

## A Cross-Sectional Study on Quality of Life in Children with Attention-deficit/hyperactivity disorder: Influencing Factors and Parental Perspectives

### Abstract

**Aims:** Attention-deficit/hyperactivity disorder (ADHD) affects about 5.3% of children globally, causing notable functional challenges. This study examines the link between parental stress-coping strategies and the quality of life (QoL) in children with ADHD.

**Methods:** In this cross-sectional analysis, 220 children with ADHD (ages 8 to 12) and their parents were selected from Babol University of Medical Sciences-affiliated medical centers in 2023. Diagnoses of ADHD were verified by a child and adolescent psychiatrist using DSM-5 criteria. Parents completed the Coping Inventory for Stressful Situations-Short Form (CISS-SF), while children's QoL was assessed with the Pediatric QoL Inventory (PedsQL).

**Findings:** Overall, children provided higher ratings for their QoL and its specific aspects compared to their parents. A significant difference was observed only in the emotional coping strategy within the emotional functioning domain, where children in the high-QoL group reported better scores ( $p = 0.017$ ). Other dimensions and coping strategies did not show statistically significant differences ( $P > 0.05$ ). Furthermore, from the parents' perspective, no notable associations were found between stress coping strategies and their children's QoL across any dimension ( $P > 0.05$ ).

**Conclusion:** The findings from this study highlight the influence of parental coping strategies, particularly emotional coping, on the QoL for children with ADHD. Yet, to fully understand these relationships, further studies are necessary. Future research should explore a broader range of interacting factors that may jointly affect these children's QoL.

**Keywords:** Attention deficit/hyperactivity disorder, ADHD, Coping strategies for stress, Quality of life, Parents

### Introduction

ADHD, or attention-deficit/hyperactivity disorder, is recognized as both a neurobiological and neurodevelopmental condition with a distinct genetic basis [1]. Defined by symptoms of inattention, hyperactivity, and impulsiveness, ADHD frequently leads to significant functional impairments that impact daily life [2, 3]. Globally, an estimated 5.3% of children and adolescents are affected by ADHD, with variations in prevalence based on gender, socio-economic status, and ethnicity [4]. In Iran, the results of a systematic review study indicated that its prevalence was from 2.5% to 14.5%. Boys predominantly exhibited the Hyperactive/Impulsive subtype of ADHD, whereas girls more commonly showed the Inattentive subtype, suggesting gender-based differences in symptom presentation [5, 6].

ADHD symptoms in children often lead to challenges that are more disruptive than those associated with other childhood mental health disorders. This disruption places considerable stress on the entire family, as the unique caregiving demands of ADHD require constant attention and adaptation [7]. Parents of children with ADHD often experience heightened levels of anxiety, stress, depression, and other mental health issues [8]. They also face social stigmas and taboos, which impact their daily functioning, productivity, and overall mental health. Consequently, these factors may lead to a poor perceived quality of life (QoL) among these parents [9]. Research has consistently shown that parents of children with ADHD endure high levels of stress. This elevated stress not only impacts their own QoL but may also have adverse effects on their children's well-being [10, 11]. Coping strategies are crucial in managing stress and can significantly affect both the parents' and children's well-being [12]. The Coping Inventory for Stressful Situations (CISS) identifies three main coping strategies: task-oriented, emotion-oriented, and avoidance-oriented coping. Understanding which strategies parents of children with ADHD predominantly use can provide insights into interventions that may improve the QoL for both parents and children.

This study aims to investigate the connection between the coping strategies parents use to manage stress and how these strategies may influence the QoL experienced by children with ADHD. By assessing these coping strategies using the CISS and evaluating the QoL of children through the Pediatric Quality of Life Inventory (PedsQL), we seek to determine how these factors interrelate from

both the parents' and children's perspectives. This research is particularly relevant for developing targeted interventions to support families affected by ADHD in Northern Iran.

Given the high levels of stress that parents of children with ADHD endure and the potential impact on both their own and their child's QoL examining the coping strategies these parents use becomes essential. Understanding these mechanisms can inform the development of supportive strategies aimed at enhancing the QoL for both parents and children. This study, conducted in Northern Iran, will provide valuable insights into the specific challenges and coping strategies in this cultural context, contributing to the broader literature on ADHD and family dynamics.

## **Materials & Methods**

### **Participants and sampling**

This cross-sectional analytical study targeted children with ADHD and their parents, selecting participants from those attending Babol University of Medical Sciences affiliated medical centers in 2023. Participants included children aged 8 to 12, diagnosed with ADHD by a child and adolescent psychiatrist according to DSM-5 criteria, along with one of their parents. Both children and parents provided informed consent. Exclusion criteria ruled out participants with developmental delays, intellectual disabilities, autism spectrum disorder, psychotic disorders, or bipolar disorder. To detect a minimum correlation of 0.2 between parental stress coping strategies and the children's QoL, a sample size of 220 was calculated, accounting for a 10% anticipated dropout rate.

### **Collecting data**

Parents provided written informed consent after the study's purpose and procedures were explained, with child assent also obtained. Participants were assured of confidentiality; personal information was protected, and findings were analyzed anonymously. In total, 220 children and one parent each took part in the study. Parental coping strategies were assessed using the CISS-SF, while children's QoL was measured via the PedsQL. Statistical analyses were performed to explore the connection between parental coping approaches and the QoL in children with ADHD.

### **CISS-SF:**

To assess stress-coping strategies, the study employed the CISS-SF, developed by Endler and Parker. This inventory categorizes coping into three primary behaviors: problem-focused, emotion-focused, and avoidance coping. Participants rated each of the 21 items on a Likert scale from 1 (never) to 5 (very often), with seven questions dedicated to each coping strategy. Specifically, questions 1, 4, 7, 9, 15, 18, and 21 address avoidance coping; questions 2, 6, 8, 11, 13, 16, and 19 assess problem-focused coping; and questions 3, 5, 10, 12, 14, 17, and 20 measure emotion-focused coping. Each strategy has a possible score range from 7 to 35. Previous studies have established the CISS-SF's high reliability and validity, supporting its use in various contexts [11, 13].

### **Children's Quality of Life Questionnaire (PedsQL)**

In this study, the PedsQL questionnaire was used to evaluate the QoL among children aged 8 to 12. Comprising 23 items, each scored on a Likert scale from 0 (never) to 4 (always), the questionnaire provides both a total score and four specific subscale scores: physical, emotional, social, and academic performance. Additionally, it includes two composite scores for overall psychological and physical health. The PedsQL's reliability and validity have been well-established in previous research, with Cronbach's alpha indicating strong internal consistency [14].

### **Data analysis:**

Using SPSS version 22, descriptive statistics were computed for all study variables. Participant demographics, such as age, gender, and educational level, were presented as means, standard deviations, and frequency distributions. QoL was assessed through multiple dimensions: physical and emotional functioning, social and academic performance, as well as mental and physical health. The Wilcoxon Signed Ranks Test was conducted to compare QoL scores between children and parents. Additionally, an Independent Samples Test was used to explore associations between coping strategies—avoidance, problem-focused, and emotion-focused—and the Parent-Child Life Questionnaire grouping (Low & Medium vs. High). A p-value of less than 0.05 was considered statistically significant throughout the analyses.

### **Findings**

A total of 220 persons participated in the study, where 162 (73.6%) were males in the case of children, and 34 (15.5%) were males in the case of parents. The mean age of children was 9.39 years (SD = 1.23), while for parents it was 37.22 years (SD = 5.41). Parents' educational level was 26.4% with a high school level, 30.5% have a diploma, while 43.2% had a university degree.

In this study, the use of different stress coping strategies by parents of children with ADHD was assessed using CISS-SF. The mean score for the avoidance strategy was  $21.11 \pm 3.96$  (range = 9 - 34), with a corresponding usage percentage of 60.31%. The problem-oriented strategy had a mean score of  $21.71 \pm 3.81$  (range = 9 - 34) and a usage percentage of 62.02%. The emotional strategy had the highest mean score of  $25.71 \pm 4.56$  (range = 13 - 35) and a usage percentage of 73.45%.

The study compared QoL scores between children with ADHD and their parents across various dimensions using the Wilcoxon Signed Ranks Test, revealing significant differences. Children reported significantly higher QoL scores than their parents in all measured areas, including physical performance, emotional functioning, social performance, academic performance, and mental health. Each of these differences was highly significant, with p-values under 0.001 across all domains. For example, children rated their physical health at  $83.53 \pm 14.17$ , compared to parents' rating of  $63.72 \pm 18.40$ . Overall, children's total QoL score ( $80.74 \pm 15.19$ ) was significantly higher than parents' assessments ( $60.28 \pm 13.15$ ), highlighting a notable discrepancy in perception (Table 1).

**Table 1:** Comparison of Quality-of-Life Scores Between Children's Self-Reports and Parent-Reports Across Different Dimensions

Variables		Physical performance	Emotional functioning	Social Performance	Academic Performance	mental health	Physical health	Total Quality of Life
<b>Perspective</b>	Children	83.53±14.17	77.43±23.12	83.54±18.59	76.77±21.29	79.25±18.24	83.53±14.17	80.74±15.19
	Parents	63.72±18.40	52.20±20.91	65.15±22.81	57.98±17.47	58.45±15.26	63.72±18.40	60.28±13.15
<b>P-value *</b>		<b>≤0.001</b>	<b>≤0.001</b>	<b>≤0.001</b>	<b>≤0.001</b>	<b>≤0.001</b>	<b>≤0.001</b>	<b>≤0.001</b>

\*Wilcoxon Signed Ranks Test

This study also investigates the connections between different stress coping strategies such as avoidance, problem-focused, and emotional coping and the various aspects of QoL in children diagnosed with ADHD. Across most dimensions—physical performance, social performance, academic performance, and mental health—no significant differences were observed between groups employing low/medium or high levels of coping strategies, as indicated by p-values > 0.05. However, in the emotional functioning dimension, a significant difference was found for the emotional coping strategy, where children in the high group reported a higher mean score ( $26.32 \pm 4.56$ ) compared to the low and medium group ( $24.83 \pm 4.46$ ), with a p-value of 0.017. This suggests that emotional coping strategies may play a more pronounced role in improving emotional well-being among children with ADHD, while other coping strategies and QoL dimensions showed no significant statistical impact (Table 2).

**Table 2:** Relationship Between Stress Coping Strategies and Quality of Life from Children's Perspective Across Different Dimensions

Variables		Avoidance Strategy	Problem Oriented Strategy	Emotional Strategy
Physical performance	Low & medium	21.01±4.64	21.71±4.83	25.33±4.64
	High	21.15±3.70	21.72±3.38	25.85±4.54
<b>P-value *</b>		0.819	0.988	0.463
Emotional functioning	Low & medium	20.75±3.95	21.31±3.85	24.83±4.46
	High	21.36±3.97	22.00±3.78	26.32±4.56
<b>P-value *</b>		0.261	0.189	<b>0.017</b>
Social Performance	Low & medium	21.32±4.27	22.09±3.86	25.23±4.54
	High	21.03±3.84	21.56±3.80	25.91±4.57
<b>P-value *</b>		0.621	0.348	0.311
Academic Performance	Low & medium	21.45±4.18	22.11±4.25	25.60±4.51

	High	20.81±3.76	21.36±3.35	25.81±4.63
<b>P-value *</b>		0.239	0.145	0.741
<b>mental health</b>	Low & medium	21.18±4.26	21.88±4.05	25.10±4.39
	High	21.07±3.78	21.61±3.67	26.10±4.65
<b>P-value *</b>		0.840	0.608	0.113
<b>Physical health</b>	Low & medium	21.01±4.64	21.71±4.83	25.33±4.64
	High	21.15±3.70	21.72±3.38	25.85±4.54
<b>P-value *</b>		0.819	0.988	0.463

\*Independent Samples Test

Furthermore, the relationship between stress coping strategies (avoidance, problem-oriented, and emotional) and This study evaluated multiple QoL dimensions for parents of children with ADHD, covering physical, emotional, social, academic, and mental health aspects. Analysis showed no significant differences in coping strategy use between parents with low-to-medium and high perceived QoL. For example, in the physical performance dimension, the mean score for the avoidance strategy was  $20.95 \pm 3.81$  in the low-to-medium group compared to  $21.61 \pm 4.41$  in the high group ( $p = 0.295$ ). Similar non-significant results were observed across other dimensions, with p-values above 0.05 (refer to Table 3).

**Table 3:** Relationship Between Stress Coping Strategies and Quality of Life from Parents' Perspective Across Different Dimensions

<b>Variables</b>		<b>Avoidance Strategy</b>	<b>Problem Oriented Strategy</b>	<b>Emotional Strategy</b>
<b>Physical performance</b>	Low & medium	20.95±3.81	21.54±3.83	25.85±4.36
	High	21.61±4.41	22.25±3.76	25.27±5.15
<b>P-value *</b>		0.295	0.232	0.421
<b>Emotional functioning</b>	Low & medium	21.04±3.81	21.60±3.74	25.74±4.37
	High	21.78±5.13	22.65±4.37	25.47±6.10
<b>P-value *</b>		0.398	0.216	0.795
<b>Social Performance</b>	Low & medium	21.00±3.71	21.54±3.67	25.69±4.52
	High	21.35±4.44	22.06±4.08	25.75±4.68
<b>P-value *</b>		0.536	0.335	0.921
<b>Academic Performance</b>	Low & medium	21.32±4.01	21.76±3.94	25.86±4.52
	High	19.83±3.43	21.43±2.92	24.73±4.81
<b>P-value *</b>		0.056	0.661	0.207
<b>mental health</b>	Low & medium	21.01±3.89	21.66±3.77	25.79±4.44
	High	21.85±4.48	22.11±4.20	25.11±5.41
<b>P-value *</b>		0.306	0.569	0.466
<b>Physical health</b>	Low & medium	20.95±3.81	21.54±3.83	25.85±4.36
	High	21.61±4.41	22.25±3.76	25.27±5.15
<b>P-value *</b>		0.295	0.232	0.421

\*Independent Samples Test

As shown in Table 4, the study examined the association between stress coping strategies namely, avoidance, problem-focused, and emotional coping and the QoL of children with ADHD from both the children's and parents' perspectives. The analysis revealed no significant differences in coping strategy usage across various QoL categories. For instance, from the children's perspective, the mean score for the avoidance strategy was  $21.03 \pm 4.04$  in the low and medium group, compared to  $21.16 \pm 3.94$  in the high group ( $p = 0.829$ ). Similarly, from the parents' perspective, the avoidance strategy had mean scores of  $21.12 \pm 3.91$  for the low and medium group and  $21.04 \pm 4.51$  for the high group

(p = 0.921). These findings suggest that coping strategies do not significantly differ between low-to-medium and high quality of life groups (Table 4).

**Table 4:** Relationship Between Stress Coping Strategies and Total Quality of Life

Variables	Quality of Life from Children's Perspective		P-value *	Quality of Life from Parents' Perspective		P-value *
	Low & medium	High		Low & medium	High	
<b>Avoidance Strategy</b>	21.03±4.04	21.16±3.94	0.829	21.12±3.91	21.04±4.51	0.921
<b>Problem Oriented Strategy</b>	21.90±4.17	21.61±3.62	0.588	21.71±3.80	21.75±4.04	0.966
<b>Emotional Strategy</b>	25.48±4.36	25.83±4.68	0.580	25.72±4.31	25.62±6.38	0.920

\*Independent Samples Test

### Discussion

This study examined the link between parental coping strategies and the QoL in children diagnosed with ADHD. Various aspects of QoL were assessed, including physical and emotional functioning, social and academic performance, and overall mental and physical health. The findings offer significant insights into how parental coping mechanisms impact children's well-being. Our findings indicate that children with ADHD rated their own QoL higher in all dimensions compared to the ratings given by their parents. This highlights a significant discrepancy, potentially attributable to differing perspectives: children with ADHD often maintain a positive outlook due to their engagement in enjoyable activities, whereas parents focus on the challenges and problems associated with ADHD, such as academic difficulties and behavioral issues. Also, this finding could indicate that children may understand their abilities and strengths better than parents or that parents may have a more negative evaluation of their children's quality of life due to their stress and worries. This finding can also point to the perceptual differences between children and their parents and highlight the need for parents to better understand their children's attitudes and feelings. Studies have shown that children and their parents often differ in how they assess QoL. Notably, children tend to provide more favorable evaluations of their own QoL compared to their parents' assessments [15-17].

The results showed that parents use more emotional strategies instead of problem-oriented and avoidance strategies. These findings are consistent with previous studies that have shown that parents of children with special needs often resort to more positive and practical coping strategies to deal with stress [18-20]. Additionally, these results indicate that the emotional coping strategies employed by parents may have a direct effect on the emotional QoL experienced by their children. On the other hand, no statistically significant differences were noted across other QoL dimensions or coping strategies. This may imply that the effect of parents' coping approaches on other aspects of children's QoL is either less direct. Alternatively, it may highlight the complex and multidimensional influence of parental coping strategies on their children's well-being. In line with this, previous research has shown that family QoL is associated with negative emotions, specifically sadness and depression, while adaptive coping strategies are linked to an enhanced quality of family life [21, 22]. From the perspective of parents, no significant relationship was observed between coping strategies and different aspects of children's QoL. This finding may be due to differences in the views and perceptions of parents and children. Additionally, this lack of significance could mean that parents do not feel a direct and significant impact of their strategies on the quality of children's lives, or perhaps these impacts manifest in more complex ways that require further investigation. Previous studies suggest that parenting styles, particularly in terms of emotional support and family dynamics, are shaped by the parent's age and gender. Emotional support from parents is positively linked to control efforts, family cohesion, commitment, and a higher perceived QoL. Conversely, it is negatively associated with male gender, experiences of rejection, and more effective coping strategies [23].

Finally, the total score of the QoL, from both the children's and parents' points of view, did not show a statistically significant relationship with parents' coping strategies. This finding suggests that the QoL in children with ADHD is shaped by multiple factors and is not solely dependent on how parents cope. Prior research has similarly shown that the QoL of parents with ADHD children is often compromised. Factors such as gender, location, family income, household size, marital status, occupation, and educational level have been associated with lower QoL scores. These findings highlight the need for a comprehensive and multidimensional approach. Such an approach should

consider the perspectives of the child, parent, and entire family to effectively evaluate QoL in families managing ADHD [24]. To enhance the QoL of these children, there is a need for more comprehensive and multifaceted interventions that involve psychological, educational, and social support for both children and parents.

The study's use of validated tools such as the CISS-SF and the PedsQL questionnaire ensures the reliability and validity of the collected data. Including perspectives from both parents and children provides a comprehensive understanding of the QoL in families dealing with ADHD. Additionally, the study's significant sample size enhances the generalizability of the findings. However, the cross-sectional design limits the ability to establish causality between coping strategies and QoL outcomes. Potential biases in self-report measures could affect the accuracy of the reported data, as parents and children might perceive and report their experiences differently. Moreover, the exclusion of children with certain comorbid conditions (e.g., developmental delays, schizophrenia) may limit the applicability of the findings to all children with ADHD.

#### **Conclusion:**

The findings from this study suggest that parental coping strategies, especially those involving emotional support, play a key role in shaping the emotional experiences of children with ADHD. However, to deepen our understanding of these influences, further research is needed to examine a broader range of interconnected factors that affect the QoL in these children.

#### **LIST OF ABBREVIATIONS**

ADHD: attention deficit hyperactivity disorder

QoL: Quality of Life

CISS-SF: Coping Inventory for Stressful Situations-Short Form

PedsQL: Pediatric Quality of Life Inventory

QOL: Quality of life

SD: Standard deviation

CI: Confidence interval

OR: Odds ratio

#### **Competing interests**

There is no conflict of interest.

#### **Acknowledgements:**

We thank all the participants who cooperated with us to conduct this study.

**Statement of Ethics:** This study, which included human participants, was conducted in accordance with the Declaration of the World Medical Association Declaration of Helsinki.

**Ethical Approval:** After receiving approval from the university's research ethics committee, all participants were thoroughly informed of the study's potential benefits and provided their consent by signing a written form. The confidentiality of all collected data will be strictly upheld. This study has been officially registered with the Babol University of Medical Sciences Ethics Committee under code IR.MUBABOL.REC.1402.076.

**Informed Consent Statement:** Upon receiving approval from the university's research ethics committee, participants were given a full explanation of the study's benefits. They formally joined the study by completing a written informed consent form.

**Disclosure Statement:** There is no conflict of interest.

**Funding / Support Sources:** This research was both approved and funded by the Research Vice-Chancellor at Babol University of Medical Sciences, under Grant No. 724134146.

**Author Contribution:** A.M., serving as the lead author and guarantor, played a key role in data interpretation and manuscript revision. S.M.Z. and S.M. were responsible for planning the study and took the lead in drafting and revising the manuscript. Additionally, S.M.Z., S.M., E.A., H.Gh.A., and A.M. contributed to both data interpretation and the writing and revision process. All authors have reviewed and approved the final submitted version. Each author actively contributed to the manuscript's preparation, adheres to the latest authorship guidelines of the International Committee of Medical Journal Editors, and endorses the content of the manuscript. This research is original and is not currently under review by any other journal.

**Data Sharing Statement:** Data supporting the results of this study can be obtained from the corresponding author, [Armon Massoodi], upon a reasonable request.