Function of people with spinal cord and health care models in high-complexity institutions in Colombia

Luz Helena Lugo
Universidad de Antioquia https://orcid.org/0000-0002-3467-8835

Maria Paz Grisales (✉ grisales.maria@correounivalle.edu.co)
Universidad de Antioquia https://orcid.org/0000-0003-1226-5076

Vanessa Seijas
Swiss Paraplegic Center https://orcid.org/0000-0002-2072-8512

Ana Maria Posada
Universidad de Antioquia https://orcid.org/0000-0002-0727-3269

Method Article

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Abstract

Background: In Colombia, there are two reasons why the function profile of people with spinal cord injuries differs from the rest of the world: most injuries are related to violence with firearms, and there are no inpatient acute and subacute rehabilitation centers. Due to these differences, there is a need to describe the healthcare models of different institutions and how they affect the function of people with spinal cord injuries in Colombia.

Methods: Within the second International Spinal Cord Injury Community Survey (InSCI), we designed a national module to describe the different institutional healthcare models for spinal cord injury. It seeks to establish professionals involved in care, group dynamics, and rehabilitation objectives and intensity. Institutional coordinators of spinal cord care will complete the questionnaire.

Results: We expect that the InSCI and this module for institutional health care models will allow us to describe these models and how they affect the function of people with spinal cord injuries.

Introduction

There are an estimated 21 (19-24) million people living with spinal cord injury worldwide (1). This population has an average age 39.8 (SD 12.2) years, 3.37 males for every female; and 46.02% have cervical injuries (2). The most frequent etiologies are traffic accidents (39.5%) and falls (38.8%) (2). In Latin America, people with spinal cord injury are younger, there are more men and thoracic injuries are more common (51% of the cases) (2). In an international study the most frequent injury patterns were incomplete paraplegia with 34.5% of the studied population and incomplete paraplegia with 28.1% (3). In Colombia, according to studies in the 1990s and 2000s, the population with spinal cord injury was younger, with an average age of 32 years, men represented 85% of the population, injuries were more frequent at the thoracic level and the main etiology was violence with 40% of the cases, especially firearm injuries (4,5).

Spinal cord injury is a neurological condition that has a great impact on people’s lives, being among the first five conditions of years of life lost due to disability (1). The spinal cord injury interrupts the distal neurological pathways generating sensory, motor and autonomic compromise below the lesion, causing mobility restriction, greater risk of skin lesions, bladder and intestinal malfunction and dysregulation of the cardiovascular system, among other situations (6). The compromise of body structures and functions impairs daily activities related to mobility and self-care, and restricts participation (6). The International Classification of Functioning and Disability (ICF) core set for chronical spinal cord injury includes 44 items of body functions, 19 of body structures, 64 of activities and participation and 41 of environmental factors (7). In 2016, an international study including more than 12,000 people establish that the categories most frequently affected were self-care, home cleanliness an mobility in activities bowel, urinary and sexual functions, spasticity and pain in body functions (3,8).
The functioning of people with spinal cord injury is directly related to the level of injury and its severity, however contextual factors might also modify it (6,9). Among these contextual factors, health care has been recognized as an important mediator (10–14). The World Health Organization recommend that during this period people with spinal cord injuries should receive high intensity rehabilitation processes that seek neurological recovery, functional independence and prevention of complications (15). Around the world this is done in inpatient rehabilitation centers where patients spend between 3 and 24 weeks depending on the complexity of the case and the rehabilitation model of the country (16,17). A study found that during this process the time from the injury to the start of rehabilitation, the overall duration of physical and recreational therapy and the years of experience of the care staff impact on the function and occupational outcomes after the injury (18).

In Colombia, there are no standardized health care models for persons with spinal cord injury during the acute, subacute, and chronic stages, and the characteristics of these models in the institutions where this care is provided are unknown. In general, persons with spinal cord injury are discharged after acute care around a week after the injury and there are no inpatient rehabilitation facilities for the subacute stage. The subacute rehabilitation process is performed on outpatient rehabilitation services with high variance on the time waiting for the start of process, the integration of rehabilitation services, and the experience of professionals. According to a study conducted in the city of Cali between 2009 and 2012, only 18.05% of patients were seen for follow-up during the first 30 post-injury and 16.59% required more than six months for initial evaluation (19). The relationship between the differences in these models of care and the functioning of persons with chronic phase spinal cord injury in the country is also unknown.

This study seeks to characterize the models of care for people with spinal cord injury during the acute and subacute stages during the first stage; and to describe the functioning of people with spinal cord injury in the chronic phase living in the country during the second stage. From these stages, the relationship between functioning and health care models will be explored.

Reagents

Equipment

Procedure

This is a cross-sectional multicenter study in two simultaneous phases. During the first phase seeks to describe the rehabilitation care models of high complexity centers. The second phase seeks to describe the functioning profile of people living with spinal cord injury and to explore the relationship between functioning and the rehabilitation care models.

This study was developed under the recommendations of the Helsinki Declaration, it is considered a low-risk study. On every participation institution the ethics committee will approve the protocol before data collection. Informed consent will be obtained from each participant.
Participating institutions will be invited to participate through the national society of physical medicine and rehabilitation. Among those interested in participating we will select high complexity institutions, with available neurosurgical, orthopedic, rehabilitation departments and intensive care units, and who attend at least 40 spinal cord injury cases per year. Institutions without information on attended persons living with spinal cord injury or their basic demographic and contact information.

During the second phase we will include adults living with spinal cord injury who suffered the injury at least one year before the inclusion. Persons with congenital spinal cord injuries, neurodegenerative diseases, peripheral nerve injuries, moderate or severe cranioencephalic trauma, or who do not understand Spanish will be excluded.

The first phase of the study includes variables in three categories: the general characteristics of the institution, acute in-hospital care, and outpatient care during the subacute stage with emphasis on rehabilitation. A specific questionnaire has been designed to collect this data, considering the ICSOR 2.0 categories, the ISCoS recommendations, the interventions suggested by WHO in its package of rehabilitation interventions and the specific rehabilitation situation of the country. This questionnaire will be reviewed by twelve national experts on spinal cord injury and rehabilitation services using Delphi methodology. At each institution data will be collected through an interview with the rehabilitation department director.

The second phase of the study includes variables to characterize persons with spinal cord injury from the sociodemographic and clinical point of view, functioning, and characterization of the personal care process received by the patient with respect to continuity of care. The data will be entered simultaneously during the interview in the InSCI system.

Statistical Analysis

The sample size was calculated by the InSCI coordinating team for each country. They made a calculation considering the score in the five most relevant ICF domains with scales with Rasch analysis developed in the previous survey (mental functions, bodily functions, mobility, self-care, social integration) (20). A minimum relevant difference of 10% between these categories was considered for comparison of two groups, a power of 80%, an alpha error of 5%. With this, sample sizes were obtained for each of the domains from 74 to 194. For this reason, 200 patients were established as the minimum sample for each country, which is the minimum sample expected to be obtained in this study.

A descriptive statistical analysis of the data obtained from the institutional surveys will be performed. Median and interquartile range will be used for quantitative variables, and frequencies for qualitative variables. This description will be made for both acute care processes and ambulatory care. This data will explore the characteristics where there are major differences between institutions. From this exploration, categories will be established to classify the care models of the institutions. According to the available literature, it is expected that the most important categories to classify the institutions will be related to the intensity of the rehabilitation processes, rehabilitation care during hospitalization and the
integration of services. Finally, it will be explored how the health care models in the country compare with the international recommendations of ISCoS and WHO.

A descriptive statistical analysis will be made of the results obtained from the demographic and clinical characterization of the persons with spinal cord injury participants. Means and standard deviations will be used for quantitative data and frequencies for qualitative data. The functioning categories will be analyzed according to their nature. Additionally, the categories established in Erhmann's article will be used to compare the results with the previous InSCI population (3). An additional exploration of the data will be carried out to compare the results between people with spinal cord injury with tetraplegia and paraplegia.

A cluster analysis of participants will be performed according to the model of care with which they were cared for. The demographic, clinical and functional characteristics of each of these groups will be described with frequencies and means according to each data. The SCIM (Spinal Cord Injury Independence Measure) and the frequency of secondary health conditions will be used for comparison. The calculation of means and standard deviations for the total score of the SCIM in each of these groups will be made, the comparison of means without adjustment will be made by means of a one-way ANOVA, then the comparison with an ANOVA adjusted for age, sex, tetraplegia, complete injury, income deciles, schooling, and complete management in the institution. The comparison of the results of each of the subscales of the SCIM both raw and adjusted by the previously established categories will be explored. The incidence of the most frequent secondary health conditions will be carried out considering the time contributed by each participant, and its comparison will consider adjustment by the previously described categories.

References


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