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ORIGINAL ARTICLE

Functional characterization of patients with cerebral palsy living in the Magallanes region and the Chilean Antarctic

Caracterización funcional de pacientes con parálisis cerebral que viven en la región de Magallanes y la Antártica Chilena

Patricio Barria Aburto[a,b], Vanessa Barria Ruiz[b], Matías Castillo Aguilar[c,f], Rolando Aguilar Cárdenas[d], Asterio Andrade Gallardo[a], Cristian Núñez-Espinosa[e,f,g]

[a]Kinesiólogo/a. Unidad de Investigación, Corporación de Rehabilitación Cruz del Sur. Punta Arenas, Chile.
[b]Brain-Machine Interface Systems Lab, Universidad Miguel Hernández de Elche. Elche, España.
[c]Estudiante de Kinesiología. Universidad de Magallanes. Punta Arenas, Chile.
[d]Ingeniero Eléctrico. Departamento de Ingeniería, Universidad de Magallanes. Punta Arenas, Chile.
[e]Escuela de Medicina, Universidad de Magallanes. Punta Arenas, Chile.
[f]Centro Asistencial Docente y de Investigación, Universidad de Magallanes. Punta Arenas, Chile.
[g]Interuniversity Center for Healthy Aging. Chile.

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What do we know about the subject matter of this study?

Interventions with patients with cerebral palsy (CP) should assess and classify the functional status of each patient at the time of clinical evaluation in order to obtain significant outcomes, thus allowing a comprehensive understanding of the impairment degree in CP.

What does this study contribute to what is already known?

This work is a pioneering study of functional characterization of patients with CP living in the Magallanes and Chilean Antarctica Region and presents new evidence for the characterization of these patients at the national levex

Abstract

Objective: To functionally characterize patients with Cerebral Palsy (CP) living in the Magallanes Region and the Chilean Antarctic. **Patient and Method:** Descriptive-retrospective observational study of patients with cerebral palsy, registered in the Outpatient Rehabilitation Program of the *Corporación de Rehabilitación Club de Leones Cruz del Sur de Punta Arenas* between 1986 and 2018. Patients with CP were clinically categorized and then functionally characterized according to gross motor skills (GMFCS), manual ability (MACS), feeding ability (EDACS), and communication function (CFCS). **Results:** 106 patients were included. Regarding the clinical classification, the most common type of CP was bilateral spastic paralysis, with the highest percentage of functional involvement in each of the evaluated areas, followed by unilateral spastic paralysis, while cases of dystonic CP and other non-classifiable types presented were less frequent. According to the clinical subclassification, spastic

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Correspondence:
Cristian Núñez-Espinosa
cristian.nunez@umag.cl

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Carolina Heresi Venegas

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diplegia was more frequent, especially affecting manual and communication skills level I compared with hemiplegia, while cases of mixed and unclassifiable quadriplegia were less frequent with greater overall involvement of level I feeding skills. **Conclusion**: The observed results of CP in the Magallanes Region and the Chilean Antarctic are similar to studies available in the literature. The complete evaluation and classification of patients with CP enable a better understanding of the pathology for future studies.

Introduction

Cerebral palsy (CP) is a disorder of movement and posture caused by a non-progressive brain lesion in the developing brain[1].Its prevalence is estimated at 2 to 3 cases per thousand births, but it is significantly higher in preterm births, with 40 to 100 cases per thousand births at 28 weeks of gestation or less[2-4], showing specific changes in the underlying trends in groups with different etiologic and socioeconomic characteristics[2,5]. In the management of CP, symptomatic treatment is essential since few interventions modify the underlying pathological state[6].

To ensure that interventions have a significant outcome for people with CP, they should correlate to the functional status at the time of clinical evaluation[6]. Several grading scales evaluate the functional status of patients; the most widely used worldwide include the Gross Motor Function Classification System (GMFCS)[7], Manual Ability Classification System (MACS)[8], Eating and Drinking Ability Classification System (EDACS)[9], and the Communication Function Classification System (CFCS)[10]. Each of them allows establishing the impairment degree in areas related to motor control and speech, as well as functions related to activities of daily living[11], which together allow a comprehensive understanding of the impairment degree in CP and to individualize therapeutic strategies according to the interpersonal differences among CP patients[12,13].

Although population studies have described the functional status of patients with CP, the population living in high southern latitude has been the least studied. The objective of this work is to functionally characterize patients with CP living in the Magallanes and Chilean Antarctica Region, which will contribute relevant evidence to the existing scientific literature, thus providing new information on the characteristics of these patients.

Patients and Method

Participants

Retrospective descriptive observational study of patients with CP, registered in the Outpatient Rehabilitation Program of the *Corporación de Rehabilitación Club de Leones Cruz del Sur* of Punta Arenas, Chile, between 1986 and 2018. This health institution is the sole center that rehabilitates patients with CP living in high southern latitudes in Chile. For this study, all patients with a medical diagnosis of cerebral palsy from the clinical records database of the *Corporación de Rehabilitación Club de Leones Cruz del Sur* were considered, accounting for 106 patients.

The inclusion criteria were to be aged between 4 and 57 years, to have a clinical diagnosis of CP, and to reside permanently for at least 10 months per year in the Magallanes and Chilean Antarctica Region. Consent for the use of patient data was obtained at the time of admission to the institution and with authorization from their legal guardian. Adult patients who did not sign their informed consent and minors who did not sign their informed assent and/or whose legal guardian did not sign informed consent were excluded.

The study was approved by the Ethics Committee of the *Corporación de Rehabilitación Club de Leones Cruz del Sur* and was conducted according to the Declaration of Helsinki on Ethical Principles for Medical Research involving Human Subjects, amended by the 64th World Medical Association General Assembly, in October 2013.

For this study, the data considered were the functional classifications performed in 2019, by reviewing the clinical record of each patient. For the analysis, patients were divided into three descriptive groups as follows: Minors between 4 and 11 years of age (n = 30); Adolescents between 12 and 19 years of age (n = 39); and Adults between 20 and 57 years of age (n = 37).

Gross Motor Function Classification System (GMFCS)

The GMFCS is a 5-level classification system that describes the gross motor function of children and youth with CP based on their self-initiated movement with particular emphasis on sitting, walking, and mobility. Distinctions between levels are based on functional abilities, the need for assistive technology, including hand-held mobility aids (walkers, crutches, or canes), wheeled mobility aids (wheelchairs), and, to a much lesser extent, quality of movement[7].

Manual Ability Classification System (MACS)

The MACS scale assesses a child's typical manual performance in manipulating objects in activities of daily living. These activities should be age-appropriate and should not include activities that require advanced skills, such as playing a musical instrument, i.e., eating, dressing, and playing. Each level determines the degree of assistance needed by the child based on her or his daily activities[8].

Eating and Drinking Ability Classification System (EDACS)

The EDACS evaluates the limitations of eating and drinking ability in people with CP aged from 3 years, establishing five levels of severity, and is characterized by its safety and efficacy. Safety evaluates the texture of the food or fluid that a person can bite, chew, and swallow without risk of choking and aspiration, and efficacy evaluates the ability to hold food and fluids in the mouth, as well as the speed and amplitude of oral movements associated with eating[9].

Communication Function Classification System (CFCS)

The CFCS was used to determine the level of daily communication of a person with CP according to its effectiveness. It presents five levels that allow describing the performance of everyday communication according to the emission and reception of messages and the child's ease to communicate with different people in her or his environment, both as acquaintances and strangers[10].

Table 1 presents a general description of the functionality levels of each scale.

Procedure

The classification procedure for each subject was performed by a health professional with experience in children's neurological rehabilitation by reviewing electronic clinical records from the CRIWEB software in order to classify them in each measurement system.

For the analysis according to the clinical classification of CP, the definitions of the Surveillance of Cerebral Palsy in Europe[2] were considered, classifying the patients as Bilateral Spastic Paralysis (BSP), Unilateral Spastic Paralysis (USP), Dyskinetic Paralysis, and with Other Type of Paralysis (OTP, including ataxia and unclassifiable ones). For further analysis, a clinical diagnostic subclassification of CP was performed on the total number of patients in the study, based on the Cerebral Palsy Alliance classification (14), where patients were grouped into Diplegia, Hemiplegia, Quadriplegia, Mixed, and Unclassifiable.

Statistical analysis

Descriptive analyses of patients with CP registered in the study as of 2019 were performed. The frequency, percentage, and the total number of patients are described according to their distribution by group and sex. Patients are also described functionally based on GMFCS, MACS, EDACS, and CFCS in their five levels. Both descriptions are based on the clinical classification and subclassification used in this study. The SPSS software was used for statistical analysis.

Table 1. Functionality levels of GMFCS[7], CFCS[8], EDACS[9] y MACS[10]

Nivel	GMFCS	CFCS	EDACS	MACS
I	Walk without limitations.	Effective sender and receiver with unknown partners and relatives.	Eat and drink safely and efficiently.	Wields most items but with somewhat reduced quality and/or achievement speed.
II	Walk with limitations.	Effective sender and/or receiver, but slower paced with unknown or familiar partners.	Eat and drink safely, but with some limitations to efficiency.	Handles objects with difficulty; needs help to prepare and/or modify activities.
III	Walk using a handheld mobile device.	Efficient sender and receiver with family partners.	Eat and drink with some safety limitations; there may be limitations to efficiency.	Manages a limited selection of easy-to-manage objects in adapted situations.
IV	Walk using a handheld mobile device.	Inconsistent sender and/or recipients with family partners.	Eat and drink with significant safety limitations.	Maneja una selección limitada de objetos fáciles de administrar en situaciones adaptadas.
V	Transported in a manual wheelchair.	Rarely effective sender and receivers, even with family partners.	Unable to eat or drink safely: Tube feeding may be considered to provide nutrition.	It does not handle objects and has a very limited ability to perform even simple actions.

GMFCS: Gross Motor Function Classification System; CFCS: Communication Function Classification System; EDACS: Eating and Drinking Ability Classification System; MACS: Manual Ability Classification System

Results

This investigation included 106 patients with diagnosis of CP from the *Corporación de Rehabilitación Club de Leones Cruz del Sur* from Punta Arenas, Chile. 67% were men, with a mean age of 18 years and 17 years for women. In relation to the descriptive groups of patients, minors account for 28.3% of the sample, adolescents for 36.8%, and adults for 34.9%.

Table 2 presented the distribution by descriptive groups and sex of the patients, according to clinical classification. There is a percentage increase in cases of bilateral spastic paralysis and dyskinetic paralysis as the patient's age increases (55% and 7%, respectively), affecting mostly men (27%), however, unilateral spastic paralysis presents the highest percentage value in the group of minors (30%).

Table 3 presented the percentage distribution according to the clinical diagnostic subclassification. There is a higher number of patients with quadriplegia, mixed and unclassifiable paralysis the older they are, although during adolescence and compared with the group of minors and adults, diplegia cases increase in percentage (42%) and hemiplegia cases decrease (6%).

Regarding the clinical classification of the study group, according to Surveillance of Cerebral Palsy in Europe, it was observed that most patients presented Bilateral Spastic Paralysis (66 cases, 62.26%), followed by Unilateral Spastic Paralysis (25 cases, 23.58%), Other Types of Paralysis (9 cases, 8.49%), and finally Dyskinetic Paralysis (6 cases, 5.66%).

As clinical subclassification, according to the Cerebral Palsy Alliance, most patients presented diplegia (37 cases, 34.9%), followed by quadriplegia (33 cases, 31.13%), hemiplegia (24 cases, 22.64%), unclassifiable (8 cases, 7.54%), and finally mixed paralysis (4 cases, 3.77%). In this classification, one patient previously classified with Unilateral Spastic paralysis was reclassified as Not Classifiable.

Tables 4 and 5 detail the functional characterization of all patients based on clinical classification and subclassification, respectively. The evaluation of gross motor function performed through GMFCS showed that there is a predominance of functional classification in level I (40%), followed by level V (24%), level II (15%), level III (13%), and level IV (8%), which shows that there is an important functional impact in patients with CP.

Regarding the characterization of manual performance through MACS, although most patients were classified as level I (39%), the records of level II (27%), level III (13%), level V (12%), and level IV (9%) show the significant functional compromise of these patients. The classification of eating and drinking ability through EDACS, showed a predominance of patients classified in level I (66%), followed by level IV (11%), while a smaller group was observed in level III (9%), level II (8%), and level V (6%). The daily communication classification values by CFCS showed that more than half of the patients with CP were classified in level I (54%), followed by level III (14%), level IV (13.5%), and level II (13.5%), while the group classified as level V (4%) was the lowest.

In relation to the clinical classification of the patients and the classification systems evaluated in this study, it could be observed that bilateral spastic paralysis affects motor skills mainly in level V (35%), while manual (38%), feeding (56%), and communication (49%) skills are mainly in level I.

Unilateral spastic paralysis affects functional capacity mainly in feeding (86%) and communication (76%), showing that both are mainly in level I. In the case of dystonic paralysis and other types of paralysis, the distribution of functional impairment is heterogeneous, although, in the feeding function, OTP concentrates 100% of the cases in level I.

Considering the clinical subclassification, it shows that both diplegia and hemiplegia present the greatest functional compromise in level I in all functions. However, the group with quadriplegia concentrates its motor (66%) and manual (34%) compromise mostly in level V, while feeding function is in level IV (29%) and communication (34%) in level III. As for the mixed and unclassifiable groups, the functional

Table 2. Distribution of groups and sex of the patients according to the clinical classification.

Clinical Classification	Minors n (%)	Adolescents n (%)	Adults n (%)	Men n (%)	Woman n (%)	Total n (%)
Bilateral Spastic Paralysis	16 (53%)	25 (64%)	25 (68%)	39 (55%)	27 (77%)	66
Unilateral Spastic Paralysis	9 (30%)	7 (18%)	9 (24%)	19 (27%)	6 (17%)	25
Dystonic paralysis	1 (3%)	3 (8%)	2 (5%)	5 (7%)	1 (3%)	6
Other types of paralysis	4 (13%)	4 (10%)	1 (3%)	8 (11%)	1 (3%)	9
Total	30 (28%)	39 (37%)	37 (35%)	71 (67%)	35 (33%)	106

distribution is heterogeneous, although, in the feeding function, unclassifiable cases concentrate 100% of the patients in level I.

Discussion

This study clinically and functionally characterized patients with CP living in the Magallanes and Chilean Antarctica Region through systems specially validated for these patients. The reliability of the classifications and instruments used in this study allows for characterizing patients under international functional standards, which is one of the requirements to systematically evaluate the progression of rehabilitation programs worldwide[15].

In order to characterize a patient with CP, it is first necessary to classify them according to the clinical characteristics of their condition. Currently, there are several types of classifications and clinical subclassifications of CP based on neurological symptoms and their localization[2]. The Swedish classification is one of the most widely used because of its scope in terms of functional abilities, general health, etiology, and time of the encephalic lesion[14,16].

In relation to the clinical classification used in this study, it was observed that most of the patients presented Bilateral Spastic CP, followed by Unilateral Spastic CP, Other Types of CP, and Dyskinetic CP. These results agree with those found in other experiences in Chile and Europe[17-19]. Regarding this type of classification, Ozmen in 1993, evaluated the frequency and distribution of CP in 1873 cases for 6 years, finding in the analysis percentages similar to those of this study, where Bilateral Spastic Paralysis showed the highest number of cases with 70% of the total number of patients, unilateral Spastic Paralysis reached 18%, Dystonic CP 10%, and other types of paralysis reached 2%[3].

In order to provide a more comprehensive picture of the patients, this study also used a clinical subclassification which evidenced that most of the cases presented with spastic diplegia type. Spastic syndromes are known to be the predominant types among all cases of CP. Our results are consistent with this condition, and furthermore, the distribution of clinical types of our spastic cases was similar to studies reported in developed countries[20].

In relation to functional characterization based on classification systems, these instruments allow a more accurate description of patients compared with traditional methods. In addition, these classification systems facilitate communication between health care providers and allow to standardize populations, which favors clinical research[11]. Thus, the functional scales used in this study (GMFCS, MACS, CFCS, and EDACS) allowed us to identify motor skills, manual dexterity, communicative function, and eating and drinking ability, which favors a comprehensive approach to these patients in the health care context[21].

Gross motor function assessed by GMFCS showed that most patients are in level I. This indicates that patients present better motor performance, being able to walk at home, at school, outdoors, and in the community; go upstairs without the use of a handrail; and perform gross motor activities such as running and jumping, but with limited speed, balance, and coordination[7]. In this study, unilateral spastic paralysis presented the least motor compromise on this scale, while bilateral spastic paralysis presented the greatest functional compromise.

Our findings are similar to those of Howard et al (2005), where 323 patients from the Australian CP register were evaluated, finding a higher relative frequency in GMFCS level I while level V presented the lowest frequency (18%)[22]. This scale has been compared in the Chilean population as in the study by Rotter et al. (2009), who analyzed the functional characteristics of 459 children with CP from *Teletón* institutes, showing significant inverse associations between age and functional compromise of these children[17], which is consistent with what has been reported in the literature[23].

Table 3. Distribution of groups and sex of the patients according to the diagnostic clinical subclassification.

Diagnostic clinical subclassification	Minors n (%)	Adolescentes n (%)	Adults n (%)	Men n (%)	Woman n (%)	Total n
Diplegia	11 (36%)	16 (42%)	10 (27%)	23 (32%)	14 (40%)	37
Hemiplegia	9 (30%)	6 (16%)	9 (25%)	17 (24%)	7 (20%)	24
Quadriplegia	8 (27%)	12 (31%)	13 (35%)	21 (30%)	12 (34%)	33
Mixed	1 (3%)	2 (5%)	1 (3%)	4 (6%)	0 (0%)	4
Not Classifiable	1 (3%)	3 (8%)	4 (11%)	6 (9%)	2 (6%)	8
Total	30 (28%)	39 (37%)	37 (35%)	71 (67%)	35 (33%)	106

Table 4. Functional classification is based on the clinical classification of patients with cerebral palsy

Functional Classification		Bilateral Spastic Paralysis n (%)	Unilateral Spastic Paralysis n (%)	Dystonic Paralysis n (%)	Other Type of Paralysis n (%)	Total n (%)
GMFCS	I	19 (29%)	17 (68%)	0 (0%)	6 (67%)	42
	II	4 (6%)	7 (28%)	3 (50%)	2 (22%)	16
	III	11 (17%)	1 (4%)	1 (17%)	1 (11%)	14
	IV	9 (14%)	0 (0%)	0 (0%)	0 (0%)	9
	V	23 (35%)	0 (0%)	2 (33%)	0 (0%)	25
MACS	I	25 (38%)	12 (48%)	0 (0%)	4 (44%)	41
	II	13 (19%)	8 (32%)	3 (50%)	5 (56%)	29
	III	8 (12%)	5 (20%)	1 (17%)	0 (0%)	14
	IV	9 (14%)	0 (0%)	0 (0%)	0 (0%)	9
	V	11 (17%)	0 (0%)	2 (33%)	0 (0%)	13
EDACS	I	37 (56%)	22 (88%)	2 (33%)	9 (100%)	70
	II	5 (8%)	2 (8%)	1 (17%)	0 (0%)	8
	III	7 (11%)	1 (4%)	2 (33%)	0 (0%)	10
	IV	11 (16%)	0 (0%)	1 (17%)	0 (0%)	12
	V	6 (9%)	0 (0%)	0 (0%)	0 (0%)	6
CFCS	I	32 (49%)	19 (76%)	1 (17%)	5 (56%)	57
	II	7 (11%)	4 (16%)	1 (17%)	2 (22%)	15
	III	11 (17%)	1 (4%)	2 (33%)	2 (22%)	16
	IV	12 (18%)	1 (4%)	2 (33%)	0 (0%)	15
	V	4 (6%)	0 (0%)	0 (0%)	0 (0%)	4

GMFCS: Gross Motor Function Classification System; CFCS: Communication Function Classification System; EDACS: Eating and Drinking Ability Classification System; MACS: Manual Ability Classification System

Table 5. Functional classification based on clinical diagnostic subclassification of patients with cerebral palsy.

Functional Classification		Diplegia n (%)	Hemiplegia n (%)	Quadriplegia n (%)	Mixed n (%)	Unclassifiable n (%)	Total n
GMFCS	I	20 (57%)	14 (58%)	1 (3%)	1 (25%)	6 (75%)	42
	II	4 (11%)	7 (29%)	1 (3%)	2 (50%)	2 (25%)	16
	III	7 (20%)	2 (8%)	4 (11%)	1 (25%)	0 (0%)	14
	IV	2 (6%)	1 (4%)	6 (17%)	0 (0%)	0 (0%)	9
	V	2 (6%)	0 (0%)	23 (66%)	0 (0%)	0 (0%)	25
MACS	I	25 (71%)	12 (50%)	0 (0%)	0 (0%)	4 (50%)	41
	II	7 (20%)	6 (25%)	9 (26%)	3 (75%)	4 (50%)	29
	III	1 (3%)	6 (25%)	6 (17%)	1 (25%)	0 (0%)	14
	IV	1 (3%)	0 (0%)	8 (23%)	0 (0%)	0 (0%)	9
	V	1 (3%)	0 (0%)	12 (34%)	0 (0%)	0 (0%)	13
EDACS	I	30 (86%)	21 (88%)	9 (26%)	2 (50%)	8 (100%)	70
	II	2 (6%)	1 (4%)	4 (11%)	1 (25%)	0 (0%)	8
	III	2 (6%)	1 (4%)	6 (17%)	1 (25%)	0 (0%)	10
	IV	1 (3%)	1 (4%)	10 (29%)	0 (0%)	0 (0%)	12
	V	0 (0%)	0 (0%)	6 (17%)	0 (0%)	0 (0%)	6
CFCS	I	28 (80%)	17 (71%)	7 (20%)	0 (0%)	5 (62%)	57
	II	4 (11%)	3 (12%)	3 (9%)	1 (25%)	3 (38%)	15
	III	1 (3%)	1 (4%)	12 (34%)	2 (50%)	0 (0%)	16
	IV	2 (6%)	3 (12%)	9 (26%)	1 (25%)	0 (0%)	15
	V	0 (0%)	0 (0%)	4 (11%)	0 (0%)	0 (0%)	4

GMFCS: Gross Motor Function Classification System; CFCS: Communication Function Classification System; EDACS: Eating and Drinking Ability Classification System; MACS: Manual Ability Classification System

Regarding the classification of ability to handle objects in daily activities assessed through MACS, the highest percentage was reached in level I, especially in patients with unilateral spastic paralysis and other types of paralysis, followed by levels II, III, and V, and the lowest percentage was in level IV, indicating that most of the subjects manage to manipulate objects with ease and success[24]. Our study showed similar values to those of Öhrvall et al (2014) with data from 1267 children from the Swedish CP Surveillance Program registry (CPUP), finding the highest percentage of cases in Level I (44%) and the lowest percentage in level III (9%), differing from the findings of this study which records the lowest percentage in level IV[25]. However, the greatest involvement in this area was observed in bilateral spastic paralysis and dyskinetic paralysis, as well as in the clinical subclassification of quadriplegia, which reflects the complex manual involvement of this condition.

In relation to the ability to eat and drink, in our study, it was identified that more than half of the patients were in level I while the lowest values were in level V. Based only on the clinical subclassification, it is possible to observe that quadriplegia is the one that presents greater functional compromise in this area since the clinical classification is very similar in its distribution of cases. This means that most of the subjects can eat and drink safely and efficiently. These results are slightly different from cross-sectional population-based cohort studies in children with CP that have identified a total of 43.5% of patients in level I and the lowest percentage values were identified in level IV with 10.6%. However, although our data present differences, the EDACS seems to be a possible complement to the clinical evaluation of feeding skills in children with CP for use in surveillance trials and clinical practice[26]. In addition, this classification may be useful for the follow-up of patients during development since digestive disorders are one of the most frequent comorbidities among children with CP[27].

In relation to communication categorized by CFCS, it was identified that more than half of the patients were classified in level I, who did not present problems in communication, managing to alternate independently and effectively between the role of sender and receiver of information with most people and in most environments or contexts[10]. In 2020, Kristoffersson et al. published a cross-sectional study with a sample of 3000 children aged 0-18 years and identified that 45% of the patients in the Swedish CPUP were classified as level I. This indicates that 55% were not fully effective communicators[28]. In our study, 46.2% of patients presented with varying severity communication problems. These findings are consistent with previous research results suggesting that children with CP are at high risk of developing communication problems[29].

One of the challenges in the standardization and categorization of patients with CP is the creation of epidemiological registries and cross-sectional databases at the national level that allow greater access to information that can be used both for its applicability in local strategies and in public policies to improve the health system for these patients. The results of this study show the importance of clinical subclassification of these patients because it shows more clearly the rehabilitation needs in each of the dimensions studied, allowing to face the challenges of this process in a cross-sectional and multidisciplinary way. Thus, these findings can help health providers to improve therapeutic plans and programs for children and adolescents with CP, by assigning therapies, equipment, and technical aids appropriate to the characteristics of each level of functional classification[21].

The main strengths of this study were to demonstrate for the first time the functional characteristics of patients with CP living in the Magallanes and Chilean Antarctica Region and the use of the GMFCS, MACS, EDACS, and CFCS scales which together provide a complete profile of the patients' functionality. The limitations of this study are not having all the evaluations of patients with CP in the region, since some of the patients do not attend the Rehabilitation Center; the four areas evaluated, although they are the most used in the classification of patients with CP, are not the only ones found in the literature; the retrospective design used could incorporate some degree of bias in the information since the clinical records were completed before the study by professionals who were not involved in the study.

It is expected that CP classifications will allow a common language in order to describe and communicate more adequately the large heterogeneous number of functional abilities in people with CP, both the classification and the common language are important because they allow information to be transmitted quickly and adequately from one clinician to another and caregivers at the same time. Traditionally used classification systems allow standardization of populations in order to facilitate clinical research[11].

Future work should identify the usefulness of the classifications for the management and provision of services in the clinical context and research helping in the management of patients with CP. In addition, the main causes associated with the different types of CP should be identified by implementing information collection systems for use at the hospital level, family health centers, and through direct interviews with family members and patients for complementary examinations and medical reports.

Conclusion

The most frequent type of CP in the clinical classification was bilateral spastic paralysis, followed by unilateral spastic paralysis. In the clinical diagnostic subclassification, the most common CP was spastic diplegia. The main functional motor problems were seen in level I of unilateral spastic paralysis and level V of bilateral spastic paralysis. As for manual function, feeding, and communication, they are mainly at level I, mostly in patients with diplegia and hemiplegia. All these results led to the conclusion that the observed reality of CP in this region is similar to the situation in other countries and localities available in the literature. However, the importance of a complete diagnosis is fundamental to establishing suitable comparisons between study groups.

Ethical Responsibilities

Human Beings and animals protection: Disclosure the authors state that the procedures were followed according to the Declaration of Helsinki and the World Medical Association regarding human experimentation developed for the medical community.

Data confidentiality: The authors state that they have followed the protocols of their Center and Local regulations on the publication of patient data.

Rights to privacy and informed consent: The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is in the possession of the correspondence author.

Conflicts of Interest

Authors declare no conflict of interest regarding the present study.

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