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Assessment of Health-Related Quality of Life Using the AUQEI Questionnaire in Children Aged 3–6 Years: A Prospective Observational Study in a Tertiary Care Center in India

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ABSTRACT

Background: Early childhood is a critical period for psychosocial development, yet health-related quality of life (QoL) assessments in preschool-aged children are underexplored, particularly in the Indian context. This study aimed to evaluate QoL among children aged 3–6 years using the AUQEI questionnaire and identify domains associated with impaired QoL.

Methods: A prospective observational study was conducted at a tertiary care center in India, enrolling 144 children aged 3–6 years through consecutive sampling. The AUQEI questionnaire, adapted for Indian cultural relevance, was administered via parent-proxy reporting. Demographic, clinical, antenatal, and postnatal histories were recorded. Children were classified as having normal or impaired QoL based on established AUQEI scoring thresholds. Domain-wise scores and associations with demographic and symptomatic variables were analyzed using independent t-tests, chi-square tests, and linear regression models.

Results: The prevalence of impaired QoL was 4.86% (95% CI: 1.35–8.37%). Children with impaired QoL demonstrated significantly lower scores in autonomy ($p < 0.001$), family relationships ($p < 0.001$), and functioning ($p = 0.018$) domains, whereas leisure domain scores were comparable between groups. No significant associations were observed between QoL classification and age group, gender, or symptom patterns. Linear regression analysis confirmed that demographic and clinical variables were not significant predictors of total AUQEI scores.

Conclusion: The majority of preschool children exhibited a normal quality of life, with impairments primarily affecting autonomy, family relationships, and functioning. Routine psychosocial assessments during early childhood health visits could help identify at-risk children and enable timely interventions. Further longitudinal research is needed to track the long-term impact of early psychosocial vulnerabilities.

***Keywords**: Quality of Life, AUQEI, Preschool Children, Psychosocial Well-being, Early Childhood, Autonomy, Family Relationships, India, Health-Related Quality of Life, Pediatric Assessment.*

INTRODUCTION

Quality of life (QoL) is increasingly recognized as a central component of comprehensive health assessment, extending beyond mere absence of disease to encompass an individual's physical, emotional, social, and psychological well-being.(1) In the pediatric population, evaluating QoL holds particular significance, as childhood is a critical period of rapid cognitive, emotional, and social development. Early life experiences shape future trajectories of health and well-being, and disruptions during this sensitive window may have enduring consequences. Despite its recognized importance, the assessment of QoL in young children, particularly those aged 3–6 years, remains underexplored, especially in low- and middle-income countries (LMICs) where healthcare resources and preventive strategies are often limited.(2)

Psychosocial health in early childhood is increasingly acknowledged as a determinant of multiple domains of development, including emotional regulation, academic achievement, and social competence. Emerging evidence suggests that emotional, behavioural, and relational problems are prevalent even among preschool-aged children, with rates approximating 8–10% in studies from high-income countries. (3) These early disturbances not only impair immediate functioning but also portend elevated risks for psychiatric morbidity, educational failure, and social maladaptation in later life.(4) However, in clinical practice, particularly in resource-constrained settings, psychosocial aspects of health are often overshadowed by acute biomedical concerns, resulting in missed opportunities for early intervention. In India, the paucity of research exploring the psychosocial well-being of young children compounds this challenge, contributing to a substantial knowledge gap in pediatric care.

Assessing QoL in very young children presents unique methodological challenges. Conventional health-related quality of life (HRQoL) tools often rely on complex verbal communication and abstract reasoning, which are developmentally inappropriate for preschoolers. Consequently, there is a critical need for validated, age-appropriate, and culturally adaptable instruments that can reliably capture young children's perceptions of their well-being. The Autoquestionnaire Qualité de Vie Enfant Imagé (AUQEI) is one such instrument, specifically designed to assess QoL in children aged 3–6 years. Utilizing pictorial representations and simple language, AUQEI enables self-reporting by children with limited literacy and verbal skills. Validation studies have demonstrated its satisfactory psychometric properties(5), including internal consistency and construct validity establishing it as a robust tool for pediatric QoL assessment.(6)

There is a paucity of empirical data from India assessing the quality of life (QoL) among preschool-aged children using validated instruments such as the AUQEI questionnaire. Sociocultural and healthcare system differences limit the direct applicability of international findings, underscoring the need for indigenous research to inform child-centered clinical practices. Integrating psychosocial evaluation into routine pediatric care is essential for delivering holistic health interventions. Understanding QoL in young Indian children can guide the development of targeted strategies to optimize overall well-being. Against this backdrop, the present study was undertaken to assess health-related quality of life in children aged 3–6 years presenting to a tertiary care hospital in India using the AUQEI questionnaire, and to explore whether incorporating psychosocial assessment into clinical management can enhance treatment outcomes.

MATERIALS AND METHODS

This study was designed as a prospective observational study conducted over a period of six months, at the Department of Paediatrics, SRM Medical College Hospital and Research Centre, India. The study aimed to assess the health-related quality of life (HRQoL) among children aged 3–6 years using the Autoquestionnaire Qualité de Vie Enfant Imagé (AUQEI) instrument. The sample size was determined based on an assumed prevalence (p) of psychosocial problems in children aged 3–6 years at 10%, derived from existing literature. Considering a clinical allowable error (d) of 5% and a 95% confidence interval, the sample size (n) was calculated using the standard formula for single proportion studies: $n=4\times p\times q/d^2n$ and the calculated sample size was 144. Rounding up to account for potential non-responses, a final sample size of 150 participants was targeted.

Participants were recruited using a consecutive sampling technique from among children aged 3–6 years who presented to the pediatric inpatient services during the study period. Children were screened against defined eligibility criteria. Inclusion criteria comprised children within the specified age group whose parents provided informed written consent for participation. Exclusion criteria included children younger than 3 years or older than 6 years, children with known developmental delays, neurodevelopmental disorders, or illnesses impairing their ability to understand or respond to questionnaire stimuli, and cases where parental consent was declined.

Data collection employed a pre-tested, semi-structured questionnaire divided into three components: demographic details, clinical history, and the AUQEI tool for psychosocial health assessment. The demographic and clinical sections captured variables including age, sex, birth history, antenatal and postnatal history, current clinical symptoms, comorbid illnesses, and schooling status. The AUQEI questionnaire, previously validated in similar pediatric populations, was adapted for administration in the Indian context. A pre-testing exercise was conducted on a subset of 10 children meeting the inclusion criteria but not included in the final analysis, to ensure comprehensibility, cultural relevance, and appropriate phrasing. Minor modifications were made based on the pre-testing results to optimize clarity.

Prior to data collection, data collectors underwent a structured training session conducted by the principal investigator. The training emphasized standardized methods of explaining the AUQEI questionnaire to children, obtaining consent, managing potential challenges during administration, and ensuring child-friendly engagement techniques. Additionally, calibration exercises were undertaken to harmonize interpretation and guidance while administering the questionnaire, minimizing interviewer bias. To address potential quality concerns, several data quality assurance mechanisms were instituted. All data collection forms were cross-verified daily by the principal investigator for completeness, internal consistency, and accuracy. Any discrepancies were immediately reconciled with the data collector to prevent cumulative errors. Double data entry was performed using Microsoft Excel to detect transcription errors, and discrepancies were resolved by referring to the original data sheets.

Ethical clearance for the study was obtained from the Institutional Ethics Committee of SRM Medical College Hospital and Research Centre (approval number: SRMIEC-ST1123-936). Written informed consent was obtained from all participating parents or guardians after explaining the purpose of the study, the voluntary nature of participation, the confidentiality of data, and the right to withdraw at any point without consequence. Data were entered into a password-protected database and analyzed using STATA version 14. Descriptive statistics were presented as means with standard deviations for continuous variables and as frequencies and percentages for categorical variables. The AUQEI scores were summarized and categorized based on established cut-off values. Inferential statistical analysis based on independent t-tests for comparing continuous variables, and Chi-square tests for categorical variables where applicable. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Among the 144 study participants, the majority were aged 5 years (35.4%), followed by 3 years (25.0%), with a slight male predominance (55.6%). The most commonly reported symptoms were respiratory infections (38.9%) and other general symptoms (43.1%), while gastrointestinal and neurological issues were less frequent. Comorbidities were uncommon, with 93.1% of children having no underlying conditions. Antenatal complications were reported in 38.9% of cases, with gestational diabetes and hypothyroidism each accounting for 8.3%. Postnatal complications occurred in 20.1% of children, predominantly neonatal hyperbilirubinemia and respiratory distress. More than half were born via normal vaginal delivery (54.2%), while 42.4% underwent cesarean section and 72.2% of parents reported good overall outcomes for their children as shown in Table 1.

Table 1: Distribution of Study Participants by Sociodemographic, Clinical, Birth, and Parental Characteristics (n = 144)

Variable	Category	Frequency (n)	Percentage (%)
Age Group	3 years	36	25.0
	4 years	30	20.8
	5 years	51	35.4
	6 years	27	18.8
Gender	Male	80	55.6
	Female	64	44.4
Symptom Involvement	Others	62	43.1
	Respiratory Infections	56	38.9
	Gastrointestinal Issues	9	6.3
	Neurological Disorders	7	4.9
	Urinary Tract Infections	6	4.2
	Respiratory Allergic Conditions	3	2.1
	Nutritional Disorders	1	0.7
Comorbidity Pattern	No Comorbidity	134	93.1
	Others	5	3.5
	Nutritional Disorders	3	2.1
	Allergic Conditions	1	0.7
	Other Chronic Conditions	1	0.7
Antenatal History	No Antenatal Complication	88	61.1
	Gestational Diabetes Mellitus (GDM)	12	8.3
	Hypothyroidism	12	8.3
	Gestational Hypertension (GHTN)	4	2.8
	Other Complications	28	19.4

Postnatal History	No Postnatal Complication	115	79.9
	Neonatal Hyperbilirubinemia (NNH)	14	9.7
	Respiratory Distress (RDS, TTNB, SFS)	14	9.7
	Others	1	0.7
Birth History	Normal Vaginal Delivery (NVD)	78	54.2
	Lower Segment Cesarean Section (LSCS)	61	42.4
	Preterm/Complicated Births	5	3.5
Parent-Reported Outcome	Good	104	72.2
	Fair	31	21.5
	Normal	6	4.2
	Others	3	2.1

In the present study, the prevalence of impaired quality of life (QoL) among children, as assessed using the AUQEI scale, was 4.86% (95% CI: 1.35–8.37%). Most children (95.1%) exhibited normal QoL as shown in Figure 1. In the comparison of AUQEI domain scores between children with normal and impaired quality of life (QoL), significantly lower scores were observed in the impaired QoL group across the domains of autonomy (6.00 vs. 8.59; $p < 0.001$), family (8.86 vs. 11.92; $p < 0.001$), and functioning (9.14 vs. 11.20; $p = 0.018$). However, the difference in leisure domain scores between the two groups was not statistically significant (5.57 vs. 5.97; $p = 0.384$) as shown in Figure 2.

Figure 1: Quality of Life Classification Among Children (AUQEI)

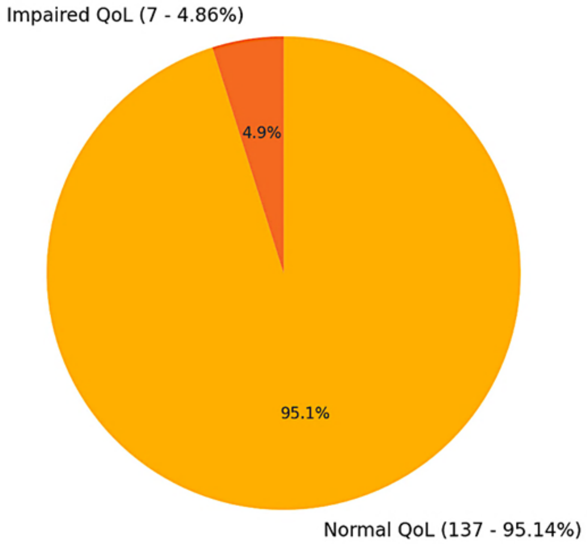
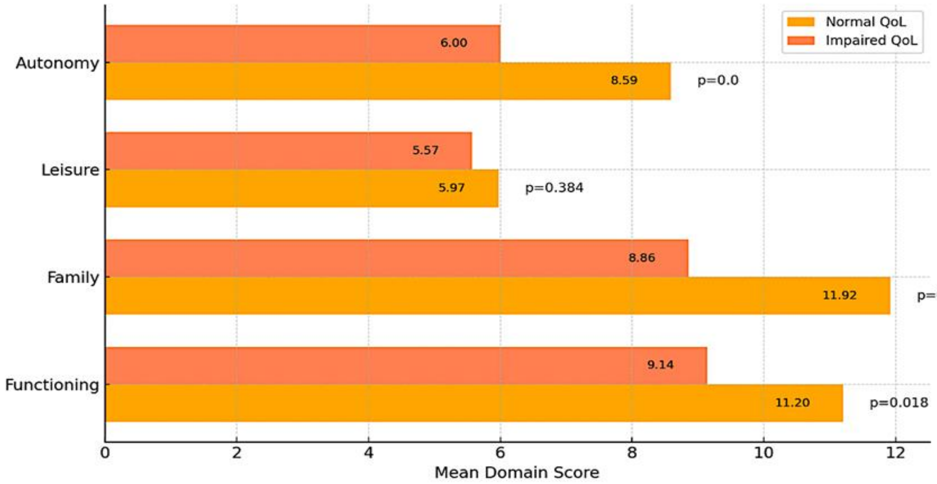


Figure 2: Comparison of AUQEI Domain Scores between Normal and Impaired QoL Groups



No statistically significant association was observed between quality of life (QoL) classification and age group (p = 0.622), gender (p = 0.634), or symptom involvement (p = 0.267) among the study participants, as shown in Table 2. Furthermore, linear regression analysis (Table 3) revealed that none of the assessed variables including age, gender, and various symptom patterns were significant predictors of total AUQEI score.

Table 2: Association of Age Group, Sex, and Symptom Involvement with QoL Classification (n = 144)

Variable	**Normal QoL (n, %)**	**Impaired QoL (n, %)**	**Chi-square value**	**p-value***
Age Group				
3–4 years	62 (43.1%)	2 (1.4%)	0.243	0.622
5–6 years	74 (51.4%)	5 (3.5%)	0.243	
Gender				
Male	75 (52.1%)	5 (3.5%)	0.227	0.634
Female	62 (43.1%)	2 (1.4%)	0.227	
Symptom Involvement				
Others	58 (40.3%)	4 (2.8%)	1.23	0.267
Respiratory Infections	52 (36.1%)	4 (2.8%)	1.23	
Gastrointestinal Issues	7 (4.9%)	2 (1.4%)	1.23	
Neurological Disorders	6 (4.2%)	1 (0.7%)	1.23	
Urinary Tract Infections	5 (3.5%)	1 (0.7%)	1.23	
Respiratory Allergic Conditions	2 (1.4%)	1 (0.7%)	1.23	
Nutritional Disorders	1 (0.7%)	0 (0.0%)	1.23	

*p-value was obtained using chi-square test

Table 3: Linear Regression Analysis Predicting Total AUQEI Score

Variable	**Coefficient (B)**	**p-value**	**Lower 95% CI**	**Upper 95% CI**
Age in years	0.245	0.693	-0.943	1.432
Gender				
Male	Reference			
Female	0.358	0.595	-0.958	1.674
Symptom pattern				
Others	Reference			
Gastrointestinal Issues	-1.259	0.274	-3.532	1.014
Neurological Disorders	-0.417	0.794	-3.489	2.655
Nutritional Disorders	1.405	0.539	-3.046	5.856
Respiratory Allergic Conditions	-1.589	0.512	-6.420	3.241
Respiratory Infections	0.280	0.710	-1.247	1.807
Urinary Tract Infections	-0.294	0.879	-4.008	3.419

DISUCSSION

In this prospective observational study, the prevalence of impaired quality of life (QoL) among children aged 3 to 6 years was found to be 4.86% (95% CI: 1.35–8.37%), indicating that most participants exhibited a normal QoL profile. Domain-wise analysis revealed that children classified with impaired QoL had significantly lower scores in the areas of autonomy, family relationships, and functioning, underscoring specific domains of vulnerability within early childhood development. Conversely, leisure domain scores did not differ significantly between normal and impaired groups. Furthermore, no significant associations were observed between QoL classification and demographic variables such as age group or gender, nor with the presence of specific symptom patterns. These findings collectively suggest that, in a generally healthy pediatric population, psychosocial stability and supportive family dynamics play critical roles in preserving quality of life during the formative preschool years.

Comparing with Existing Literature

The present study revealed a low prevalence of impaired health-related quality of life (HRQoL) at 4.86% among children aged 3–6 years, as assessed by the AUQEI questionnaire. This finding is notably lower than earlier studies using the same or similar instruments. Assumpção et al.(7), in their validation of AUQEI among Brazilian children, identified a higher proportion of children reporting domain-specific impairments, particularly in autonomy and family functioning. The lower prevalence in our cohort may reflect differences in sampling, as our participants were largely healthy children presenting with minor illnesses rather than children with chronic conditions. Moreover, the cultural differences in parental attitudes and early child-rearing practices between Indian and Brazilian contexts could contribute to variation in how children internalize and report their quality of life.

Domain-specific findings from our study align partially with prior evidence. We observed significant impairment in autonomy, family, and functioning domains among children classified with impaired QoL, but not in the leisure domain. Barbosa-Resende et al.(6) similarly reported that AUQEI reliably detected lower autonomy and family scores among children with cerebral palsy, although autonomy was particularly sensitive to motor limitations in clinical populations. The lack of significant difference in leisure activities in our sample might be attributable to the structured and familial nature of leisure among Indian preschoolers, where leisure is often home-centered and less independently navigated, thus being less sensitive to psychosocial stressors at this age.

A plausible biological and developmental explanation for the low prevalence of impaired QoL in our study is rooted in the natural resilience of early childhood. During the ages of 3–6 years, cognitive and emotional regulation capacities are still emerging, and environmental buffers such as parental support can significantly mitigate the impact of minor health adversities. This notion is supported by studies like Paula et al.(8), which showed that children from stable family and social environments reported higher AUQEI scores despite the presence of medical conditions. In our setting, high rates of intact family structures and active parental caregiving may have provided protective psychosocial scaffolding that buffered against disruptions in quality of life.

Another important aspect is the absence of significant associations between impaired QoL and demographic or clinical variables, including age, gender, or type of presenting symptom. This finding contrasts with the work of Rezende et al.,(9) who observed that lower socioeconomic status and poor self-perceived health were linked to diminished QoL in Brazilian children. One plausible explanation for this divergence is that our study population was relatively homogenous with respect to acute illness severity and socioeconomic background, minimizing variability in psychosocial stress exposure. Moreover, Indian cultural practices that emphasize collectivism and joint family structures may provide additional social resilience that buffers against stress irrespective of minor acute illnesses.

The methodological choice of using the AUQEI tool offers strength but also introduces inherent challenges. While the AUQEI is validated for use in young children, its reliance on simple symbolic understanding can be variable among 3–6-year-olds. Previous adaptations by Cui et al.(10) emphasized the need for cultural and cognitive adjustments when using AUQEI in special populations. Moreover, studies such as Maheswaran (11) highlight that severity of clinical conditions like cerebral palsy can drastically impact perceived QoL, suggesting that tools must be sensitive to detect subtle functional and emotional impairments even in early childhood.

While our findings are reassuring in indicating preserved QoL among preschoolers attending a tertiary care hospital, they underscore the necessity for longitudinal monitoring. The cross-sectional nature of our study captures a single time point and may not fully detect transient psychosocial disturbances that could later evolve into clinically significant impairments. Studies like that of Raj et al.,(12) assessing broader community samples in India, suggest that HRQoL can vary dynamically with age, health events, and socio-environmental changes. Continued surveillance and early psychosocial screening, particularly in vulnerable populations, remain imperative for holistic pediatric care.

Clinical implications

The findings of this study have important clinical implications for pediatric health practice and early childhood interventions. Given that deficits in autonomy, family relationships, and functioning domains were significantly associated with impaired quality of life (QoL), routine psychosocial assessments during preschool health visits could be instrumental in identifying children at risk of poor developmental outcomes. Early detection of subtle impairments in psychosocial well-being enables timely referral for supportive services, such as family-centered counseling, structured autonomy-building programs, and community-based interventions. Integrating validated tools like the AUQEI into routine pediatric evaluations can enhance holistic child health monitoring beyond traditional physical parameters. Moreover, the overall low prevalence of impaired QoL in this cohort emphasizes the effectiveness of current early childhood health frameworks, while highlighting the need for targeted support strategies for the small but vulnerable subset of children exhibiting early psychosocial difficulties.

Strengths and Limitations

This study has several notable strengths. It is among the few prospective investigations from India to assess quality of life (QoL) specifically in the preschool age group using a validated and culturally adapted instrument, the AUQEI. The use of a pre-tested questionnaire, standardized data collection methods, and ethical rigor enhance the reliability and generalizability of the findings within similar clinical settings. Furthermore, the detailed domain-wise analysis provides nuanced insights into specific psychosocial areas affecting young children's well-being. However, certain limitations should be acknowledged. The single-center hospital based study design may restrict the broader applicability of the findings to diverse community settings. The relatively small number of children identified with impaired QoL limited the power for subgroup analyses and multivariate modelling. Additionally, the reliance on parent-proxy reporting could introduce subjective bias, and the cross-sectional design precludes establishing causality between associated factors and QoL outcomes. Future multi-centric, longitudinal studies are warranted to validate and expand upon these findings.

Conclusion and Recommendations

In conclusion, this study found that impaired quality of life (QoL) was present in a small proportion (4.86%) of preschool-aged children, with significant impairments specifically noted in the domains of autonomy, family relationships, and functioning. These findings suggest that early disruptions in developing independence and family support structures are critical risk factors even in the absence of overt medical comorbidities. Based on these observations, it is recommended that routine pediatric assessments incorporate simple screening measures to evaluate autonomy-building capacities and family relationship dynamics during the preschool years. Paediatricians should be trained to identify early signs of reduced autonomy and family strain, and offer anticipatory guidance to caregivers accordingly. Furthermore, targeted interventions, such as structured autonomy enhancement programs and parental counseling sessions, should be piloted and evaluated in primary care settings to address these specific domains. Future research should focus on longitudinally tracking QoL trajectories in this age group to understand how early impairments in autonomy and family domains influence later cognitive, emotional, and social development.

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