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Application of the scale Spinal Alignment and Range of Motion Measure (SAROMM) in children and adults with cerebral palsy in a compartment institution in Porto Alegre (RS)

Aplicação da escala Spinal Alignment and Range of Motion Measure (SAROMM) em crianças e adultos com paralisia cerebral, em uma instituição de abrigagem de Porto Alegre (RS)

Aplicación de la escala Spinal Alignment and Range of Motion Measure (SAROMM) en niños y adultos con parálisis cerebral de una institución de refugio en Porto Alegre (RS)

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ABSTRACT | This study described the profile of institutionalized children and adults with cerebral palsy (CP), as well as their musculoskeletal alterations, spinal alignment and range of motion; and to outline strategies to minimize the advance of already present deformities. This is a cross-sectional and descriptive study. Children and adults with cerebral palsy from a shelter in the city of Porto Alegre, Rio Grande do Sul were evaluated (n=28). The Spinal Alignment and Range of Motion Measure (SAROMM) scale was used to assess deformities and the Gross Motor Function Classification System (GMFCS) was used to classify the functional level. 96% of the subjects were spastic; 42.85% of the total number of participants had motor level V; the greatest deformities found were in the knee, hip and spine, evaluated by the SAROMM Scale, associated with older age and spastic quadriplegia, with clinical diagnosis in the medical record. Subjects over 20 years old had an average score of 68.7 (ranges from 0 to 104) and subjects under 20 years old, their average score was 55.1 points, wherein the lower the value the better the alignment and the less deformities. Subjects with CP of a shelter location had, mostly, bilateral spasticity of the four limbs, their predominant GMFCS level was V and the major deformities found were joint changes in knees, hip and spine. Strategies should be drawn and executed as early as possible to reduce deformities and the SAROMM scale may be a choice to evaluate this audience.

Keywords | Cerebral Palsy; Disability Evaluation; Physiotherapy.

RESUMO | O objetivo do estudo foi descrever o perfil de crianças e adultos institucionalizados com Paralisia Cerebral, bem como, suas alterações musculoesqueléticas, alinhamento da coluna vertebral e amplitude de movimento; também, traçar estratégias para minimizar o avanço das deformidades já instaladas. Estudo de caráter transversal e descritivo. Crianças e adultos com Paralisia Cerebral de uma Instituição de abrigagem da cidade de Porto Alegre/RS foram avaliados (n=28). Utilizou-se a escala *"Spinal Alignment and Range of Motion Measure"* (SAROMM) para avaliar as deformidades e *Gross Motor Function Classification System* (GMFCS) para classificar o nível funcional. 96% dos sujeitos foram do tipo espástico; 42,85% apresentaram nível motor V do total dos participantes; as maiores deformidades encontradas foram em joelho, quadril e coluna avaliados pela Escala de SAROMM, associado com a idade mais avançada e quadro de quadriplegia espástica, com diagnóstico clínico em prontuário. Sujeitos maiores de 20 anos obtiveram uma pontuação média de 68,7 (varia de 0 a 104) e

Study performed in Casa do Menino Jesus de Praga, Porto Alegre (RS).

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sujeitos menores de 20 anos, sua pontuação média foi de 55,1 pontos, sendo quanto menor, melhor o alinhamento e menos deformidades. Sujeitos com PC de um local de abrigagem apresentaram, na sua maioria, espasticidade do tipo bilateral dos quatro membros, nível de GMFCS predominante foi o V e alterações articulares em joelhos, quadril e coluna vertebral como maiores deformidades encontrada. As estratégias devem ser traçadas e iniciadas o mais cedo possível para diminuir e ou minimizar deformidades e a escala de SAROMM pode ser uma escolha para avaliar esse público.
Descritores | Paralisia Cerebral; Avaliação da Deficiência; Fisioterapia.

RESUMEN | El objetivo de este estudio fue describir el perfil de niños y adultos institucionalizados con parálisis cerebral (PC), sus cambios musculoesqueléticos, alineación espinal y rango de movimiento, así como elaborar estrategias que mitigan el avance de las deformidades ya instaladas. Se trata de un estudio transversal y descriptivo. Se evaluaron a niños y adultos con parálisis cerebral en una institución de refugio en la ciudad de Porto Alegre, ubicada en el estado de Rio Grande do Sul (n=28). Se utilizó la escala *Spinal Alignment and Range of Motion Measure* (SAROMM) para evaluar las deformidades y el Sistema de Clasificación de la Función Motora Gruesa (GMFCS) para clasificar el nivel funcional. El 96% de los sujetos eran espásticos; el 42,85% tenían nivel motriz V; las mayores deformidades encontradas fueron en las rodillas, la cadera y la columna evaluadas por la escala SAROMM, que se asociaban a mayor edad y la cuadriplejía espástica con diagnóstico en la historia clínica. Los sujetos mayores de 20 años tuvieron un puntaje promedio de 68,7 (que oscila de 0 a 104), y los sujetos menores de 20 años presentaron un puntaje promedio de 55,1 puntos, por tanto, cuanto menor la edad, mejor es la alineación y menos deformidades. Los sujetos con PC de un local de refugio presentaron, en su mayoría, espasticidad de tipo bilateral en las cuatro extremidades, predominancia del nivel V de GMFCS y cambios articulares en rodillas, cadera y columna como las mayores deformidades encontradas. Se debe elaborar y comenzar estrategias lo antes posible para disminuir o mitigar las deformidades de esta población, y la escala SAROMM puede ser una opción para evaluarla.
Palabras clave | Parálisis Cerebral; Evaluación de la Discapacidad; Fisioterapia.

INTRODUCTION

A subject living in a shelter institution, in addition to experiencing abandonment, lack of love or disregard, experiences deprivation of family life, which is sometimes impossible to be circumvented. Moreover, a subject living in a shelter institution with cerebral palsy (CP), functionally dependent on their caregivers, are practically forgotten[1]. For a long time, these subjects remained (or still remain) without any type of intervention (motor, cognitive, learning, language, spiritual, etc.). Only with hygiene and feeding intervention. This population must be seen, studied, and the scientific community should bring new and significant information to these subjects, as there seems to be few studies in this field[1].

CP is a non-progressive disease, caused by an injury to the immature brain, representing the most common childhood neuromuscular disorder. The injury may occur during the prenatal, perinatal or postnatal period and the causes may be: congenital, genetic, inflammatory, infectious, anoxic, traumatic and metabolic[2,3]. It can be classified according to the affected brain region, according to the severity of the impairment, or by the topographic distribution of the lesion. As for cerebral involvement, CP can be subdivided into spastic, ataxic, dyskinetic, dystonic, mixed and hypotonic. Topographic distribution can be classified as bilateral (the two sides of the affected body) or unilateral (an affected hemicorp)[4].

It has a growing prevalence, that is, about 1.5 to 4 children per 1000 live births have CP, generating high economic cost and negatively impacting the quality of life[5]. The damage caused to the immature nervous system, associated with late therapeutic assistance, leads to a poor prognosis, which is associated to the neuropsychomotor development of children with CP[6]. Although the brain injury remains static in its size, the resulting musculoskeletal changes will invariably progress due to spasticity, muscle weakness, and deficiency of longitudinal skeletal growth[7].

Postures and patterns of atypical movements can trigger delay in the acquisition of motor skills. People with CP are more likely to have a decrease in range of motion (ROM) due to reduced mobility and the presence of spasticity and/or dystonia. Loss of joint amplitude is a main concern in the long-term management of children with CP. Deformities such as

scoliosis, pelvic obliquity and hip dislocation are more common in severely affected adults, usually those with bilateral spastic CP or those who do not walk[8,9]. Muscle contractures, foot deformity and osteoarthrosis, on the other hand, can be found in all types of CP[10]. Due to the negative impact of musculoskeletal changes on the quality of life of patients with CP, it is extremely important to evaluate such patients, especially when there is no family that can provide better living conditions.

Spasticity sequelae are the most frequent found in CP Cases, being present in more than 70% of cases[11]. Spasticity may cause musculoskeletal changes secondary to changes in muscle tone. Among musculoskeletal changes, those that affect the lower limbs are more frequent with medial hip rotation, knee flexion, and equinovar feet, corroborating our findings. These changes may be due to adaptive shortening of soft tissues, loss of ROM and biomechanical changes in joint congruence, since some muscles of the lower limbs act on more than one joint[12]. Spasticity occurs due to hypoxic-ischemic injury and bleeding, mainly from the middle cerebral artery (MCA) in the cortical and subcortical areas, classically considered the primary motor system, such as precentral gyrus, inner capsule and white substance[13-15].

For such, there are evaluation scales, which are tools that collect data about the patient and relate to the defined treatment objectives in order to perform a pre- and post-intervention evaluation, create health indicators, or discriminate the profile of the treated patient. They are used to measure, describe, predict or evaluate changes over time, and to establish functional goals and intervention planning. The study conducted by Bartlett and Purdie[16] described the development and preliminary tests of the "*Spinal Alignment and Range of Motion Measure*" (SAROMM) scale. This study demonstrated that SAROMM has sufficient reliability and validity for use in children with CP in clinical and research settings by rehabilitation professionals.

What originated this study was the idea of verifying the profile of a population (of different age groups with CP) in a shelter, who did not receive early multidisciplinary treatment, where these subjects presented contractures and acquired deformities. The proposal was to know how to program evidence-based treatment strategies. However, we observed few articles describing this population, and research in this context is extremely necessary. So it is important to study them in depth. These data could predict something concrete for the following populations that perform an early multidisciplinary rehabilitation. Will we in the future be able to show the importance of early start of rehabilitation, compared to those who have not had the same opportunity?

Thus, this study described the profile of institutionalized children and adults with CP (this population has never been studied) and their musculoskeletal changes, spinal alignment and ROM, as well as to draw strategies to minimize the advance of already present deformities and use a new form of evaluation before and after therapeutic intervention.

METHODOLOGY

Design and participants

This is a cross-sectional and descriptive study, with a non-probabilistic convenience sample, so that all subjects living in the institution participated in the research. Data collection was carried out between August and December 2017, and the sample consisted of children and adults with CP residing in a shelter institution located in the city of Porto Alegre, Rio Grande do Sul. Currently, the institution houses 35 children and adults with neurological injury and multiple disabilities aged between four and 40 years. The invitation to participate in the research was made to the legal guardians of the subjects, since the institution was responsible for the sheltered people and they had intellectual deficit and did not speak.

The inclusion criteria established were: (a) being a resident of the shelter for more than one year; (b) having a CP diagnosis; (c) not having physical and psychological impediments to perform the tests. We used the following exclusion criteria: not having a CP diagnosis; or (b) not tolerating touch and handling, or (c) previous surgery on the spine (arthrodesis), and (d) presence of positioning difficulties to perform the test.

Collection instruments and procedures

Initially, authorization was requested to conduct the study at the institution and for the signing of the informed consent form. After the authorization, the dates for evaluating the sheltered individuals were defined.

The evaluations were conducted in a local room, specifically designed for this purpose, with adequate furniture. The data collection team was composed of two physiotherapy professionals. A previous two-week training was conducted to standardize the assessment.

A goniometer was used to evaluate ROM, a stretcher was used to position patients in supine position, and a bench was used to evaluate patients in sitting position. In addition, the "*Spinal Alignment and Range of Motion Measure*" (SAROMM) scale with 26 items was used. It contains four items for spinal alignment and 11 items for ROM, tested bilaterally. Each item is scored on a scale of 0-4 points: 0 means that there are no limitations on alignment and the correction is active; 1 means a good alignment and passive correction; 2 is assigned when the limitation is reduced almost completely in the passive correction, and there were minimum deformity; 3 means that the limitation is almost not reducible in passive manner, and there is a moderate deformity; 4 is assigned when the limitation is not reduced, and the deformity is severe[16].

The alignment of the spine was determined by the sum of the scores for the first four items (score from 0 to 16). The ROM and extensibility were determined by the sum of the values of items 5 to 26 (score from 0 to 88). Total SAROMM score (spine alignment from 0 to 16 and ROM and extensibility from 0 to 88) can range from 0 to 104. Lower values indicate minimal deviation of spinal alignment and ROM, while high counts indicate significant deviations and limitations. The scale provides a reliable method for estimating overall alignment deviations and limitations of the ROM of the spine[16].

Patients were also classified according to the *Gross Motor Function Classification System* (GMFCS). This classification has important clinical applicability in this population and is based on the severity of functional impairment, and it serves to establish the expected long-term development. It is based on voluntarily started movement, with an emphasis on sitting, transfers and mobility. Patients are divided into five levels of severity, according to the degree of limitation of gross motor function, namely: level I - Walks without restrictions (home and community). Impaired speed, coordination and balance; Level II – Walks with restrictions (home and community) even on flat surfaces, crawls at home and presents difficulties to jump and run; Level III – Walks using a manual mobility device such as walkers and crutches, climbs stairs holding on handrails and depends on the function of the upper limbs to touch the wheelchair for long distances; Level IV – Automobility with limitations; can use motorized mobility. Makes transfers with the help of an adult, walks with a walker for short distances with difficulties on uneven surfaces; Level V – Transported in a manual wheelchair, needs adaptations to sit, fully dependent on activities of daily living and in locomotion and can touch motorized wheelchair with adaptations[17].

Statistical analysis

The data collected from all evaluations were stored in a database of the *application software Statistical Package for the Social Sciences* (SPSS), version 22.0. Descriptive statistical analysis was performed by calculating percentage, mean.

RESULTS

The sample included 28 participants, 15 male and 13 female, aged between six and 37 years, totaling an average of 21.7 years. This great age variability is a characteristic of most institutions that host individuals with CP. Twelve participants presented GMFCS Level V (42.8%), ten presented Level IV (35.7%), four presented Level III (14.2%) and two participants Level II (7.1%). No participants with motor level I were found. Participants did not have their functional independence, language or cognition assessed.

All were evaluated by the SAROMM scale and the results were compared with data from the subject himself, such as age and motor level (GMFCS). Analysis of Table 1 showed that the participants with the highest score on the SAROMM scale have motor Level V and IV (78.5%).

Table 1. Overall results of participants' assessment through Spinal Alignment and Range of Motion Measure (SAROMM)

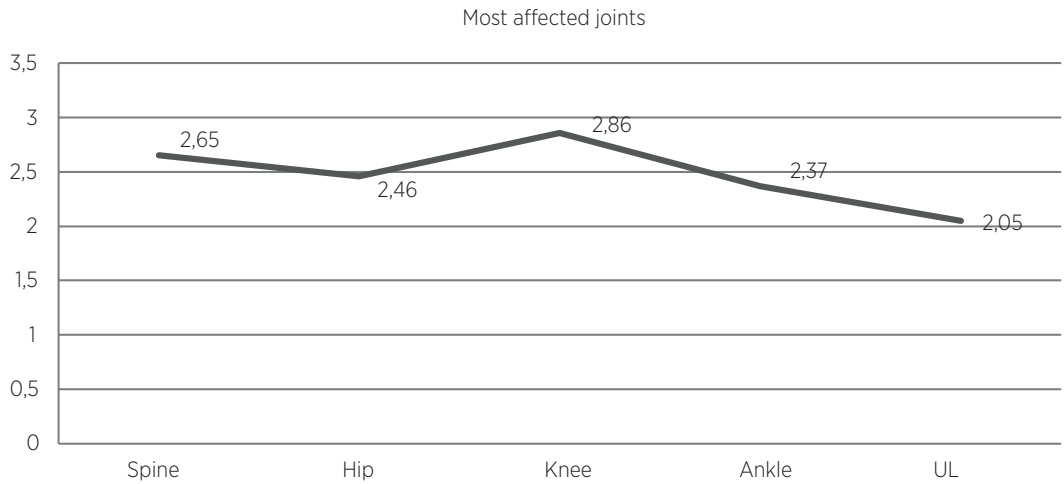
Participants	Alignment Spinal	Score hip	Score knee	Score ankle	Score UL	ROM	Total SAROMM	Age
Participant 1	3.2	2	2	3	1	2	59	6
Participant 2	3	2	2	2	2	2	56	32
Participant 3	2	2.3	2	3	2	2.3	60	37
Participant 4	2	2.4	2.5	1	2	1.9	55	35
Participant 5	2	1.5	2.5	0.2	1	1.3	38	25
Participant 6	**1.2**	**0.5**	**1**	**1**	**0**	**0.6**	**19**	**20**
Participant 7	4	3.1	4	4	3	3.5	92	21
Participant 8	1.7	2.7	4	3	3	3.1	74	21
Participant 9	**3.7**	**3.2**	**4**	**4**	**4**	**3.8**	**94**	**28**
Participant 10	2.4	3.3	3	2	1	2.3	72	23
Participant 11	2	2.3	2	2	1	1.8	54	25
Participant 12	3	3	3.7	3	3	3.1	81	32
Participant 13	2	2.2	2.5	2	1	1.9	54	19
Participant 14	2	2	2.5	2	1	1.8	48	21
Participant 15	4	2.1	3	3	1	2.2	60	13
Participant 16	2.5	1.3	2	1	0	1.0	35	14
Participant 17	2.7	3.1	3	3	2	2.7	77	36
Participant 18	2	2	2.5	0.7	1	1.5	45	15
Participant 19	2.5	2.3	2	2	2	2.0	58	21
Participant 20	3.7	3.2	4	4	2	3.3	90	27
Participant 21	1.7	2.1	4	2	3	2.7	63	21
Participant 22	3.7	3	3	2	2	2.5	77	21
Participant 23	3	3.3	4	4	3.5	3.7	91	23
Participant 24	3	3.5	3	2	4	3.1	82	25
Participant 25	3.7	2.9	2.5	3.5	3	2.9	80	15
Participant 26	2	2.0	2.5	1	3	2.1	53	8
Participant 27	2	2	3	2	2	2.2	56	11
Participant 28	3.2	3.1	4	4	4	3.7	91	15
Average value	**2.6**	**2.4**	**2.8**	**2.3**	**2.0**	**2.4**	**64.7**	**21.7**

UL: upper limb; ROM: range of motion.

	GMFCS V
	GMFCS IV
	GMFCS III
	GMFCS II

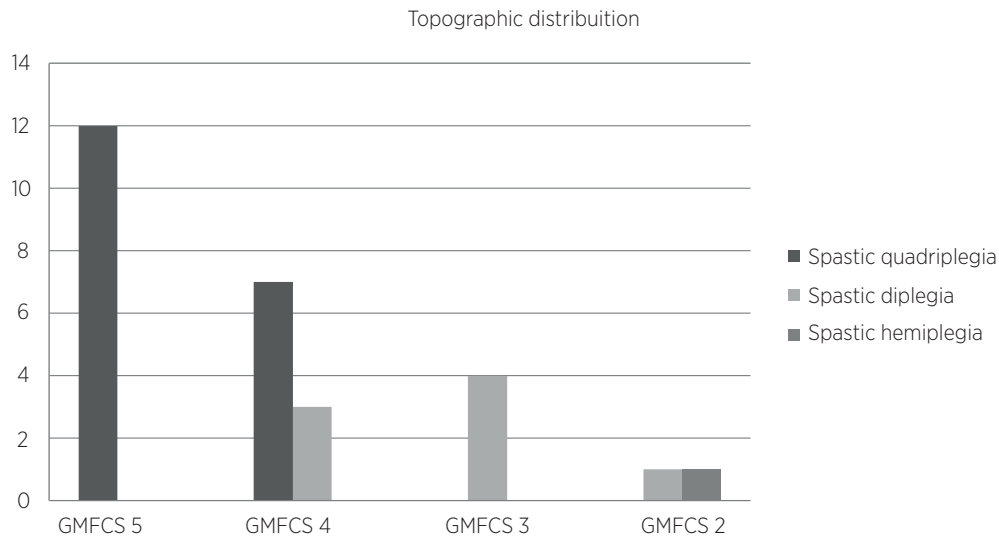
The joints most affected by deformities and muscle shortenings were knees, spine and hip respectively (Figure 1). Subjects older than 20 years obtained an average score of 68.7. Considering that 52 would be the median score of the SAROMM scale (104 is the maximum), namely subjects with more deformities and shortenings, older subjects displayed more deformities and shortenings than younger ones, who also obtained a score close to 52% (55.1). The subject with the highest score was 28 years old (SAROMM 94) and the one with the lowest score was 20 years old (SAROMM 19). The youngest scored 59 points (6 years) and the oldest 60 points (37 years).

In this study, there was a large number of individuals with already present contractures and deformities, most often in the joints of the knee, spine and hip respectively, although it should be noted that the SAROMM Scale uses goniometry. In the topographic evaluation (Figure 2), the predominance of the evaluated group consisted of patients with bilateral spastic CP (quadriplegia) with 19 participants (67.8%), followed by bilateral spastic with predominance of lower limbs with six participants (21.4%) and two participants with unilateral spastic (7%). Spasticity predominated in the entire group evaluated (96.4%).



UL: upper limbs.

Figure 1. Joints most affected by shortening and deformities



GMFCS: Gross Motor Function Classification System.

Figure 2. Topographic involvement of the evaluated individuals

The natural course of CP has changed greatly over the past 50 years. Studies in several countries have shown that the life expectancy of individuals with CP has increased[18]. Children with CP may have survival rates similar to that of the general population, when they do not have significant comorbidities and effectively receive adequate health care[19].

Fortunately, in the last ten years, health teams have been detecting children's neurofunctional lesions early and initiating rehabilitation treatment as early as possible. The initial assessment of the brain after the injury is challenging, as there is uncertainty to know at what time the event of the neurological injury occurred. Supplementary examinations (electroencephalogram, brain ultrasound, cerebrospinal fluid, magnetic resonance imaging) and the patient's clinic are great allies for early diagnosis[20,21]. However, subjects who were born longer did not have the same outcome. In the case of older shelter residents, the diagnosis of CP was made late, no treatment was invested, mainly because it was considered long and generated pain. Follow-up was discouraged or poorly understood. Subjects living in the shelter did not have a structured family that could invest in their development[22].

What can be done to this population, where after-effects are already present? The important thing here is to try to decrease or minimize them. It is extremely important to know the profile of the subjects, the place where they live and their musculoskeletal changes, such as the alignment of the spine and ROM. Another objective is to draw strategies to minimize the advance of already present deformities.

As in the present study, Andersson and Mattsson[23] found 80% of contractures in adults with CP. Of the 27 quadriplegic participants, 25 did not walk and, of these, only one had no contracture. Of the 47 hemiplegics, 31 had contractures. According to the results of ultrasound studies in muscles of subjects with CP, both in cases of immobility or disuse and in cases of excessive use or in unfavorable biomechanical situations, tissue adaptations occur and, as consequences, contractures, muscle atrophies and modifications in muscle architecture occur. The muscle is a dynamic organ that adapts to the demands of its use.

In addition to bilateral limb involvement, spasticity also predominates in CP. Spastic patients have global changes in muscle tone, decreased spontaneous motor skills and joint mobility, leading to the emergence of deformities. Subjects withs bilateral spastic CP with a predominance of lower limbs and unilateral spasticity, in general, have less change in muscle tone compared to subjects with bilateral spastic CP of the four limbs[24]. Usually, these biomechanical changes lead to asymmetry, weight discharge changes, balance changes, that is, compensatory strategies are used to perform their functions[8]. As in this study, the spasticity of the four limbs was predominant (67.8%), and thus functionality is quite limited. Most of the time was spent on beds and chairs. Such a brain is very immature and more susceptible to these kinds of injuries. As for unilateral spasticity, Santos suggests that its prevalence ranges from 21 to 40% of CP cases. In this study, we found 7%[15].

For this population, the more serious the case of the child, the higher the risk of abandonment by the biological family, thus leading to more patients with spastic and bilateral injury of the four limbs[25]. In the earliest stages, spasticity leads to inadequate articular positions, leading to dynamic muscle contractures that, over time, stay fixed in place, leading to articular deformities. There is a muscular imbalance between agonists and antagonists, and excessive contraction/tension of spastic muscles that distends and weakens their antagonists. It is worth noting that there are secondary deformities due to compensations, such as hip flexion being secondary to knee flexion, and equinovarus being secondary to knee flexion. This is due to the fact that many muscles have action in more than one joint, a recurring fact in our sample[25].

Changes in the spine were one of the most common. Scoliosis in children with CP is caused by inadequate postures, which can negatively affect the morphology of the chest and physiology of the respiratory system, causing the occurrence of respiratory comorbidities that will affect the quality of life of these children[26]. High rates of scoliosis were found in the bilateral spastic group of the four limbs. Among the children with this change in the spine, none showed gait. Hodgkinson et al.[27] reported that children with CP who did not walk had a high percentage of scoliotic posture occurrences. Deformities related to the trunk of spastic patients showed severe scoliosis, with a higher incidence in the thoracolumbar region.

Bottos et al.[28], in a characterization study of 72 adults with CP in Italy, found scoliosis above 30° in 20.3% of the participants and 28.2% of hip dislocation or subluxation. Turk et al.[29], in a study involving 63 adult women with CP, found 40% of hip deformities (pelvic obliquity or hip dislocation), 53% of spinal

deformities (kyphosis or scoliosis) and 75% of muscle contractures. In the present study, 14 participants (50%) had more deformities in the knee joint, 10 participants in the spine (35.7%), and four participants showed hip deformities (14.2%). Deformities in the hip were distributed in internal rotation, external rotation and flexion, the latter being more evident in the group of bilateral lower limb spastics. The internal and external rotations of the hip occur due to the abnormality of the psoas muscles, internal and external rotators, adductors and the exaggerated anteversion of the femoral neck, usually found in children with CP who do not walk.

Pelvic obliquity is associated with neuropathic curves that prevent the pelvis from maintaining its horizontality in a sitting position. As a result of this change, pelvic rotation may be developed because of contractures of muscles that are fixed above and below the pelvis. It is common to find thigh-femoral dislocation, leading to a limitation of passive and active hip abduction. Finally, the deformity in feet varismus is a consequence of the spasticity of the posterior tibial muscle. However, in our research, foot valgism was found associated with fibular spasticity and foot equinovarus, followed by hallux valgus and hammer toe[30]. In upper limbs, the orthopedic changes that stood out the most in this study were: internal rotation of the shoulder, elbow and wrist flexion, ulnar deviation and thumb opposition. The use of orthosis can be an excellent strategy for this type of population[31].

In this study, subjects over 20 years of age obtained a higher average SAROMM score than those under 20 years of age. The increase in age among individuals with GMFCS Level IV and V was associated with higher SAROMM scores. However, we must always think that the severity, progression, increase in muscle shortenings and appearance of deformities is a characteristic of each subject and their personal history. It depends on the size and volume of the lesion, when it occurs, and how it and its sequelae are addressed[32]. The damage caused to the immature nervous system, associated with late therapeutic assistance often resulting from the lack of knowledge of the parents about rehabilitation and stimulation, leads to the appearance of muscle shortenings, rendering an unsatisfactory prognosis related to the neuropsychomotor development of children with CP.

A strategy to minimize the evolution of deformities and shortening of individuals with CP with more severe motor conditions (GMFCS V and IV) in a shelter institution is to conduct an orientation program to the caregivers of these subjects, as well as teach them appropriate positions for the wheelchair and bed, passive joint stretching, adherence to a rehabilitation service and the use of orthopedic devices such as LL and UL orthoses.

This study has some notable strengths. First, this study was carried out in a place of excellence in our city that serves sheltered individuals with CP. We argue that what was missing regarding the functional issues of older sheltered subjects should be detected and corrected for the next sheltered individuals that enter the institution. This future generation of sheltered individuals can start physiotherapy earlier, with the use of orthoses and better postures. Additionally, caregivers should always be guided to know how to assist in rehabilitation and activities of daily living. With increased knowledge, caregivers can ask the rehabilitation team for additional examinations, better diagnoses and prognoses. Physical therapy for spastic CP may not only improve the gain in joint amplitude and strength, but also facilitate movement for daily life activities (feeding, locomotion, transfer and sanitation).

The limitations of this study were that: statistical analyses could have been better explored with correlations; incomplete data were also found for analysis of previous history in patients' records, which limited the exploration of the initial life history of the subjects that would correlate with their characteristics. It would be interesting to consider an invitation to other shelter institutions with this topic so as to check the data of their subjects with CP and comparing them to other places.

CONCLUSION

This study showed that subjects with CP from a shelter site presented, for the most part, spasticity of the bilateral type in their four limbs, the predominant level of GMFCS was V and the most deformities found were joint changes in the knees, hip and spine. Deformities and shortenings increase over time, but they do not depend on age, but rather the size of the lesion, its volume and the history of each person.

The strategies that can be traced are: to start the exchange of postures as early as possible (sedestation and orthostasis) for those without present deformities. For CP with musculoskeletal changes, seeking spinal alignment and strategies to minimize the advance of already present deformities. Involving the entire team in these procedures would be a very relevant strategy for improving results, especially for the next people to join the shelter.

We recommend physiotherapists to count on a new form of evaluation before and after therapeutic intervention, and utilizing the SAROMM scale may be a good choice for such.

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