatic injuries	Nontraumatic injuries	P-value
Age	47.5	54.0	0.08
Time of injury	35.3	102.3	0.04
Treatment duration	94.0	87.0	0.91
Pain scale	6.3	6.9	0.39
Duration of removal from work	32.8	60.1	0.19

DISCUSSION

The majority of the sample did not show a high level of disability according to the evaluation of the WHODAS. However, it was found that the intensity of pain was high for most individuals and that the time since the injury was long, especially in the group of patients with nontraumatic injuries, characterizing, in this context, chronic problems.

Another aspect was the long duration of treatment, which, on average, was of three months. These results indicate that the central focus of rehabilitation may be on the relief of pain and not on the improvement of the functional capacity of the patient.

Most of the patients are of low income and low educational levels, the group being made up predominantly of unemployed or out of work mothers, who, therefore, require assistance for the reduction of pain and disability, aiming to go back to work as soon as possible. This research corroborates other studies[11-13] that found results that associated chronic pain with women, married and unemployed people, with low socioeconomic and educational levels.

In regard to the inability and the difficulty of returning to work, a population-based study[14], in Finland, pointed out that retirement due to disability is strongly associated with workers of a low social class. This fact is important when you consider that there is a decrease in the quality of life and perception of health in workers that are removed from work[15].

The musculoskeletal nontraumatic injuries are among the injuries that restrict the most the return to work. The restriction and the return to work are among the most complex aspects in the policies of the worker's health care, and the main barriers are the lack of programs of work rehabilitation and the poor communication between the different

administrative and political levels. In this context, the musculoskeletal injuries are considered to be one of the costliest public health problems through the world[5,8].

The results of this study indicate that, in addition to planning the treatment in order to meet the specificities of patients with musculoskeletal injury, and to prioritize the recovery, it is relevant to define strategies of prevention with the purpose of avoiding future injuries and their consequences, since it is more advantageous to invest in prevention than deal with a disability associated with the work[15].

The nontraumatic injury, even though less prevalent in this sample, can be classified as a chronic injury and is characterized by the fact that it delays the return of the patients to work. This can bring damage not only to the public system but also for the patients who have a low income (88% with less than 2 minimum wages). Patients with chronic pain, in addition to facing financial problems, may lose social roles and display a tendency to isolation in a way that the social relationship becomes restricted to the family alone[17].

It is worth mentioning that the return to work may be more difficult depending on the age of the patients, and in this sample, the individuals had an average of 50 years of age. The musculoskeletal injuries are more common in middle-aged workers (50 years old or more), and they cause a substantial impact on the capacity for work of these individuals[18].

The high score of disability was associated with the female gender, which may be related to the greater exposure of women to jobs that present higher risks for musculoskeletal injuries. Women are more affected by these musculoskeletal injuries, since the sexual division of labor that exists in the social and cultural relationships, contribute to the fact that they are employed primarily for positions of greater risk and exposure[19]. By presenting less resistance to a rigid organization of work, women have to adapt more to the monotonous and repetitive production rules[19].

The majority of respondents presented pain of high intensity, but no association was found between this variable and the level of disability, indicating that there are other factors that interfere in the presence of pain and that not every painful symptom result in a case of disability.

The beliefs and attitudes of the individuals about their pain are factors that interfere in the surfacing of physical disability and depression[13]. In this context, changes in beliefs, after multidisciplinary treatment, are associated with an improvement in functionality, reiterating the theory that other factors, besides pain, can influence the outcome of the disability and that, therefore, the pain symptoms should not be the single parameter for the treatment and for the discharge processes of patients in rehabilitation.

CONCLUSION

The majority of patients had a high pain intensity score and a low level of functional disability according to the WHODAS 2.0. In the "removed from work" category, there was a predominance of the female gender, with low income and education. The non-traumatic musculoskeletal injuries showed a lower prevalence among the patients interviewed. However, they showed a direct association with a high disability score. Thus, the focus of treatment, especially for nontraumatic injuries, should be the recovery of functional capacity. Though most of the individuals declared a high level of pain, it was not associated with disability. The time of the injury and the treatment duration both tended to be very long according to the results. Both reiterate the need for a more efficient rehabilitation, aimed at a more quickly return to work activities.

It is possible that the large variability in the time of the injury presented in this study, may have interfered in the result, especially in the correlation between pain and disability. Therefore, longitudinal studies that assess factors associated with functional disability, before and after treatment, may provide evidence for the development of treatments more capable of effectively attending individuals with musculoskeletal injuries of the upper limbs.

REFERENCES

1. Luz MT, Sampaio RF. Funcionalidade e incapacidade humana: explorando o escopo da classificação internacional da Organização Mundial da Saúde. Cad Saúde Pública [Internet]. 2009 [cited in 17 feb 2016]; 25(3):475-83. doi: http://dx.doi.org/10.1590/S0102-311X2009000300002

2. Araújo ES, Buchalla CM. Utilização da CIF em fisioterapia do trabalho: uma contribuição para coleta de dados sobre funcionalidade. Acta Fisiátrica [Internet]. 2013 [cited in 23 feb 2016]; 20(1):1-7. Available from: http://www.actafisiatrica.org.br/detalhe_artigo.asp?id=487. doi: 10.5935/0104-7795.20130001

3. Sampaio RF, Mancini MC. Tecendo uma rede de usuários da CIF. Rev Bras Fisioter. 2007; 11(4):245-331.

4. Nubila HBV, Buchalla CM. O papel das classificações da OMS-CID e CIF nas definições de deficiência e incapacidade. Rev Bras Epidemiol. [Internet]. 2008 [cited in 13 jul 2016]; 11(2):324-35. Available from: http://www.scielo.br/scielo.php?pid=S1415-790X2008000200014&script=sci_abstract&tlng=pt. doi: http://dx.doi.org/10.1590/S1415-790X2008000200014

5. Toldrá RC, Daldon MTB, Santos MC, Lancman S. Facilitadores e barreiras para o retorno ao trabalho: a experiência de trabalhadores atendidos em um Centro de Referência em Saúde do Trabalhador–SP. Rev Bras Saúde Ocup. [Internet]. 2010 [cited in 20 jul 2016]; 35(121):10-22. Available from: http://www.scielo.br/scielo.php?pid=S0303-76572010000100003&script=sci_abstract&tlng=pt. doi: http://dx.doi.org/10.1590/S0303-76572010000100003

6. Souza NSS, Santana VS. Posição socioeconômica e duração do benefício por incapacidade devido a doenças musculoesqueléticas relacionadas ao trabalho. Cad Saúde Pública. [Internet]. 2012 [cited in 08 jul 2016]; 28(2):324-34. Available from: http://www.scielo.br/scielo.php?script=sci_abstract&pid=S0102-311X2012000200011&lng=pt&nrm=iso&tlng=en. doi: http://dx.doi.org/10.1590/S0102-311X2012000200011.

7. Pereira ALP. Prevalência de distúrbios musculoesqueléticos em membros superiores e fatores associados em trabalhadores de limpeza urbana de Salvador, Bahia. [Dissertation]. Salvador: Universidade Federal da Bahia; 2011.

8. Dantas DRS, Silva M, Couto GC, Costa GS, Santos MFL, Santos Junior, FFU, et al. Caracterização clínica dos pacientes com distúrbios musculoesqueléticos atendidos em um serviço público de reabilitação fisioterapêutica no município de São Francisco do Conde–Bahia. Rev Ciênc Med Biol. [Internet]. 2015 [cited in 12 feb 2016]; 13(2):156-62. doi: http://dx.doi.org/10.9771/cmbio.v13i2.1128.

9. Pedroso RA, Celich KLS. Dor: quinto sinal vital, um desafio para o cuidar em enfermagem. Texto & Contexto Enferm. [Internet]. 2006 [cited in 10 mar 2016]; 15(2):270-6. doi: http://dx.doi.org/10.1590/S0104-07072006000200011

10. Silveira C, Parpinelli MA, Pacagnella RC, Camargo RSD, Costa ML, Zanardi DM, et al. Cross-cultural adaptation of the World Health Organization Disability Assessment Schedule (WHODAS 2.0) into Portuguese abstract. Rev Assoc Med Bras. [Internet]. 2013 [cited in 06 mar 2016]; 59(3):234-40. Available from: http://www.scielo.br/pdf/ramb/v59n3/en_v59n3a08.pdf. doi: http://dx.doi.org/10.1016/j.ramb.2012.11.005

11. Ruviaro LF, Filippin LI. Prevalência de dor crônica em uma Unidade Básica de Saúde de cidade de médio porte. Rev Dor [Internet]. 2012 [cited in 05 mar 2016]; 13(2):128-31. doi: http://dx.doi.org/10.1590/S1806-00132012000200006

12. Oliveira RM, Leite ACDS, Silva LMSD, Almeida PCD, Oliveira SKPD, Chaves ACP. Comparative analysis of functional capacity among women with fibromyalgia and low back pain. Rev Dor [Internet]. 2013 [cited in 05 mar 2016]; 14(1):39-43. doi: http://dx.doi.org/10.1590/S1806-00132013000100010

13. Alcântara MA, Nunes GS, Ferreira, BCS. Work-related musculoskeletal disorders: the profile of workers receiving welfare benefit in Diamantina (MG, Brazil). Ciênc Saúde Colet. [Internet]. 2011 [cited in 08 jul 2016]; 16(8):3427-36. doi: http://dx.doi.org/10.1590/S1413-81232011000900010

14. Leinonen T, Pietiläinen O, Laaksonen M, Rahkonen O, Lahelma E, Martikainen P. Occupational social class and disability retirement among municipal employees-the

contribution of health behaviors and working conditions. Scand J Work Environ health [Internet]. 2011 [cited in 05 oct 2016]; 37(6):464-72. http://www.sjweh.fi/show_abstract.php?abstract_id=3182

15. Saldanha, JHS, Pereira, APM, Neves, RDF, Lima, MAGD. Facilitadores e barreiras de retorno ao trabalho de trabalhadores acometidos por LER/DORT. Rev Bras Saúde Ocup. [Internet]. 2013 [cited in 08 jul 2016]; 38(127):122-38. doi: http://dx.doi.org/10.1590/S0303-76572013000100014

16. Dutra FCMS, Costa LC, Sampaio RF. A influência do afastamento do trabalho na percepção de saúde e qualidade de vida de indivíduos adultos. Fisioter Pesqui. [Internet]. 2016 [cited in 08 jul 2016]; 23(1):98-104. doi: http://dx.doi.org/10.1590/1809-2950/14900923012016

17. Silva FCM, Sampaio RF, Mancini MC, Luz MT, Alcântara MA. A qualitative study of workers with chronic pain in Brazil and its social consequences. Occup Ther Int. [Internet]. 2011 [cited in 05 mar 2016]; 18(2):85-95. doi: https://doi.org/10.1002/oti.302

18. Vargas-Prada S, Coggon D. Psychological and psychosocial determinants of musculoskeletal pain and associated disability. Best Pract Res Clin Rheumatol. [Internet]. 2015 [cited in 08 jul 2016]; 29(3):374-90. doi: https://doi.org/10.1016/j.berh.2015.03.003

19. Pessoa JCS, Cardia MCG, Santos MLC. Análise das limitações, estratégias e perspectivas dos trabalhadores com LER/DORT, participantes do grupo PROFIT-LER: um estudo de caso. Ciênc Saúde Colet. [Internet]. 2010 [cited in 08 jul 2016]; 15(3):821-30. doi: http://dx.doi.org/10.1590/S1413-81232010000300025

CONTRIBUTIONS

Viviane Gontijo Augusto participated in the design of the research, data interpretation, and writing of the article. **Fernanda Maria Franschetto Rocha do Amaral** worked in the design of the research, writing and revision of the text. **Ana Cristina Franco da Rocha Fernandes** has contributed in data analysis and revision of the text. **Patrícia Aparecida Tavares**, **Kamila Coimbra de Freitas Castro** and **Marina Massière Pinto Lopes** participated in the data collection, interpretation, and writing.

How to cite this article (Vancouver)

Augusto VG, Amaral FMFR, Fernandes ACFR, Tavares PA, Castro KCF, Lopes MMP. Disability of workers with upper limb musculoskeletal injuries in a rehabilitation center. REFACS [Internet]. 2018 [cited in *insert day, month, and year of access*]; 6(Supl. 2):563-570. Available from: *Insert Access link*. DOI: *insert DOI link*.

How to cite this article (ABNT):

AUGUSTO, V. G. et al. Disability of workers with upper limb musculoskeletal injuries in a rehabilitation center. **REFACS**, Uberaba, MG, v. 6, supl. 2, p. 563-570, 2018. Available from: <*insert access link*>. Access in: *insert day, month and year of access*. DOI: *insert DOI link*.

How to cite this article (APA):

Augusto, V. G., Amaral, F., M. F. A., Fernandes, A. C. F. R., Tavares, P. A., Castro, K. C. F. & Lopes, M. M. P. (2018). Disability of workers with upper limb musculoskeletal injuries in a rehabilitation center. REFACS, 6(Supl. 2), 563-570. Recovered in: *insert day, month and year of access* from *insert access link*. DOI: *insert DOI link*.