Quality of Life of Children with Attention Deficit/Hyperactivity Disorder

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Background: Attention-deficit/hyperactivity disorder (ADHD) is one of the most common chronic mental illnesses in childhood and adolescence. There are many impacts of ADHD on children in several domain of quality of life (QoL).

Objective: To determine the QoL of children with ADHD aged 6-15 years.

Materials and Methods: A descriptive cross-sectional study was conducted at Bhumibol Adulyadej Hospital (BAH) between July 2019 and December 2021. Children aged 6-15 years with ADHD were recruited from the child development clinic. The child's parent completed a demographic questionnaire, Thai version of the Pediatric Quality of Life Inventory™ 4.0 Core Scales (PedsQL): parent-proxy report. The Parenting Stress Index-Short Form (PSI-SF) were also measured. Data of ADHD treatment and comorbidities were collected from medical records.

Results: One hundred and ten children were enrolled. The mean PedsQL score of children with ADHD was 64.9 ± 13.02. The physical health summary score was higher than the psychosocial health summary score. Children with no comorbidity and behavioral treatment had higher PedsQL score when compared to those with comorbidity as well as both medical and behavioral treatments. Also, there was higher PedsQL score in children whose parents living with a partner or not having physical health conditions. Moreover, a statically significant negative relationship was noted between level of parenting stress and child's PedsQL score (r = -0.541, p<0.001).

Conclusion: Children with ADHD have worse psychological rather than physical domain QoL, with the poorest QoL in school functioning. Parental stress was negatively correlated with quality of life in ADHD children. Holistic assessment and care for ADHD children and their families may result in a better quality of life for these pediatric patients.

Keywords: Quality of life, Attention-deficit/hyperactivity disorder

Introduction

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common chronic mental illnesses in childhood and adolescence. It is characterized by inappropriate hyperactivity, impulsivity, and inattention development [(1)]. The epidemiological prevalence of ADHD is 5.3% worldwide[(2)] and 8.1% in Thailand[(3,4)]. Children with ADHD are more likely to have poor concentration, high levels of activity, impulsiveness, poor intensity behavioural advice, and greater risk for longer term negative outcomes[(5)]. In previous studies, it was suggested that a significant symptom of disorders could continue in 30–60% of affected individuals into adulthood.[(6,7)]

World Health Organization (WHO) defines quality of life (QoL) as an individual's perception of life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns [(8)]. QoL is overall the assessment of one's life which can be measured by several sub-dimensions (physical and psychosocial domains). It is a broad, complex, multidimensional concept, covering both physical

and mental health issues, as well as level of thoughts, relationships, beliefs, and relationships with the environment. Meanwhile, health is a state of complete physical health. Therefore, the QoL is a measurement of health outcome with an assessment of diseases and treatment from the perspectives of patients or caregivers.

The general questionnaires for children QoL measurement in Thailand currently include: Thai version of the Pediatric Quality of Life Inventory™ 4.0 Core Scales (PedsQL) and Thai Quality of Life in Children (TQOLC). Besides, there are QoL questionnaires for specific diseases, including the Pediatric Quality of Life Inventory™ Cerebral Palsy Module (PedsQL™ Cerebral Palsy Module) and the Pediatric Asthma Quality of Life Questionnaire (PAQLQ). In this study, Thai version of the Pediatric Quality of Life Inventory™ 4.0 Core Scales (PedsQL) was applied for health-related quality of life (HRQoL) measurement in children with ADHD.

In a previous report by Pongwilairat K[9] in Chiangmai, there was an assessment of HRQoL between school-age children with ADHD and those without physical or mental disorders. The results showed that children with ADHD and their parents had a significantly lower QoL score than the controls and their parents.

Bhumibol Adulyadaj Hospital is a large tertiary hospital in north Bangkok and a pediatric care center for a large number of children with developmental disorders and other chronic diseases. However, there is a lack of data on the QoL assessment, especially in pediatric patients with ADHD. Thus, this study aims to determine the QoL of children with ADHD for the improvement of HRQoL towards a future comprehensive holistic ADHD child care center.

Materials and Methods

The present study protocol was approved by the Bhumibol Adulyadaj Hospital (BAH) Ethics Committee (IRB no.44/63). All children with ADHD and their parents received information of the study and thoroughly understood the study protocol. Their written informed consents were also obtained. Due to COVID-19 pandemic, the study information was explained by the researcher via telephone. Electronic documentation of study information, consent, and questionnaires were sent to parents, using mobile phone application.

A descriptive cross-sectional study was conducted between July 2019 and December 2021 in the child development clinic at Bhumibol Adulyadaj Hospital. Participants were children aged 6-15 years with ADHD diagnosed by developmental and behavioral pediatricians according to the Diagnostic and Statistical Manual 5th edition (DSM-V) diagnostic criteria [10].

The Thai version of the Pediatric Quality of Life Inventory™ 4.0 Core Scales (PedsQL) was used for assessment of child's QoL, with Cronbach's alpha coefficient 0.88[11]. The parent-proxy report version of the PedsQL for young children (ages 5-7), children (ages 8-12), and teens (ages 13-18) were applied in the present study. The questionnaire consisted of 23 items, addressing in 4 dimensions (physical, emotional, social and school functioning). The sum of subscale scores was used for calculation of a mean total score. Psychosocial health summary scores comprised emotional, social, and school functioning subscale items. The physical functioning subscale items were included in physical health summary scores. The higher scores indicated better QoL.

The Parenting Stress Index-Short Form (PSI-SF), a self-report questionnaire, was utilized to assess magnitude of parental stress in the parent-child system. The PSI-SF was a 36-item, self-report measurement with 3 subscales: Parental Distress (PD), Parent-Child Dysfunctional Interaction (PCDI), and Difficult Child (DC). The Thai version of the PSI-SF was validated with Cronbach's alpha coefficient of 0.904). Parent with total stress scale score of 86 or above was considered to have clinically significant levels of stress [13].

There were 113 participants during the study period. Three participants were excluded. Thus, total number of sample size in this study was 110 cases.

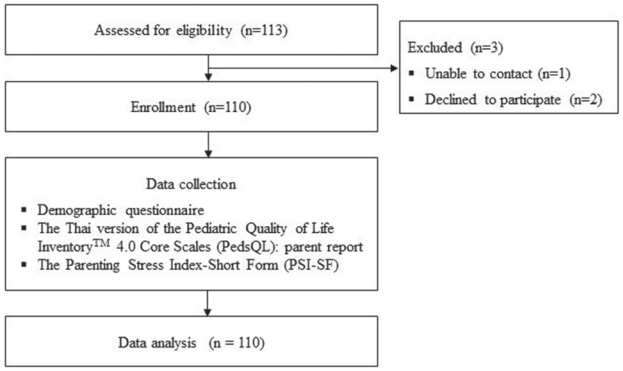

Figure 1 Flow diagram of participants' progress through phases of the present study

Statistical data analysis

Continuous variable was calculated and presented as mean and standard deviation using SPSS version 26 (IBM SPSS Statistics 26.0) for statistical analysis. A p-value of < 0.05 was considered statistical significant.

Results

One hundred and ten children with ADHD participated in this study. Child's parent completed all questionnaires. Demographic information of children with ADHD and their parents were shown in Table 1. The average age of children with ADHD was 9.9 years, mostly boys (91.8%), and 83.6% of them were currently at primary school level. The average age of parents was 43.8 years, and 80% of them were father or mother. Half of the parents had bachelor's degree (55.5%).

Table 1. Demographic characteristics of children with ADHD and parents

Characteristics	n (%)
Children with ADHD (n=110)	
Age (years, months), mean ± SD*	9.9 ± 2.2
Male gender	101 (91.8)
Education	
• Kindergarten	2 (1.8)
• Primary School	92 (83.6)
• High school	16 (14.5)
Parents (n=110)	
Age (years, months), mean ± SD	43.8 ± 9.6
Relationship to child	
• Father or mother	88 (80.0)
• Others	22 (20.0)
Education	
• Less than Bachelor's degree	49 (44.5)
• Bachelor's degree or above	61 (55.5)

*SD = Standard deviation

The PedsQL scores were shown in Table 2. Mean total PedsQL score was 64.90 ± 13.02. The psychosocial health summary scores were markedly lower than the physical health summary scores (59.19 ± 19.16 and 76.29 ± 19.10, respectively).

Table 2 PedsQL scores of children with ADHD (n=110)

Scale	Mean ± SD*
Total score	64.90 ± 13.02
Physical health summary score • Physical Functioning	76.29 ± 19.10
Psychosocial health summary score	59.19 ± 19.16
• Emotional Functioning	62.64 ± 16.76
• Social Functioning	63.34 ± 23.28
• School Functioning	51.59 ± 17.44

*Standard deviation

One fourth of children with ADHD were diagnosed with comorbidity and had lower PedsQL score than those without comorbidity. Children with ADHD diagnosed with learning disorders had higher PedsQL score than those

with intellectual disability, autism, and aggressive behaviors (65.74 ± 14.79, 51.45±2.26, 60.25 ± 9.50 and 63.45±12.40, respectively).

All children with ADHD received behavioral treatment. One-fourth of them received both behavioral and medical treatment. The PedsQL score of children with only behavioral treatment was higher than those with both behavioral and medical treatments. Children with ADHD whose parents lived with a partner, no physical health conditions, had a higher PedsQL score than those whose parents had these problems.

Table 3 Children and parental factors and PedsQL scores

	n (%)	Total PedsQL score (Mean ± SD*)
Children with ADHD (n=110)		
Comorbidity		
• No comorbidity	89 (80.9)	65.71 ± 13.14
• ≥1 comorbidity	21 (19.1)	60.22 ± 9.73
Treatment		
• Behavioral treatment	27 (24.5)	65.53 ± 15.32
• Behavioral and medical treatment	83 (75.5)	64.77 ± 12.27
Parents (n=110)		
Marital status		
• Living with partner	78 (70.9)	65.88 ± 12.16
• Separated, divorced, widowed	32 (29.1)	62.7 ± 14.86
Physical health problem		
• No	71 (71.8)	65.64 ± 12.79
• Yes	31 (28.2)	63.22 ± 13.62
Mental health problem		
• No	108 (98.2)	64.89 ± 13.04
• Yes	2 (1.8)	68.58 ± 15.37

*Standard deviation

There was a statically significant negative relationship between magnitude of parenting stress and child's PedsQL score ($r = -0.541$, $p < 0.001$). (Table 4)

Table 4. Parenting stress and total PedsQL score (n=110)

Level of stress	n (%)	Total PedsQL score (Mean ± SD)	*p*-value
Clinically significant stress**	67 (60.9)	60.34 ± 11.46	<0.001 (r = -0.541)
Not clinically significant stress	43 (39.1)	72.26 ± 12.24	

*Standard deviation,

**Clinically significant stress = Total stress scale scores of 86 or above

Discussion

There are different domains in PedsQL scores, which corresponds to other previous studies. A study by Pongwilairat K[9] in Chiangmai yielded children with similar demographics but different characteristics of report. In this study, the parental report version was applied because we included young children and those with comorbidity which may prevent self-reporting accuracy. In meta-analysis study, there were nine studies which compared the HRQoL between children or adolescents with ADHD and those with typical development, using both child self-reports and parent proxy-reports PedsQL™. No significant difference of overall HRQOL was reported between parent-ratings and child-ratings[14].

In previous studies of Pongwilairat K[9], Kandemir et al.[15], and Limbers CA et al.[16] to determine QoL in children with ADHD by using PedQL, the findings demonstrated worse psychological than physical QoL, as well as psychologically worse QoL in school functioning rather than social and emotional functioning, compatible to our study.

Nonetheless, children with ADHD are more likely to have school difficulties, disruptive behaviors, and negative interactions with their peers, teachers, and parents, but rarely with physical problems, resulting in a high PedsQL score in physical functioning. Thus, there should be a concern for QoL improvement in ADHD as an important holistic care.

In our study, children with ADHD and comorbidities had a lower PedsQL score than those without comorbidities. Likewise, Danckaerts M Marija et al.[17] found that children with ADHD and comorbidities experienced higher rates of peer problems and poorer QoL than those with ADHD alone. Episodes of anger and aggression was reported in children and likely to contribute to psychosocial stress and low QoL. The presence of comorbidities is significant because it complicates the diagnostic process and affects the course, prognosis, and therapeutic processes. Assessment and support in comorbid disorders are often as important as the assessment and treatment of ADHD symptoms. In this study, children with ADHD and learning disorder had better QoL than those with other comorbid conditions. This possibly may be due to ongoing clinical surveillance and screening of learning disorder in children with ADHD. Also, treatment is provided with comprehensive educational interventions for children and coordination of care between families and schools.

In this study, treatment in behavioral intervention group had higher PedsQL score than that with medication and behavioral intervention group. This may be because children with only behavior treatment were likely to have less severe symptoms. However, this study did not assess the severity of ADHD symptoms, which may provide more definitive information in a future study.

In the parental factors, parents living together, without physical health problems had higher PedsQL score than those with problems of familial structure or physical health conditions. Thus, parents and family should be the most important for caring children with ADHD. Danckaerts M. et al.[17] reported that familial factors such as a parent with a physical or mental health problems could be significantly associated with a poorer QoL. Therefore, they should be ready both physically and mentally to help children control themselves with better adjustment.

In this study, the significant parenting stress group demonstrated a significantly lower PedsQL score than the non-significant parenting stress group. Nuri et al.[18] reported that parents who rated their child's lower QoL had a higher perceived stress score. Parenting stress was a unique predictor of child QoL from parent proxy rated. Therefore, parenting stress should be assessed with interventions to promote positive parenting practice in parents of children with ADHD, which may have a positive impact on good children's outcomes. Interventions that target parenting stress may contribute to improvements in the child's QoL.[19]

Conclusion

Children with ADHD have worse psychological rather than physical domain QoL, with the poorest QoL in school functioning. Parental stress was negatively correlated with quality of life in ADHD children. Holistic assessment and care for ADHD children and their families may result in a better quality of life for these pediatric patients.

Limitation

Limitations of the current study was on clinical samples from one clinical setting. So, its generalization could not be guaranteed. However, to the best of authors' knowledge, this was the first study with assessment of QoL in children with ADHD in Bhumibol Adulyadej Hospital.

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Potential conflicts of interest

The authors declare no conflict of interest

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การศึกษาคุณภาพชีวิต ของผู้ป่วยเด็กโรคซนสมาธิสั้น

นันท์วดี พรหมบังเกิด, สรินนา อรุณเจริญ, ศิรินทร์ญา เทพรักษ์

ความเป็นมา: โรคซนสมาธิสั้น (Attention-deficit/hyperactivity disorder) เป็นหนึ่งในโรคเรื้อรังทางด้านพัฒนาการและพฤติกรรมที่พบบ่อยในเด็กและวัยรุ่น เกิดจากความผิดปกติของพัฒนาการทางสมองซึ่งส่งผลต่อพฤติกรรม อารมณ์ การเรียน การทำงาน หรือการเข้าสังคม นอกเหนือจากประสิทธิภาพในการรักษาโรคที่ดีแล้ว การช่วยให้ผู้ป่วยเด็กเหล่านี้มีคุณภาพชีวิตที่ดีขึ้นจึงเป็นเป้าหมายในการรักษาที่สำคัญ

วัตถุประสงค์: เพื่อศึกษาคุณภาพชีวิตของผู้ป่วยเด็กโรคซนสมาธิสั้น อายุ 6 – 15 ปี

วิธีการศึกษา: การศึกษานี้เป็นการศึกษาเชิงพรรณนาแบบตัดขวาง ผู้เข้าร่วมการศึกษา คือ ผู้ป่วยเด็กโรคซนสมาธิสั้นอายุ 6-15 ปี ที่มารับบริการในคลินิกพัฒนาการเด็ก โรงพยาบาลภูมิพลอดุลยเดช ทำการศึกษาระหว่างเดือนกรกฎาคม พ.ศ. 2562 ถึงเดือนธันวาคม พ.ศ. 2564 เก็บข้อมูลจากการตอบแบบสอบถามโดยผู้ปกครอง ได้แก่ แบบสอบถามข้อมูลส่วนบุคคลทั่วไป, Pediatric Quality of Life InventoryTM 4.0 Core Scales (PedsQL) ฉบับภาษาไทย และ Parenting Stress Index-Short Form (PSI-SF)

ผลการศึกษา: ผู้เข้าร่วมวิจัยจำนวน 110 ราย คะแนนเฉลี่ยคุณภาพชีวิตโดยรวม 64.9 ± 13.02 คะแนนเฉลี่ยคุณภาพชีวิตด้านกายภาพสูงกว่าด้านจิตสังคม ผู้ป่วยเด็กโรคซนสมาธิสั้นที่ไม่มีโรคร่วมหรือได้รับการรักษาด้วยพฤติกรรมบำบัดมีคะแนนเฉลี่ยคุณภาพชีวิตโดยรวมสูงกว่าผู้ป่วยเด็กที่มีโรคร่วมหรือได้รับการรักษาด้วยพฤติกรรมบำบัดร่วมกับยา คะแนนเฉลี่ยคุณภาพชีวิตโดยรวมของผู้ป่วยเด็กที่ผู้ปกครองอยู่ร่วมกับสามี/ภรรยา ไม่มีโรคทางกายสูงกว่าผู้ป่วยเด็กที่ผู้ปกครองมีปัญหาดังกล่าว ความเครียดของผู้ปกครองมีความสัมพันธ์เชิงลบกับคุณภาพชีวิตผู้ป่วยเด็กโรคซนสมาธิสั้นอย่างมีนัยสำคัญทางสถิติ

สรุป: ผู้ป่วยเด็กโรคซนสมาธิสั้นมีคุณภาพชีวิตด้านจิตสังคมด้อยกว่าด้านกายภาพ และคุณภาพชีวิตด้านโรงเรียนด้อยที่สุด ความเครียดของผู้ปกครองมีความสัมพันธ์เชิงลบกับคุณภาพชีวิตของผู้ป่วยเด็กโรคซนสมาธิสั้น การประเมินและดูแลผู้ป่วยเด็กโรคซนสมาธิสั้นและครอบครัวอย่างองค์รวม อาจส่งผลให้คุณภาพชีวิตของผู้ป่วยเด็กเหล่านี้ดีขึ้น

คำสำคัญ: คุณภาพชีวิต, โรคซนสมาธิสั้น

กองกุมารเวชกรรม โรงพยาบาลภูมิพลอดุลยเดช กรมแพทย์ทหารอากาศ