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Caregiver perception of the quality of Neuropediatric Physiotherapy services at rehabilitation Centers in the State of Paraíba, Brazil

Percepção de cuidadores sobre a qualidade de serviços de Fisioterapia Neuropediátrica em Centros de reabilitação no estado da Paraíba, Brasil

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ABSTRACT
Current study evaluates the perception of caregivers about the quality of neuropediatric physiotherapy services offered at specialized rehabilitation centers (SRC) in Brazil. This is a cross-sectional, quantitative, evaluative study whose target population were caregivers of children in rehabilitation. The AQSF-Neuroped instrument was used to evaluate the quality of three SRC based on the perception of 320 caregivers. The one-proportion hypothesis test was used based on each AQSF-Neuroped item and dimension. The Weight of Evidence and Latent Class Analysis models were used to evaluate the influence of variables on the perception of quality. A mean overall quality score of 133±14 points indicated a positive perception of quality; however, there were aspects related to physical structure (Interpersonal Dimension) and access (Organizational Dimension II) that needed to be improved (*p*-values<0.05) to better meet the expectations of caregivers. The LCA allowed to identify, by group formation, caregiver's characteristics that determined a positive or negative perspective of the quality. SRC B was evaluated best among all SRC (IV<0.10). Managers are provided with, results to support improvements in services.

Keywords: Children with disabilities. Physical Therapy Specialty. Health care quality indicators. Health services research.

RESUMO
Este trabalho objetivou avaliar a percepção de cuidadores sobre a qualidade dos serviços de Fisioterapia neuropediátrica ofertados em Centros Especializados em Reabilitação (CER) no Brasil. Trata-se de um estudo transversal, quantitativo, de caráter avaliativo, cujo público-alvo foi representado por cuidadores das crianças em reabilitação. O instrumento AQSF-Neuroped foi utilizado para avaliar a qualidade dos serviços de Fisioterapia neuropediátrica em três CER, com base na percepção de 320 cuidadores. Utilizou-se o teste de hipótese para uma proporção a partir de cada item e dimensão do AQSF-Neuroped. Os modelos *Weight of Evidence* e Análise de Classes Latentes foram utilizados para avaliar o comportamento de variáveis sobre a percepção de qualidade. Obteve-se um escore médio total de qualidade de 133±14 pontos, implicando em uma percepção positiva de qualidade; porém, há aspectos relacionados à estrutura física (dimensão interpessoal) e ao acesso (dimensão organizacional II) que precisam ser aprimorados (*p*-valores<0,05) para melhor atender às expectativas dos cuidadores. O CER B foi melhor avaliado dentre os demais serviços (IV<0,10). O ACL permitiu identificar, por meio da formação de grupo, características do cuidador que determinaram uma perspectiva positiva ou negativa de qualidade. Assim, disponibiliza-se aos gestores resultados para subsidiar melhorias nos serviços.

Palavras-chave: Crianças com deficiência. Fisioterapia. Indicadores de qualidade em assistência à Saúde. Pesquisa sobre Serviços de Saúde.

INTRODUCTION

Motor impairment is one of main reasons of search for motor physiotherapy and can occur through several neurological damage, as in cerebral palsy (CP), that is the most common cause of young and children's physical impairment around the world[1].

Motor physiotherapy is important in the rehabilitation of children with neurological deficits[2,3]. In this sense, Specialized Rehabilitation Centers (SRC) are reference health services in rehabilitation for children with disabilities in Brazil, that have been reorganized to ensure these children access[6] in order to meet the requirements of the Care Network for People with Disabilities. Specifically, they should ensure not only access but also comprehensive care, specialized care and quality care to this population[7,8].

Therefore, immediate access to rehabilitation services, adequate physiotherapy care and the provision of an environment conducive to this care are important aspects in the evaluation of the quality of such services[3,4]. However, there is a scarcity of studies with this focus in neuropediatric physiotherapy services[5].

Evaluate health services quality is a complex process, due to technical, interpersonal and organization features[4.] It is protruded that the use of user's or caregiver's point of view on health services is primordial to build and to monitor good quality services[4,9]. In this way, the aim of this study was to evaluate the perception of caregivers about the quality of neuropediatric physiotherapy services offered at SRC in Brazil.

METHODOLOGY

STUDY DESIGN AND PARTICIPANTS

This is a cross-sectional study with a quantitative approach and evaluative character outlined following the Strengthening Reporting of Observational Studies in Epidemiology (STROBE) guidelines[10].

As eligibility criteria, the study included caregivers of children aged up to 12 years old, who were undergoing rehabilitation with motor physiotherapy in the evaluated SRC. Caregivers whose children were cared for in more than one evaluated service had their data collected only from the first evaluated service, avoiding duplication of data.

Based on a nonprobabilistic sample, the study included 320 caregivers of children undergoing physiotherapy rehabilitation at three SRC in the state of Paraíba, Brazil. The study complied with the Declaration of Helsinki and was approved by the local Ethics Committee (Protocol no. 2.731.674), and the participants signed an informed consent form.

VARIABLES AND RESULTS

Sociodemographic data were collected on the caregivers (sex, age, relationship to the child, educational level, profession and employment status) and children in rehabilitation (sex, age), as well as clinical and rehabilitation data (clinical diagnosis, SRC where rehabilitation is performed).

The Evaluation of the Quality of Neuropediatric Physiotherapy Services (AQSF-Neuroped) instrument[12] was used to assess the quality of rehabilitation services based on the perception of caregivers, which is composed of 33 aspects distributed in four quality dimensions: technical, interpersonal, organizational I and organizational II[4,11]. AQSF-Neuroped was elaborated e validated at Brazil[12]. Each aspect was scored on a Likert scale from 1 to 5 points, with quality 1-very poor, 2-poor, 3-regular, 4-good, 5-very good. For data analysis, the term "negative perception of quality" was adopted for aspects scored 1, 2 or 3 points and "positive perception of quality" for aspects scored 4 or 5 points.

Data were collected between September 2017 and December 2019 by previously trained researchers and at the evaluated SRC.

STATISTICAL ANALYSIS

The sociodemographic characteristics were expressed as absolute (n) and relative (%) frequencies for categorical data or as the mean ± standard deviation (SD) for continuous data. To designate the quality evaluated in each AQSF-Neuroped item and dimension, the one-proportion hypothesis test was adopted along with the corresponding 95% confidence interval. A proportion of respondents equal to or greater than 80% was considered acceptable, considering the hypothesis (H0) that “quality is acceptable”. The mean overall perception score was estimated from the sum of the scores obtained. Missing data were imputed and therefore discarded.

Two models were used to investigate the influence of categorical variables (caregiver’s educational level, age of child in rehabilitation and evaluated SRC) on caregiver perception of

quality, namely, the weight of evidence (WoE) binary classification model and latent class analysis (LCA).

For the WoE model[13], the information value (IV) was adopted as an adjustment metric, and the positive perception of quality was adopted as an outcome. The LCA evaluated the probability[14] of the caregivers having evaluated the SRC with negative or positive perception of quality as a function of the analyzed characteristics. To choose the number of latent classes, the Bayesian information criterion (BIC) and Akaike information criterion (AIC) were used, respectively, following a priority sequence[15,16]. Statistical analyses were performed with SPSS v21.0 and R software (version 3.6.1). A significance level of 5% was adopted.

RESULTS

The sample had a mean age of 32±9 years and was represented by a majority of mothers (n=283), with intermediate educational level (n=155) and who reported being homemakers (n=132). The characteristics reported by the 320 caregivers are shown in Table 1.

Table 1. Distribution of the target population according to sociodemographic and clinical characteristics reported by the caregivers (2017-2019), Paraíba, Brazil

		n	%
Evaluated SRC	SRC A	189	59.1
	SRC B	107	33.4
	SRC C	24	7.5
Caregivers			
Sex	Male	16	5.0
	Female	304	95.0
Relationship to the child	Mother	283	88.4
	Father	16	5.0
	Relative	18	5.6
	Other	3	0.9
Occupation	Homemaker	132	41.3
	Student	13	4.1
	Farmer	58	18.1
	Professor	7	2.2
	Retailer	12	3.8
	Other	98	30.6
Employment status	Employed	178	54.9
	Unemployed	142	45.1
Educational level	No education	3	0.9
	Incomplete primary education	91	28.4
	Primary education	35	10.9
	Incomplete secondary education	38	11.9
	Secondary education	117	36.6
	Incomplete higher education	19	5.9

	College education	14	4.4
	Graduate education	3	0.9
Children			
Sex	Male	190	59.4
	Female	130	40.6
Age	Up to 3 years	151	47.9
	3 to 6 years	71	22.2
	Over 6 years	98	30.6
Clinical diagnosis	Microcephaly	70	21.9
	Cerebral palsy	110	34.4
	Down syndrome	29	9.1
	Muscular dystrophy	9	2.8
	Prematurity	15	4.7
	Other	74	23.1
	No diagnosis	13	4.1

Source: prepared by the authors, 2020.

EVALUATION OF SRC QUALITY

Based on the mean overall quality score (133±14 points), which considered the score of all AQSF-Neuroped items for each of the respondents, it was estimated that 181 caregivers (56.7%) showed a positive perception regarding the overall quality of the evaluated SRC.

Considering a proportion ≥80%, it was estimated that 69.7% (23) of the items were evaluated with a positive perception of quality. Of the 33 analyzed items, ten aspects (30.3%) were negatively evaluated (*p*-value <0.05), thus implying regular, poor or very poor quality, according to the perception of caregivers. The *p*-values and proportions of the dimensions and items are shown in Table 2 and Table 3, respectively.

Table 2. Calculated proportions and *p*-values for each AQSF-Neuroped dimension, adopting a positive perception of quality (good or very good) as reference, Paraíba, Brazil.

Instrument Dimensions	**% positive perception of quality**	***p***
Technical Dimension (D1)	90.0	0.9999
Interpersonal Dimension (D2)	67.6	< 0.0001**
Organizational Dimension I (D3)	85.6	0.9999
Organizational Dimension II (D4)	65.6	< 0.0001**

Source: prepared by the authors, 2020.

***p*-value<0.05, H0 is rejected, implying a perception of quality lower than acceptable (<80%).

Table 3. Calculated proportions and *p*-values for each AQSF-Neuroped item, adopting a posi]tive perception of quality (good or very good) as reference, Paraíba, Brazil.

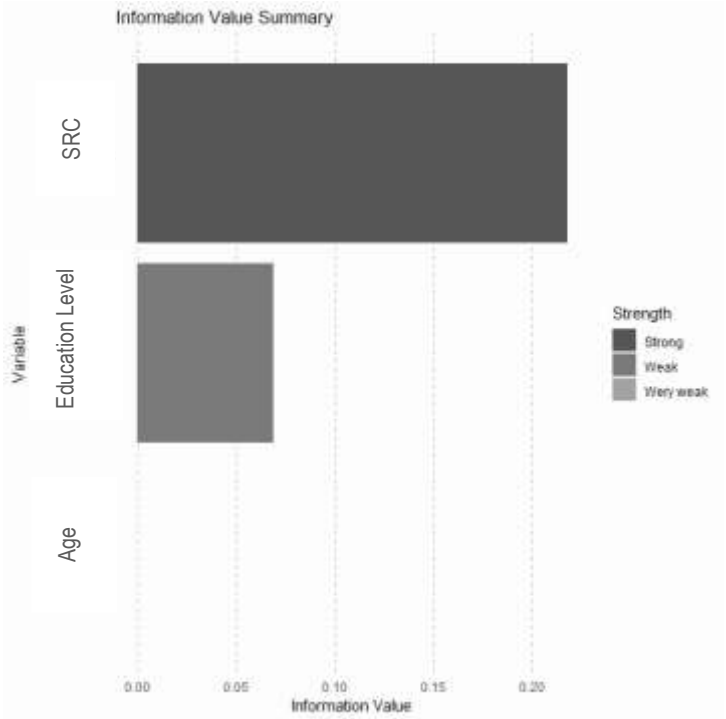
Instrument variables	%	*p*
Q1 Ability of the physiotherapist(s) to deal with the child.	95.3	0.9999
Q2 Confidence of the physiotherapist(s) when answering questions related to the child's diagnosis, progression and treatment.	92.1	0.9999
Q3 Ability of the physiotherapist(s) to perform the rehabilitation techniques.	93.4	0.9999
Q4 Availability of the physiotherapist(s) to answer questions related to the child's diagnosis, progression and treatment.	89.8	0.9999
Q5 Clarity in answering questions related to the child's diagnosis, progression and treatment.	90.6	0.9999
Q6 Physiotherapist(s)' knowledge of the child's case.	89.2	0.9999
Q7 Confidence transmitted by the physiotherapist(s) in the consultations.	95.0	0.9999
Q8 Support/incentive for the co-participation of the guardian/caregiver in the child's rehabilitation by the physiotherapist(s).	93.4	0.9999
Q9 Physiotherapist(s)' individual attention to the child during care.	93.4	0.9999
Q10 Physiotherapist(s)' guidelines for continuing treatment at home.	90.9	0.9999
Q11 Physiotherapist(s)' concern with knowing the child's clinical and family context.	75.6	0.0307**
Q12 Attention of the physiotherapist(s) in listening to the child's guardian/caregiver.	91.9	0.9999
Q13 Physiotherapist(s)' support/incentive to the caregiver (child's condition and his/her permanence in physiotherapy).	89.9	0.9999
Q14 Periodic evaluations in the child's rehabilitation by the physiotherapist(s).	81.1	0.6605
Q15 Progression of the child with the physiotherapy offered in this service (response to treatment).	87.3	0.9992
Q16 Supply of drinking water.	60.6	< 0.0001**
Q17 Availability of seats in the waiting room.	61.3	< 0.0001**
Q18 Ventilation in the care environments.	61.3	< 0.0001**
Q19 Physical facilities (distribution of furniture, electronic devices, etc.).	70.8	< 0.0001**
Q20 Number of physiotherapists for patient demand.	46.0	< 0.0001**
Q21 Size of the environments of this service (waiting room, care room, restrooms, entrance area, etc.).	81.0	0.6376
Q22 Availability of hand hygiene devices in different environments.	52.9	< 0.0001**
Q23 Presence of materials to distract the child in the waiting room (toys, games, etc.).	27.2	< 0.0001**
Q24 Availability of an appropriate care environment for the child.	86.2	0.9960
Q25 Cleanliness of the environments of this service (waiting room, care room, restrooms, entrance area, etc.).	81.2	0.6779
Q26 Availability of resources used in children's care (Swiss ball, roll, toys, stretchers, beds or mats, etc.).	87.5	0.9994
Q27 State of preservation of resources used in children's care (Swiss ball, roller, toys, stretchers, beds or mats, etc.).	80.2	0.5056
Q28 Waiting time to be seen in this service at each session.	80.2	0.5056
Q29 Physiotherapist(s)' punctuality in the care provided.	89.6	0.9999
Q30 Organization of this service in relation to care (order of arrival or scheduled time).	89.0	0.9999
Q31 Professionals' welcoming in this service, from reception.	83.4	0.9232
Q32 Waiting time between the search for the service and the first appointment.	66.3	< 0.0001**
Q33 Process to get a place in this service.	64.9	< 0.0001**

Source: prepared by the authors, 2020.

***p*-value<0.05, H0 is rejected, implying a perception of quality lower than acceptable (<80%).

INFLUENCE OF VARIABLES ON QUALITY PERCEPTION

Based on the WoE, it was found that the age of the children and the educational level of the caregivers had low predictive power (IV<0.10) in relation to the positive perception of quality outcome; therefore, these variables were insignificant in the model. Only the service variable showed strong predictive power (Figure 1). The strong influence of the evaluated SRC on the prediction of quality perception was confirmed by Pearson's chi-square test, in which a significant difference was observed between the overall perceived quality among the SRC (*p*-value <0.05). It was found that SRC B was the service evaluated as best.



Consider "Strong"= strong prediction, "Weak"= weak prediction and "Very Weak"= very weak prediction.

Figure 1. Information value of the variables child's age, caregiver's educational level and evaluated specialized rehabilitation center (SRC) on positive perception of quality in the WoE model.

Using the LCA model, fit indices were calculated for up to five latent classes, so that the optimal BIC and AIC were found with the two latent classes model (BIC=2342.66; AIC=2276.68), whose prevalence and conditional probabilities are shown in Table 4.

Table 4. Conditional probabilities and prevalence of latent classes, Paraíba, Brazil.

Variables		Class 1 ([a]Positive perception)	Class 2 ([b]Negative perception)
Child's age	≤ 3 years	0.50	0.42
	> 3 years	0.50	0.58
Caregiver's educational level	Up to complete basic education	0.42	0.45
	Incomplete or complete secondary education	0.44	0.52
	Incomplete or complete college education or graduate education	0.14	0.04
SRC	SRC A	0.53	0.79
	SRC B	0.44	0.20
	SRC C	0.03	0.00
Dimension 1	Negative perception	0.08	0.92
	Positive perception	0.92	0.38
Dimension 2	Negative perception	0.59	0.99
	Positive perception	0.41	0.00
Dimension 3	Negative perception	0.13	0.78
	Positive perception	0.87	0.22
Dimension 4	Negative perception	0.36	0.61
	Positive perception	0.64	0.39
Portion estimated for the latent class		0.74	0.26
Prevalence of the latent class (posterior)		0.74	0.26

Source: Prepared by the authors, 2020.
[a]Positive perception of quality; [b]Negative perception of quality.

DISCUSSION

It was found that the motor physiotherapy services offered to children in the evaluated specialized rehabilitation centers are structured and functioning to meet the needs of these users with quality, according to the perception of the caregivers of these children, since the mean score obtained pointed to a positive perception of quality. To evaluate the quality of these services, the AQSF-Neuroped[12] was used, an instrument that includes aspects related to the structure-process-outcome triad proposed by Donabedian[11] and widely used by researchers in the evaluation of health services[9.]

The positive evaluation of the quality of services was linked, above all, to good or very good physiotherapy care, making the technical dimension a determining criterion in the evaluation of the quality of these services[4]. This finding indicates that the therapist-patient relationship, which encompasses aspects such as technical and humanized care for the child as well as the attention that physiotherapists give to caregivers, is an important quality factor in rehabilitation services[5].

The "Ability of the physiotherapist(s) to deal with the child" (Q1) and the "Confidence transmitted by the physiotherapist(s) in the consultations" (Q7) were the items evaluated best.

Regarding the ability to deal with the child, there was no consensus in the literature; however, the physiotherapist's confidence or mastery of the applied rehabilitation techniques is considered critical[2,17].

Although item Q11, "Physiotherapist(s)' concern with knowing the child's clinical and family context", from the technical dimension, was positively evaluated by a proportion of caregivers close to 80% (75.6%), the positive perception was not acceptable (p-value<0.05) and was therefore identified as an aspect that needs to be improved, since it is up to the physiotherapist to know the child's home environment and routine in order to promote the accessibility and autonomy of child with disability to support their inclusion in family activities and the family's participation in the child's rehabilitation[2,7,17-19].

Organizational dimension I was the second dimension best evaluated by the caregivers, implying that they were satisfied with the organization of the service hours and with the punctuality of care[9]. In addition, the professionals were able, from reception, to welcome the service users in a humanized way.

The use of the caregivers' view should be part of a regular evaluation of the quality of these rehabilitation services, given that a family-centered approach is important[18.] Despite being a complex evaluation, the instrument used in this study[12] was able to also highlight aspects that need to be improved. It was observed that the dimensions evaluated with the worst perception of quality were the interpersonal (D2) and organizational II (D4) dimensions.

The interpersonal dimension encompasses aspects related to the ambience of the services, such as the cleanliness and size of the environments, the supply of resources and the physical facilities[4]. Among the items evaluated with worst perception, the following, in order, stood out: Q23, Q20 and Q22. Item Q23 refers to the "Presence of materials to distract the child in the waiting room (toys, games, etc.)", whose negative perception by the caregivers may have been influenced by scarcity, poor preservation and even the absence of materials at the SRC.

The presence of toys in the waiting room was evaluated as important in the consultation with five experts for content validation of the AQSF-Neuroped[12]. Despite this evaluation, the availability (Q26) and preservation (Q27) of resources/toys in the care room, which are fundamental aspects in rehabilitation[2,17], were evaluated with a positive perception of quality. This implies that the fact that there are no resources for child distraction in the waiting room was not necessarily related to the absence or poor preservation of these materials in the care room but rather likely to the amount available being insufficient.

The number of physiotherapists at the SRC (Q20) was also negatively evaluated and may have influenced the negative evaluation of organizational dimension II, related to

access[7,20], since the waiting time between the search for the service and the first appointment (Q32) and the process to get a place in the SRC (Q33) were also negatively evaluated. According to specific guidelines for SRC in Brazil[7,20], the number of professionals in centers that offer physical rehabilitation should be at least four and varies according to the SRC modality.

Another aspect evaluated poorly was the provision of hand hygiene devices at the SCRs (Q22), suggesting that they were scarce or not available. It is known, however, that the presence of these resources is essential in the prevention and control of infections in pediatric health settings[21].

It is worth mentioning that some poorly evaluated structural and organizational aspects are simple to solve. Therefore, the dissemination of the results of the evaluation of each aspect and dimension proposed by the AQSF-Neuroped can assist in identifying these problems and, consequently, assist in decision-making for improvements in rehabilitation services.

The use of WoE, despite being innovative in the field of health[22,23], allowed to identify that the children's age and caregivers' educational level had low predictive power[24], indicating that they did not influence the positive perception of caregivers. However, the LCA allowed to determine that caregivers with high educational levels, although not significant (p=0.14), were more likely to belong to the class with a positive perception, contrary to the findings of other study that infers that lesser educated patients become satisfied even when they receive the minimum care[25].

LCA has been shown to be an excellent method to evaluate behaviors and perceptions[15,16,26]. The nomenclature of the latent classes was defined based on the probabilities obtained in all evaluated dimensions, with a higher probability of individuals having evaluated the services with positive perception of quality in all dimensions in class 1.

The present study was based on the assumption of using the evaluation process to promote improvements in the quality of the investigated SRC. Although the perception of caregivers does not encompass technical and scientific knowledge, typically held by professionals and managers, the use of this subjective approach has been fundamental in the evaluation of the quality of health services[9,27].

We can point out as limitations of this study the fact that the treatment time of children in the services was not considered, which could generate sampling bias, nor the knowledge of the entire structure of the services offered by the caregivers, which can generate response bias. It is suggested that more studies evaluating neuropediatric physiotherapy services be conducted, taking these variables as important. It is also suggested that studies with other perspectives are

also carried out to investigate aspects related to the quality of services, such as the opinion of professionals and managers.

However, it is expected that the results achieved will serve as a basis for the planning and execution of actions and services within the SRC, based on assistance to managers and political agents in decision-making regarding assistance, structural and organizational aspects. with negative perception of quality. The results may also strengthen discussions at local, regional and national levels, so that special care can be established for children with disabilities, from health promotion to rehabilitation, in addition to warning about the need for greater investments in research in the area of evaluation.

CONCLUSION

The motor physiotherapy services offered to children in the evaluated SRC in the state of Paraíba, Brazil, are structured and functioning to meet the needs of these users with quality, from the perception of caregivers, especially with regard to physiotherapy care, from a technical and humanized viewpoint. However, there are aspects related to access and infrastructure that need to be rethought and improved by managers to improve the care of children with disabilities and the satisfaction of caregivers.

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