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Research Article

Determinants of Parental Satisfaction with Rehabilitation Service Delivery to Children with Childhood-Onset Physical Disabilities: A Turkish Sample

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Abstract

Aim: Studies have demonstrated that family centeredness, or family involvement in decision-making and care provision, is crucial for achieving the best results in pediatric rehabilitation and is also directly associated to parental/caregiver satisfaction with rehabilitation services. This study aimed to explore the potential determinants of parents'/caregivers' satisfaction with rehabilitation services based on the various elements of family centeredness.

Material and Method: Authors included the parents/caregivers of 120 children with physical disabilities aged 5-18 years (mean 10.14 years, SD 4.17). The Measure Process of Care-20 (MPOC-20) was used to assess parents'/caregivers' perceptions of the family centeredness in provision of rehabilitation services and therefore parental/caregiver satisfaction with rehabilitation service delivery to children.

Results: Service-related and child-related factors accounted for 78% and 67% of the variances in the parents'/caregivers' satisfaction with being provided opportunities for them to make decisions about rehabilitation services (MPOC-20-Enabling and Partnership subscale), respectively. Parental/caregiver satisfaction with service delivery in the context of sharing information about child's progress was correlated with service-related, child-related, and parent/caregiver-related factors (adjusted R^2=0.75, 0.71, and 0.68, respectively). Satisfaction with service delivery regarding coordinated and comprehensive care was significantly influenced by the service provider and the parent/caregiver-related variables (R^2=0.63 and R^2=0.59, respectively). Finally, in the event of satisfaction with services in terms of respectful and supportive care, each factor accounted for a small and approximately equal amount of variance in the mean score of relevant MPOC-20 subdomain (range of adjusted R^2=0.10–0.18).

Conclusion: Factors or determinants identified in the current study as having the potential to increase parents'/caregivers' satisfaction with rehabilitation services should be considered when providing rehabilitation services.

Keywords: Childhood disability, rehabilitation service, family-centered service, children, physiotherapy

INTRODUCTION

Childhood-onset physical disability is a complex medical condition that arises from the interaction between an underlying health condition (e.g., early brain insult) and contextual factors (1). On the other hand, children with physical disabilities have the same right as their typically developing peers to receive high-quality healthcare services that enable them to participate independently in community activities, make their own decisions, and even attend regular school (2). However, a significant proportion of children with physical disabilities lack access to adequate rehabilitation services, including institutionalized or specialized rehabilitation centers, experienced health professionals, modern assistive technologies, and evidence-based intervention approaches (3). Regrettably, it is widely acknowledged that numerous children with physical developmental impairments, especially in low- and middle-income countries, do not receive evidence-based rehabilitation services and are often subjected to unnecessary, ineffective, or harmful medical interventions (4).

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Family-centered services (FCS) are designed to facilitate collaboration between families and service providers to make informed decisions about the delivery of services and to support both children and their families/caregivers (5). FCS refers to a philosophy or strategy for providing rehabilitation services to individuals with physical disabilities through both family-centered and child-centered practices (6). Family-centered rehabilitation services typically follow a top-down model, where the primary goal is to engage in task-specific practice of whole tasks (7). Thus, in family-centered approaches, service providers and parents/caregivers collaborate to recognize the specific needs of the child (8). The elements underlying family-centeredness (including enabling and partnership, providing general information, providing specific information about the child, coordinated and comprehensive, respectful and supportive care) are also in line with the international "*Convention on the Rights of Persons with Disabilities*" (9). Previous research has demonstrated that family-centered rehabilitation strategies are crucial in pediatric physiotherapy to enhance parental and caregiver satisfaction with rehabilitation services and promote their psychological well-being (10). In conclusion, FCS acknowledges the vital role of families in providing rehabilitation services to their children and encourages their active involvement in the care process (11). That is, FCS encompasses developing partnerships with families or caregivers, viewing them as experts who can contribute to the clinical team (12). It also recognizes that families/caregivers are experts at figuring out what's best for themselves and their children. Within the context of the pediatric rehabilitation, the identification of potential factors influencing parents'/caregivers' satisfaction with service delivery may be useful to enhance the satisfaction of families/caregivers with rehabilitation services. It is essential to provide family-centered rehabilitation services to children with physical disabilities, especially those in low-income countries, as FCS have been proven to significantly reduce parental/caregiver stress and increase successful rehabilitation outcomes (11). In contrast, most of children with childhood-onset physical disability are unable to access such services due to various barriers. For this reason, understanding the factors that are likely to affect family centeredness in provision of rehabilitation services is very important in families/caregivers to decide where or how they can receive best practices for their children. Moreover, determining potential factors that may influence parents'/caregivers' satisfaction with service delivery will provide both health care managers and service providers with information about whatever should be done in terms of service delivery. Therefore, our aim was to identify determinants of parental satisfaction with rehabilitation services based on the concept of family centeredness.

MATERIAL AND METHOD

This was a cross-sectional study conducted between May 15, 2022, and December 15, 2022 in 15 special education and rehabilitation centers. The study was conducted after approval from the Human Research Ethics Committee at Muş Alparslan University (no: 03.04.2022-45864). For a regression model with five predictors, an estimated sample size of 120 participants was determined, assuming a population R-square of 0.30, alpha=0.05, and desired power=0.80, using G*Power 3.1.

Participants

The study included children aged between 5 and 18 years (mean age 10.14±4.17; 56 males and 46 females) receiving rehabilitation services from government-funded rehabilitation centers, their parents, rehabilitation service providers, and health care/rehabilitation center managers. Children in the study were those with physical disabilities of any severity of motor function, including cerebral palsy, spinal cord injury, muscular dystrophy, and juvenile rheumatoid arthritis. All service providers who provided rehabilitation services to the participating children were physiotherapists. Individual (child's age, prognosis, etc.) and contextual factors (primary caregiver's age, level of education, etc.) were noted through face-to-face interviews with parents/caregivers. Study data were collected from 15 rehabilitation centers operating in two different cities located in different regions (Karaman and Bingöl) where at least two physiotherapists are employed. Additionally, each rehabilitation center in which data was gathered was run by different company. Each rehabilitation center from which data collected served a wide range of disability types, including rachial plexus injury, down syndrome, spina bifida, hydrocephaly, muscular dystrophy, poliomyelitis, rheumatoid arthritis, developmental coordination disorder, fragile, x syndrome, acquired brain injury. All families/caregivers who wanted to participate in the measurement process as well as had ability to comprehend items in the MPOC-20 were randomly selected. In contrast, families whose children had started receiving rehabilitation services recently, i.e., who lacked adequate opinion with rehabilitation services delivered to their children were not enrolled in the study.

Identification and measurements of potential determinants of satisfaction with rehabilitation services

The possible determinants of parents'/caregivers' satisfaction with rehabilitation services were identified based on the previously published studies on family-centered services (13,14) as well as the authors' clinical experience in the field of pediatric rehabilitation. A comprehensive set of variables that would potentially predict family-centeredness of rehabilitation services were outlined in Table 1.

Table 1. Measurement of potential determinants of family-centered approach	
Determinants	**Scale of measurement**
Child-related factors	
The type of disease or disorder	CP / other
Age	0-12 / 13-18
Gender	female / male
Comorbidity	yes / no
Severity of gross motor impairment	GMFCS I-III / GMFCS IV-V
Service provider-related factors	
Length of service (clinical experience)	<5 years / ≥5 years
Postgraduate education/master's degree	yes / no
Occupational course after graduation	yes / no
Parent/caregiver-related factors	
Age	<35 years / ≥35 years
Educational level	≤high school / university
Type of caregiver	parent / caregiver
Belief in rehabilitation services	yes / no
Expectation of rehabilitation services	yes / no
Satisfaction with the clinical environment	yes / no
Service/care-related factor	
The type of rehabilitation service	standardized care / functional or goal -directed
Facility/rehabilitation center-related factors	
Environmental modification	satisfied / dissatisfied
Experience of active work in the field of pediatric rehabilitation	<10 years / ≥10 years

CP: cerebral palsy, GMFCS: gross motor function classification system

Procedure

Parents/caregivers of the children in the study were provided with detailed information about the family-centered program before data collection. Before the beginning of the study, researchers held a series of workshops with parents/caregivers to explain concepts "family-centeredness" and "satisfaction with the rehabilitation services." Additionally, parents/caregivers were informed in detail about the following family-centeredness principles: 1) parents/caregivers are experts on their children's needs, 2) family-centeredness is a respectful, supportive, coordinated, and comprehensive service, 3) family-centered rehabilitation services enable partnerships between parents/caregivers and rehabilitation providers.

Instruments

Gross Motor Function Classification Systems–Expanded & Revised

The severity of the participants' gross motor function impairment was described using Turkish version of Gross Motor Function Classification System–Expanded and Revised (GMFCS–E&R) (15). The GMFCS was firstly released by Palisano et al. in 1997 to describe gross motor function of children with CP between 2 and 12 years of age (16). Then, the GMFCS–E&R was developed in 2007 as an expanded and revised version of the GMFCS by including an age band of 12–18 years to classify youth with CP (17). The GMFCS–E&R consists of five levels to classify the severity of involvement in the gross motor function of children with CP between of 2 and 18 years of age based on their self-initiated movement (18). The GMFCS has been widely for children with different health conditions other than CP (19). The GMFCS-E&R has been validated for Turkish CP population and shown to have an excellent test-retest reliability coefficient of 0.94 (15).

Measure of Processes of Care (MPOC-20)

The Measure of Processes of Care (MPOC-20) was used to evaluate parental/caregiver satisfaction with rehabilitation services since MPOC-20 was developed to evaluate family- centeredness in health care which has been reported to be closely related to increased parental satisfaction with services (20). MPOC-20 is a shorter and more updated version of the original 56-item MPOC that was established to assess parent/caregiver perceptions of the service delivery processes for their children with physical disabilities (20). In the context of our sample, it was used to assess parent/caregiver perceptions of the behavior exhibited by rehabilitation service providers to examine the extent to which specific rehabilitation services delivered to children with physical disabilities are family centered. The initial version of the MPOC was a 56-item survey based on the notion that parents/caregivers are experts on their children's needs, as their perspective mediates between the delivery of health services and the outcomes of those treatments (21). It evaluates five domains: "*enabling and partnership, providing general information, providing specific information about the child, coordinated, and comprehensive care, and respectful and supportive care*". The MPOC-20 is a self-administered questionnaire with 20 items that rate healthcare services or rehabilitation center staff's behavior on a 7-point scale (*1=not at all, 7=to a very great extent; 1=never, 4=sometimes, and 7=to a great extent*). The MPOC-20's average score is derived by summing all of the item scores and then dividing them by 20 (22). The Turkish version of the MPOC-20 has been found to be valid and reliable for use with Turkish parents/caregivers of children with disabilities (23).

Statistical Analysis

Statistical analyses included data from children with at least five potential determinants of parent satisfaction with rehabilitation services. SPSS software version 25 was used for the statistical analyses. Visual (histograms, probability plots) and analytical (Kolmogorov–Smirnov) methods were performed to test whether the continuous data were normally distributed. When possible, Pearson correlation and Student's t-test were used to establish the parameters (potential determinants) that determined parental satisfaction with rehabilitation services. The reference category was set to 0 since all probable predictors of parent satisfaction with rehabilitation services were

characterized as two-level variables (dichotomy). Five fitted multiple linear regression analyses with a backward model were performed separately for each subdomain of the MPOC to identify independent predictors of parental satisfaction with rehabilitation services. Through this, the predefined potential variables related to each factor were first included in the model, then the variables that were unable to contribute significantly to the model ($p<0.05$) were each excluded from the model. Therefore, the number of predefined variables was gradually reduced. The model fit was evaluated using appropriate residual and goodness-of-fit indices. A 5% types I error level was used to infer statistical significance.

RESULTS

Initially, a total of 141 children with various types of developmental disabilities were screened for eligibility, and 21 were removed from the statistical analysis because they reported more than one missing variable for any predetermined predictor factor. As a result, the study enrolled 120 children and their families or primary caregivers. Table 2 outlines the demographic characteristics of the study participants.

Determinants of parents'/caregivers' satisfaction with rehabilitation services in terms of enabling and partnership

The "*enabling and partnership*" model showed that service-related factors (standardized care or functional/goal-directed intervention) and child-related factors (type of disorder, age, and presence of comorbidity) were the most significant predictors (adjusted R^2=0.78 and 0.67, respectively) (Table 3). More specifically, it was found that parents/caregivers of children with CP were more satisfied with rehabilitation services than those of parents/caregivers of children with non- CP. Moreover, it was demonstrated that parents'/caregivers' satisfaction with rehabilitation services improved when the services was functional/goal directed intervention.

Determinants of parents'/caregivers' satisfaction with rehabilitation services in terms of providing specific information about the child

The model of the MPOC- "*specific information about the child*" revealed that service-related, child-related, and parent/caregiver-related factors were the strongest predictors and explained 75%, 71%, and 68%, respectively, of the variance in the subdomain score (Table 4). "In the event of child-related factors, it was revealed that service providers provided with parents/caregivers more information about the child if she/he had a diagnosis of CP".

Determinant of parents'/caregivers' satisfaction with rehabilitation services in terms of "coordinated and comprehensive care"

In terms of the "*coordinated and comprehensive care*" model, the service provider and parent/caregiver-related factors proved to be the best predictors, accounting for 63% and 59% of the variance in this subdomain mean score, respectively. More specifically, the physiotherapist's clinical experience, postgraduate occupational course, and master's degree status led to more coordinated and comprehensive physiotherapy (R^2=63) (Table 5).

Determinant of parents'/caregivers' satisfaction with rehabilitation services in terms of respectful and supportive care

In relation to MPOC- 20 "respectful and supportive care", each factor explained a small and approximately equal amount of variance in this subdomain mean score (range of adjusted R^2=0.10–0.18) (Table 6)

Determinant of parents'/caregivers' satisfaction with rehabilitation services in terms of providing general information

Concerning the subdomain of "*providing general information*", only the facility/rehabilitation center-related factors explained a considerable amount of variance in the mean score (R^2=37) (Table 7).

Table 2. Characteristics of study participants (n=120)

Characteristics	Summary data	
Age (mean±SD)	10.14 (4.17)	
Range (max-min)	2.5-15	
	n	%
Gender		
Male	56	46.7
Female	64	53.3
Type of disability		
Cerebral palsy	50	41.7
Unilateral (hemiplegic, monoplegia)	21	42
Bilateral (diplegic, quadriplegic)	25	50
Ataxy	4	8
Non-cerebral palsy	70	58.3
Brachial plexus injury	5	7.14
Down syndrome	8	11.42
Spina bifida	3	4.28
Hydrocephaly	3	4.28
Muscular dystrophy	7	10
Poliomyelitis	5	7.14
Rheumatoid arthritis	9	12.85
Developmental coordination disorder	13	18.57
Fragile X syndrome	10	14.28
Acquired brain injury	7	10
Mobility level		
GMFCS I-III	75	62.27
GMFCS IV-V	45	37.5
Type of caregiver		
Parent	77	64.2
Paid caregiver	43	35.8

SD: Standard deviation, n: Number of participants, GMFCS: Gross Motor Function Classification system; Summary data are presented as mean and SD for continuous variables, while categorical data are presented as %

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Table 3. Multiple regression models of the Measure of Processes of Care (MPOC-20)- 'Enabling and Partnership' subdomain

MPOC-Enabling and Partnership						
Determinants	**Correlation (p)**	**Estimate (95% CI)**	**Standard error of coefficient**	**Adjuste R^2**	**Intercept**	**P*****
Child-related factors						
Type of disease or disorder	0.76 (0.000)	2.83 (2.25-3.42)	0.29			
Age	-0.32 (0.000)	0.69 (0.16-1.22)	0.26			
Gender*	0.00 (0.47)**	0.00 (-0.4 to 0.41)	0.2	0.67	3.09	0.000
Comorbidity	-0.51 (0.000)	-0.86 (-1.34 to -0.39)	0.24			
Severity of gross motor impairment	0.45 (0.000)	0.44 (-0.03 to 0.91)	0.24			
Service provider-related factors						
Length of service (clinical experience) *	0.28 (0.09)**	0.67 (-0.21 to 1.54)	0.44			
Postgraduate education/master's degree	0.49 (0.000)	1.6 (0.97-2.23)	0.32	0.23	3.5	0.000
Postgraduate occupational course*	0.23 (0.65) **	0.05 (-0.68 to0.77)	0.37			
Parent/caregiver-related factors						
Age*	0.00 (0.47)**	-0.27 (-0.84 to 0.31)	0.3			
Educational level	0.48 (0.000)	1.3 (0.7-1.9)	0.3			
Type of caregiver*	0.13 (0.87)**	0.27 (-0.43 to 0.97)	0.35	0.38	2.5	0.000
Belief in rehabilitation services	0.38 (0.000)	1.03 (0.45-1.62)	0.3			
Expectation to rehabilitation services	0.39 (0.000)	1.1 (0.521-68)	0.29			
Satisfaction with the clinical environment*	0.14 (0.34)**	0.37 (-0.35 to 1.09)	0.36			
Service/care-related factors						
Type of rehabilitation service	0.86 (0.000)	1.52 (0.88-2.17)	0.32	0.78	3.8	0.000
Facility/rehabilitation center-related factors						
Environmental modification	0.46 (0.000)	1.25 (0.59-1.91)	0.33	0.32	3.05	0.000
Experience of active work in the field of pediatric rehabilitation	0.48 (0.000)	1.26 (0.6-1.91	0.33			

*The variables that were removed from the proposed regression model due to an insignificant correlation coefficient with MPOC- 'Enabling and partnership' subdomain, CI: confidence interval, ***A P value of less than 0.001 was considered to show a statistically significant result

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Table 4. Multiple regression models of the Measure of Processes of Care (MPOC-20)- 'Providing Specific Information About the Child' subdomain

MPOC- Providing Specific Information About the Child						
Determinants	**Correlation (p)**	**Estimate (95% CI)**	**Standard error of coefficient**	**Adjuste R^2**	**Intercept**	**P*****
Child-related factors						
Type of disease or disorder	0.75 (0.000)	2.83 (2.26-3.39)	0.29			
Age	-0.32 (0.000)	0.72 (0.2-1.23)	0.26			
Gender*	0.00 (0.49**)	-0.02 (-0.42 to 0.38)	0.2	0.71	3.15	0.000
Comorbidity	-0.52 (0.000)	-0.87(-1.33 to-0.41)	0.23			
Severity of gross motor impairment	0.41 (0.000)	0.42 (-0.03 to 0.88)	0.23			
Service provider-related factors						
Length of service (clinical experience) *	0.13 (0.09**)	0.7 (-0.17 to 1.56)	0.44			
Postgraduate education/master's degree	0.42 (0.000)	1.6 (0.97-2.2)	0.31	0.44	3.56	0.000
Postgraduate occupational course*	0.21 (0.000)	0.00(-0.71 to 0.71)	0.36			
Parent/caregiver-related factors						
Age*	-0.00 (0.48)**	-0.32 (-0.88 to 0.25)	0.29			
Educational level	0.48 (0.000)	1.00 (0.3-1.7)	0.36			
Type of caregiver*	0.33 (0.000)	0.28 (-0.4 to 0.97)	0.35	0.68	2.57	0.000
Belief in rehabilitation services	0.37 (0.000)	0.98 (0.4-1.57)	0.3			
Expectation to rehabilitation services	0.39 (0.000)	1.03 (0.45-1.63)	0.29			
Satisfaction with the clinical environment*	0.7 (0.56)**	0.34 (-0.36 to 1.04)	0.36			
Service/care-related factors						
Type of rehabilitation service	0.4 (0.000)	1.5 (0.87-2.14)	0.32	0.75	3.71	0.000
Facility/rehabilitation center-related factors						
Environmental modification	0.46 (0.000)	1.22 (2.6-3.61)	0.33	0.29	3.1	0.000
Experience of active work in the field of pediatric rehabilitation	0.47 (0.000)	1.26 (0.61-1.9)	0.32			

*The variables that were removed from the proposed regression model due to an insignificant correlation coefficient with MPOC- 'Providing Specific Information About the Child' subdomain, CI: confidence interval, ***A P value of less than 0.001 was considered to show a statistically significant result

Table 5. Multiple regression models of the Measure of Processes of Care (MPOC-20)- 'Coordinated and Comprehensive Care' subdomain

MPOC- Coordinated and Comprehensive Care						
Determinants	**Correlation (p)**	**Estimate (95% CI)**	**Standard error of coefficient**	**Adjuste R^2**	**Intercept**	**P*****
Child-related factors						
Type of disease or disorder	0.74 (0.000)	2.8 (2.22-3.36)	0.29			
Age	-0.32 (0.000)	0.69 (0.17-1.21)	0.26			
Gender*	0.00 (0.48)	-0.04 (-0.44 to 0.37)	0.21	0.55	3.11	0.000
Comorbidity	-0.52 (0.000)	-0.88 (-1.35 to-0.41)	0.24			
Severity of gross motor impairment	0.41 (0.000)	0.43 (-0.03 to 0.89)	0.23			
Service provider-related factors						
Length of service (clinical experience) *	0.4 (0.000)	0.72 (-0.14 to 1.6)	0.44			
Postgraduate education/master's degree	0.42 (0.000)	1.12 (0.26-1.97)	0.43	0.63	3.5	0.000
Postgraduate occupational course*	0.21 (0.54) **	-0.02 (-0.74 to 0.7)	0.36			
Parent/caregiver-related factors						
Age*	0.00 (0.5) **	-0.31 (-0.88 to 0.26)	0.29			
Educational level	0.48 (0.000)	1.28 (0.68-1.87)	0.3			
Type of caregiver*	0.23 (0.67) **	0.29 (-0.4 to 1.00)	0.35	0.59	2.1	0.000
Belief in rehabilitation services	0.57 (0.000)	0.98 (0.4-1.56)	0.29			
Expectation to rehabilitation services	0.39 (0.000)	1.08 (0.51-1.66)	0.29			
Satisfaction with the clinical environment*	0.41 (0.000)	0.31 (-0.4-1.02)	0.36			
Service/care-related factors						
Type of rehabilitation service	0.89 (0.000)	1.49 (0.85-2.12)	0.32	0.46	3.64	0.000
Facility/rehabilitation center-related factors						
Environmental modification	0.46 (0.000)	1.22 (0.57-1.87)	0.33	0.29	3.01	0.000
Experience of active work in the field of pediatric rehabilitation	0.48 (0.000)	1.26 (0.62-1.91)	0.32			

*The variables that were removed from the proposed regression model due to an insignificant correlation coefficient with MPOC- 'Coordinated and Comprehensive Care' subdomain, CI: confidence interval, ***A P value of less than 0.001 was considered to show a statistically significant result

Table 6. Multiple regression models of the Measure of Processes of Care (MPOC-20)- 'Respectful and Supportive Care' subdomain

MPOC- Respectful and Supportive Care						
Determinants	**Correlation (p)**	**Estimate (95% CI)**	**Standard error of coefficient**	**Adjuste R^2**	**Intercept**	**P*****
Child-related factors						
Type of disease or disorder	0.35 (0.000)	3.93 (2.04-5.82)	0.96			
Age	-0.2 (0.081)***	0.22(-2.21 to 2.65)	1.23			
Gender*	-0.08 (0.207)**	-0.82 (-2.7-1.06)	0.95	0.12	3.9	0.000
Comorbidity	-0.25 (0.341)**	-1.31(-3.5 to 0.87)	1.1			
Severity of gross motor impairment	0.21 (0.213)**	0.81(-1.33 to 2.94)	1.08			
Service provider-related factors						
Length of service (clinical experience) *	0.22 (0.49)	1.13 (-1.55 to 3.8)	1.35			
Postgraduate education/master's degree	0.24 (0.005)	0.67-4.60)	1	0.10	3.13	0.009
Postgraduate occupational course*	0.15 (0.051)	0.48 (-1.8 to 2.76)	1.15			
Parent/caregiver-related factors						
Age*	-0.8 (0.2)**	-1.4 (-3.31 to 0.57)	0.98			
Educational level	0.24 (0.004)	2.3 (0.27-4.34)	1.03			
Type of caregiver*	0.087) **			0.18	2.61	0.007
Belief in rehabilitation services	0.2 (0.65)**	1.6 (-0.44 to 3.63)	1.03			
Expectation to rehabilitation services	0.21 (0.012)	1.75 (-0.3 to 3.8)	1.03			
Satisfaction with the clinical environment*	0.22 (0.097)**	0.29 (-2.22 to 2.8)	1.27			
Service/care-related factors						
Type of rehabilitation service	0.22 (0.009)	2.42 (0.42-4.41)	1.00	0.11	3.56	0.018
Facility/rehabilitation center-related factors						
Environmental modification	0.23 (0.005)	1.86 (-0.35 to 4.1)	1.12	0.11	2.78	0.010
Experience of active work in the field of pediatric rehabilitation	0.14 (0.46)**	2.65 (0.65-4.65)	1.01			

*The variables that were removed from the proposed regression model due to an insignificant correlation coefficient with MPOC- 'Respectful and Supportive Care' subdomain', CI: confidence interval, ***A P value of less than 0.001 was considered to show a statistically significant result

Table 7. Multiple regression models of the Measure of Processes of Care (MPOC-20)- 'Providing General information' subdomain

MPOC- Providing General information						
Determinants	**Correlation (p)**	**Estimate (95% CI)**	**Standard error of coefficient**	**Adjuste R^2**	**Intercept**	**P*****
Child-related factors						
Type of disease or disorder	0.75 (0.000)	2.93 (2.5-3.5)	0.29	0.15	2.96	0.81
Age	-0.32 (0.000)	0.73 (0.2-1.27)	0.73			
Gender*	0.01 (0.45**)	0.02 (-0.38-0.44)	0.20			
Comorbidity	-0.49 (0.000)	-0.79 (-1.27 to -0.32)	0.24			
Severity of gross motor impairment	0.40 (0.000)	0.44 (-0.02 to 0.90)	0.23			
Service provider-related factors						
Length of service (clinical experience)*	0.38 (0.000)	0.69 (-0.19 to1.57)	0.45	0.17	3.46	0.32
Postgraduate education/master's degree	0.41 (0.000)	1.11 (0.24-1.99)	0.44			
Postgraduate occupational course*	0.22 (0.008)	0.06 (-0.67 to 0.8)	0.36			
Parent/caregiver-related factors						
Age*	0.02 (0.4)	-0.19 (-0.78 to 0.38)	0.29	0.23	2.45	0.42
Educational level	0.48 (0.000)	1.09 (0.35-1.83)	0.37			
Type of caregiver*	0.31 (0.08)	0.16 (-0.54 to 0.87)	0.35			
Belief in rehabilitation services	0.37 (0.000)	0.98 (0.37-1.58)	0.30			
Expectation to rehabilitation services	0.38 (0.000)	1.04 (0.43-1.64)	0.30			
Satisfaction with the clinical environment*	0.40 (0.000)	0.36 (-0.36 to 1.08)	0.36			
Service/care-related factors						
Type of rehabilitation service	0.39 (0.000)	1.52 (0.87-2.17)	0.32	0.14	3.6	0.23
Facility/rehabilitation center-related factors						
Environmental modification	0.45 (0.000)	1.22 (0.55-1.89)	0.26	0.37	3.03	0.000
Experience of active work in the field of pediatric rehabilitation	0.46 (0.00)	1.24 (0.57-1.91)	0.33			

*The variables that were removed from the proposed regression model due to an insignificant correlation coefficient with MPOC- 'Providing General information' subdomain', CI: confidence interval, ***A P value of less than 0.05 was considered to show a statistically significant result

DISCUSSION

This study sought to investigate determinants that may influence parents'/caregivers' satisfaction with rehabilitation services in individuals with childhood-onset physical disabilities. The findings indicated that each satisfaction domain, as measured by the MPOC-20, was determined by different factors, with varying degree of variances in the relevant subdomains.

The primary predictors of parents'/caregivers' satisfaction with rehabilitation services in terms of "*enabling and partnership*" were found to be service-related and child-related variables. More specifically, the findings showed that the parents or caregivers were more actively involved in the service delivery when the rehabilitation service was functional, or goal directed. This is compatible with the fact that the caregivers/parents are involved more actively in finding solutions to their children's motor problems in functional or goal-directed rehabilitation services (24). As previously noted, in functional or goal-directed rehabilitation services, therapeutic goals are established in consultation with the parent/caregiver or child, with strong encouragement for the involvement of the parent/caregiver in the physiotherapy session (25). In summary, the results indicated that more interaction between the parent/caregiver and the physiotherapist may be possible when rehabilitation services are functional, or goal -directed. Moreover, child-related factors, including being younger than 13 years of age, having a diagnosis of CP, not having a comorbidity, and having a mobility level of GMFCS I–III were found to allow for a more interactive rehabilitation service. This is in line with studies of goal-directed or functional rehabilitation services where inclusion criteria are higher mobility level (GMFCS I–II or III), age less than 12 years, CP, and no severe comorbidity (26-28). This is also consistent with another previous study documenting that parents'/caregivers' satisfaction with rehabilitation services was associated with fewer health and development issues experienced by the patients. In Law et al.'s study, in which they examined factors improving parents'/caregivers' satisfaction with services delivery for children with disabilities, they concluded that parent satisfaction with services delivery was affected by perception whether the services were family-centered, fewer clinical settings in which services were carried out, and fewer developmental difficulties for their child (29). As a result, child- and service-related variables enhanced the partnership between parents/caregivers and service providers. The improved satisfaction observed among parents/caregivers of children with CP regarding rehabilitation services suggests that service providers should be strongly encouraged to deliver family-centered rehabilitation services not only to children with CP but also to children with non-CP conditions. In the current study, service-related, child-related, and parent/caregiver-related factors were found to be indicators of whether parents or caregivers were provided with information about their own child. As emphasized above, functional or goal-directed rehabilitation services include child or person-centered goals that are established in collaboration with the parents/caregivers based on the notion that parents/caregivers spend more time with their children in daily activities (30). In functional or goal-directed rehabilitation services, service providers are expected to meet children's specific needs by providing parents or caregivers with detailed information about their children. Additionally, child-related factors (i.e., <13 years of age, CP diagnosis, no comorbidity, higher mobility level) and parent/caregiver-related factors (i.e., higher education level, type of caregiver being the parents, belief in rehabilitation services, and expectations of rehabilitation services) were found to be appreciable determinants of family-centeredness in service delivery in respect to *sharing information about the child*. The finding that parents'/caregivers' beliefs in rehabilitation services (parent/caregiver-related factors) increased their satisfaction with rehabilitation services is supported by a previous study (29), suggesting that parents' beliefs about service delivery influence their perceptions of rehabilitation services. "*Coordinated and comprehensive care*" refers to whether service delivery is continuous and consistent over time. The model of "*coordinated and comprehensive care*" showed that service provider-related and parent/caregiver-related variables were considerable predictors of parents'/caregivers' satisfaction with rehabilitation services. In other words, service provider-related factors, including having a 5 or over years of clinical experience, postgraduate education, and postgraduate occupational course, were found to facilitate continuous and consistent rehabilitation service. This is consistent with a previous study, demonstrating that parental/caregiver satisfaction with pediatric rehabilitation is significantly influenced by both personal experience and professional competence (31). In conclusion, parental and caregiver satisfaction with pediatric rehabilitation is significantly influenced by the personal qualities and professional competence of healthcare providers. Similarly, parents'/caregivers' satisfaction with collaboration in rehabilitation services was significantly influenced by parent/caregiver-related factors, including a higher education level, type of caregivers being parents, belief in rehabilitation services, and expectations of rehabilitation services. As a result, both service provider-related and parent/caregiver-related factors might lead to (physio)therapist to plan rehabilitation services together with the parents or caregivers. These implications align with the study's results, which indicated that consistent service provision had a strong correlation with the satisfaction of parents or caregivers with healthcare services (32). Regarding parental satisfaction with "*respectful and supportive care*", all factors were associated with improved levels of satisfaction, with parent/caregiver-related variables having slightly stronger predictive factors. Finally, it has been demonstrated that facility/rehabilitation center-related variables influence whether parents/caregivers receive adequate information regarding their children's problems, advice on where to find information, and information about rehabilitation services.

Limitations

In the current study, the data were collected from a total of 15 rehabilitation centers located in two different cities, each employing an average of 2-3 physiotherapists. This may have led to limited diversity in the data related to both service providers and facility/rehabilitation centers. Second, study sample was only representative of urban centers rather than rural centers because all rehabilitation centers in which data were collected were selected from the centers of the cities. Therefore, future research, including a larger number of rehabilitation centers that are located both in urban and rural regions, as well as more service providers, needs to be carried out.

CONCLUSION

This study provided new insights into possible factors that improve parents'/caregivers' satisfaction with rehabilitation services. First, the findings indicated that both service-related and child-related factors are important variables in improving parents'/caregivers' satisfaction with rehabilitation services as to "*enabling and partnership*." Second, service-related, child-related, and parent/caregiver-related factors were associated with parental satisfaction with service delivery in relation to "*specific information about the child*". Later, when examining parental satisfaction with service delivery in respect to "*coordinated and comprehensive care*", it was found that the variables of the service provider and the parent/caregiver are the most important determinants. Finally, parental satisfaction with rehabilitation services with respect to "*providing general information*" was determined to be influenced by the facility/rehabilitation center-related variables. As a result, given that family-centeredness in service delivery is closely related to parents'/caregivers' satisfaction with rehabilitation services, the factors or variables identified in the current study as having the potential to increase parents'/caregivers' satisfaction with rehabilitation services should be considered when providing rehabilitation services.

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Informed consent: *Written informed consent was obtained from both families/guardians and children aged 12 years or older after the research objectives were explained in detail.*

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