Arch Health Sci Res. 2024;11(3):142-147
DOI: 10.5152/ArcHealthSciRes.2024.23098

Original Article

Psychometric Properties of Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire

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Cite this article as: Sel SA, Kerem Günel M, Şengelen M, Hayran M. Psychometric properties of compliance and perceptions of parents of children with cerebral palsy to home program assessment questionnaire (CPHP-Q). *Arch Health Sci Res.* 2024;11(3):142-147.

ABSTRACT

Objective: Home program (HP) compliance is a crucial matter for parents of cerebral palsy (CP). A questionnaire is needed to determine the compliance and perceptions of parents of children with CP regarding the HP. The aim is to evaluate the structural validity, reliability, and responsiveness of Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire (CPHP-Q).

Methods: Parents of children with CP aged 2-18 years completed CPHP-Q (n = 225). Among all participants, 70 individuals were randomly selected for responsiveness, and another 70 individuals were selected for reliability. Psychometric properties were evaluated using the intraclass correlation coefficient (ICC) and Cronbach's Alpha for reliability, effect size (ES) and standard response mean (SRM) for responsiveness, and factor analysis for validity.

Results: In parents with CP, CPHP-Q demonstrated high internal consistency (Cronbach's alpha = 0.96, ICC = 0.93). Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire showed significant responsiveness with ES value 1.31 and SRM value 1.29. Kaiser Meyer Olkin (KMO) was found to be significant with a value of 0.82. According to factor analysis, Chi-square/degrees of freedom (CMIN/DF) = 2.25, The Root Mean Square Error of Approximation (RMSEA) = 0.07, Goodness of Fit Index (GFI) = 0.84, and comparative fit index (CFI) = 0.93 were found. These values showed that model fit was good.

Conclusion: The CPHP-Q is a valid, reliable, and responsive measure for HP adherence of parents of children with CP, and it is useful for determining HP implementation adherence and perceptions of parents but needs validation in other languages.

Keywords: Cerebral palsy, home program, questionnaire, validity, reliability

Introduction

A home program (HP) is a set of frequently used recommendations in the field of pediatric physiotherapy and rehabilitation. An HP is provided to parents by physiotherapists and is intended to be applied at home (namely, outside of the treatment session).[1] The concept was pioneered by Madden et al[2] for children with learning difficulties and was called the "Mother-Child Home Program" at the time. Gradually, HPs began to be used as an evidence-based practice in the field of physiotherapy and rehabilitation.[3] The main goals of an HP are to make children with cerebral palsy (CP) more active, maintain their quality of movement, apply the skills gained from physiotherapy to daily life, and prevent secondary problems that could occur in the long term without such a program.[4] The majority of the evidence shows that an effective HP for children with CP typically includes all the above-mentioned steps.[5] According to Novak and Berry[3] goal-directed HP practices are effective in strengthening motor functions. An HP is used not only to prevent the emergence of secondary problems in children with CP but also to assist in the transfer of the skills learned during the session to daily life through repetition; therefore, it also affects the concerned children's daily activities.[6]

HP practices account for 50%-80% of total physiotherapy time in upper limb therapies, while the remaining time consists of direct interaction with the physiotherapist.[7] However, the results of qualitative and quantitative studies conducted to determine the adherence of parents to HP showed that the rate of HP implementation was low.[8-10]

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Received: August 18, 2023
Revision Requested: January 20, 2024
Last Revision Received: June 29, 2024
Accepted: August 16, 2024
Publication Date: October 7, 2024

Parents play a key role in HP implementation.[11] A qualitative study focused on parents showed that HPs promote parents' awareness and their children's mastery. However, implementing an HP is challenging and can become exhausting over time, and parental support is necessary, as is their children's.[12] Parents believe that their children's participation in daily activities plays a role in their becoming independent. Therefore, HP implementation is a contributing factor to participation in daily activities.[12] In this context, the HP approach is family centered.[5] Parents choose easy, effective, and time-efficient HPs managed by a physiotherapist who is responsive to the questions and needs of the family, and contributing environmental factors can positively affect compliance with the exercise program.[13] Although it is a known fact that parents do not implement HPs regularly,[8] the literature lacks a scale to evaluate their adherence. While several existing scales evaluate the effects of HPs on children with CP, only one study has determined compliance with HP implementation using a scale that assesses the level of parental stress.[11] Therefore, the reasons and consequences associated with low HP implementation rates have not been determined effectively.

Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire (CPHP-Q) was developed by Sel et al.[14] The scale was competent enough to determine the effectiveness of an HP provided by a physiotherapist and its adherence by the family/caregivers. It consists of 28 questions, which were devised within the scope of the International Classification of Functioning, Disability, and Health-Children and Youth (ICF-CY). These questions focus on the child's body structure and functions, environmental factors, and personal aspects that may affect compliance with the HP. But previous study focused on validity and reliability, not responsiveness. The aim of this study was to determine all the psychometric properties—structural validity, reliability, and responsiveness of the CPHP-Q scale—for parents of children with CP aged 2-18 years.

Methods

Participants

The participants in the current study were parents of children with CP aged 2-18 years. They were recruited at the Hacettepe University, Physical Therapy and Rehabilitation Faculty, Cerebral Palsy and Pediatric Rehabilitation Unit and Special Education and Rehabilitation Centers. The inclusion criteria were having a child with CP aged 2-18 years, being a primary caregiver, ability to understand Turkish without an interpreter (i.e., being literate in Turkish), not having a chronic illness or disability that could prevent HP implementation, and having implemented an HP previously. The CPHP-Q was completed by all participants. (Seventy people were randomly selected to evaluate HP training and responsiveness. Afterward, 70 more people were selected to evaluate the reliability.) The HPs were provided by physiotherapists who are research assistants at the Hacettepe University Physical Therapy and Rehabilitation Faculty Cerebral Palsy and Pediatric Rehabilitation Unit. The HPs given to the parents included routine physiotherapy applications as well as goal-directed activities intended to increase their children's gross and fine motor skills. They were structured in accordance with their children's functional levels. The HP consisted of activities implemented by family members tailored to the child's functional level and the activities the child could or could not perform. The content of the HP varied based on the child's GMFCS level. All materials such as balls, benches, walkers, toys, games, and materials for activities specific to the child's goals were recommended according to the child's functional status. The implementation status of the HP was monitored by physiotherapists through dairy kept by parents. Table 1 includes an example of HP applied to one of the participants.

Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire was repeated 2 weeks later by the same randomly assigned participants to measure test–retest reliability. Additionally, the test was repeated 4 weeks later with the same participants to evaluate responsiveness. Parents who were randomly selected for responsiveness were also asked to keep a diary. The diary was checked by physiotherapists. For responsiveness, 70 randomly selected families also answered 2 questions about HP implementation duration and frequency by designed authors (Appendix 2). The researcher who conducted the assessment for this study was completely blinded from the home programing process and was responsible only for the application of the scale to assess the implementation of the programs.

Procedures

Parent's and their children's sociodemographic characteristics and Gross Motor Function Classification System (GMFCS),[17] Manual Abilities Classification System (MACS),[18] Eating and Drinking Ability Classification System (EDACS),[19] Communication Function Classification System (CFCS),[20] and Visual Function Classification System (VFCS)[21] values of the children were determined. GMFCS, MACS, EDACS, CFCS, and VFCS values were determined by the same researcher (SAS).

Measure

Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire

The CPHP-Q was administered as a caregiver-report questionnaire. It aims to measure the HP adherence of parents of children with CP. The CPHP-Q, which was developed within the frame of ICF-CY, consists of 28 items about body structure and functions, environmental factors, and personal factors that may affect compliance and perceptions of the HP.[14] Furthermore, the translation of the CPHP-Q into English was conducted based on the current guidelines for cultural adaptation of patient-reported outcome measures.[22] Two physiotherapists (M.K.G. and S.A.S.) translated the instrument into English and then summarized the results of the translations. Afterward, this translation is back-translated to Turkish by an independent bilingual speaker. Subsequently, it is checked by the physiotherapists and the final version of English CPHP-Q is prepared for international use. The final instrument named CPHP-Q, and the full version of the scale in both languages are written in statement form (Appendix 1). Each item was rated on a 5-point Likert scale from a score of "1" (I strongly disagree) to "5" (Absolutely I agree).

Ethical Considerations

Ethical approval for this research was obtained from the Hacettepe University Non-invasive Clinical Research Ethical Committee (Approval no: 20/357, Date: April 17, 2021). The data were collected between

Table 1. Home Program Examples

Goal	Home Program Example
1. Sitting independently for 10 seconds	A seating arrangement was created where the participant could sit for 10 seconds in order to increase the sitting duration.
2. Reaching out and grasp a pen	The participant was encouraged to reach for the pen by providing a suitable seating arrangement and placing a writing board in front of her so that could reach the pen without assistance.
3. Independently walking with assistive device	A walker with appropriate trunk support was recommended.

June 2020 and March 2021 and all participants (n = 225) are evaluated at this range. Informed consent was obtained from all the parents.

Statistical Analysis

SPSS AMOS and the Statistical Package for Social Sciences version 23.0 software (IBM Corp.; Armonk, NY, USA) were used for analysis. The CPHP-Q is a caregiver-report outcome measure, therefore, COncensus-based Standards for the Selection of health Measurement Instruments (COSMIN) checklist was used to determine measurement properties for evaluation.[23] To determine psychometric properties structural validity, test retest reliability, internal consistency, and responsiveness were evaluated. Structural validity is defined as "the degree to which the scores of a measurement instrument are an adequate reflection of the dimensionality of the construct to be measured".[24] Structural validity was evaluated using factor analysis. Kaiser Meyer Olkin (≥ 0.80 as acceptable) value was calculated to understand whether the scale is suitable for factor analysis.[25] Structural equation modelling (SEM) used to determine the relationship between factors was found after factor analysis.[26] Since the current study is an original scale development research, the same data set was used in exploratory factor analysis and confirmatory factor analysis.[27] Chi-square/degrees of freedom (CMIN/df) (0 < CMIN/df < 2.5 as good compliance), The Root Mean Square Error of Approximation (RMSEA) (0 ≤ RMSEA ≤ 0.05 as good, 0.05≤ RMSEA ≤ 0.08 as acceptable compliance), and Goodness of Fit Index (GFI) (0.90 ≤ GFI ≤ 1 as good compliance, 0.85 ≤ GFI ≤ 0.90 as acceptable compliance), the comparative fit index (CFI) (0.90 ≤ CFI ≤ 1 as good compliance, 0.85 ≤ CFI ≤ 0.90 as acceptable compliance) were used for model fit. Reliability is defined as "the degree to which the measurement is free from measurement error".[24] Test re-test reliability was determined by comparing 2-week interval scores. The same parents completed the CPHP-Q by themselves. The interclass correlation coefficient (ICC) value was calculated. Internal consistency was determined by calculating Cronbach's alpha value (α) ($\alpha \geq 0.90$ as excellent, 0.80 $\alpha <$ 0.90 as good, 0.70 $\alpha <$ 0.80 as acceptable).[28] Responsiveness is defined as "the ability to detect clinical change".[24] Responsiveness was determined by comparing 4-week interval scores. Effect size (ES) is a standardized measurement of change calculated by dividing the mean change between baseline measurement and measurement after the intervention period by the SD of the baseline measurement. Standard response mean (SRM) is calculated as the mean change in scores between baseline measurement and measurement after the intervention period divided by the SD of that change score. Standard response mean and ES (between 0.20 and 0.50 are less sensitive; 0.51 and 0.80 are moderately sensitive; and from 0.80 are highly sensitive) were calculated.[29,30] Since content validity was made in the previous study, we didn't repeat it in the current.[14] According to Pearson's correlation coefficient (r), the degree of the relationship was categorized as: ≤ 0.10 negligible/very weak, 0.10-0.39 weak, 0.40-0.69 moderate, 0.70-0.89 strong, and ≥0.90 very strong correlation.[31]

Results

Participants, 90 out of 225 were randomly chosen to repeat CPHP-Q 2 weeks later for test–retest reliability. Seventy participants were randomly chosen to repeat CPHP-Q 4 weeks later for the CPHP-Q's responsiveness. All participants were administered CPHP-Q at baseline, for test–retest reliability it was repeated after 2 weeks and for responsiveness, it was repeated after 4 weeks.

Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire was completed by 240 participants who meets the inclusion criteria and 15 of them were excluded because they did not complete the instruments. Finally, 225 parents of children with CP were included in the study; their mean age

Table 2. Demographic Characteristics of Children and Parents

		(n = 225)				(n = 225)	%
Mothers' age (y)		38.5 ± 7.9		Parents Education	Primary school	69	30.7
Family income		(n = 225)	%		High school	23	10.2
<40000TL		101	44.9		Associate degree	55	24.4
>40000TL		124	55.1		Undergraduate	73	32.4
Children's age (y)		(n = 225)			Master	5	2.2
		9.2 ± 4.6		Gender	Female	95	42.2
CP types		(n = 225)	%		Male	130	57.8
	Spastic	181	80.4				
	Dyskinetic	18	8.0				
	Hypotonic	16	7.1				
	Mixt	10	4.4				
GMFCS	I	50	22.2	MACS	I	73	32.4
	II	31	13.8		II	34	15.1
	III	40	17.8		III	45	20.0
	IV	51	22.7		IV	28	12.4
	V	53	23.6		V	45	20.0
CFCS	I	128	56.9	EDACS	I	167	74.2
	II	19	8.4		II	13	5.8
	III	30	13.3		III	18	8.0
	IV	23	10.2		IV	15	6.7
	V	25	11.1		V	12	5.3
VFCS	I	137	60.9				
	II	20	8.9				
	III	17	7.6				
	IV	25	11.1				
	V	26	11.6				

CFCS, Communication Function Classification System; EDACS, Eating and Drinking Ability Classification System; GMFCS, Gross Motor Function Classification System; MACS, Manual Abilities Classification System; VFCS, Visual Function Classification System.

was 38.7 ± 7.9, 32.3% of parents graduated from college; 94.2% were married. The mean age of 225 children with CP was 9.11 ± 4.8; GMFCS I-V with spastic-type CP 80.1%, dyskinetic-type CP 8.0%, hypotonic-type CP 7.1%, and mixed-type CP 4.4%. Table 2 describes the sample characteristics.

Structural Validity

Kaiser Meyer Olkin value was found 0.82. Bartlett's test of Sphericity result was found to be significant. Therefore, the correlation matrix was adequate for factor analysis.

Factor Analysis

We found 7 dimensions after factor analysis. The dimensions obtained as a result of the analysis matched with the dimensions we thought during the scale development phase. First dimension was named *USEFULNESS* consists of item 3, item 6, and item 7. Second dimension was named *TIME* and *DIFFICULTY*, consists of item 26 and item 27. Third dimension was named *INDEPENDENCE*, consists of item 2, item 5, item 8, and item 22. Fourth dimension was named *MOTIVATION* consists of item 20 and item 21. Fifth dimension was named *PHYSIOTHERAPIST* consists of items 12-17. Sixth dimension was named *ENVIRONMENT* and consists of items 23 and 24. Seventh dimension was named *CHILD*, consists of item 10 and item 11 (Table 3). First dimension, second dimension, and third dimension measure compliance; fourth dimension, fifth dimension, sixth dimension, and seventh dimension measure perceptions.

Seven items were removed from the CPHP-Q. Because these items were spoiling the factor load distribution and reliability. Final version of the instrument contains 21 items (Appendix 3).

Structural Equation Modelling

After factor analysis results the structural equation modeling was used to test the relationships between the observed variables and the structure or structures that are considered to be measured through this observed variable.[32] Figure 1 describes the relationship between dimensions and items. According to confirmatory CMIN/df = 2.25, RMESA = 0.07, GFI = 0.84, and CFI = 0.93 were found (Table 4). These values showed that the model fit was good.

Test–retest Reliability

Internal consistency of the CPHP-Q was determined to be acceptable (Cronbach's alpha value = 0.96). The test–retest reliability value was found good (ICC = 0.93, 95% CIs = 0.91 – 0.95) means that the CPHP-Q demonstrated reliability and internal consistency. The ICC and Cronbach's alpha values for the dimensions are provided in Table 4. According to the subheadings, the ICC and Cronbach's alpha values were as follows: physiotherapist dimension (ICC = 0.912, Cronbach's alpha = 0.951), environment dimension (ICC = 0.927, Cronbach's alpha = 0.963), motivation dimension (ICC = 0.950, Cronbach's alpha = 0.970), independence dimension (ICC = .941, Cronbach's alpha = 0.960), child dimension (ICC = 0.926, Cronbach's alpha = 0.958), time and difficulty dimension (ICC = .954, Cronbach's alpha = 0.976), and usefulness dimension (ICC = 0.951, Cronbach's alpha = 0.954) (Table 5).

Responsiveness

At baseline, the CPHP-Q's mean score was 65.60 ± 1.40; after 4 weeks, which means parent's HP implementation given by physiotherapists CPHP-Q score mean was 82.55 ± 1.41. Effect size was found 1.31 and SRM was found 1.29 (95% CI = 0.92 – 1.65). Pearson correlation coefficient was found significant and moderate with a value of 0.553.

Home program implementation duration and frequency change positively over time in compliance with the CPHP-Q results (Table 6).

Discussion

The results of this study showed that the CPHP-Q is a psychometrically sound assessment tool for measuring parental adherence to an HP. To our knowledge, the CPHP-Q is the first assessment tool to measure this aspect. Therefore, this work proves the validity and reliability of this tool for parents of children with CP aged between 2 and 18 years.

Table 3. The Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire Components According to Factor Load Distribution

	Components						
	Physiotherapist	Environment	Motivation	Independence	Child	Time and Difficulty	Usefulness
Item 16	0.950						
Item 13	0.950						
Item 15	0.943						
Item 17	0.931						
Item 14	0.884						
Item12	0.560						
Item 24		0.933					
Item 23		0.931					
Item 20			0.884				
Item 21			0.882				
Item 2				0.712			
Item 22				0.626			
Item 5				0.614			
Item 8				−0.453			
Item 10					0.738		
Item 11					0.738		
Item 27						0.834	
Item 26						0.723	
Item 6							0.703
Item 3							0.606
Item 7							0.556

CPHP-Q, Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire.

Table 4. According to the Structural Equation Modelling of the Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire, the Items and Model Fit in the Sub-dimensions

	Model Fit			
	CMIN/df*	GFI	CFI***	RMSEAφ
CPHP-Q	2.252	0.849	0.933	0.075

CFI, comparative fit index (CFI) >0.90***; CMIN/df, Chi-square/ degrees of freedom <3.00*; CPHP-Q, Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Assessment Questionnaire; GFI, Goodness of Fit Index >0.90; RMSEA, Root Mean Square Error of Approximation <0.80φ.

An assessment tool must be valid, reliable, and responsive,[25] all of which are proven properties of the CPHP-Q as per the findings of this study. The outputs of this instrument were analyzed by following the COSMIN checklist. According to this checklist, patient report scales must have a clear aim, a clear description of the construct to be measured, as well as clear descriptions of the inclusion and exclusion criteria and the methods used to analyze the data.[23] The structural validity, internal consistency, and responsiveness results should be statistically robust.[33]

As a result of the analysis, 7 items that distorted the factor load distribution were removed from the scale. The remaining 21 items were fitted to the model. We found 7 sub-dimensions: *USEFULNESS, TIME* and *DIFFICULTY, INDEPENDENCE, MOTIVATION, PHYSIOTHERAPIST, ENVIRONMENT*, and *CHILD*. Home program adherence is related to these sub-dimensions. According to a qualitative study about parents' HP adherence, environment, family support, and a feasible HP prescription are crucial for parents' adherence to an HP.[13] Another qualitative study suggests that therapists' attitudes also influence parents' HP adherence.[10] The sub-dimensions of our instrument were found to be compatible with these results. Therefore, the confirmatory factor analysis results pertaining to our scale in this study align with the results of the above-stated qualitative studies. We coded HP adherence as ***UPTIMEC*** (***U****sefulness,* ***T****ime and difficulty,* ***I****ndependence,* ***M****otivation,* ***P****hysiotherapist,* ***E****nvironment,* ***C****hild*). Notably, the current study suggests that the characteristics of an effective HP are that it is useful, time-efficient, and easy to implement. Moreover, it should motivate parents, have caring physiotherapists, facilitate an enriched environment, and motivate the child.

Cronbach's alpha and ICC are alternatives to test the reliability of an instrument such as the CPHP-Q.[26] Thus, we measured Cronbach's alpha and ICC to determine the re-test reliability of the CPHP-Q. The Cronbach's alpha value was lower in the first studied version of the scale.[14] We think that the deletion of items from the scale increased the Cronbach's alpha. Therefore, we concluded that the CPHP-Q is a reliable scale.

The responsiveness of a scale reflects the extent to which changes in a measure over a specified time frame relate to corresponding changes in a reference measure of health status.[30] In other words, the strength of a scale depends on the responsiveness of its structure to change with time.[29] According to the results, the CPHP-Q could measure the effect of parents' compliance with the HP provided by the physiotherapists; the responsiveness of the CPHP-Q was acceptable. Objective data were needed to prove that the CPHP-Q was responsive. For this purpose, parents who completed the CPHP-Q were asked 2 questions to determine the duration and frequency of HP implementation. Implementation time and frequency of the HP increased in parallel with the CPHP-Q results. These results support that the CPHP-Q is a responsive questionnaire. Therefore, the instrument can be used by academicians and clinicians.

Table 5. Intraclass Correlation Coefficient and Cronbach's Alpha Values of the Sub-dimensions

Dimentions	ICC (95% CI)	Cronbach's Alpha
Physıotherapist	0.912 (0.902-0.923)	0.951
Environment	0.927 (0.914-0.935)	0.963
Motivation	0.950 (0.938-0.964)	0.970
Independence	0.941 (0.924-0.955)	0.960
Child	0.926 (0.906-0.945)	0.958
Time and difficulty	0.954 (0.942-0.966)	0.976
Usefulness	0.951 (0.937-0.953)	0.954

Cronbach's alpha α ≥ 0.90 as excellent; intraclass correlation coefficient (ICC) α ≥ 0.90 as excellent.

Table 6. Change of Home Program Implementation Duration and Frequency with Percentages

How Many Days a Week Can You Implement the Home Program?	First Measurement (n = 70) %	Last Measurement (n = 70) %	*P*
Never	4.3	0.00	<.001
1-2 days	30.0	10.0	<.001
2-4 days	22.9	37.1	<.001
4-6 days	38.6	47.1	<.001
7 days	4.3	5.7	<.001
How many minutes do you implement the home program in a day?	First measurement (n = 70) %	Last measurement (n = 70) %	
Less than 30 minutes	44.3	8.6	<.001
30-45 minutes	28.6	47.1	<.001
45-60 minutes	25.7	42.9	<.001
More than 1 hour	1.4	1.4	<.001

The ICF-CY defines a child's health status within the context of their body functions, structure, activity, participation, and environmental and personal factors.[34] The sub-dimensions of the CPHP-Q are compatible with the ICF-CY framework. The CPHP-Q measures the environmental and personal factors affecting parents' adherence to the HP. Therefore, from the perspective of the ICF framework, the CPHP-Q is a required scale and a useful tool for clinicians and academicians. Notably, the CPHP-Q is currently not available in any other language besides Turkish; thus, it needs to be validated in other languages. Moreover, more research is required to examine the relationship between HP compliance and perceptions and predictors of CP, such as CP type as well as the child's age and functional level.

In summary, the CPHP-Q is a valid, reliable, and responsive caregiver measure to determine parents' adherence to HP implementation. The CPHP-Q can indicate the reasons that affect parents' inability to implement an HP effectively. It is also a useful tool from the perspective of the ICF-CY. Expanding the availability of the CPHP-Q in different languages will help researchers assess its effectiveness in other cultures, helping it to become a valid, reliable, and responsive international scale that measures compliance with an HP. Thus, the CPHP-Q holds much potential, given the extent of the gaps it can bridge in this area.

Study Limitations

The findings of this study may only apply within the type of health structure that predominates in one country and may not generalize.

Conclusion

The CPHP-Q is a valid, reliable, and responsive caregiver measure to determine parents' adherence to HP. The CPHP-Q can describe the reasons why parents are not able to implement an effective HP. It is a useful measurement from the ICF-CY perspective. If the CPHP-Q is used

in different languages, it can be determined how effective it is in other cultures and thus it can become a valid, reliable, and responsive international scale that measures compliance and perceptions with the HP. From this point of view, the CPHP-Q can fill a gap in this area.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Hacettepe University (Approval no: 20/357, Date: April 17, 2021).

Informed Consent: Written informed consent was obtained from all parents who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – S.A.S., M.K.G.; Design – S.A.S., M.K.G., M.Ş.; Supervision – M.K.G., M.Ş.; Resources – S.A.S.; Materials – S.A.S.; Data Collection and/or Processing – S.A.S.; Analysis and/or Interpretation – S.A.S., M.H.; Literature Search – S.A.S.; Writing Manuscript – S.A.S.; Critical Review – M.K.G.

Declaration of Interests: The authors have no conflict of interest to declare.

Funding: The authors declared that this study has received no financial support.

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Appendix 1. English Version of Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Questionnaire

		I strongly disagree	I do not agree	I am indecisive	I agree	Absolutely I agree
	Items	**1**	**2**	**3**	**4**	**5**
1	I apply the home program regularly and completely					
2	I experience any difficulty while following the home program.					
3	I feel enthusiastic when implementing the home program.					
4	I feel scared when I do the exercises in the home program.					
5	I do not need help from others while doing the exercises.					
6	I feel pressured when I cannot follow the exercise program regularly.					
7	I think the program I am implementing has benefited my child.					
8	Despite learning the exercise program, I find it difficult to remember.					
9	Taking notes, videos, or photos helps me remember the home program.					
10	My child is reluctant to exercise.					
11	I always need to offer a reward (such as watching TV or buying toys) to my child in order to make him/her complete the exercise.					
12	I think that our therapist has helped with regard to conducting the exercises correctly.					
13	I think that our therapist has explained the exercise program sufficiently.					
14	I think that the home program is updated adequately by the therapist.					
15	I trust our therapist.					
16	I think that our therapist is realistic about the goal to be reached at the end of the home program.					
17	I can easily ask our therapist about any questions I have about the home program.					
18	I think our therapist has a strict and oppressive attitude in giving and applying the home program.					
19	I think our therapist is uninterested in giving a home program.					
20	I feel positive about the home program being created to meet one or more specific goals for my child.					
21	It feel excited when I realize that my home program actually works.					
22	I can implement the home program alone.					
23	We use our devices (AFO, calcaneal cup, KAFO, standing bench, walker, corset, relaxation orthosis, etc.) while implementing the home program.					
24	I think that the equipment we use (e.g., standing table) has helped us implement the home program.					
25	The side effects of the drugs we use change the way we practice the exercise program.					
26	I think that the time I spend implementing the home program reduces the time I spend on myself.					
27	I think that implementing the home program strains me physically (e.g., by causing back and neck pain).					
28	I recommend other parents use a home program as well.					

Turkish version of Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Questionnaire

		Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle katılıyorum
	Maddeler	**1**	**2**	**3**	**4**	**5**
1	Ev programını düzenli ve eksiksiz biçimde uyguluyorum					
2	Ev programını uygularken zorlanmıyorum.					
3	Ev programını uygularken istekli hissediyorum.					
4	Ev programındaki egersizleri yaptırırken korkuyorum.					
5	Egzersizleri yaptırırken başkalarından yardım almaya ihtiyacım yoktur.					
6	Egzersiz programını düzenli uygulayamadığımda kendimi baskı altında hissediyorum.					
7	Uyguladığım programın çocuğuma fayda sağladığını düşünüyorum.					
8	Egzersiz programını öğrendikten sonra hatırlamakta zorlanıyorum.					
9	Önerileri not almak, video ya da fotograf çekmek ev programını hatırlamama yardımcı olur.					
10	Çocuğum egzersiz yaparken isteksizdir.					
11	Çocuğuma egzersiz yaptırabilmek için mutlaka bir ödül koymam gerekir.(tv izlemek, oyuncak almak gibi)					

12	Terapistimizin egzersizleri doğru uygulama konusunda yeterince yardımcı olduğunu düşünüyorum.
13	Terapistimizin egzersiz programını yeterince açıklayıcı anlattığını düşünüyorum.
14	Ev programının terapist tarafından yeterli düzeyde güncellendiğini düşünüyorum.
15	Terapistimize güvenirim.
16	Terapistimizin egzersiz programı sonunda ulaşılacak hedef konusunda gerçekçi olduğunu düşünüyorum.
17	Terapistimize egzersiz programı ile ilgili sorularım olduğu zaman rahatlıkla sorabilirim
18	Terapistimizin egzesiz verme ve uygulatma konusunda katı ve baskıcı bir tavır sergilediğini düşünüyorum.
19	Terapistimizin ev egzersiz programı verme konusunda ilgisiz olduğunu düşünüyorum.
20	Ev programının bir amaç için yapılacağını bilmek beni heveslendirir.
21	Uyguladığım egzersiz programının işe yaradığını görmek beni heveslendirir.
22	Ev programını tek başıma uygulayabiliyorum.
23	Egzersiz yaparken cihazlarımızı kullanırız (AFO, Kalkaneal Kap, KAFO, ayakta durma sehpası, yürüteç, korse, gövde ortezi, vb.)
24	Kullandığımız yardımcı ekipman (ayaktadurma sehpası ....) ev programını uygulamamıza yardımcı olduğunu düşünüyorum
25	Kullandığımız ilaçların yan etkileri egzersiz programını uygulama düzenimizi değiştiriyor.
26	Ev programını uygulamaya ayırdığım zamanının kendime ayırdığım zamanı azalttığını düşünüyorum
27	Ev programı uygulamanın fiziksel zorlanmalara (bel-boyun problemleri gibi) neden olduğunu düşünüyorum.
28	Diğer ebeveynlere de ev programı uygulamalarını öneririm.

Appendix 2. Home Program Implementation Frequency

1. How many days a week can you apply the home program?

□ *Never* □ *1-2 days* □ *2-4 days* □ *4-6 days* □ *Always*

2. How many minutes do you implement the home program in a day?

□ *Less than 30 minutes* □ *30-45 minutes* □ *45-60 minutes* □ *More than 1 hour*

Appendix 3. Last Version of Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Questionnaire

		I strongly disagree	I do not agree	I am indecisive	I agree	Absolutely I agree
	Items	**1**	**2**	**3**	**4**	**5**
2	I experience no difficulty while following the home program.					
3	I feel enthusiastic when implementing the home program.					
5	I do not need help from others while doing the exercises.					
6	I feel pressured when I cannot follow the exercise program regularly.					
7	I think the program I am implementing has benefited my child.					
8	Despite learning the exercise program, I find it difficult to remember.					
10	My child is reluctant to exercise.					
11	I always need to offer a reward (such as watching TV or buying toys) to my child in order to make him/her complete the exercise.					
12	I think that our therapist has helped with regard to conducting the exercises correctly.					
13	I think that our therapist has explained the exercise program sufficiently.					
14	I think that the home program is updated adequately by the therapist.					
15	I trust our therapist.					
16	I think that our therapist is realistic about the goal to be reached at the end of the home program.					
17	I can easily ask our therapist about any questions I have about the home program.					

20	I feel positive about the home program being created to meet one or more specific goals for my child.
21	It feel excited when I realize that my home program actually works.
22	I can implement the home program alone.
23	We use our devices (AFO, calcaneal cup, KAFO, standing bench, walker, corset, relaxation orthosis, etc.) while implementing the home program.
24	I think that the equipment we use (e.g., standing table) has helped us implement the home program.
26	I think that the time I spend implementing the home program reduces the time I spend on myself.
27	I think that implementing the home program strains me physically (e.g., by causing back and neck pain).

Turkish Version of Last Version of Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Questionnaire (CPHP-Q)

		Kesinlikle katılmıyorum	**Katılmıyorum**	**Kararsızım**	**Katılıyorum**	**Kesinlikle katılıyorum**
	Maddeler	**1**	**2**	**3**	**4**	**5**
2	Ev programını uygularken zorlanmıyorum.					
3	Ev programını uygularken istekli hissediyorum.					
5	Egzersizleri yaptırırken başkalarından yardım almaya ihtiyacım yoktur.					
6	Egzersiz programını düzenli uygulayamadığımda kendimi baskı altında hissediyorum.					
7	Uyguladığım programın çocuğuma fayda sağladığını düşünüyorum.					
8	Egzersiz programını öğrendikten sonra hatırlamakta zorlanıyorum.					
10	Çocuğum egzersiz yaparken isteksizdir.					
11	Çocuğuma egzersiz yaptırabilmek için mutlaka bir ödül koymam gerekir.(tv izlemek, oyuncak almak gibi)					
12	Terapistimizin egzersizleri doğru uygulama konusunda yeterince yardımcı olduğunu düşünüyorum.					
13	Terapistimizin egzersiz programını yeterince açıklayıcı anlattığını düşünüyorum.					
14	Ev programının terapist tarafından yeterli düzeyde güncellendiğini düşünüyorum.					
15	Terapistimize güvenirim.					
16	Terapistimizin egzersiz programı sonunda ulaşılacak hedef konusunda gerçekçi olduğunu düşünüyorum.					
17	Terapistimize egzersiz programı ile ilgili sorularım olduğu zaman rahatlıkla sorabilirim					
20	Ev programının bir amaç için yapılacağını bilmek beni heveslendirir.					
21	Uyguladığım egzersiz programının işe yaradığını görmek beni heveslendirir.					
22	Ev programını tek başıma uygulayabiliyorum.					
23	Egzersiz yaparken cihazlarımızı kullanırız (AFO, Kalkaneal Kap, KAFO, ayakta durma sehpası, yürüteç, korse, gövde ortezi, vb.)					
24	Kullandığımız yardımcı ekipman (ayaktadurma sehpası ....) ev programını uygulamamıza yardımcı olduğunu düşünüyorum					
26	Ev programını uygulamaya ayırdığım zamanının kendime ayırdığım zamanı azalttığını düşünüyorum					
27	Ev programı uygulamanın fiziksel zorlanmalara (bel-boyun problemleri gibi) neden olduğunu düşünüyorum.					

Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Questionnaire (CPHP_Q)© Scoring Guide

Compliance and Perceptions of Parents of Children with Cerebral Palsy to Home Program Questionnaire (CPHP_Q) was developed by Sinem Asena Sel and Mintaze Kerem Günel. The scale questions the parents' level of implementation of the home program, why they do not apply it, and how they have difficulties in implementing the home program.

Reliability

Test–retest value of the developed scale was found to be ICC = 0.843 and Cronbach alpha coefficient = 0.915.

Validity

The Kaiser-Meyer-Olkin and Bartlett Sphericity Values have proved to be suitable for structural validity.

Scoring

The scale scoring is as follows: "strongly disagree" 1 point, "strongly agree" 5 points in positive expressions; negative expressions will be calculated as "strongly disagree" 5 points, "strongly agree" 1 point.

Positive Expressions; 1, 2, 3, 5, 9, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 28.

Negative Expressions; 4, 6, 7, 8, 10, 11, 18, 19, 25, 26, 27.

After factor analysis, Item 1, Item 4, Item 9, Item 18, item 19, item 25, item 28 were removed from the scale.

Highest score is 105; the lowest score is 21.

Very good compliance 88,2– 105

Good compliance 71,4 – 88.2

Medium compliance 54,6 – 71,4

Poor compliance 37,8 – 54,6

Very bad compliance 21 – 37,8