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Factors associated with duration of disability benefits: a cohort study

ABSTRACT

OBJECTIVE: To analyze factors associated with the duration of disability benefits due to work-related upper-limb musculoskeletal disorders.

METHODS: Ambispective cohort study conducted with 563 insured workers from the General Social Security System who received temporary disability benefits due to work-related upper-limb musculoskeletal disorders in the city of Salvador, Northeastern Brazil, in 2008. The data came from an inquiry performed by the Regional Audit of the National Social Security Institute and from administrative records. Sociodemographic and work-related variables were analyzed, as well as characteristics of the health problem and aspects related to social security. Factors associated with time until the cessation of the benefit were identified through survival analysis techniques.

RESULTS: Low socioeconomic position (RR=1.29; 95%CI 1.02; 1.64), age below 39 years (RR=1.23; 95%CI 1.03; 1.47), income replacement by the National Social Security Institute $\leq 100\%$ (RR=1.24; 95%CI 1.04; 1.47) and high expectation of returning to work (RR=1.20; 95%CI 1.00; 1.44) are the categories related to higher rate of cessation of the benefit and with its shorter duration.

CONCLUSIONS: Factors that are not strictly medical, like socioeconomic position, age, expectation of returning to work and level of income replacement by the National Social Security Institute, seem to influence the benefit's duration. These hypotheses need to be tested with further confirmatory studies in order to improve the understanding of the process of determining incapacity for work.

DESCRIPTORS: Sick Leave. Musculoskeletal Diseases. Insurance, Disability, utilization. Insurance Benefits. Insurance, Health. Occupational Health. Cohort Studies.

INTRODUCTION

Incapacity for work caused by health-related injuries is a problem all over the world, with considerable social and economic cost. Approximately 3% to 10% of the economically active population in developed countries received benefits due to disability caused by health problems in 2003.¹⁴ The grant of these benefits has been vigorously increasing in Brazil, remarkably for temporary disability, which grew 138% (from 909,476 to 2,163,063) between 2000 and 2008.^a

Studies use measures of the duration of benefits receipt as indicators of the burden of disability in the population. The results show low correlation between

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^a Ministério da Previdência Social (BR). Estatísticas da Previdência Social. Anuário Estatístico da Previdência Social – AEPS. Suplemento Histórico, 2008. Brasília (DF): MPS/DATAPREV; 2009; p. 61. [cited 2012 Feb 23]. Available from: <http://www.mpsas.gov.br/conteudoDinamico.php?id=423>

physical limitation and duration of benefits receipt, mainly concerning chronic diseases. Factors beyond the specific to trigger or sustain health problems may explain differences in return to work or in the benefit's duration.^{5,10,17}

Literature reviews have shown distinct predictors of the duration of incapacity for work, like individual characteristics of the worker, of the disease, of the health system, of social security, of work's demands, besides other factors such as discrimination, legal framework and unionization, which may influence the duration of the disability and the odds of returning to work.^{7,8,17} The work's high physical and psychological demand and low social support have been associated with 20% lower rates of return to work in workers from California who suffered from low-back pain.¹⁶ Even after adjustment by severity of the event, Cheadle et al⁴ (2004) found association between age above 30 years and female sex and duration of the disability benefit. A study with workers on leave due to musculoskeletal diseases found that a positive expectation of return to work was a predictor of the benefit's duration.¹² An inverse relation between income and duration of work leave was observed in workers who received benefits due to low-back pain in the United States.²⁴ Conversely, a study carried out in Brazil with all the health problems found a positive association between the monthly value of the benefit (which indirectly measures the worker's salary) and its duration.^b

Disability studies investigate mainly musculoskeletal disorders (MSD). These diseases represent the largest cause of receipt of social security compensations in diverse countries, remarkably when related to work.^{2,18,19} In Brazil, 48.2% of the benefits granted due to work-related diseases were granted due to MSD in 2006.^c Thus, this research focuses on neck and/or upper-limb musculoskeletal disorders (ULMSD) of occupational origin, as a way to reduce differences in characteristics and clinical evolution and to highlight aspects related to prevention capacity.

The present study aimed to analyze factors associated with the duration of disability benefits due to work-related ULMSD.

METHODS

Ambispective cohort study conducted with 563 insured workers from *Regime Geral da Previdência*

Social (RGPS - General Social Security System) who received temporary disability benefits due to work-related ULMSD in the city of Salvador, Northeastern Brazil, in 2008. Eligible individuals were beneficiaries with first entrance in the system in 2008, start of the benefit between 1/1/2008 and 12/31/2008 and diagnoses contained in the International Classification of Diseases (ICD-10) compatible with ULMSD.^d Injury resulting from acute trauma and previous history of benefit receipt due to work-related ULMSD in any period were exclusion criteria. The follow-up lasted until 12/31/2009 and the benefit's cessation due to medical decision was considered an event.

The secondary data came from two sources: *Sistema Único de Benefícios* (SUB, National Benefits System, which is the record of administrative data of *Instituto Nacional do Seguro Social* [INSS – National Social Security Institute], in which each benefit grant is processed) and a project about temporary disability benefits due to ULMSD developed by the Regional Audit of INSS in Salvador. This project included the RGPS workers whose ULMSD benefits were granted in the *Agências da Previdência Social* (APS – Social Security Agencies) of Salvador in the period. After the grant of the benefit, the insured workers were summoned by the Audit to answer a questionnaire containing sociodemographic information, occupational history, work demands, characteristics of the current health problem and others. The use of these data was authorized by the management of the Regional Audit of Salvador. The data and the reason for the benefit's cessation were provided by the Regional Audit in January 2010, due to the fact that they were requested after the date that had been set for the termination of the follow-up of the insured workers. The access to the other data occurred in April 2009.

A total of 1,738 benefits were granted due to work-related ULMSD (32% of the occupational benefits, including occupational diseases and accidents). These benefits corresponded to 1,692 workers, among whom 46 received two temporary benefits due to ULMSD in the year and 1,016 were considered ineligible (972 with previous receipt and diagnosis compatible with work-related ULMSD and 44 with injury deriving from acute trauma).

Of the 676 eligible insured workers, 83.3% answered the questionnaire administered by the Regional Audit of the INSS. Of the 16.7% that did not participate, 61 did not go to the Regional Audit after communication

^b Santana V, Bouzón A, Bouzas Filho J, Nobre L, Campos M, Silva M. Estimativa da carga e custos indiretos com os acidentados de trabalho: relatório de pesquisa. Salvador: Instituto de Saúde Coletiva da Universidade Federal da Bahia; 2004 [cited 2012 Feb 28]. Available from: http://www.2pontos.net/preview/pisat/hp/upload/custos_relCOSAT2007.rar

^c Ministério da Previdência Social (BR). Estatísticas da Previdência Social. Anuário Estatístico da Previdência Social – AEPS. Suplemento Histórico, 2008. Brasília (DF): MPS/DATAPREV; 2009; p. 61. [cited 2012 Feb 23]. Available from: <http://www.mpas.gov.br/conteudoDinamico.php?id=423>

^d G56, G56.0, G56.1, G56.2, G56.3, G56.8, G56.9, M50, M50.0, M50.1, M50.2, M50.3, M50.8, M50.9, M53.1, M54.1, M54.2, M65, M65.2, M65.3, M65.4, M65.8, M65.9, M67, M67.8, M67.9, M70, M70.0, M70.8, M70.9, M75, M75.0, M75.1, M75.2, M75.3, M75.4, M75.5, M75.8, M75.9, M77, M77.0, M77.1, M79.

by letter or by telephone and 52 were not located. There was a higher proportion of women and older workers among participants in relation to non-participants, but no statistically significant difference was observed in the monthly income paid by the INSS. The median of the benefit's duration was higher to participants compared to non-participants.

The response variable was duration of the disability benefit (interval in days between the beginning and the cessation of the benefit due to the decision of the medical expert of the INSS).

The predictor variables were selected based on literature reviews about return to work and disability benefits.

The sociodemographic variables were age, sex, level of schooling, skin color, marital status, employment situation, unionization and socioeconomic position – measured by the ownership of assets and level of schooling of the head of household^c: low (classes C, D and E – scores from 0 to 22) and high (classes A and B – scores from 23 to 46).

Psychosocial work demands were measured through the Job Content Questionnaire (JCQ),^f translated and adapted by Araújo^g (2000). Scores were estimated for its three components: psychological demand, control and social support. Each component was analyzed in a dichotomous way (high; low), based on its respective medians. This variable was created through the combination of these three measures:⁶ low (high support/high control, high control/low demand or high support/low demand); and high (low control/ low support, low control/high demand or low support/high demand). Job dissatisfaction, whose evaluation was based on questions of the JCQ adapted by Fernandes^h (2004), was measured by the scores and dichotomously analyzed (high; low) based on the medians.

Physical work demands were defined based on the answers to the questions proposed in the adapted instrument^h referring to repetitive gestures, muscular strength with arms or hands, lifting loads and elevation of the arms above the height of the shoulders. Scores were built by adding the points corresponding to each answer and were analyzed as low exposition and high exposition, with cut-off point in the median.

Other work-related factors were analyzed: employees' turnover in the company and time of employment in the last company (in days).

Factors related to the health problem and to health in general approached pain intensity, measured by the individual him/herself based on his/her perception (scale of zero – absence of pain – to ten – unbearable pain),³ classified into low (< median) and high (\geq median); duration of the problem (in days) before the receipt of the benefit; having undergone surgery due to the current disease; depression symptoms assessed by the administration of the Patient Health Questionnaire;²² undergoing psychological therapy; comorbidities; and utilization of the *Sistema Único de Saúde* (SUS – National Health System) to treat the health problem.

The insured worker's expectation regarding return to work was assessed through the question adapted from the Work Ability Index:¹ "Considering your health, do you think that in two years' time you'll be able to perform your current work?" The expectation was classified into low ("it's improbable" or "I'm not sure") and high ("probable" or "quite probable").

Social security factors involved monthly income paid by the INSS and level of income replacement by the social security (percentage of the net value of the insured worker's last salary replaced by the INSS, classified into up to 100% and higher than 100%).

The factors associated with time up to benefit cessation were identified with survival analysis techniques. The Kaplan-Meier method was used to estimate the survival functions. The identification of factors associated with the duration of the benefit was based on the hazard ratio, which is equivalent to the risk ratio (RR) and respective 95% confidence intervals, and the Cox model was applied. $RR > 1$ indicated higher rate of benefit cessation and shorter duration of the benefit compared to the reference group. RR were estimated to each descriptor variable, taking a category as referent in bivariate analysis to select the variables to the multiple analysis. The multiple analysis was based on a backward approach, starting from a model with all the variables that presented statistically significant crude risk ratios for $\alpha = 0.20$. The statistical significance level $\alpha = 0.05$ was adopted as the criterion for the variables to remain in the model. Level of schooling and monthly income paid by the INSS were excluded from the initial model because they are constructs that directly or indirectly constitute the socioeconomic position. The likelihood ratio test was employed to compare the multiple models. The presupposition of risk proportionality,

^c Associação Brasileira de Empresas de Pesquisa. Critério Brasil de Classificação Econômica: Brasil 2008. São Paulo: ABEP; 2008 [cited 2012 Feb 23]. Available from: www.abep.org/novo/FileGenerate.ashx?id=252

^f Karasek R. Job Content Instrument: questionnaire and user's guide. Rev.1. Lowell: University of Massachusetts; 1985 [cited 2010 Oct 27]. Available from: http://www.jcqcenter.org/JCQGuide_12885-Rev1.pdf

^g Karasek R. Questionário do Conteúdo do Trabalho – JCQ: versão reduzida – formato recomendado: 49 questões. Araújo T, tradutora e adaptadora. Feira de Santana: UEFS, 2000.

^h Fernandes RCP. Distúrbios musculoesqueléticos e trabalho industrial [doctorate thesis]. Salvador: Instituto de Saúde Coletiva da Universidade Federal da Bahia; 2004.

¹ Tuomi K, Ilmarinen J, Jahkola A, Katajarinne L, Tulkki A. Índice de capacidade para o trabalho. Fischer FM, tradutora e coordenadora. São Carlos: EduFSCar; 2005.

Table 1. Sociodemographic, work and social security characteristics. Salvador, Northeastern Brazil, 2008 (N=563).

Variables	N	Mean	Standard-deviation	%
Sociodemographic				
Age (years)				
20 to 29	102			18.1
30 to 39	181			32.2
40 to 49	183			32.5
50 or older	97			17.2
Sex				
Female	400			71.1
Male	163			28.9
Skin color				
White	96			17.1
Mixed ethnicity (black and white)	268			47.6
Black	195			34.6
Indian	4			0.7
Marital status				
With partner	369			65.5
Without partner	194			34.5
Level of schooling				
Up to primary education	123			21.8
Complete/incomplete secondary education	319			56.7
Complete/incomplete higher education	121			21.5
Socioeconomic position				
Low (Classes D and E)	91			16.2
Medium (Class C)	362			64.3
High (Classes A and B)	110			19.5
Employment situation				
Employed	536			95.2
Unemployed	27			4.8
Unionization				
Yes	284			50.5
No	279			49.5
Psychosocial work factors				
Psychosocial demand				
High	287			50.9
Low	276			49.1

To be continued

Table 1 continuation

Variables	N	Mean	Standard-deviation	%
Control (24 to 96)	563	60.2	8,8	
Psychological demand (12 to 48)	563	36.2	5,4	
Social support (8 to 32)	563	21.6	2,9	
Job dissatisfaction (0 to 1)	563	0.4	0,3	
Attitudes and beliefs				
Expectation related to returning to work				
It's improbable	125			22.2
I'm not sure	228			40.5
Probable	146			25.9
Quite probable	64			11.4
Other work factors				
Physical demand (0 to 20)	563	13.2	4,6	
Time of employment in the current company (year)				
≤ 1	59			10.5
> 1	504			89.5
Empresa com alta rotatividade de trabalhadores				
Yes	267			47.4
No	296			52.6
Social security				
Monthly income paid by the INSS (R\$)	563	944.2	703.0	
Level of income replacement by the INSS				
> 100%	264			46.9
≤ 100%	299			53.1

INSS: *Instituto Nacional do Seguro Social* (National Social Security Institute).

necessary to the Cox model, was evaluated with the graphical approach and with a statistical test based on the analysis of Schoenfeld residuals.¹⁵ The final model was stratified by job dissatisfaction due to the violation of this presupposition.

The management of the databases was performed with EpiInfo, version 6.0 and Stata 7.0 for the conduction of the analysis.

This research was approved by the Research Ethics Committee of the Institute of Public Health of Universidade Federal da Bahia (Process no. 014/2009). Access to the nominal data was restricted to the first author.

RESULTS

The mean age of the population was 39 years (Table 1). The majority of the insured workers was of the female

sex (71%), non-white (83%), lived with a partner (65%), came from Class C (64.3%), had studied up to the middle or the end of Secondary School (56.7%) and was composed of employed workers (95%). The mean monthly income paid by the INSS was R\$ 944.23. To 46% of the workers, the income paid by the INSS was higher than their last net salary. The beneficiaries had high control of the work, high psychological demand, high social support, high physical demand and low job dissatisfaction. Workers with negative expectation of return to work predominated (62%).

The mean pain intensity that was reported was 9.28, the mean duration of the health problem before the beginning of the benefit was more than two years, the majority did not report having undergone surgery (85%), 42% presented depression symptoms, and 37% used the SUS for medical treatment (Table 2).

The insured workers' probability of continuing to receive the benefit was higher than 70% in the first 90 days and 14% after one year (Figure 1). The duration of the benefit varied from six to 730 days, with median of 139 days and mean of 188 days (SD = 151). Considering that the censored cases were included in the calculation of the mean, there was underestimation. At the end of the follow-up, 95% of the insured workers had their benefit terminated, 24 continued on work leave and two had their sickness allowance transformed into disability retirement.

The rate of benefit cessation was 35% higher for younger insured workers than for older ones (RR = 1.35; 95%CI 1.14;1.60). Workers with lower level of schooling and those with low socioeconomic position had higher rates of benefit cessation, respectively, 22% (RR = 1.22; 95%CI 0.99;1.49) and 36% (RR = 1.36; 95%CI 1.10;1.69) and, consequently, shorter duration of the benefit. There were no differences in benefit duration in relation to sex, skin color, marital status, employment situation and unionization. Low psychological demand at work increased by 22% the benefit cessation rate (RR = 1.22; 95%CI 1.03;1.45), while high control and job satisfaction reduced the benefit cessation rate by 22% (RR = 0.78; 95%CI 0.66;0.93) and 16% (RR = 0.84; 95%CI 0.71;1.00), respectively. Psychosocial demand, physical demand and turnover in the company had no effect on benefit duration. Workers with positive expectation of return to work had a 22% higher rate of benefit cessation compared to those with negative expectation (RR = 1.22; 95%CI 1.03;1.46). Not reporting comorbidities (RR = 1.19; 95%CI 1.00;1.42) and shorter duration of the health problem before starting to receive the benefit from the INSS (RR = 1.28; 95%CI 1.08;1.52) were associated with benefit cessation. Undergoing surgery due to the health problem, pain intensity, associated depression symptoms, undergoing psychological therapy and utilization of the SUS had no effect on benefit duration.

Table 2. Clinical characteristics of the cases and health care. Salvador, Northeastern Brazil, 2008. (N = 563)

Variables	N	Mean	SD	%
Clinical characteristics				
Underwent surgery due to the health problem				
Yes	86			15.3
No	477			84.7
Pain intensity (0 to 10)	563	9.3	1.1	
Depression symptoms				
Yes	240			42.6
No	323			57.4
Other diseases (comorbidities)				
Yes	217			38.5
No	346			61.5
Duration of the health problem before starting to receive the benefit (in days)	563	897.0	988.0	
Underwent psychological therapy				
Yes	39			6.9
No	524			93.1
Health care				
Care provided by the SUS				
Yes	211			37.5
No	352			62.5

SUS: *Sistema Único de Saúde* (Unified National Health System)

Value of the benefit paid by the INSS lower than or equal to R\$ 593.87 increased by 38% the benefit cessation rate in relation to that of higher value (RR = 1.38; 95%CI 1.16;1.63), while income replacement lower than or equal to 100% by the social security increased this rate by 29%, compared to replacement higher than 100% (RR = 1.29; 95%CI 1.09;1.53) (Table 3).

After adjustment by the multiple analysis, the categories of variables associated with benefit cessation and its shorter duration were: low socioeconomic position (RR = 1.29; 95%CI 1.02;1.64), age below 39 years (RR = 1.23; 95%CI 1.03;1.47), high expectation of returning to work (RR = 1.20; 95%CI 1.00;1.44) and level of income replacement by the INSS lower than or equal to 100% (RR = 1.24; 95%CI 1.04;1.47) (Table 4). These were measures of residual effect, after adjustment by all the potential predictors.

DISCUSSION

Low socioeconomic position, age below 39 years, high expectation of returning to work, and income replacement by the INSS lower than or equal to 100% are related to higher benefit cessation rate and to shorter benefit duration.

Table 3. Means of benefit duration and results of the bivariate analysis for the association of the variables: sociodemographic, work, social security, and cases' clinical characteristics with the duration of the disability benefit. Salvador, Northeastern Brazil, 2008. (N = 563)

Variables	Mean (days)	Risk ratio ^a	95%CI	p
Age (years)				
≥ 39	208	1		
< 39	166	1.35	1.14;1.60	0.001
Sex				
Female	185	1		
Male	196	0.93	0.77;1.12	0.424
Skin color				
White	206	1		
Non-white	185	1.13	0.90;1.41	0.297
Marital status				
Without partner	186	1		
With partner	190	0.98	0.82;1.17	0.805
Level of schooling				
Incomplete/complete higher education	218	1		
Up to complete secondary education	181	1.22	0.99;1.49	0.061
Socioeconomic position				
High	232	1		
Low	178	1.36	1.10;1.69	0.005
Unionization				
Yes	192	1		
No	185	1.05	0.88;1.24	0.592
Employment situation				
Unemployed	193	1		
Employed	188	1.11	0.74;1.68	0.606
Psychosocial demand at work				
High	182	1		
Low	195	0.92	0.78;1.09	0.348
Control at work				
Low	168	1		
High	206	0.78	0.66;0.93	0.005
Psychological demand				
High	200	1		
Low	173	1.22	1.03;1.45	0.023
Social support				
Low	187	1		
High	190	0.99	0.83;1.17	0.876
Job dissatisfaction				
High	177	1		
Low	201	0.84	0.71;1.00	0.051

To be continued

Table 3 continuation

Variables	Mean (days)	Risk ratio ^a	95%CI	p
Physical demand				
High	194	1		
Low	181	1.13	0.95;1.34	0.156
Time of employment at the current company (year)				
> 1	193	1		
≤ 1	154	0.77	0.58;1.02	0.066
Turnover at the company				
Yes	191	1		
No	186	1.07	0.90;1.26	0.457
Expectation of returning to work				
Negative	199	1		
Positive	171	1.22	1.03;1.46	0.023
Underwent surgery due to the health problem				
Yes	198	1		
No	187	1.06	0.84;1.34	0.612
Pain intensity				
High	187	1		
Low	191	0.97	0.82;1.16	0.749
Depression symptoms				
Yes	197	1		
No	182	1.12	0.94;1.33	0.195
Other diseases (comorbidities)				
Yes	202	1		
No	180	1.19	1.00;1.42	0.048
Underwent psychological therapy				
Yes	229	1		
No	186	1.27	0.91;1.78	0.155
Duration of the health problem before the work leave (in days)				
> 532	206	1		
≤ 532	171	1.28	1.08;1.52	0.004
Health care provided by the SUS				
Yes	183	1		
No	192	0.95	0.80;1.13	0.562
Monthly income paid by the INSS (R\$)				
> R\$593.87	214	1		
≤ R\$593.87	163	1.38	1.16;1.63	0.000
Level of income replacement by the INSS				
> 100%	206	1		
≤ 100%	173	1.29	1.09;1.53	0.003

SUS: *Sistema Único de Saúde* (Unified National Health System); INSS: *Instituto Nacional do Seguro Social* (National Social Security Institute).

^a Risk Ratio higher than 1 - increased odds of benefit cessation/return to work and, consequently, of shorter duration of the benefit.

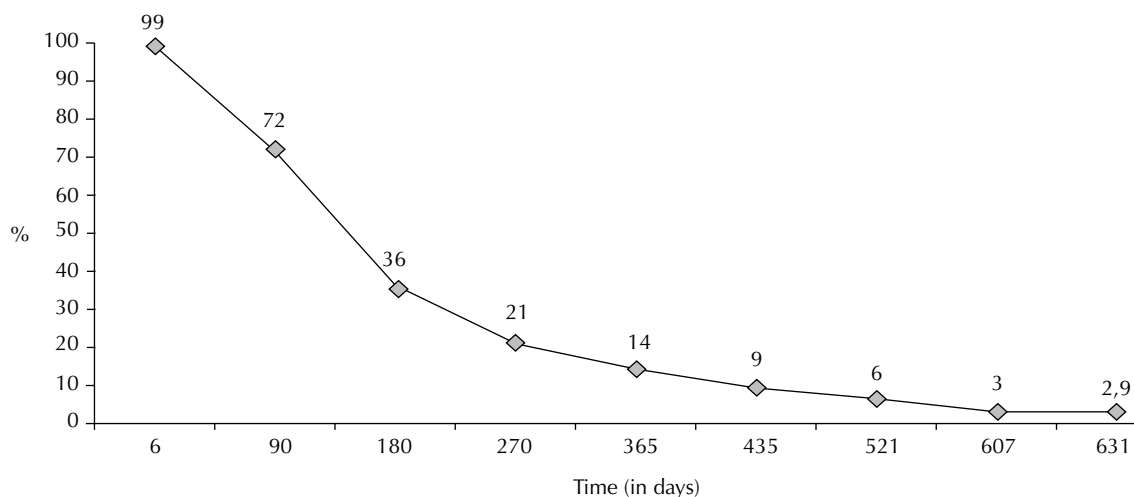


Figure. Survival curve (likelihood of remaining in benefit, in days) of insured workers with work-related neck and/or upper limb musculoskeletal disorders. Salvador, Northeastern Brazil, 2008. (N = 563)

The shorter duration of the benefit among workers of low socioeconomic position compared to those of high socioeconomic position, which was shown in this study, differs from the findings of investigations carried out in other countries, in which the association between socioeconomic position and benefit duration is observed in the opposite direction. Volinn et al²⁴ (1991) examined benefits granted due to low-back pain in the United States and found an inverse relation between income and duration of the work leave. Katz et al¹³ analyzed factors related to return to work among workers who underwent surgery for carpal tunnel syndrome and observed that individuals with lower income had odds almost four times higher of remaining on leave compared to those with higher income. A literature review showed a strong and consistent inverse association between social class and duration of work leave due to low-back pain, mainly among men.²⁵ However, as in the present study, preliminary analyses of the database of the INSS in Bahia in 2000 showed a positive association between the monthly value of the disability benefit, which indirectly measures the worker's salary, and benefit duration.¹ These results can reflect inequalities in the local social security, in which the economically privileged individuals have more lasting benefits. Individuals with privileged socioeconomic position would have greater dialog capacity with their employers and with State institutions, and greater knowledge of their rights and of the functioning of social security, which might determine a difference in the utilization of the social security benefits.

The association between expectation of returning to work and benefit duration agrees with other studies about MSD. This association has been found in Canada by Hogg-Johnson & Cole,¹² who studied workers with

work-related MSD in Ontario, and by Gross & Battié,⁹ who analyzed patients with chronic low-back pain in Alberta. Expectation of returning to work among patients submitted to surgery due to carpal tunnel syndrome was the most important predictor of absence from work.¹³ The reason that influences workers' expectation is not exactly known, nor the mechanisms of its association with duration of work leave. A qualitative study with workers with occupational low-back pain showed that the expectation of returning to work reflects four domains: financial and job security, possibility of recurrence of the health problem, social support at the workplace and self-image.²¹

The level of income replacement by the INSS was a predictor of benefit duration. In the Brazilian social security, the value of the disability benefit received by the insured worker corresponds to 91% of the benefit salary, which corresponds to the mean of the 80% highest salaries of the entire contribution period, duly corrected. Thus, the benefit's value can be lower, equal or higher compared to the insured worker's last salary before the leave. Individuals who received benefits equal to or lower than the value of the last salary before the leave had shorter benefits in relation to those who received benefits with higher value. The higher value of the benefit compared to the salary may be a direct incentive to the worker, thus becoming an attractive condition and influencing the longer duration of the benefit.^{11,20} On the other hand, inadequate income replacement by the social security system, with value lower than the salary, may make the worker return prematurely to work, with important physical limitations. This does not allow him/her to recover adequately, which may lead to relapses and other work leaves. Loeser et al²⁰ concluded that

¹ Santana V, Bouzón A, Bouzas Filho J, Nobre L, Campos M, Silva M. Estimativa da carga e custos indiretos com os acidentes de trabalho: relatório de pesquisa. Salvador: Instituto de Saúde Coletiva da Universidade Federal da Bahia; 2004 [cited 2012 Jan 16]. Available from: http://www.2pontos.net/preview/pisat/hp/upload/custos_relCOSAT2007.rar

Table 4. Factors associated with the duration of the disability benefit. Salvador, Northeastern Brazil, 2008. (N = 563)

Variable	Risk Ratio ^a	95%CI	p
Socioeconomic position			
High	1		
Low	1,29	1,02;1,64	0,031
Age (years)			
≥ 39	1		
< 39	1,23	1,03;1,47	0,025
Expectation of returning to work			
Negative	1		
Positive	1,20	1,00;1,44	0,045
Level of income replacement by the INSS			
> 100%	1		
≤ 100%	1,24	1,04;1,47	0,016

INSS: *Instituto Nacional de Seguridade Social* (National Social Security Institute).

^a Risk Ratio higher than 1 - increased odds of benefit cessation/return to work and, consequently, of shorter duration of the benefit.

Note: Final model stratified by the variable "job dissatisfaction"

there is an effect of the level of income replacement by the insurance on the incidence and duration of disability benefits. Another review concluded that the results concerning the association between level of income replacement by the insurance and benefit duration are controversial, possibly due to differences in the contexts in which the studies were conducted.¹¹

Benefits of younger insured workers lasted less, which indicates lower recovery difficulty in this group. Age is one of the most consistent predictors of disability due to occupational health problems.²³

Psychological demand, work control, comorbidities and the period in which the health problem was present before the receipt of the benefit were associated with benefit duration, but lost significance in the final model. One of the possible explanations may be the insufficient size of the studied population to detect differences in benefit duration caused by these factors. Analytical approaches with multiple predictors frequently demand an increase in the size of the studied sample.¹

The results that were found should be analyzed in light of the limitations of the database; after all, this study used secondary data from the INSS, which may negatively affect the quality of the information. In the present study, the losses represented 16.7% of the selected insured workers. The median of benefit duration was higher to the participants in comparison to non-participants and the difference between the survival curves was statistically significant. The utilization of information restricted to the first benefit of the insured worker was another limitation. Such procedure might underestimate the duration of the disability, because the ULMSD may cause recurrent leaves from work because they are chronic diseases.

Non-strictly medical factors, like socioeconomic position, age, expectation related to returning to work and level of income replacement by the INSS influence the duration of the benefit. These hypotheses should be tested in confirmatory studies. Enhancing the understanding of the process that determines the utilization of the social security/ incapacity for work is fundamental to the development of interventions that reduce the economic, social and personal costs of disability, as well as to face the possibility of social inequality in the utilization of the insurance.

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