The impact of foot and ankle injuries on social security

Impacto previdenciário dos traumatismos de tornozelo e pé

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ABSTRACT

Objective: To determine number and evolution of sickness benefits granted to ICD-10 S90-S99 groups (Injuries to the ankle and foot). **Methods**: This cross-sectional study carried out from 2009 to 2013 assessed the amount of sickness benefits granted by Brazilian Social Security System (INSS) for individuals diagnosed with ICD-10 S90 to S99. **Results**: A total of 11,628.289 sickness benefits were granted over the period studied. In the same period, 520.027 sickness benefits were given for individuals diagnosed with ICD-10 S90-S99, therefore, representing 4.47% of the total, an estimated cost of R$734 million. Fractures were responsible for more than half of sickness benefits given followed by sprains and strains. **Conclusion**: There was progressive increase in number of sickness benefits given by INSS. It was not possible to determine the reason of these variables, but perhaps they are related with the increase in formal jobs in Brazil over the last years. Foot and ankle trauma was a common cause of disability, which represented an important reason to give sickness benefit, mainly among those who had suffered an accident.

Keywords:
Social security; Foot; Foot injuries; Occupational diseases

RESUMO

Objetivo: Determinar o número total e a evolução do número de benefícios do tipo auxílio-doença concedidos para o grupo da CID S90 a S99 (Traumatismo do Tornozelo e Pé). **Métodos:** Estudo transversal, no qual foram estudados os benefícios do tipo auxílio-doença concedidos pelo INSS para o grupo da CID S90 a S99, de 2009 até 2013. **Resultados:** No período de 2009 a 2013, foram concedidos 11.628.289 benefícios de auxílio-doença. No mesmo período, foram concedidos 520.027 auxílios-doença para o grupo S90 a S99, representando 4,47% do total, com custo estimado de R$734 milhões. As fraturas foram responsáveis por mais da metade dos benefícios, seguidas das entorses e das distensões. **Conclusão:** Houve aumento progressivo no número do auxílio-doença previdenciário. Não foi possível determinar a causa dessas variações, mas possivelmente elas estão relacionadas ao aumento da formalização do mercado de trabalho brasileiro, ocorrida nos últimos anos. Os traumatismos do tornozelo e pé foram as causas frequentes de incapacidade, representando importante causa de concessão de benefícios do tipo auxílio-doença, especialmente entre os do tipo acidentário.

Descritores:
Previdência social; Pé; Traumatismos do pé; Doenças profissionais

INTRODUCTION

The Brazilian National Institute for Social Security (INSS, acronym in Portuguese) is responsible for collecting contributions for and payment of benefits for workers. When an employee has coverage by the INSS and he/she suffers an accident or develops a disease that prevents them from working for more than 15 consecutive days, they have the right to receive disability insurance, which is classified as social and pension benefits (B31), not related to work, or work-related accident (B91).[1] In Brazil, the scope of work-

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related accidents is only partially known because reports of these accidents to the INSS is limited. This notification is achieved by Work Accident Communication (CAT, acronym in Portuguese) provided by hired employees.[2,3]

In addition to problems that it poses to individuals, work disability has social, economic and public health implications. Among them the negative effect that being away from work because of disease has on employers and the economy; such absences may result in a reduction in the workforce and an increase in medical costs, social security and production expenses.[4]

Currently, trauma is a severe public health problem because it is responsible for a large amount of hospital services around the world. Of patients who experienced an internal trauma, 85% had musculoskeletal disorders. In individuals aged 0 to 39 years, trauma is the leading cause of morbidity and mortality.[5]

The International Classification of Diseases (ICD) has existed for more than a century; it was first designed as a way to respond to the need to understand causes of death. The ICD became a target of growing interest, and it was used broadly to codify the status of inpatients and, then, for outpatient and primary care consultations; it is now also used for morbidity. Version 10 of the ICD (ICD-10), titled International Statistical Classification of Diseases and Related Health Problems, is the newest revision of the Bertillon classification. ICD-10 is well structured into four hierarchical levels organized into type and characteristic of the disease: chapter, group, category and subcategory. It includes 22 chapters, 275 groups, 2,045 categories and 12,451 subcategories.[6]

Studies carried out in Brazil, Canada and the United States show that diseases included in Chapter XIII: Diseases of the Musculoskeletal System and Connective Tissue are the main causes leading to a request for social security benefits among workers.[7]

We studied the S90 and S99 groups (Ankle and Foot Trauma) and their categories in Chapter XIX: Injury, Poisoning and Certain Other Consequences of External Causes."

OBJECTIVE

We sought to determine total use and growth of benefits of disability insurance given for ICD groups S90 and S99 (Foot and Ankle Trauma).

METHODS

In this cross-sectional study, we verified types of disability insurance benefits (social security and accidental) given by INSS for ICD S90 and S99 and their categories from 2009 to 2013. The study design was non-random. Available data were organized on a website that enabled creation of graphics and tables favorable for reaching the study objective by using numbers and percentages.

The group categories Foot and Ankle Trauma are S90 (superficial injury of ankle and foot), S91 (open wound of ankle and foot), S92 (fracture of foot, except ankle), S93 (dislocation, sprain and strain of joints and ligaments at ankle and foot level), S94 (injury of nerves at ankle and foot level), S95 (injury of blood vessels at ankle and foot level), S96 (injury of muscle and tendon at ankle and foot level), S97 (crushing injury of ankle and foot), S98 (traumatic amputation of ankle and foot), S9 (other and unspecified injuries of ankle and foot).

Information was obtained by searching the database of the Brazil Ministry of Labor and Social Security, available at http://www.previdencia.gov.br.

RESULTS

From 2009 to 2013, a total of 11,628.289 disability insurance benefits was given: 1,560.473 for accidents and 10,067.816 for social security. In the same period, 520,027 was given for disability insurance for S90 to S99 groups (148,832 for accidents and 371,175 for social security), representing 447 of the total.

Figures 1 and 2 describe the total distribution of accidental and social security benefits given during 2009 to 2013. We observed that, after a peak in 2010, the amount of accident disability insurance progressively decreased, whereas among social security benefits, the number increased throughout the historical series.

Benefits of accident disability insurance for ankle and foot trauma represent, on average, 9.53% of the total of this benefit. In the case of social security disability insurance, ankle and foot trauma made up about 3.67% of the total (Table 1).

Figure 3 shows the distribution of accident disability insurance throughout the years of the study. After a peak in 2010, when 30,697 benefits were given, there was reduction in 2011 (30,167) and 2012 (29, 696), followed by an increase in 2013 (29,849).

Figure 4 shows that, among social security disability insurance for the S90 to S99 group, there was progressive increase throughout the years: from 59,860 in 2009 to 86,239 in 2013.

Concerning distribution according to different categories and percentages related to total benefits for group S90

to S99, we observed that fractures were responsible for more than half of benefits given, followed by sprains and distensions (Table 2).

DISCUSSION

In Brazil, between 1998 and 2006, the number of taxpayers contributing to public social security increased 55% and the number of social security disability insurance benefits given increased 198%.[8] Among those who took leave for work-related diseases, the mean duration of leave was 113 days.[9] Between 2000 and 2002, in Recife, northeast Brazil, 70% of disability insurance benefits were given for

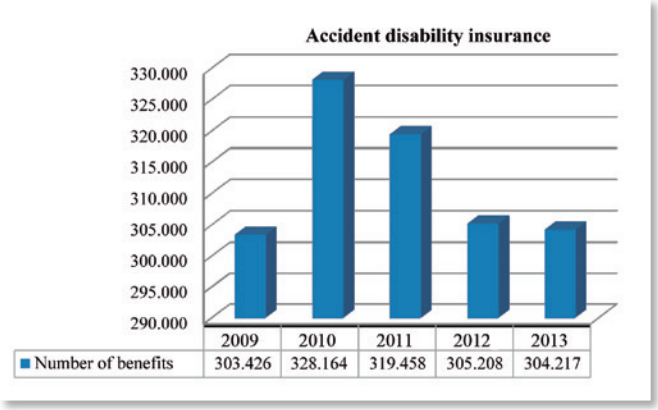

Figure 1 | Accident disability insurance.

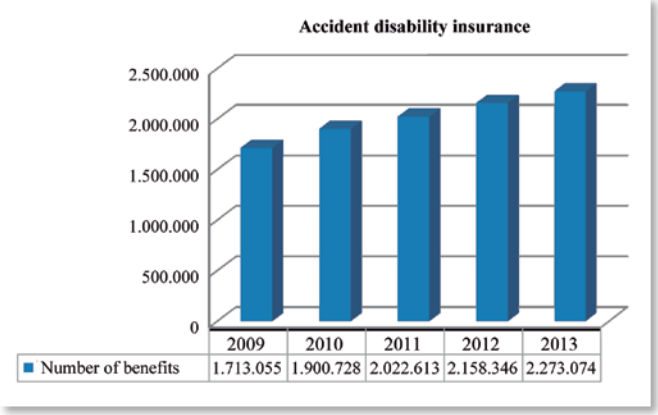

Figure 2 | Social security disability insurance.

Table 1 | Benefits for group of ICD S90 to S99 related to total of benefits given

Year	Social security disability insurance (%)	Accident disability insurance (%)
2009	3.49	9.37
2010	3.63	9.35
2011	3.67	9.44
2012	3.79	9.73
2013	3.79	9.81

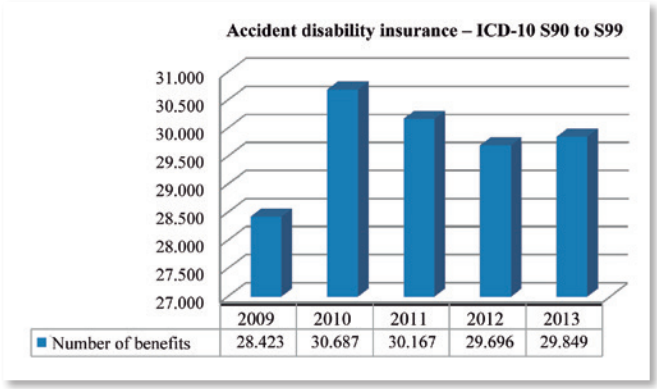

Figure 3 | Accident disability insurance related to ICD S90 and S99.

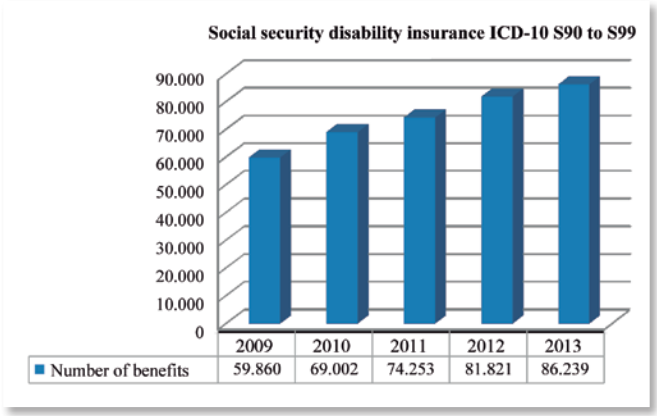

Figure 4 | Social security disability insurance related to S90 to S99.

Table 2 | Benefits distributed by category

ICD	Accident (%)	Social security (%)
S90	10.654 (7,15)	16.741 (4,5)
S91	11.675 (7,84)	28.371 (7,64)
S92	80.584 (54.14)	224.359 (60,45)
S93	37.773 (25,38)	86.524 (23,31)
S94	301 (0,20)	801 (0,22)
S95	81 (0,05)	188 (0,05)
S96	1.648 (1,10)	5.100 (1,38)
S97	1.046 (0,70)	1.077 (0,30)
S98	3.907 (2,63)	5.475 (1,48)
S99	1.213 (0,82)	2.542 (0,68)

individuals aged 17 to 48 years.[10] Therefore, it is important to study the impact of each disease type in order to define prevention strategies and early rehabilitation.

Between 2009 and 2013, we observed a linear increase in the number of social security disability insurance benefits and for the ICD S90 and S99 groups. The accident benefits given peaked in 2010, followed by a decrease in 2011 and 2012, with a subsequent increase in 2013.

Benefits given for work-related disease represented 13.41% of total benefits. In 2000, in the state of Bahia, among the total benefits related to health, 11.7% was for occupational health problems, while occupational accident (external causes, injury, and poisoning) made up 7.3%. Among occupational benefits, accidents represented 62.8%.[11] This high percentage of accidents, if it occurs again in Brazil, would explain the high percentage of conditions in the S90 to S99 group responsible for benefits given in relation to accident disability insurance (9.53%) compared with social security disability benefit (3.67%).

During the study, the number of benefits of social security disability insurance progressively increased. It is not possible to determine the cause of these increases, but they are probably related to an increase in the formalization of the Brazilian labor market, which occurred in the past several years.[8,9] Regardless of the increase of absolute number, there was an increase in the proportion of benefits given for the S90 to S99 group in relation to total benefits, showing an increase in incidence of this type of trauma as the cause of work-related disability, mainly in cases of work-related diseases.

When the categories that made up the ICD groups in the study were assessed, we verified that fractures of the foot (S92) were the main cause of concession of benefits, accounting for more than half, followed by luxation, sprain and joint and ligaments distensions of the ankle and foot (S93), which represented around 25% of benefits. Severe traumas related to ICD S98 (traumatic amputation of ankle and foot) represented 2.64% of accident disability insurance benefits and 1.48% of social security disability insurance benefits. According to social security data,[12] in 2011, the monthly mean expense with disability insurance was R$1,224.146.1643.00, which represents an annual cost about R$14,690 billion. In the same year, a total of 2,342.071 benefits were given for accident and social security disability insurance. Therefore, the social security expenses with disability insurance for the study group were roughly R$734 million.

The main limitation of the study was the inclusion of ankle fractures, which are included in the S80 to S89 groups (Ankle and Knee Trauma). Presentation of social security data is made up to the level of ICD-10. Ankle fractures are part of several subcategories of category S82 (fracture of lower leg, including ankle) and, therefore, it would not be possible to separate other fractures included in this category, such as fractures of the patella, diaphysis and proximal leg bone.

CONCLUSION

Ankle and foot trauma often causes disability, accounting for a significant number of concessions of disability insurance benefits, especially accident type. These benefits therefore have a significant impact on public social security.

Further studies are needed to determine risk factors and working activities that most expose workers to this type of injury in order to establish strategies that may reduce incidence of these disorders.

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