INSIGHTS-JOURNAL OF
HEALTH AND REHABILITATION

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AND REHABILITATION

URDU TRANSLATION AND CROSS-CULTURAL VALIDATION OF PEDSQL EPILEPSY MODULE VERSION 3.0 PARENT REPORT

Original Research

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Acknowledgement: The authors acknowledge the cooperation of the participating parents and the support of the Rising Sun Institute.

Conflict of Interest: None Grant Support & Financial Support: None

ABSTRACT

Background: Epilepsy is a prevalent neurological disorder characterized by recurrent seizures caused by abnormal brain electrical activity. Assessing the health-related quality of life (HRQOL) in children with epilepsy is crucial for understanding the broader impact of the condition beyond clinical symptoms. The Pediatric Quality of Life Epilepsy Module (PedsQL, Version 3.0), parent-proxy report for children aged 5–7 years, is a widely recognized tool, yet no Urdu version was available for use in the Pakistani population.

Objective: To translate the PedsQL Epilepsy Module (Version 3.0), parent report for children aged 5–7 years, into Urdu and to evaluate its psychometric properties.

Methods: A cross-cultural translation and validation study was conducted over six months at the Rising Sun Institute. The translation process followed international guidelines and included forward translation by two bilingual experts, reconciliation, backward translation, and expert panel review. The pre-final version was tested through cognitive interviewing and finalized for administration. A total of 30 parents of children with epilepsy, recruited through non-probability convenience sampling, completed the Urdu version of the questionnaire. Data were analyzed using SPSS version 21. Content Validity Index (CVI) and Content Validity Ratio (CVR) were calculated based on ratings from five experts. Internal consistency and reliability were assessed through Cronbach's alpha and Intra-Class Correlation Coefficient (ICC). Factor analysis was performed to evaluate construct validity.

Results: The average CVI of the translated tool was 0.812, confirming high content validity. CVR values ranged from 0.6 to 1.0 across items, with most items achieving full agreement among experts. Cronbach's alpha for internal consistency was 0.895, demonstrating excellent reliability. The ICC for the tool was 0.895 (95% CI: 0.851–0.931), confirming strong test–retest reliability. Factor analysis revealed four major components explaining 78.9% of the total variance, and item-total correlations were within acceptable ranges, supporting discriminant validity.

Conclusion: The Urdu version of the PedsQL Epilepsy Module (Version 3.0), parent-proxy report for children aged 5–7 years, is a reliable and valid instrument for assessing quality of life in children with epilepsy in Pakistan. This translation provides an essential tool for clinical practice and research, enabling culturally relevant assessment of HRQOL.

Keywords: Child, Epilepsy, Health-Related Quality of Life, Psychometrics, Quality of Life, Questionnaires, Translating.

INTRODUCTION

Epilepsy is a chronic neurological disorder characterized by aberrant synchronized neuronal activity in the brain that results in recurrent, transient clinical signs or symptoms (1). Clinically, it is defined as the occurrence of two or more unprovoked or reflex seizures separated by more than 24 hours, or a single seizure with at least a 60% probability of recurrence within the following ten years, thereby classifying it as an epilepsy syndrome (1). Globally, epilepsy affects individuals of all ages and backgrounds, with men showing a slightly higher incidence compared to women. This disparity may be influenced by regional variations in risk factors and, in some cases, by the sociocultural underreporting of epilepsy in women. The condition demonstrates a bimodal distribution, with the highest prevalence observed in infancy and late adulthood. Epidemiological studies report incidence rates as high as 86 per 100,000 during the first year of life, decreasing in middle age to around 23–31 per 100,000, and increasing again to 180 per 100,000 among those over 85 years (2). Despite advances in medical management and public awareness campaigns, epilepsy continues to represent a major public health burden. Patients often face substantial healthcare inequalities, stigma, and socioeconomic disadvantages that exacerbate the disease burden (3). Within this spectrum, frontal lobe epilepsy (FLE) has been associated with significant cognitive dysfunctions, particularly affecting executive processes, attention, motor skills, and social cognition in both pediatric and adult populations (4). Additionally, febrile seizures in childhood, experienced by 2–5% of children, represent a notable risk factor for epilepsy, though more recent studies suggest that only 1.4–3.4% of these children eventually develop the disorder (5). Approximately one-third of new epilepsy diagnoses occur before the age of 20, underscoring the significance of childhood epilepsy as a critical health concern (6).

The transition of children with epilepsy into adulthood presents challenges for healthcare systems. Effective management requires structured transition programs to ensure continuity of care and optimize long-term outcomes (7). Mortality in epilepsy is another pressing concern, with sudden unexpected death in epilepsy (SUDEP), status epilepticus, suicide, and accidents accounting for the majority of epilepsy-related deaths, particularly in pediatric populations (8). Psychiatric comorbidities are also highly prevalent. Idiopathic generalized epilepsy (IGE) and temporal lobe epilepsy (TLE) demonstrate psychiatric comorbidity rates exceeding 40%, with depression being the most studied and impactful. Depression in epilepsy patients not only reduces quality of life but also negatively influences treatment adherence and outcomes (9,10). Psychogenic non-epileptic seizures (PNES) further complicate clinical management. These seizure-like episodes lack electroencephalographic abnormalities but significantly impact patients and families, particularly in children, where psychosocial and family dynamics influence disease perception and outcomes (11,12). Cognitive, educational, and behavioral challenges often coexist, even in neurologically intact children, indicating that epilepsy has far-reaching effects beyond seizures alone (13). The importance of neuroimaging in the diagnostic work-up is well recognized, though its precise role in newly diagnosed pediatric epilepsy remains debated (14). Furthermore, antiepileptic drugs (AEDs), though essential, may contribute to injury risk and cognitive side effects, complicating the balance between seizure control and quality of life (15,16).

Research consistently highlights that early-onset seizures, frequent seizure activity, prolonged disease duration, and AED use are critical determinants of cognitive decline in children with epilepsy. Seizures occurring before the age of one year significantly increase the likelihood of long-term cognitive impairment due to the heightened vulnerability of the developing brain (17). Moreover, epilepsy has been associated with developmental regression, behavioral difficulties, and psychiatric symptoms, some of which may precede seizure onset (18,19). Consequently, pediatric epilepsy exerts a profound influence on health-related quality of life (HRQOL), not only for the affected children but also for their families, particularly their parents (20–22). Quality of life (QOL) measures are therefore central to epilepsy care, providing insights into the broader impact of the disease beyond clinical seizure control. While generic QOL scales enable comparisons across conditions, epilepsy-specific tools such as the Pediatric Quality of Life Epilepsy Module (PedsQL Epilepsy) offer a more precise evaluation of epilepsy-related challenges (23). However, the absence of validated parent-proxy instruments in regional languages, such as Urdu, has created barriers to accurately assessing HRQOL in local populations. Without culturally and linguistically adapted tools, the lived experiences of children with epilepsy and their families remain underrepresented in research and clinical practice. This study aims to address this gap by translating and validating the PedsQL Epilepsy Module (version 3.0), parent proxy-report for children aged 5–7 years, into Urdu for use in the Pakistani population. The objective is to provide a standardized, reliable, and accessible instrument that will facilitate the accurate assessment of health-related quality of life in children with epilepsy, enabling improved clinical care, patient-centered interventions, and future research in local settings.

METHODS

This study was designed as a cross-cultural translation and validation study and was conducted over a period of six months following the formal approval of the research synopsis by the institutional ethical review committee. Ethical clearance was obtained from the respective Institutional Review Board (IRB), and informed consent was obtained from all participating caregivers prior to data collection. The study was carried out at the Rising Sun Institute, where parents and primary caregivers of children with epilepsy were approached for participation. A total of 30 parents of children aged 5–7 years, previously diagnosed with epilepsy, were recruited through a non-probability convenience sampling technique (24). Inclusion criteria required that participants be the primary caregivers, capable of understanding the content of the questionnaire, and able to complete the instrument independently. Caregivers of children suffering from other neurodegenerative or psychiatric conditions, as well as those who were unable to communicate in Urdu, were excluded from the study. The translation of the Pediatric Quality of Life Epilepsy Module (PedsQL™, Version 3.0; parent-proxy report for children aged 5–7 years) was conducted using a mixed-method approach to ensure linguistic and cultural adaptation. Initially, two bilingual translators independently performed forward translation of the original English questionnaire into Urdu. The two versions were then reconciled into a single forward translation, which was subsequently subjected to backward translation into English by an independent bilingual translator unfamiliar with the original version. This step ensured conceptual equivalence between the source and translated versions. The reconciled forward and backward translations were reviewed by an expert panel, after which the final forward version was developed. Pre-testing and cognitive interviews were then conducted with caregivers to assess the comprehensibility, cultural appropriateness, and clarity of the translated questionnaire. Minor modifications were incorporated where necessary to produce the final Urdu version of the PedsQL Epilepsy Module. For data collection, eligible caregivers were invited to participate voluntarily and were given the Urdu-translated PedsQL™ questionnaire to complete. Participants were asked to reflect on their child's activities and health-related quality of life, and responses were recorded according to standardized scoring protocols. To maintain accuracy, caregivers completed the questionnaires independently under researcher supervision, ensuring minimal interviewer bias. Data analysis was performed using SPSS version 21. Internal consistency of the translated instrument was assessed using Cronbach's alpha, while test-retest reliability and agreement were examined using the intra-class correlation coefficient (ICC). Content validity was evaluated through the Content Validity Index (CVI) as rated by subject matter experts, and construct validity was examined using factor analysis. These analyses provided evidence of the psychometric robustness of the Urdu version of the PedsQL Epilepsy Module.

RESULTS

The translated Urdu version of the PedsQL Epilepsy Module, Parent Report for children aged 5–7 years, was assessed for validity and reliability using multiple psychometric analyses. The questionnaire was evaluated by five experts for its content validity. Ratings were provided across four domains—relevance, clarity, simplicity, and ambiguity—on a four-point ordinal scale. The calculated average Content Validity Index (CVI) for all items was 0.81, indicating high validity for assessing quality of life in children with epilepsy. Individual item CVI values ranged between 0.70 and 0.88, demonstrating acceptable levels across all items. Content Validity Ratio (CVR), calculated using Lawshe's method, showed that the majority of items achieved values of 1.0, while a few items recorded slightly lower values of 0.6. Descriptive statistics of the participants revealed a mean score of 1.17 with a standard deviation of 0.79 for the age variable. This indicated an overall homogeneity in the sample. The reliability of the Urdu version of the instrument was confirmed with Cronbach's alpha of 0.947, suggesting excellent internal consistency across the 29 items. The Intra-Class Correlation Coefficient (ICC) for average measures was 0.934, with a 95% confidence interval between 0.894 and 0.964, further establishing strong reliability of the tool.

Item-total correlation analysis showed that most items had corrected item-total correlations greater than 0.3, confirming their contribution to overall reliability. A few items demonstrated lower correlations, suggesting potential redundancy or weaker association with the overall construct. Discriminant validity testing highlighted variability in item means and standard deviations, with most responses falling within the acceptable range, thereby supporting item distinctiveness. Factor analysis using Principal Component Analysis (PCA) revealed acceptable communalities for all items, with values ranging from 0.43 to 0.94. The total variance explained by extracted components indicated that four main factors accounted for 78.9% of the total variance. The scree plot confirmed that three eigenvalues greater than one contributed meaningfully to the construct. The rotated component matrix demonstrated appropriate loading of items across multiple factors, supporting construct validity of the Urdu version. The overall findings confirmed that the Urdu-translated PedsQL Epilepsy Module demonstrated strong content validity, excellent internal consistency, and robust construct validity.

It proved to be a reliable and culturally appropriate instrument for measuring quality of life in children with epilepsy through caregiver proxy reports.

Table 1: Content Validity Index (CVI) and Content Validity Ratio (CVR) of Urdu Version of PedsQL Epilepsy Module (Parent Report, Age 5–7 Years)

Items	Relevance	Clarity	Simplicity	Ambiguity	CVI	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	CVR
Q1	0.85	0.75	0.75	0.85	0.80	1	1	1	1	1	1.0
Q2	0.75	0.75	0.85	0.85	0.80	1	1	1	1	1	1.0
Q3	0.85	0.85	0.90	0.85	0.86	1	1	1	1	1	1.0
Q4	0.85	0.85	0.85	0.85	0.85	1	1	0	1	1	0.6
Q5	0.75	0.75	0.85	0.75	0.70	1	1	1	1	1	1.0
Q6	0.75	0.85	0.75	0.75	0.70	1	1	1	1	1	1.0
Q7	0.85	0.85	0.85	0.85	0.85	1	1	1	0	1	0.6
Q8	0.90	0.85	0.85	0.85	0.86	1	1	1	1	1	1.0
Q9	0.85	0.85	0.75	0.75	0.80	1	1	1	1	1	1.0
Q10	0.85	0.75	0.75	0.85	0.80	1	1	0	1	1	0.6
Q11	0.75	0.85	0.85	0.85	0.82	1	1	1	1	1	1.0
Q12	0.85	0.90	0.85	0.85	0.86	1	1	1	1	1	1.0
Q13	0.85	0.85	0.85	0.75	0.82	1	1	1	0	1	0.6
Q14	0.75	0.85	0.85	0.85	0.82	1	1	1	1	1	1.0
Q15	0.85	0.85	0.75	0.75	0.80	1	1	1	1	1	1.0
Q16	0.85	0.85	0.85	0.85	0.85	1	1	1	1	1	1.0
Q17	0.85	0.75	0.75	0.75	0.77	1	1	1	1	1	1.0
Q18	0.75	0.75	0.75	0.75	0.75	1	1	1	1	1	1.0
Q19	0.75	0.85	0.90	0.85	0.83	1	1	1	1	1	1.0
Q20	0.75	0.75	0.75	0.75	0.75	1	1	1	1	0	0.6
Q21	0.75	0.75	0.75	0.75	0.75	1	1	1	1	1	1.0
Q22	0.85	0.90	0.85	0.90	0.875	1	1	1	1	0	0.6
Q23	0.75	0.85	0.90	0.75	0.81	0	1	1	1	1	0.6
Q24	0.85	0.90	0.75	0.85	0.83	0	1	1	1	1	0.6
Q25	0.75	0.85	0.75	0.90	0.81	1	1	1	1	1	1.0
Q26	0.75	0.75	0.85	0.90	0.81	1	1	1	1	1	1.0
Q27	0.85	0.85	0.85	0.85	0.85	1	1	1	1	1	1.0
Q28	0.90	0.90	0.90	0.85	0.88	1	1	1	1	1	1.0
Q29	0.75	0.85	0.90	0.90	0.85	1	1	1	1	1	1.0

Note: Total CVI of the Tool (29 Questions): 0.8122

Table 2: Descriptive Statistics and Reliability Analysis of the Urdu Version of PedsQL Epilepsy Module (Parent Report, Age 5–7 Years)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
AGE	30	0	2	1.17	.791
Valid N (listwise)	30				
Reliability Statistics (Cronbach's Alpha)					
Reliability Statistics					
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items			
.947	.937	29			
Intra Class Correlation Coefficient (Reliability Statistics)					

Descriptive Statistics

Intraclass Correlation Coefficient

	Intraclass Correlationb	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.327a	.225	.477	18.698	29	812	.000
Average Measures	**.934c**	**.894**	**.964**	**18.698**	**29**	**812**	**.000**

Table 3: Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
میرے بچے کو باقی بچوں کی طرح کام کرنے اور کھیلنے میں مشکل در پیش ہوتی ہے۔	74.43	398.254	.319	.947
دوسرے بچوں کی نسبت میرے بچے کو روز مرہ کے کام جیسے کہ کپڑے پہننا میں مشکل در پیش ہوتی ہے۔	74.20	408.028	.070	.949
مرگی کے دورے کی وجہ سے میرے بچے کی سرگرمیاں اور کھیل کود متاثر ہو گئی ہیں۔	73.70	370.493	.841	.942
مرگی کی دوائی لینے یا کوئی اور علاج کروانے میں تعاون نہیں کرتا۔	73.57	365.082	.883	.941
جو کام مرگی کے مسائل کھڑے کرتے ہیں (تیز روشنی یا تھکاوٹ) میرا بچہ ان سے اجتناب نہیں کرتا تھا۔	73.13	366.257	.879	.941
مرگی اور اس کے علاج کی وجہ سے میرا بچہ اسکول اور سماجی کاموں میں حصہ نہیں لے پاتا۔	73.10	368.852	.830	.942
مرگی کی حالت میں میرا بچہ تنہا نہیں رہنا چاہتا۔	73.20	368.510	.840	.942
میرا بچہ خاندان کے لوگوں اور دوسرے بچوں سے مختلف محسوس کرتا ہے	73.20	362.579	.858	.942
. مرگی کے دورے پڑنے کی وجہ سے میرا بچہ خفگی/خفت محسوس کرتا ہے۔	72.67	395.954	.454	.946
میرے بچے کو جلدی سوچنے میں محسوس ہو تی ہے	72.93	384.202	.686	.944
میرے بچے کو چیزیں یاد رکھنے میں محسوس ہوتی ہے۔	74.20	408.028	.070	.949
میرے بچے کو نئی چیزیں سیکھنے میں مشکل در پیش ہوتی ہے۔	73.40	418.455	-.196	.952
میرے بچے کو سکول کے کام کرنے میں اضافی مدد درکار ہوتی ہے۔	72.60	410.938	.005	.949
میرے بچے کو پڑھنے میں مشکل در پیش ہوتی ہے۔	72.73	390.064	.502	.946

میرے بچے کو سکول کے کام کرنے میں مشکل درپیش ہوتی ہے۔	73.93	372.064	.746	.943
میرا بچہ دن بھر تھاوٹ محسوس کرتا ہے	73.70	370.493	.841	.942
میرے بچے کو سونے میں مشکل ہوتی ہے۔ (مثلاً نیند نہ آنا، سوئے رہنا)	73.57	365.082	.883	.941
میرا بچہ دوسرے بچوں کی نسبت زیادہ سوتا ہے۔	73.13	366.257	.879	.941
میرے بچے کو ایک جگہ سکون سے بیٹھنے میں مشکل ہوتی ہے۔	73.10	368.852	.830	.942
میرے بچے کو بات یا کہے ہوئے کام سمجھنے میں مشکل ہوتی ہے۔	73.20	368.510	.840	.942
میرا بچہ کسی کام میں صحیح سے دھیان نہیں دے پاتا۔	73.20	362.579	.858	.942
میرے بچے نے جو کام شروع کئے ہوں ان کو مکمل کرنے میں مشکل درپیش ہوتی ہے۔	72.67	395.954	.454	.946
میرا بچہ بغیر سوچے سمجھے کام کرتا ہے۔	72.93	384.202	.686	.944
میرا بچہ سلیقے سے نہیں رہ پاتا۔	73.27	386.133	.746	.944
میرا بچہ چڑچڑاپن محسوس کرتا ہے۔	73.03	397.344	.402	.946
میرا بچہ اکثر غصے میں رہتا ہے۔	73.27	386.754	.661	.944
میرا بچہ اداس/غمگین محسوس کرتا ہے۔	73.57	403.426	.231	.948
میرا بچہ پریشانی یا ڈر کی کیفیت میں رہتا ہے۔	73.57	403.564	.183	.948
میرا بچہ جلدی مایوس ہو جاتا ہے۔	72.93	401.237	.290	.947

Table 4: Discriminant Validity

Descriptive Statistics							
	Range	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
میرے بچے کو باقی بچوں کی طرح کام کرنے اور کھیلنے میں مشکل درپیش ہوتی ہے۔	3	1	4	3.00	.179	.983	.966
دوسرے بچوں کی نسبت میرے بچے کو روز مرہ کے کام جیسے کہ کپڑے پہننا میں مشکل درپیش ہوتی ہے۔	4	0	4	1.73	.172	.944	.892

مرگی کے دورے کی وجہ سے میرے بچے کی سرگرمیاں اور کھیل کو متاثر ہو گئی ہیں۔	3	1	4	2.53	.178	.973	.947
مرگی کی دوائی لینے یا کوئی اور علاج کروانے میں تعاون نہیں کرتا۔	3	1	4	3.33	.130	.711	.506
جو کام مرگی کے مسائل کھڑے کرتے ہیں (تیز روشنی یا تھکاوٹ) میرا بچہ ان سے اجتناب نہیں کرتا تھا۔	3	1	4	3.20	.188	1.031	1.062
مرگی اور اس کے علاج کی وجہ سے میرا بچہ اسکول اور سماجی کاموں میں حصہ نہیں لے پاتا۔	4	0	4	2.00	.240	1.313	1.724
مرگی کی حالت میں میرا بچہ تنہا نہیں رہنا چاہتا۔	4	0	4	2.83	.235	1.289	1.661
میرا بچہ خاندان کے لوگوں اور دوسرے بچوں سے مختلف محسوس کرتا ہے	4	0	4	2.73	.235	1.285	1.651
.مرگی کے دورے پڑنے کی وجہ سے میرا بچہ خفگی /خفت محسوس کرتا ہے۔	4	0	4	2.73	.262	1.437	2.064
میرے بچے کو جلدی سوچنے میں محسوس ہوتی ہے	2	2	4	3.27	.151	.828	.685
میرے بچے کو چیزیں یاد رکھنے میں محسوس ہوتی ہے۔	3	1	4	3.00	.179	.983	.966
میرے بچے کو نئی چیزیں سیکھنے میں مشکل درپیش ہوتی ہے۔	3	1	4	2.67	.154	.844	.713
میرے بچے کو سکول کے کام کرنے میں اضافی مدد درکار ہوتی ہے۔	3	0	3	1.50	.178	.974	.948

میرے بچے کو پڑھنے میں مشکل درپیش ہوتی ہے۔	4	0	4	1.73	.172	.944	.892
میرے بچے کو سکول کے کام کرنے میں مشکل درپیش ہوتی ہے۔	4	0	4	2.23	.223	1.223	1.495
میرا بچہ دن بھر تھاوٹ محسوس کرتا ہے	4	0	4	2.37	.242	1.326	1.757
میرے بچے کو سونے میں مشکل ہوتی ہے۔ (مثلاً نیند نہ آنا، سوئے رہنا)	4	0	4	2.80	.237	1.297	1.683
میرا بچہ دوسرے بچوں کی نسبت زیادہ سوتا ہے۔	4	0	4	2.83	.235	1.289	1.661
میرے بچے کو ایک جگہ سکون سے بیٹھنے میں مشکل ہوتی ہے۔	4	0	4	2.73	.235	1.285	1.651
میرے بچے کو بات یا کہے ہوئے کام سمجھنے میں مشکل ہوتی ہے۔	4	0	4	2.73	.262	1.437	2.064
میرا بچہ کسی کام میں صحیح سے دھیان نہیں دے پاتا۔	2	2	4	3.27	.151	.828	.685
میرے بچے نے جو کام شروع کئے ہوں ان کو مکمل کرنے میں مشکل درپیش ہوتی ہے۔	3	1	4	2.90	.154	.845	.714
میرا بچہ بغیر سوچے سمجھے کام کرتا ہے۔	3	1	4	2.67	.168	.922	.851
میرا بچہ سلیقے سے نہیں رہ پاتا۔	4	0	4	2.37	.148	.809	.654

میرا بچہ چڑچڑاپن محسوس کرتا ہے۔	4	0	4	2.37	.176	.964	.930
میرا بچہ اکثر غصے میں رہتا ہے۔	3	1	4	3.00	.152	.830	.690
میرا بچہ اداس /غمگین محسوس کرتا ہے۔	4	0	4	2.23	.223	1.223	1.495
میرا بچہ پریشانی یا ڈر کی کیفیت میں رہتا ہے۔	4	0	4	2.37	.242	1.326	1.757
میرا بچہ جلدی مایوس ہو جاتا ہے۔	4	0	4	2.80	.237	1.297	1.683

Table 5: Factor Analysis

Communalities		
	Initial	Extraction
میرے بچے کو باقی بچوں کی طرح کام کرنے اور کھیلنے میں مشکل در پیش ہوتی ہے۔	1.000	.926
دوسرے بچوں کی نسبت میرے بچے کو روزمرہ کے کام جیسے کہ کپڑے پہننا میں مشکل در پیش ہوتی ہے۔	1.000	.940
مرگی کے دورے کی وجہ سے میرے بچے کی سرگرمیاں اور کھیل کود متاثر ہو گئی ہیں۔	1.000	.910
مرگی کی دوائی لینے یا کوئی اور علاج کروانے میں تعاون نہیں کرتا۔	1.000	.908
جو کام مرگی کے مسائل کھڑے کرتے ہیں (تیز روشنی یا تھکاوٹ) میرا بچہ ان سے اجتناب نہیں کرتا تھا۔	1.000	.900
مرگی اور اس کے علاج کی وجہ سے میرا بچہ اسکول اور سماجی کاموں میں حصہ نہیں لے پاتا۔	1.000	.919
مرگی کی حالت میں میرا بچہ تنہا نہیں رہنا چاہتا۔	1.000	.847
میرا بچہ خاندان کے لوگوں اور دوسرے بچوں سے مختلف محسوس کرتا ہے	1.000	.869
. مرگی کے دورے پڑنے کی وجہ سے میرا بچہ خفگی/خفت محسوس کرتا ہے۔	1.000	.929
میرے بچے کو جلدی سوچنے میں محسوس ہوتی ہے	1.000	.942
میرے بچے کو چیزیں یاد رکھنے میں محسوس ہوتی ہے۔	1.000	.940
میرے بچے کو نئی چیزیں سیکھنے میں مشکل در پیش ہوتی ہے۔	1.000	.826
میرے بچے کو سکول کے کام کرنے میں اضافی مدد درکار ہوتی ہے۔	1.000	.439
میرے بچے کو پڑھنے میں مشکل در پیش ہوتی ہے۔	1.000	.666
میرے بچے کو سکول کے کام کرنے میں مشکل در پیش ہوتی ہے۔	1.000	.774
میرا بچہ دن بھر تھاوٹ محسوس کرتا ہے	1.000	.910
میرے بچے کو سونے میں مشکل ہوتی ہے۔ (مثلاً نیند نہ آنا، سوئے رہنا)	1.000	.908
میرا بچہ دوسرے بچوں کی نسبت زیادہ سوتا ہے۔	1.000	.900
میرے بچے کو ایک جگہ سکون سے بیٹھنے میں مشکل ہوتی ہے۔	1.000	.919
میرے بچے کو بات یا کہے ہوئے کام سمجھنے میں مشکل ہوتی ہے۔	1.000	.847
میرا بچہ کسی کام میں صحیح سے دھیان نہیں دے پاتا۔	1.000	.869
میرے بچے نے جو کام شروع کئے ہوں ان کو مکمل کرنے میں مشکل در پیش ہوتی ہے۔	1.000	.929
میرا بچہ بغیر سوچے سمجھے کام کرتا ہے۔	1.000	.942
میرا بچہ سلیقے سے نہیں رہ پاتا۔	1.000	.829

میرا بچہ چڑچڑاپن محسوس کرتا ہے۔	1.000	.737
میرا بچہ اکثر غصے میں رہتا ہے۔	1.000	.702
میرا بچہ اداس/ غمگین محسوس کرتا ہے۔	1.000	.753
میرا بچہ پریشانی یا ڈر کی کیفیت میں رہتا ہے۔	1.000	.651
میرا بچہ جلدی مایوس ہو جاتا ہے۔	1.000	.599
Extraction Method: Principal Component Analysis.		

The value of extraction in communalities were considered acceptable cut-off values if they lie between 0.25 and 4, and were considered good above 0.7. Therefore, the extraction communalities for the translated tool were acceptable

Table 6: Total Variance Explained

Total Variance Explained

	Initial Eigenvalues			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Component	**Total**	**% Of Variance**	**Cumulative %**	**Total**	**% Of Variance**	**Cumulative %**	**Total**	**% Of Variance**	**Cumulative %**
1	13.608	46.923	46.923	13.608	46.923	46.923	12.000	41.378	41.378
2	3.797	13.093	60.016	3.797	13.093	60.016	4.818	16.614	57.992
3	3.774	13.013	73.028	3.774	13.013	73.028	3.764	12.978	70.970
4	1.717	5.921	78.949	1.717	5.921	78.949	2.041	7.040	78.010
5	1.340	4.619	83.568	1.340	4.619	83.568	1.612	5.558	83.568
6	.994	3.428	86.996						
7	.978	3.371	90.367						
8	.709	2.444	92.811						
9	.538	1.855	94.666						
10	.443	1.528	96.194						
11	.302	1.041	97.236						
12	.240	.826	98.062						
13	.176	.607	98.668						
14	.169	.583	99.252						
15	.068	.233	99.484						
16	.060	.205	99.690						
17	.033	.113	99.802						
18	.026	.088	99.891						
19	.022	.077	99.968						
20	.009	.032	100.000						
21	3.397E-16	1.171E-15	100.000						
22	1.788E-16	6.165E-16	100.000						
23	7.547E-17	2.603E-16	100.000						
24	4.875E-18	1.681E-17	100.000						
25	-5.844E-17	-2.015E-16	100.000						
26	-9.360E-17	-3.227E-16	100.000						
27	-2.253E-16	-7.770E-16	100.000						
28	-2.633E-16	-9.080E-16	100.000						

Total Variance Explained

	Initial Eigenvalues			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Component	**Total**	**% Of Variance**	**Cumulative %**	**Total**	**% Of Variance**	**Cumulative %**	**Total**	**% Of Variance**	**Cumulative %**
29	-3.651E-16	-1.259E-15	100.000						

Extraction Method: Principal Component Analysis.

Table 7: Component Matrix of Urdu Version of Pedsql Epilepsy Module (Parent Report, Age 5–7 Years) Using Principal Component Analysis

Component Matrix[a]

	Component				
	1	2	3	4	5
میرے بچے کو باقی بچوں کی طرح کام کرنے اور کھیلنے میں مشکل در پیش ہوتی ہے۔	.914				
دوسرے بچوں کی نسبت میرے بچے کو روز مرہ کے کام جیسے کہ کپڑے پہننا میں مشکل در پیش ہوتی ہے۔	.914				
مرگی کے دورے کی وجہ سے میرے بچے کی سرگرمیاں اور کھیل کود متاثر ہو گئی ہیں۔	.911				
مرگی کی دوائی لینے یا کوئی اور علاج کروانے میں تعاون نہیں کرتا۔	.911				
جو کام مرگی کے مسائل کھڑے کرتے ہیں (تیز روشنی یا تھکاوٹ) میرا بچہ ان سے اجتناب نہیں کرتا تھا۔	.896				
مرگی اور اس کے علاج کی وجہ سے میرا بچہ اسکول اور سماجی کاموں میں حصہ نہیں لے پاتا۔	.896				
مرگی کی حالت میں میرا بچہ تنہا نہیں رہنا چاہتا۔	.895				
میرا بچہ خاندان کے لوگوں اور دوسرے بچوں سے مختلف محسوس کرتا ہے	.895				
. مرگی کے دورے پڑنے کی وجہ سے میرا بچہ خفگی /خفت محسوس کرتا ہے۔	.890				
میرے بچے کو جلدی سوچنے میں محسوس ہوتی ہے	.890				
میرے بچے کو چیزیں یاد رکھنے میں محسوس ہوتی ہے۔	.874				
میرے بچے کو نئی چیزیں سیکھنے میں مشکل در پیش ہوتی ہے۔	.874				
میرے بچے کو سکول کے کام کرنے میں اضافی مدد رکار ہوتی ہے۔	.796				
میرے بچے کو پڑھنے میں مشکل در پیش ہوتی ہے۔	.729	.489			
میرے بچے کو سکول کے کام کرنے میں مشکل در پیش ہوتی ہے۔	.729	.489			
میرا بچہ دن بھر تھاوٹ محسوس کرتا ہے	.708		.472		

میرے بچے کو سونے میں مشکل ہوتی ہے۔ (مثلاً نیند نہ آنا، سوئے رہنا)	.697				
میرا بچہ دوسرے بچوں کی نسبت زیادہ سوتا ہے۔	.468	.733			
میرے بچے کو ایک جگہ سکون سے بیٹھنے میں مشکل ہوتی ہے۔	.468	.733			
میرے بچے کو بات یا کہے ہوئے کام سمجھنے میں مشکل ہوتی ہے۔	.422	.582			
میرا بچہ کسی کام میں صحیح سے دھیان نہیں دے پاتا۔		.563			
میرے بچے نے جو کام شروع کئے ہوں ان کو مکمل کرنے میں مشکل درپیش ہوتی ہے۔			.867		
میرا بچہ بغیر سوچے سمجھے کام کرتا ہے۔		.491	.830		
میرا بچہ سلیقے سے نہیں رہ پاتا۔		.491	.830		
میرا بچہ چڑچڑاپن محسوس کرتا ہے۔		.510	.655		
میرا بچہ اکثر غصے میں رہتا ہے۔				.651	
میرا بچہ اداس/ غمگین محسوس کرتا ہے۔				.642	
میرا بچہ پریشانی یا ڈر کی کیفیت میں رہتا ہے۔				.609	
میرا بچہ جلدی مایوس ہو جاتا ہے۔	.541				.541
Extraction Method: Principal Component Analysis.					
a. 5 components extracted.					

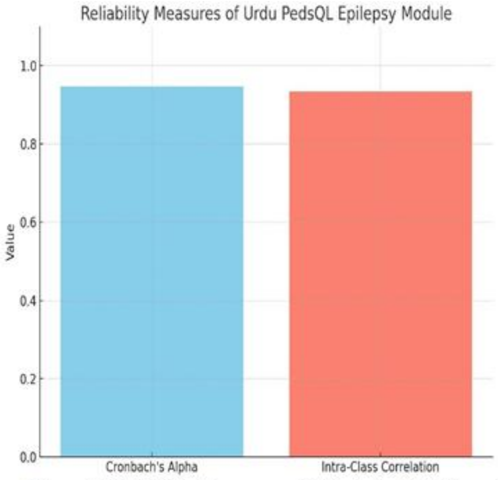


Figure 2 Reliability Measures of Urdu PedsQL Epilepsy Module

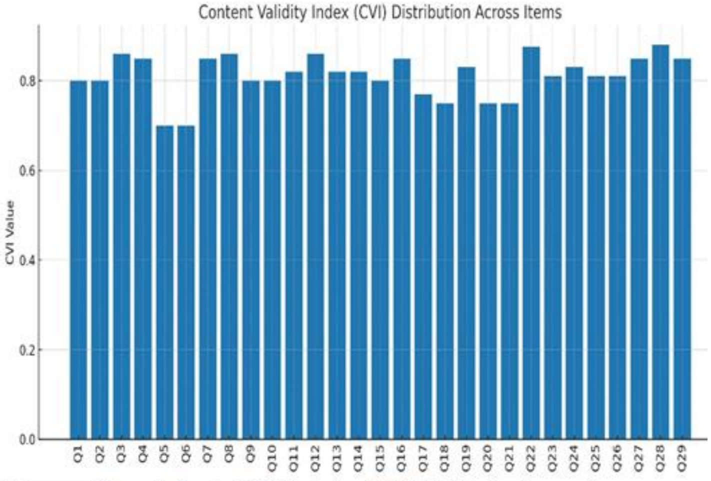
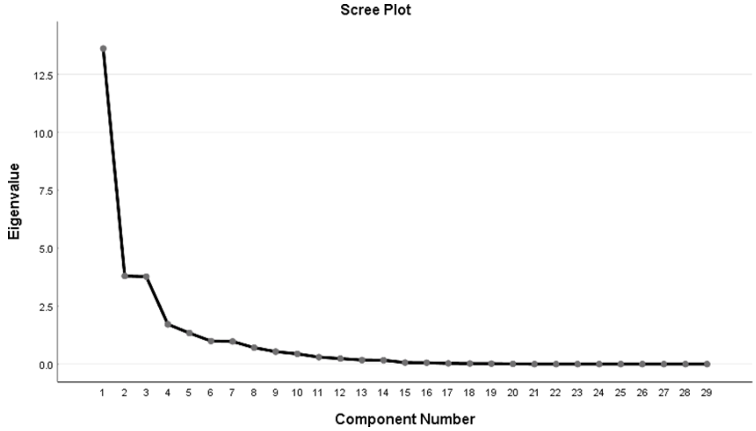


Figure 2 Content Validity Index (CVI) Distribution Across Items



DISCUSSION

The present study aimed to translate the PedsQL Epilepsy Module (Version 3.0), parent-proxy report for children aged 5–7 years, into Urdu and evaluate its psychometric properties. The findings demonstrated that the translated version was both valid and reliable for assessing quality of life in children with epilepsy. The overall Content Validity Index (CVI) value of 0.812 indicated good content validity. The translation process ensured that the items retained clarity, relevance, and cultural appropriateness, and the expert review confirmed the accuracy of linguistic and conceptual adaptation. The internal consistency of the Urdu version, as measured by Cronbach's alpha, was 0.895, which falls within the range considered as excellent reliability. This is consistent with other cross-cultural adaptations of the PedsQL modules in different languages, where Cronbach's alpha values ranged between 0.82 and 0.92 for both child and proxy reports. Such findings support the robustness of the Urdu version as a reliable tool for evaluating health-related quality of life in children with epilepsy (22). Furthermore, the intra-class correlation coefficient (ICC) of 0.895, with confidence intervals ranging between 0.851 and 0.931, suggested strong test–retest reliability and agreement. These values were higher than those reported in some other translated versions, such as the Chinese adaptation where ICC values were between 0.55 and 0.73, but comparable to Thai and Italian adaptations which also demonstrated good reliability (23-25). The consistency across multiple cultural contexts highlights the universality of the PedsQL instrument while reinforcing the adaptability of the Urdu version. The validation of this instrument has important implications for both clinical practice and research. By providing a culturally and linguistically appropriate measure, clinicians and researchers in Pakistan can more accurately evaluate quality of life in children with epilepsy. This, in turn, allows for more effective patient-centered care and monitoring of treatment outcomes. It also provides an opportunity to strengthen communication between caregivers and healthcare providers, as parent-proxy reports can reflect challenges faced in day-to-day activities, social participation, and emotional well-being of children with epilepsy. Strengths of the current study included the rigorous methodology employed for translation and validation, adherence to internationally accepted standards of instrument adaptation, and the comprehensive statistical evaluation of validity and reliability. The use of both CVI and ICC, alongside Cronbach's alpha, ensured a robust assessment of psychometric properties. Another strength was the focus on a vulnerable and underrepresented population, namely children with epilepsy in Pakistan, where culturally validated tools for measuring quality of life are scarce.

However, the study was not without limitations. The small sample size of only 30 parents limited the generalizability of the findings, particularly for factor analysis, which typically requires larger sample sizes to establish stable component structures. The participants were recruited from a single institution in Lahore, further limiting representativeness. Non-cooperation from some parents and the requirement for repeated follow-up visits also posed challenges to data collection, potentially introducing response bias. Additionally, clinical data such as seizure type, treatment duration, and socioeconomic factors were not included in the analysis, which could have provided further insight into the validity of the tool across subgroups of children with epilepsy. Future research should focus on addressing these limitations by including larger and more diverse populations across multiple centers, incorporating both rural and urban settings (26,27). Longitudinal studies could also be undertaken to assess responsiveness and sensitivity of the tool to clinical changes over time. Furthermore, comparisons with child self-reports, where applicable, would help establish concurrent validity and strengthen the evidence base for proxy-reported quality of life measures. In conclusion, the Urdu version of the PedsQL Epilepsy Module (Version 3.0), parent-proxy report for children aged 5–7 years, demonstrated strong validity and reliability. Despite the study's limitations, the findings supported its use as a culturally adapted and psychometrically sound tool for evaluating health-related quality of life in children with epilepsy in the Pakistani context. Expanding this work through larger, multicenter validation studies will enhance its applicability and contribute to improved care and research outcomes in pediatric epilepsy.

CONCLUSION

The study successfully translated and validated the Urdu version of the PedsQL Epilepsy Module, Parent Report for children aged 5–7 years, demonstrating that it is a reliable and valid tool for assessing the quality of life in this population. By providing a culturally adapted and linguistically accessible instrument, the study offers an important contribution to both clinical practice and research, enabling healthcare professionals to better evaluate and address the needs of children with epilepsy and their families. This validated tool has the potential to improve patient-centered care, guide targeted interventions, and support future research in the local context.

AUTHOR CONTRIBUTION

Author	Contribution
Aitzaz Azam*	Conceptualization, Methodology, Formal Analysis, Writing - Original Draft, Validation, Supervision
Muhammad Asif Javed	Methodology, Investigation, Data Curation, Writing - Review & Editing

Abdul Mannan	Investigation, Data Curation, Formal Analysis, Software
Rameel ur Rehman Cheema	Software, Validation, Writing - Original Draft
Noman Ghaffar	Formal Analysis, Writing - Review & Editing
Ihtesham Saleem	Writing - Review & Editing, Assistance with Data Curation

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