Research Article

Psychometric Properties and Cultural Adaptation of the Persian Version of the Family Functioning Questionnaire in Rehabilitation (FFQR) in Parents of Children with Disabilities

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Abstract

Background: Children with special needs require extensive medical and rehabilitative interventions, which pose significant challenges for their families. The Family Functioning Questionnaire in Rehabilitation (FFQR) assesses family performance in this context.

Objectives: This study aimed to evaluate the reliability, validity, and cultural adaptation of the Persian version of the FFQR among Iranian parents of children with special needs.

Methods: This observational cross-sectional study focused on psychometric validation and cultural adaptation of the Persian FFQR. Rigorous evaluations of face and content validity, criterion validity, internal consistency, test-retest reliability, and construct validity were conducted. Participants included 250 parents of children aged 3 to 18 with special needs, recruited from rehabilitation facilities in Tehran province.

Results: The translation process, along with assessments of face and content validity, led to adjustments in questionnaire items. The Persian version of the FFQR demonstrated excellent internal consistency (Cronbach's alpha = 0.946) and high test-retest reliability (correlation coefficient (ICC) = 0.94). However, criterion validity with the Child Adjustment and Parent Efficacy Scale-developmental disability was not established. Confirmatory factor analysis supported the original factor structure of the FFQR, affirming its cross-cultural applicability. Model fit indices indicated reasonable fit, although the chi-square test suggested an imperfect fit ($\chi^2 = 2409.03$, df = 1074, P < 0.001).

Conclusions: The Persian FFQR proved to be a reliable and culturally relevant tool for assessing family functioning in rehabilitation of Iranian children with special needs. These findings highlight the importance of employing culturally sensitive measurement tools in research and clinical applications.

Keywords: Validation Study, Psychometrics, Pediatrics, Social Participation, Disabled Children, Reproducibility of Results

1. Background

Children with disabilities require extensive medical, educational, and rehabilitative interventions, profoundly impacting their quality of life (1). Globally, an estimated 240 million individuals, or 15% of the population, live with disabilities ranging from mild to severe (2). The increased demand for healthcare services and support, including medication and various therapies, places significant burdens on families (3). In this context, families undergo transformative changes when raising a child with disabilities, affecting their private and social spheres (4). Research has shown that these challenges, including emotional turmoil, financial strain, and disruptions in parental relationships, collectively influence the overall quality of life for these families (5, 6).

Importantly, family functioning takes on a unique dynamic when raising a child with developmental disabilities, introducing distinct considerations and

responsibilities (7). Active family engagement in rehabilitation programs is crucial for enhancing the child's skills and fostering realistic perceptions of their capabilities (8). The evolving health landscape has shifted towards a psychosocial approach, particularly evident in the family-oriented model of children's rehabilitation (9). This approach acknowledges the critical role of families in health services and rehabilitation, empowering them as key participants in recognizing their child's abilities, needs, and priorities (10).

The International Classification of Functioning, Disability, and Health (ICF) emphasizes a holistic approach to evaluating rehabilitation services, underscoring the critical role of families in this process (11). Consequently, family-centered evaluation extends beyond the child's physical, cognitive, and social aspects, incorporating cultural and economic dimensions (12). While qualitative methods, such as interviews, provide valuable insights, they often lack the structured framework required for effectively assessing family participation in rehabilitation, highlighting the necessity for standardized tools to evaluate parental performance (13).

An expanding body of literature emphasizes the vital role of family functioning in rehabilitation of children with disabilities. For example, a recent systematic review demonstrated that family-centered approaches not only improve child outcomes but also enhance parental well-being and family cohesion (14). Active family engagement in rehabilitation programs has been shown to foster better developmental trajectories for children and support families in managing the complexities of care (15). However, existing assessment tools often lack specificity for addressing the unique dynamics encountered in rehabilitation contexts. Many general instruments fail to capture the subtleties of family interactions and support systems, revealing a gap in tools tailored to rehabilitation-specific needs (16, 17). This gap underscores the necessity for culturally sensitive and context-specific tools capable of accurately evaluating family functioning within rehabilitation, particularly in diverse populations facing distinct challenges.

Previous studies examining parents of children with disabilities have frequently overlooked tools specifically designed to assess family participation and performance in rehabilitation contexts (18). Commonly used instruments, such as the "Impact of Family Scale" (IOFS), the "Family Environment Scale" (FES), and the "life participation of parent" (LPP), lack the precision needed for application in rehabilitation settings (19). In contrast, the "Family Functioning in Rehabilitation Questionnaire" (FFQR), developed by Abaoglu and Aki in Turkey, represents a significant advancement in assessing family performance in rehabilitation (20). This study uniquely contributes to the field by culturally adapting and validating the FFQR for Persian-speaking populations, addressing a critical gap in the availability of family functioning tools tailored to specific cultural contexts. The FFQR provides a reliable and valid measure of dimensions such as "awareness," "attitude and behavior," "social participation," and "engagement in rehabilitation." Its implementation holds the potential to significantly improve rehabilitation practices in Iran by offering a culturally relevant and robust means of evaluating family participation in the rehabilitation process.

Given the indispensable role of family participation in rehabilitation, as well as the necessity for accurate targeting and early treatment planning, this study aimed to evaluate the validity and reliability of the FFQR among Iranian parents of children with disabilities. The overarching goal was to develop a standardized, reliable, and valid tool in the Persian language to assess family performance within the rehabilitation context. This research is particularly significant as it provides a culturally adapted and standardized tool for evaluating family functioning. By doing so, it enhances rehabilitation practices and contributes to improving the quality of life for families navigating the unique challenges of raising children with disabilities.

2. Objectives

The objective of this study was to investigate the psychometric properties of the FFQR, including face and content validity, criterion validity, internal consistency, test-retest reliability, and construct validity.

3. Methods

3.1. Study Design

This study employed a methodological, cross-sectional design conducted from spring to summer 2023 to assess the psychometric properties and cultural appropriateness of the Persian version of the FFQR among Iranian parents of children with disabilities. The study evaluated face and content validity, criterion validity, internal consistency, test-retest reliability, and construct validity. While cross-sectional studies collect data at a single point in time, they are particularly valuable for establishing relationships between variables and assessing the reliability and validity of measurement tools within a specific population. This design facilitates a comprehensive evaluation of the capacity of FFQR to measure family functioning, enabling researchers to draw meaningful conclusions about its applicability to the target demographic without the challenges associated with longitudinal data collection.

3.2. Participants

Parents of children aged 3 to 18 with disabilities were recruited from rehabilitation facilities in Tehran province. The questionnaire was completed by parents who were directly involved in their child's care and rehabilitation. Their qualifications included familiarity with their child's condition and rehabilitation progress, enabling them to provide accurate and meaningful responses regarding family functioning in the context of rehabilitation. This active participation ensured that the information gathered reflected the realities of their experiences and challenges. The inclusion criteria required participants to have literacy proficiency to ensure they could comprehend and respond accurately to the questionnaire. Additionally, participants were required to be Iranian nationals and to have participated in weekly rehabilitative sessions for at least one year, indicating their sustained engagement in their child's rehabilitation process.

The exclusion criteria specified that parents with physical, motor, or mental disorders that could impair their involvement in the rehabilitation process were not eligible. Children had diagnoses documented in their medical records, confirmed by qualified medical professionals such as pediatricians, psychiatrists, and neurologists based on established clinical criteria. In rare cases where a diagnosis was not recorded in the medical file, the child was referred to the relevant specialist for diagnosis, and the diagnosis was subsequently confirmed and documented.

3.3. Sampling Method and Sample Size Determination

The study employed a convenience sampling method, with a sample size of approximately 250 parents of children with disabilities, calculated based on the fivefold representation of items within the FFQR ([21]). Additionally, 30 participants underwent retesting ([22]), and 50 participants were included for criterion validity assessment using the Child Adjustment and Parent Efficacy Scale-developmental disability (CAPES-DD) ([23]). This approach ensured a robust and representative participant cohort for psychometric evaluation. Although convenience sampling was used, efforts were made to diversify the sample by recruiting parents from various rehabilitation facilities across the region. This strategy helped mitigate potential biases and enhance the generalizability of the findings within the context of Iranian families with children with disabilities.

3.4. Ethical Considerations

Ethical approval for this study was obtained from the Ethics Committee of Iran University of Medical Sciences (IR.IUMS.REC.1401.754). All participants provided informed consent prior to enrollment. This consent included a comprehensive explanation of the study's purpose, procedures, and benefits, along with assurances of confidentiality and the voluntary nature of participation. Participants were informed that they could withdraw from the study at any time without facing any consequences.

3.5. Procedure

The execution of this study involved a thorough process that included translation, face validity, content validity, sampling, and subsequent statistical and

analytical assessments to determine test-retest reliability, internal consistency, and factor analysis.

3.5.1. Translation

Following ethical approval (IR.IUMS.REC.1401.754), the translation process adhered to the IQOLA approach as outlined by Bullinger et al. (24). Initially, two proficient translators independently translated the original questionnaire into Persian: One was an expert English translator, and the other was a PhD student in occupational therapy skilled in both English and the subject matter. Collaborative review sessions were held by the research team to refine the Persian version, ensuring both linguistic accuracy and conceptual fidelity. The team comprised two PhDs in occupational therapy, one occupational therapist with a PhD in neuroscience, and one MSc in occupational therapy. This version was then translated back into English and reviewed by the questionnaire's developer for validation. Feedback from the developer was incorporated into the English version, which was subsequently revised in Persian during research team meetings to finalize the translation.

3.5.2. Face Validity

Following the translation, a comprehensive face validity evaluation was conducted using both qualitative and quantitative methods. Ten parents and eight experts, including five occupational therapists and three speech therapists with doctoral credentials and extensive clinical experience, participated in the process. The parents completed a questionnaire, rating the clarity, relevance, and comprehensibility of the 48 items on a scale from one to five. Face-to-face interviews with the parents provided additional insights. Expert opinions and parent feedback were synthesized and presented to the research team for further refinement, shaping the final test design for subsequent content validation.

3.5.3. Content Validity

Content validity was assessed using two indices: (1) the Content Validity Index (CVI), and (2) the Content Validity Ratio (CVR). Ten specialists, including occupational therapists, speech therapists, and a physiotherapist, each with over ten years of experience in child evaluation and clinical interventions, participated in the evaluation. They provided feedback on the relevance, necessity, and quality of each item, which informed the calculation of the CVR. Iterative meetings with the research team were held to make minor adjustments based on the experts' opinions. The revised version, refined through the content validity evaluation, was then finalized for the subsequent sampling phase.

3.5.4. Criterion Validity, Internal Consistency, Test-Retest Reliability, and Construct Validity

The sampling process involved recruiting 250 parents of children with special needs from private clinics. Additionally, 50 participants completed the CAPES-DD assessments to evaluate criterion validity, and 30 individuals completed the questionnaire twice to assess test-retest reliability. Statistical analyses, conducted using SPSS software, included evaluations of criterion validity, internal consistency, test-retest reliability, and factor analysis.

3.6. Instruments

3.6.1. Family Functioning Questionnaire in Rehabilitation

Developed by Abaoglu and Aki, this questionnaire comprises 48 questions designed for parents of children aged 1 to 18 with special needs. It addresses domains such as awareness, attitude and behavior, social participation, and engagement in rehabilitation. Responses are scored on a scale of one to five, with lower scores indicating greater challenges in parental engagement in the rehabilitation process. Originally developed in Turkish, the questionnaire demonstrated strong internal consistency (Cronbach's alpha = 0.943) and test-retest reliability (r = 0.772). Content validity evaluations reported a CVI of 0.75 and a CVR of 0.51 (20).

3.6.2. Child Adjustment and Parent Efficacy Scale-Developmental Disability

Developed by Emser et al., this scale consists of 24 questions designed to assess emotional and behavioral challenges in children with developmental issues over the preceding four weeks, along with parental

autonomy. Responses are scored on a scale from zero to three, with an additional score reflecting parental management of behavioral problems (25). A psychometric study conducted in Iran reported internal consistency values ranging from 0.76 to 0.94 (26).

3.6.3. Demographic Questionnaire

This comprehensive survey includes inquiries about the child's and parent's age and gender, family economic status, number of children, parental health history, duration of rehabilitation, parental occupation, and educational level.

3.7. Statistical Analysis

Statistical analysis was performed using SPSS version 26 software. Content validity was assessed using the CVI and CVR. CVI scores above 0.79 were deemed acceptable, while CVR was calculated based on expert ratings using the Lawshe scale. Internal consistency was evaluated using Cronbach's alpha, categorized as high (> 0.9), good (0.7 - 0.9), weak (0.6 - 0.7), or unacceptable (< 0.5) (27). Test-retest reliability was determined using the intraclass correlation coefficient (ICC), with values above 0.75 indicating excellence (28). Criterion validity was evaluated through Pearson's correlation with the Child Adjustment and Parent Efficacy Scale-developmental disability (CAPES), classified as low (0 - 0.29), medium (0.30 - 0.49), high (0.50 - 0.69), and very high (0.70 - 0.89) correlation (29). Confirmatory factor analysis, conducted using Lisrel software version 8.8, was used to validate the structural integrity of the instrument.

4. Results

Table 1 provides a summary of the demographic characteristics of the parents and children. The majority of mothers were homemakers, and a significant proportion of the children were diagnosed with autism spectrum disorder. Medication use, such as Ritalin and risperidone, and the utilization of rehabilitation services, primarily occupational and speech therapy, were common among the participants. Due to incomplete responses for some demographic items, the sample size was slightly less than 250. The average age of

the children was 6 years and 10 months, with an average duration of 2 years and 8 months spent in rehabilitation. Descriptive data for participant scores from the evaluation tools are detailed in Table 2.

4.1. Face Validity

During the face validity phase, 19 items were revised based on feedback from parents and experts to improve their relevance, clarity, and comprehension. For instance, item 2 was adjusted to broaden its scope to include various developmental disorders, while item 8 was revised to provide specific examples of children's needs in rehabilitation. Item 15 was clarified for better understanding, and item 31 was supplemented with an additional phrase to elaborate on health status. The detailed questionnaire items can be found in Appendix.

4.2. Content Validity

The FFQR underwent a thorough content validity assessment, showing that 90% of the questions achieved the maximum score of 1 for relevance, with 4% scoring 0.8 and 6% scoring 0.9. In the quality section, 55% of the questions attained the highest score of 1, with 14% scoring 0.8 and 31% scoring 0.9. The CVR analysis, conducted with 10 experts, indicated that 67% of the questions received the maximum score of 1, while 33% scored 0.8, meeting Lawshe's criteria.

4.3. Test-Retest Reliability

The reliability coefficient obtained was 0.94, with a confidence interval of 0.88 - 0.97, indicating excellent reliability. Detailed correlation values are presented in Table 3.

4.4. Internal Consistency

The internal consistency analysis yielded a Cronbach's alpha coefficient of 0.946 for all items, indicating excellent reliability. Furthermore, the Cronbach's alpha coefficients for the subscales were 0.89 for awareness, 0.86 for attitude and behavior, 0.77 for social participation, and 0.67 for engagement in rehabilitation, reflecting robust internal consistency.

4.5. Criterion Validity

Table 1. Demographic Characteristics of Study Participants [a]

Variables	Amount
Parent's Variables (n = 250)	
Parent's gender	
Female	216 (86.4)
Male	34 (13.6)
Father's education	
High school	21 (8.4)
Diploma	66 (26.4)
Higher than diploma	38 (15.2)
Bachelor	68 (27.2)
Masters and higher	55 (22.0)
Mother's education	
High school	23 (9.2)
Diploma	65 (26.0)
Higher than diploma	37 (14.8)
Bachelor	79 (31.6)
Masters and higher	46 (18.4)
Father's job	
Unemployed	9 (3.6)
Government job	86 (34.4)
Freelance job	145 (58.0)
Retired	8 (3.2)
Mother's job	
Housewife	180 (72.0)
Part-time	40 (16.0)
Full-time	30 (11.6)
Family's income	
Low	52 (20.8)
Medium	181 (72.4)
High	17 (6.8)
Parent's marital status	
Married	235 (94.0)
Divorced	15 (6.0)
Having other's support	
No	151 (60.4)
Yes	94 (37.6)
Having insurance	
No	164 (65.6)
Yes	86 (34.4)
Mother's age (y)	38.60 ± 6.26
Father's age (y)	42.20 ± 7.08
Number of children	1.66 ± 0.69
Child's Variables (n = 250)	
Child's gender	
Girl	62 (24.8)
Boy	188 (75.2)
Type of disorder	
ASD	136 (54.4)
Speech delay	22 (8.8)
ADHD	17 (6.8)
Other disorders	75 (30.0)
Using assistive device	
Yes	49 (19.6)
No	201 (80.4)
Having a history of seizures	
Yes	63 (25.2)
No	186 (74.4)
Having a history of medication use	
Yes	130 (48.0)
No	120 (52.0)
Type of therapeutic sessions	
Occupational therapy & speech therapy	129 (51.6)
Speech therapy	16 (6.4)
Occupational therapy	63 (25.6)
Other therapeutic sessions	42 (16.4)
Having independency	
Does not have	62 (24.8)
Sometimes	86 (34.4)
Most of the time	66 (26.4)
Always	35 (14.0)
Child's age (mo)	82.6 ± 28.58
Duration of using rehabilitation services (mo)	32.32 ± 19.90
Number of sessions per week	5.00 ± 3.91

[a] Values are expressed as No. (%) or mean ± SD.

Regarding criterion validity, Pearson's correlation test was employed due to a P-value exceeding 0.05 and the normal distribution of variables. However, the criterion validity assessment did not meet acceptability criteria with CAPES-DD. The FFQR questionnaire demonstrated an insignificant relationship with CAPES-

Table 2. Descriptive Statistics for Scores of Study Tools

Variables and Subscale	Mean ± SD
FFQR	
Awareness	67.40 ± 11.40
Attitude and behavior	59.70 ± 9.80
Social participation	30.66 ± 5.10
Rehabilitation engagement	22.96 ± 3.90
Total Raw Score	182.00 ± 30.00
FFQR retest	
Awareness	68.90 ± 10.60
Attitude and behavior	59.60 ± 10.70
Social participation	30.60 ± 5.10
Rehabilitation engagement	22.60 ± 3.50
Total Raw Score	183.80 ± 30.00
CAPES-DD	
Parent efficacy	168.00 ± 33.70
Child Adjustment	27.00 ± 5.90
FFQR Percentage Scores	
Awareness	68.60 ± 15.90
Attitude and behavior	68.10 ± 16.70
Social participation	70.80 ± 15.90
Rehabilitation engagement	70.60 ± 16.60
Total Raw Score	69.10 ± 14.10
FFQR retest Percentage Scores	
Awareness	70.70 ± 14.20
Attitude and behavior	68.10 ± 16.70
Social participation	70.80 ± 15.90
Rehabilitation engagement	69.30 ± 14.90
Total Raw Score	69.50 ± 95.30

Abbreviations: FFQR, Family Functioning in Rehabilitation Questionnaire; CAPES-DD, Child Adjustment and Parent Efficacy Scale-Developmental Disability.

Table 3. Test-Retest Reliability Analysis Intra-class Correlation Coefficient [a]

Variables	ICC	CI	Strength of Relationship
Awareness	0.98	0.96 to 0.99	Strong
Attitude and behavior	0.99	0.96 to 0.99	Strong
Social participation	0.98	0.96 to 0.99	Strong
Rehabilitation engagement	0.99	0.997 to 0.998	Strong
Total Raw Score	0.99	0.97 to 0.99	Strong

Abbreviations: ICC, Intra-Class Correlation Coefficients; FFQR, Family Functioning in Rehabilitation Questionnaire; CI, Confidence Intervals.

[a] The test-retest reliability analysis demonstrates the ICC for various variables within the FFQR. The ICC values, along with their CI, Signify the strength of the relationship between scores obtained from the initial assessment and those obtained upon retesting. The strength of the relationship is categorized as "strong," emphasizing the robust stability of scores over the two-week period.

DD, suggesting that CAPES-DD is unsuitable as a criterion for FFQR due to a lack of homogeneity and congruence between the two instruments.

4.6. Factor Analysis and Model Fit Assessment

In the confirmatory factor analysis, factor loadings were calculated to evaluate the strength of the relationship between latent and observed variables. The graphical representation illustrated factor loadings, with values above 0.6 deemed highly desirable. Significance, as indicated by *t*-value statistics, was

determined by values smaller than 1.96, which were highlighted in red (Figure 1).

These values indicated non-significant correlations in the standard analysis.

4.7. Model Fit

4.7.1. Chi-square Test

The chi-square test, with degrees of freedom (df) of 1074 and a minimum fit function chi-square of 2409.03 (P = 0.0), revealed a statistically significant lack of fit
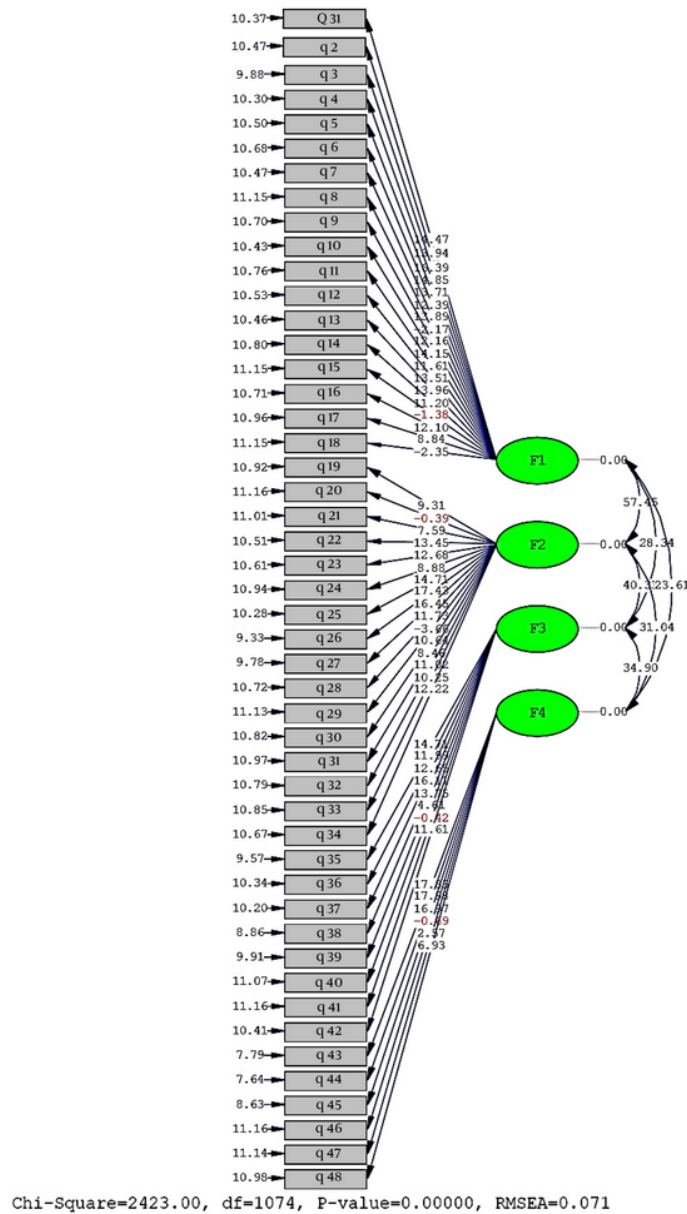
Figure 1. Path diagram of confirmatory factor analysis for Family Functioning in Rehabilitation Questionnaire (FFQR) model fit assessment

between the hypothesized model and the observed data. It is important to acknowledge the sensitivity of the chi-square statistic to sample size, underscoring the need to consider additional goodness-of-fit indices for a more comprehensive evaluation.

4.7.2. Root Mean Square Error of Approximation

The RMSEA value of 0.071, with a 90% confidence interval ranging from 0.067 to 0.075, demonstrated a reasonable fit. Although the RMSEA suggested an acceptable fit, the lower bound of the confidence

interval slightly exceeded the commonly recommended threshold of 0.05 for a close fit. Nonetheless, the relatively low RMSEA value indicated an overall acceptable fit for the model.

4.7.3. Comparative Fit Indices

Various comparative fit indices offered additional insight into the model's appropriateness. The Normalized Fit Index (NFI), Non-normal Fit Index (NNFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Relative Fit Index (RFI) displayed values close to or exceeding 0.90, generally supporting a good model fit.

4.7.4. Model Comparison

The Expected Cross-Validation Index (ECVI), estimated at 10.55 with a 90% confidence interval of (9.99, 11.14), indicated good predictive performance for the model. Its position within the confidence interval, closer to the ECVI for the saturated model than for the independence model, underscored the model's efficacy in prediction.

4.7.5. Other Fit Indicators

Additional fit indices included the root mean square residual (RMR), Standardized RMR, Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI). The RMR and GFI indicated a moderate fit, while the AGFI suggested a reasonable adjustment, taking model complexity into account.

In summary, although the chi-square test indicated an imperfect fit, the RMSEA and comparative fit indices supported an overall reasonable fit for the proposed model. Additionally, the ECVI demonstrated good predictive performance, offering a comprehensive evaluation of the model's appropriateness.

5. Discussion

Children with special needs face unique challenges, necessitating comprehensive rehabilitation strategies (30). The translation and validation of the FFQR into Persian, similar to its Turkish version, entailed a meticulous process to ensure linguistic accuracy and cultural relevance. The participants in this study were aged between 3 and 18 years, with an average age of 6

years and 10 months. Prior to using any measurement tool, researchers must establish its validity and reliability (31).

5.1. Face Validity and Item Adaptations

The face validity assessment included qualitative and quantitative interviews with families, providing an in-depth understanding of each item. Collaborative efforts with parents and experts resulted in modifications that enhanced the clarity and transparency of the items. For example, item 34 was revised from "I allow my child to spend time with his peers" to "I provide opportunities for my child to spend time with his peers and friends," emphasizing the family's role in facilitating social participation (32). Similarly, language adjustments, such as changing "I make sure" to "I try," highlighted the family's caring role in promoting social interactions (33). Recognizing the inclusive nature of family involvement, the term "other" was added to "family members" in an item addressing participation in rehabilitation programs (34). Both the Turkish (20) and Persian translations prioritized crafting clear, unambiguous, and culturally relevant language, essential for selecting effective measurement tools.

5.2. Content Validity and Expert Feedback

The CVI results confirmed the simplicity, expressiveness, and clarity of all test items, meeting the criteria established by experts. The accuracy and quality of the translation contributed to the favorable CVI scores, with high ratings for simplicity, fluency, and transparency. Additionally, the items demonstrated acceptable CVRs ranging between 0.8 and 1, further validating their appropriateness. Expert-driven enhancements, such as including "does not need rehabilitation services" in item 15, emphasized the importance of family awareness and active participation in planning treatment strategies. Similarly, the addition of "cognitive" to "motor ability" in item 33 highlighted the significance of addressing cognitive aspects in children with special needs.

The iterative refinement during the content validity process, informed by family interviews and expert opinions, aimed to minimize potential errors in completing the tool, thereby improving question

comprehension. The strong CVI and CVR scores observed in this study align with findings from previous research, which demonstrate that the clarity and relevance of items play a critical role in the effectiveness of measurement tools within similar contexts of rehabilitation engagement (35). These results underscore the importance of culturally sensitive adaptations in ensuring the tool's applicability and relevance across diverse populations.

5.3. Factor Analysis Findings

An in-depth interpretation of the factor analysis findings reveals that the four identified dimensions—awareness, attitude and behavior, social participation, and rehabilitation engagement—play critical roles in family functioning within the context of rehabilitation. Awareness reflects the family's understanding of their child's needs, which is essential for informed and active participation in rehabilitation activities. The dimension of Attitude and Behavior emphasizes the significance of a supportive family attitude in fostering positive therapeutic behaviors. This underscores the necessity of strategies that promote proactive, positive family attitudes, which can significantly influence a child's progress. Social participation emerged as a key factor, highlighting the family's role in facilitating the child's social interactions. Encouraging social participation is vital for a child's development, as support from family members can lead to improved social skills and overall well-being. On the other hand, rehabilitation engagement captures the extent of the family's involvement in the rehabilitation process, reinforcing the importance of fostering strong family commitment to ongoing therapeutic efforts. Previous research has demonstrated that active family engagement in rehabilitation leads to better outcomes for children with disabilities (36). This finding reinforces the value of tools like the FFQR, which can be used to assess family functioning and identify areas that may require additional support. Collectively, these dimensions enhance understanding of family dynamics and pinpoint areas where healthcare providers can focus their interventions. By identifying these aspects, the FFQR serves as a valuable tool for assessing and supporting family functioning, facilitating the tailoring of rehabilitation programs to meet the unique needs of each family.

Confirmatory factor analysis in both Turkish and Iranian studies endorsed the original factor structure of the FFQR, supporting its applicability in both contexts. The alignment of factors in the Persian version with those in the Turkish version suggests cross-cultural suitability, reflecting the cultural similarities between the Iranian and Turkish populations. Although the chi-square test indicated a lack of fit in both studies, this highlights the complexities of achieving a perfect fit in such models. Nevertheless, various comparative fit indices collectively indicated reasonable fits for the proposed models.

5.4. Reliability and Cross-Cultural Applicability

Internal consistency, as indicated by the excellent Cronbach's alpha of 0.946, highlights the compatibility of items within the FFQR, emphasizing its representation of a unified construct. The uniform interpretation among families, regardless of the nature of their children's problems, contributed to the strong internal consistency observed. Similarly, the Turkish version demonstrated comparable internal consistency (Cronbach's alpha = 0.946) (20).

The high test-retest reliability, indicated by a significant ICC of 0.94, reinforced the stability of the tool's measured concept over a two-week period. This reliability further establishes the FFQR as a dependable instrument for evaluating family performance in rehabilitation contexts.

5.5. Criterion Validity and Future Directions

In exploring criterion validity using the CAPES-DD questionnaire, incongruence between the two tools emerged. The CAPES-DD, designed for developmental disabilities, did not align seamlessly with the FFQR, prompting suggestions for future exploration of alternative tools.

The identified discrepancies between the FFQR and CAPES-DD underscore the necessity for future studies to refine and develop tools that can be integrated more effectively, ensuring comprehensive assessments that

address both family functioning and child developmental outcomes.

In summary, the rigorous validation process has established the FFQR as a reliable and culturally relevant tool for assessing family functioning in the rehabilitation of Iranian children with special needs. The study's outcomes provide valuable insights for both research and clinical applications, emphasizing the importance of culturally sensitive measurement tools. The Persian version of the FFQR is shown in the Appendix in Supplementary File.

5.6. Study Limitations

Certain limitations should be acknowledged in this study. The use of self-reported data may have introduced response bias, as participants might have responded in ways that reflect social desirability rather than accuracy. Although the FFQR demonstrated strong reliability and consistency, the criterion validity results suggest that further validation using other tools could be beneficial. Additionally, while the sample size was relatively large, it may have affected the chi-square test results related to model fit. Future research could address these limitations by increasing the sample size and exploring validation with alternative tools.

5.7. Conclusions

In conclusion, the rigorous translation and validation of the FFQR into Persian, mirroring its Turkish counterpart, represent significant advancements in understanding family dynamics within rehabilitation contexts. These culturally sensitive tools offer researchers and clinicians systematic means to assess family functioning in caring for children with special needs. The similarities in translation and validation processes indicate potential cross-cultural applicability, emphasizing their importance in enhancing rehabilitation practices globally.

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Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

Footnotes

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