

ORIGINAL RESEARCH

Depression in Turkish Children May Affect Children's and Their Parents Quality of Life More Than Other Psychopathologies: A Single-Center Study

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Abstract

Objective: The study aimed examine the quality of life (QoL) of parents and their children with common psychiatric diagnoses.

Methods: We examined 785 referrals of children and adolescents, aged 6-18 years, with a semi-structured interview (Kiddie Schedule for Affective Disorders and Schizophrenia, K-SADS-P). QoL of the children were evaluated via Pediatric Quality of Life Inventory (PedsQL) and parental QoL was evaluated via World Health Organization Quality of Life-Brief Form (WHOQOL BREF).

Results: Depression in the child had the most significant adverse association with their own and parental QoL. Autism Spectrum Disorders had the worst impact on the quality of children's social life. Having a mental disorder, other than anxiety disorders, had overall the worst impact on the quality of children's school life.

Conclusion: Depression seems to have the most significant impact on the quality of life parameters. Results indicate further analysis of the association between childhood depression and parental QoL.

Keywords: Child, Parents, Quality of Life, Psychiatry

INTRODUCTION

Prevalance of mental and behavioral disorders in children and adolescents is about 13.4%, across the World (1). Research from Turkish studies reports somewhat different prevalence rates of childhood psychiatric disorders as compared to the pooled worldwide rates. The prevalence rates of psychopathologies with severe impairment was found 12.7% for attention deficit hyperactivity disorder (ADHD), 1.4% for mood disorders and 2.6% for anxiety disorders (2). Data from Turkish clinical samples report various prevalence rates largely due to methodological differences and associated functional impairment (3-5).

The symptoms must cause significant distress and impairment in adaptive functioning for a psychiatric

diagnosis according to DSM-5 (6). Although, the concept of quality of life (QoL) is not taken into consideration when the impairment criteria is employed, it is suggested to be chosen over the psychopathology or impairment as the main health care outcome (7). The bidirectional relationship between psychiatric problems and QoL are well-established in adults, however, it remains to be an understudied area of research in pediatric age population, especially in non-western countries. Most of the existing studies in children focused on the relationship between physical disorders and QoL, therefore the relationship of QoL with mental disorders has not received the same degree of scientific attention (8). Besides, studies report different results, which is mainly due to the methodological differences, particularly in terms of whether the child's QoL was assessed in self-reports or from the point of view of their parents and clinicians. In a large national survey, compared to the parents of children with physical disorders, the parents of children with mental health problems reported a worse QoL in their children (9). In a clinical study, no differences were found in the total QoL between the diagnostic categories according to

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child and parent ratings, however, clinician's ratings yield poorer QoL in children with pervasive developmental disorders. Different subdomains of quality of life were affected in that study, i.e. poorer school functioning for children with disruptive disorders (10). A recent study showed that children with ADHD had poorer QoL across all domains of functioning according to parent and child reports (11). According to another study, children with ADHD reported that their QoL was almost similar to their typically developed non – ADHD peers (12). Poorer QoL was reported in adolescents with ADHD than their peer without a chronic health condition in another study (13). In two recent systematic reviews, QoL in children with psychiatric problems was reported as significantly decreased compared to healthy controls across several QoL dimensions and in different mental disorders (8,14). In the review by Dey et al., (2012), especially psychosocial and family-related functioning were reported as the most adversely affected QoL domains, however, failure to use self-ratings were noted to be one of the main limitations (8). In the other review, as compared to self-reports, parents' ratings were reported to be substantially lower, which the authors interpreted as casting doubt on the validity of proxy-reports. On the other hand, existing literature suggests that proxy reports may be a better tool for observable characteristics of children and that self reports may reflect child's inner world more properly (15, 16). Studies for depressive disorders and anxiety disorders in children were noted to be largely lacking (14).

Childhood psychopathologies can cause severe impairment in several domains in the functionality of not only the children but also their parents and families. Health-related QoL of parents of children with Autism Spectrum Disorders (ASD) is shown to be impaired, which is attributed to their child's behavior characteristics (17,18). Similarly, parenting to a child with intellectual disability is shown to be related to poor psychological and social QoL (19). A longitudinal study showed that caregivers of children with developmental disabilities had less social contact and caregivers of children with severe mental health problems reported more depressive symptoms, physical health symptoms and alcohol related problems (20).

Osoba and King (2005) argued that the main aim of health care was to restore or preserve well-being and functioning related to health, which is health-related QoL (21). Bastiaansen et al.(2005) reported QoL improvement without psychiatric symptom reduction in their clinical population (22). Therefore it can be advocated that the quality of life measurement should

be included in the routine psychiatric evaluation and that it could be a target for treatment.

In the present study, we aimed to examine the quality of life status of children and their parents associated with the most common childhood psychopathologies in a Turkish clinical sample, as such data from different countries may shed light on possible cultural differences. Based on the existing research we expected that; firstly the parents of children with neurodevelopmental disorders and disruptive behavior disorders would have overall poorer QoL than children with anxiety/mood disorders and those with no diagnosis. Secondly, the impairment in children's QoL would be in the QoL domains specific to the diagnosis, i.e. poorer emotional QoL in children with depressive disorders and anxiety disorders, poorer social QoL in children with autism spectrum disorders and poor school QoL in children with ADHD and disruptive disorders.

METHODS

Participants

The study sample consisted of 785 children and adolescents aged 6-18 years who had been referred to Bezmialem Vakif University Hospital Child and Adolescent Psychiatry Clinics between August 2015 and May 2016. A total number of 895 children between age of 6-18 were referred to our clinics in that time period. 42 subjects refused to participate in the study, 68 subjects were excluded because they did not filled the questionnaires properly (more than 50% of the questionnaires were missing). Response rate was 92%. Children provided verbal assent, and a written informed consent was sought from their parents.

The study was approved Bezmialem Vakif University Ethics Committee. (IRB date 30.09.2015 number:18/27)

Measures

Sociodemographic information was collected via a form developed by authors of the study. The sociodemographic form consists of items about parental age, education, physical and psychiatric history of parents and siblings, marital status and income.

Kiddie Schedule for Affective Disorders and Schizophrenia Present Version (KSADS P)

As a semi-structured diagnostic interview based on DSM-4 criteria (23), KSADS-P covers a wide range of psychiatric conditions (mood disorders, schizophrenia, anxiety disorders, obsessive-compulsive disorder, tic disorders,

elimination disorders, eating disorders, disruptive disorders, adjustment disorders, post-traumatic stress disorder, and its Turkish adaptation was reported to be valid and reliable (24).

Pediatric Quality of Life Inventory (PedsQL)

Measuring the child's QoL from the perspective of parents, PedsQL consists of 23 items (8 for physical, 5 for emotional, 5 for social and 5 for school functioning) scored on a 5-point Likert scale from 0 to 4 (0= "never a problem"; 4= "always a problem") (25,26). Then scores convert to a QoL score (100= "never a problem"; 0= "always a problem") in which higher scores indicate a better QoL and the items cover the problems occurred within the past month. The sum of the items divided by the number of items answered provides the scale score and in addition, a psychosocial health summary score (involves emotional, social and school functioning) and total scale score can be computed (involves psychosocial and physical functioning). It was reported to be reliable and valid in Turkish with Cronbach's α 0.88 on parent's report in 8-12 years, 0.87 on parent's report in 5-7 years and 13-18 years, (27-29). In our study parental reports (5-7, 8-12 and 13-18 years) were used to determine child QoL because of the wide range of age and psychiatric diagnoses.

World Health Organization Quality of Life-Brief Form (WHOQOL BREF)

As a generic quality of life instrument designed to be applicable to people living under different circumstances, conditions, and cultures, the WHOQOL BREF provides a subjective evaluation of the quality of life in a multidimensional concept (30). The WHOQOL-BREF is a self-report instrument completed by parents, consisting of 26 items as opposed to 100 items in its full version, provides unweighted measures on the following four domains: physical, psychological, social relationship, and environment. It is based on a Likert type scale, where each item is scored from 1 to 5, with higher scores indicating a better quality of life. The Turkish version has highly satisfactory psychometric qualities (31).

Procedure

Parents completed the sociodemographic form and QoL questionnaires. A semi-structured diagnostic interview (KSADS-P) was then performed by two experienced child and adolescent psychiatrists (VG, ACO) to conclude the diagnosis which was determined by consensus of the two psychiatrists. Since KSADS-P does not cover all DSM diagnoses, a DSM-5 based clinical interview was

conducted to detect the diagnoses fallen outside the scope of the KSADS-P (e.g. ASD, intellectual disability, speech and language disorders). In terms of the DSM-5 based clinical interview; firstly DSM-5 criteria of the target disorders were employed in the interview with the child and parents; then mental status examination was performed with the child alone, and lastly if there was a suspected intellectual disability or language disorder, appropriate psychometric testing was used to confirm the diagnosis.

The diagnosis with the highest clinical significance (the disorder which causes more impairment to the child) was taken as the primary diagnosis. Participants were categorized into the following categories according to their primary diagnosis: attention deficit and disruptive behavior disorders (ADHD and DBD), anxiety disorders, autism spectrum disorders (ASD), depressive disorders and no diagnosis based on the study by Bastiaansen et al. (2004) (10). Those with a diagnosis of OCD, elimination disorders, communication and learning disorders, adjustment disorders, tic disorders, or other rare diagnoses not listed above were included in the "other disorders" category, however not included in the analysis due to the heterogeneous nature of this group.

Statistical Analysis

All analyses were conducted using SPSS for Windows (v.19, SPSS Inc., Chicago, USA). Descriptive analyses [mean and standard deviation (SD)] were conducted for sociodemographic variables. Mean scores of the scales were compared with one way ANOVA. In case of a significant F ratio for the diagnostic category, a Tukey's HSD (honest significant difference) post hoc test was carried out. Correlations between the QoL of parent and child were calculated by Pearson's correlation coefficient. In order to test the hypotheses on tailed p values were used and significance was set at $p \leq 0.05$.

RESULTS

Diagnostic Categories

Study sample consisted 785 children and their parents; 64.6% (n= 507) of children were boys, and 35.4% (n= 278) were girls. The mean age of the sample was 9.44 years (SD= 3.18; range 6-18 years). The response rate was 92.5% of the eligible samples. Responders and non-responders did not differ in terms of their sex ($\chi^2=1.299$, $p=0.25$) and age ($t=1.684$, $p=0.092$). The main parental informant was the mother (87.2%). As the participants in the 'other

diagnoses' category (n: 135) formed a heterogeneous group, we excluded them from the statistical analysis hence the total number dropped to 650.

In terms of the frequency of the diagnostic groups and their prevalence; ADHD-DBD group (35.9%) formed the majority of the participants, which was followed by anxiety disorders (19.6%) and no diagnosis group (19.5%). ADHD alone was present in 9.6% of the subjects, however including its comorbidities the frequency reached 33.1% (Table 2).

Table 1. Sociodemographic variables of the sample

	Total (n=650)
Age (mean $\pm$ SD)	9.50 $\pm$ 3.10
Gender (f/m) (%)	33.4/66.6
Maternal age (mean $\pm$ SD)	36.25 $\pm$ 5.70
Maternal education (above high school)	42.3 %
Paternal Age (mean $\pm$ SD)	40.21 $\pm$ 5.82
Paternal Education (above high school)	51.5 %
Income(<6000 \$/year)	53.3 %
Parents living together (%)	92.0 %
Number of children	2.23 $\pm$ 0.94
Psychiatric disorder in family	38.5 %

Table 2. Gender, age distribution of diagnostic categories

Diagnostic category	N	%	Sex (%)		Age (%)	
			Female	Male	Mean	SD
ADHD and disruptive behavior dis.	282	35.9	56	226	8.96	2.72
ADHD	76					
DBD	22					
ADHD and DBD	76					
ADHD and anxiety disorder	65					
ADHD and any other disorder	43					
Anxiety disorders	154	19.6	75	79	10.21	3.11
Specific phobia	39					
Social phobia	16					
Separation anxiety disorder	16					
Generalized anxiety disorder	15					
Panic disorder	3					
Selective mutism	2					
Other anxiety disorder	9					
Combination of anxiety disorders	23					
Anxiety dis and any other disorder	31					
Autism spectrum disorders	25	3.2	3	22	8.68	3.38
Depressive disorders	36	4.6	31	5	14.47	1.81
DD	21					
DD and any other disorder	15					
Other disorders	135	17.2	61	74	9.39	3.29
OCD	14					
Elimination disorders	27					
Communication and learning disorders	23					
Adjustment disorders	40					
Tic disorders	13					
PTSD	5					
Rare diagnoses (Bipolar 2, Schizophrenia 2, Eating Dis. 4, somatoform disorders 3, sleep disorders 2)	13					
No diagnosis	153	19.5	52	101	8.54	2.94

ADHD: Attention Deficit Hyperactivity Disorder; DBD: Disruptive behavior disorders; DD: Depressive disorder; OCD: Obsessive Compulsive Disorder; PTSD: Post Traumatic Stress Disorder; Dis: Disorder; N: Number

Association Between Diagnostic Categories and Quality of Life

Table 3 shows the mean PedsQL scores of children and WHOQOL-BREF scores of the parents. Significant differences were detected in PedsQL scores across diagnostic categories. Post hoc tests were performed to determine which variables were associated with the QoL of children and their parents. Children with a diagnosis of anxiety disorders or no diagnoses had significantly higher total scores of QoL, – therefore the overall better quality of life-, as compared to those with depressive disorders or ADHD-DB ($p < 0.05$). The same was also true for the ‘psychosocial’ and ‘school’ domains of the child QoL.

Children and adolescents with depressive disorders had

lower scores (hence worse QoL) in the total QoL scale, and psychosocial, physical and emotional domains as compared to those with anxiety disorders ($p < 0.05$). Having a depressed child was also associated with a worse physical, psychological and environmental functioning in the parents.

Those with a diagnosis of ASD had lower mean scores as compared to those with depressive disorders only in the emotional domain and ASD did not appear to have a negative relationship with the child’s QoL as compared to the rest of the sample. As expected, the lowest social QoL parameters were in children with autism ($p < 0.05$), however, – contrary to our prediction – having a child with autism did not appear to have a significant adverse relationship with the parental quality of life.

Table 3. Mean Scale Scores on PedsQL Parent Report and WHOQOL-BREF for Different Diagnostic Categories

	ADHD-DBD (n=282)		Anxiety Dis (n=154)		ASD (n=25)		Depression (n=36)		No diagnosis (n=153)		F	p
Scale	mean	SD	Mean	SD	Mean	SD	mean	SD	Mean	SD		
C-total QoL	59.1	13.6	63.7 ^{a,b}	13.0	55.8	12.8	54.3	12.1	67.2 ^{a, b, c}	13.2	13.56	.000
C-psychosocial QoL	56.6	15.5	62.0 ^{a,b,c}	14.0	51.3	14.1	52.8	13.9	66.0 ^{a, b, c}	14.9	13.66	.000
C-physical QoL	65.8	18.8	68.7 ^a	19.6	69.4	16.5	58.6	21.3	71.0 ^a	18.8	4.28	.002
C-emotional QoL	57.5 ^a	20.3	52.7 ^a	19.1	57.0 ^a	17.5	38.7	22.0	62.9 ^{a, d}	19.2	12.26	.000
C-social QoL	63.2 ^c	20.7	68.3 ^c	20.5	47.2	17.2	76.4 ^{b, c}	15.8	73.6 ^{b, c}	19.4	13.91	.000
C-school QoL	42.9	20.2	64.7 ^{a,b,c}	21.2	49.8	24.6	41.7	16.8	61.2 ^{a, b}	20.3	19.37	.000
P-physical QoL	66.9 ^a	15.4	68.1 ^a	15.3	69.4 ^a	13.0	55.7	13.7	71.8 ^a	14.0	7.68	.000
P-psychological QoL	63.4 ^a	14.7	63.4 ^a	13.4	63.4 ^a	11.3	50.6	15.5	67.2 ^a	14.1	8.68	.000
P-social QoL	64.3	18.5	65.9	17.4	62.0	21.4	57.8	18.3	69.0 ^a	18.2	3.37	.010
P-environment QoL	62.8 ^a	13.2	62.5 ^a	14.4	63.0 ^a	12.7	53.4	16.4	66.0 ^a	13.0	5.18	.000

^a Higher scores than children in the category of depression $p < .05$; ^b Higher scores than children in the category of ADHD $p < .05$; ^c Higher scores than children in the category of ASD $p < .05$; ^d Higher scores than children in the category of anxiety disorders $p < .05$. ADHD-DBD: Attention Deficit Hyperactivity Disorder and Disruptive Behavior Disorders; Anxiety Dis: Anxiety Disorders; ASD: Autism Spectrum Disorders; C: Children’s; P: Parental; QoL: Quality of Life, SD: Standard Deviation

Correlations Between QoL in Children and Parents

The QoL parameters of the parent-rated children (parental report) and their parents, which mostly showed meaningful but weak correlations are displayed

in Table 4. The highest categorical correlations were between the child’s emotional QoL and their parent’s physical and psychological QoL.

Table 4. Correlations between parent and child quality of life scores

Scale	C-physical QoL	C-emotional QoL	C-social QoL	C-school QoL	C – psychosocial QoL	C-total QoL
P-physical QoL	.101*	.283**	.114*	.208**	.269**	.263**
P-psychological QoL	.098*	.272**	.075	.188**	.235**	.234**
P-social QoL	.042	.190**	.129*	.254**	.257**	.228**
P-environment QoL	.075	.134**	.113*	.114*	.157**	.158**

* $p < 0.05$ ** $p < 0.001$; C: Children’s, P: Parental; QoL: Quality of Life

DISCUSSION

To the best of our knowledge, the present article is the first study reporting the quality of life of children and their parents associated with the most common child psychiatric diagnoses in a Turkish clinical sample. Prevalence of psychiatric diagnoses, their comorbidity, and relationship with age and gender variables reported in our study are grossly in line with previous studies from Turkish (3-5) and western populations (10, 32-34). In a nationally representative large sample of Australian youth, Sawyer et al. (2002) reported a significantly worse QoL in children with mental disorders in several domains as compared to those with no disorder, even when the sample is controlled for age, gender, and family structure (9). Our results, although conducted in a clinical sample, are in line with the findings in the Sawyer et al. study, in which a similar methodological approach of reporting parental view was used (9). In terms of the quality of life parameters; similar to our findings, Bastiaansen et al (2004) had also reported a significant adverse relationship of mood disorders with QoL parameters, however they also found mood disorders' more deleterious effect than ADHD-DBD on the child's QoL (10). Although, this was true for the parental QoL parameters in the present study, the child's QoL was worse in more domains in those with ADHD-DBD as compared to those with depressive disorders. However, it's important to note that in the present study, bipolar affective disorder, which had been listed in the mood disorders category in the previous studies, was categorized in the other disorders group.

Partially in line with our findings, a mutually hindering relationship between elevated symptoms of anxiety or depression and low school functioning/ academic achievement was reported in a systematic review (35). However, in a large school study where QoL was assessed with self-reports, academic attainment or quality of life did not have any independent association with the child anxiety level, whilst higher levels of depressive or combined (depression and anxiety) showed a significant relationship (36). Differences in these findings are likely to be due to methodological variances and the choice of the self or by-proxy reports.

In the present study, children with ADHD and DBD had worse psychosocial and school functioning than those with anxiety disorders or no diagnosis, according to their parents. Their social functioning was also less satisfying as compared to children with depression. Findings in lower school functioning in this group are in line with

previous research (11, 16, 37). We found no difference in emotional domain of QoL as compared to children with anxiety disorders. This finding is somewhat different than Bastiaansen et al. (2004) study, where parents had reported lower emotional QoL in their anxious children. In a systematic review of the studies about the QoL in children with various mental disorders; children with ADHD had poorer QoL in multiple areas, most significantly in the psychosocial and family-related domains, as compared to healthy controls (10). These domains were also significantly worse in the QoL of their parents (8). In a Turkish study, ADHD diagnosis in children was reported to be associated with significantly worse quality of life in all domains, as compared to the control group (38). In our study, ADHD-DBD indeed had an independently negative relationship with all domains of the child's QoL, except emotional functioning. In another study from Turkey, parents of the children with ADHD reported significant differences in their general and mental health subscale scores, compared to a community sample. The psychosocial health subscale and total QoL scores of the ADHD patients and their parents were significantly lower than the community sample (39). ADHD can be a detrimental condition, however research reports that not only its symptoms can be controlled with appropriate treatment but its adverse impact on the parental QoL can also improve (40). Similar to the Bastiaansen et al (2004) study, we also combined the subjects with ADHD and DBD in the same diagnostic group (10). Although, comorbidity between these two conditions is extremely high, the studies of QoL in childhood ADHD do suggest that having comorbid oppositional defiant disorder is associated with a greater reduction in QoL (41).

In terms of ASD, when assessed in self-reports as compared to the parental reports used in our study, QoL in the children with ASD was found no significantly different in one study (10) and significantly poorer in another study (42). Our results showed that ASD did not appear to have an independent adverse association with any domains of the parents' QoL. This finding is somewhat surprising when taking into account the existing literature as the poorer quality of life in the parents of ASD children had a lower QoL compared to parents of children with various mental, behavioral and medical conditions and healthy controls (10, 14, 18, 43, 44).

Its cross-sectional methodology and lack of a control group from the non-clinical population are the main limitations of the present study. We could not evaluate effects of comorbidity because the sample was from a

psychiatry clinic and there are patients with multiple comorbidities, although, we used a primary diagnosis method to determine the diagnosis causing the most impairment. Another limitation is that we asked the parents to rate the QoL of life in their children and we know from the research that the view of children can differ from that of their parents (10). On the other hand, existing literature suggests proxy reports may be a better tool for observable characteristics of children and self reports may reflect child's inner world more properly (15).

CONCLUSION

There have been several studies demonstrating that the quality of life of children with mental health problems and that of their parents is at least as compromised as that of children with chronic medical conditions. The present findings support the existing literature that the childhood psychopathologies are more likely to be associated with QoL impairment not only in children but also in their parents. As opposed to our research hypothesis, in which we predicted that neurodevelopmental conditions would be associated with the most severe QoL impairment, the parents of children with depressive disorders had the worst and most widely affected QoL in the present study. This is one of the unique findings of the present study, which highlights the need for more attention to be given to this rather treatable but impairing condition.

Conflict of interest: None of the authors has any conflicts of interest to disclose.

REFERENCES

- [1] Polanczyk GV, Salum GA, Sugaya LS, Caye A, Rohde LA. Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *J Child Psychol Psychiatry* 2015;56:345-365.
- [2] Ercan ES, Bilac O, Ozaslan TU, Ardic UA. Prevalence of psychiatric disorders among turkish children: the effects of impairment and sociodemographic correlates. *Child Psychiatry Hum Dev* 2016;47:35-42.
- [3] Gormez V, Oregul AC, Baljinnym S, Aliyeva N. Diagnostic and demographic characteristics of patients referred to a child and adolescent psychiatry clinic [article in Turkish]. *J Mood Disord* 2017;7(1):41-46.
- [4] Aktepe E, Demirci K, Çalışkan A, Sonmez Y. Symptoms and diagnoses of patients referring to a child and adolescent psychiatry polyclinic. *The Journal of Psychiatry and Neurological Sciences* 2010;23:100-108 (Turkish).
- [5] Durukan I, Karaman D, Kara K, Turker T, Tufan AE, Yalcin O et al. Diagnoses of patients referring to a child and adolescent psychiatry outpatient clinic. *Düşünen Adam The Journal of Psychiatry and Neurological Sciences* 2011;24:113-120 [Turkish].
- [6] American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. 5th edn. Arlington, VA: American Psychiatric Association; 2013 p.20.
- [7] Spitzer RL, Kroenke K, Linzer M, Hahn SR, Williams JB, Verloin DF et al. Health-related quality of life in primary care patients with mental disorders: results from the PRIME-MD 1000 Study. *JAMA* 1995;274:1511-1517.
- [8] Dey M, Landolt MA, Mohler-Kuo M. Health-related quality of life among children with mental disorders: a systematic review. *Qual Life Res* 2012;21:1797-1814.
- [9] Sawyer MG, Whaites L, Rey JM, Hazell PL, Graetz BW, Baghurst P. Health-related quality of life of children and adolescents with mental disorders. *J Am Acad Child Adolesc Psychiatry* 2002;41:530-537.
- [10] Bastiaansen D, Koot HM, Ferdinand RF, Verhulst FC. Quality of life in children with psychiatric disorders: self-, parent, and clinician report. *J Am Acad Child Adolesc Psychiatry* 2004;43:221-230.
- [11] Coghill D, Hodgkins P. Health-related quality of life of children with attention deficit/ hyperactivity disorder versus children with diabetes and healthy controls. *Eur Child Adolesc Psychiatry* 2016;25:261-271.
- [12] Landguf JM, Abetz LN. Functional status and well-being of children representing three cultural groups: initial self-reports using the CHQ-CF87. *Psychol Health* 1997;12(6):839-854.
- [13] Topolski TD, Edwards TC, Patrick DL, Varley P, Way ME, Buesching DP. Quality of life of adolescent males with attention-deficit hyperactivity disorder. *J Atten Disord* 2004;7(3):163-173.
- [14] Jonsson U, Alaie I, Lofgren WA, Zander E, Marschik PB, Coghill D et al. Annual Research Review: Quality of life and childhood mental and behavioural disorders—a critical review of the research. *J Child Psychol Psychiatry* 2017;58:439-469.
- [15] Bastiaansen D, Koot HM, Ferdinand RF. Determinants of quality of life in children with psychiatric disorders. *Qual Life Res* 2005;14(6):1599-1612.
- [16] Danckaerts M, Sonuga-Barke EJ, Banaschewski T, Buitelaar J, Dopfner M, Hollis C et al. The quality of life of children with attention deficit/hyperactivity disorder: a systematic review. *Eur Child Adolesc Psychiatry* 2010;19:83-105.
- [17] Allik H, Larsson JO, Smedje H. Health-related quality of life in parents of school-age children with Asperger syndrome or high-functioning autism. *Health Qual Life Outcomes* 2006;4(1):1-8.
- [18] Mugno D, Ruta L, D'arrigo VG, Mazzone L. Impairment of quality of life in parents of children and adolescents with pervasive developmental disorder. *Health Qual Life Outcomes* 2007;5(22):1-9.
- [19] Emerson E. Mothers of children and adolescents with intellectual disability: social and economic situation, mental health status, and the self-assessed social and psychological impact of the child's difficulties. *J Intellect Disabil Res* 2003;47(4-5):385-399.
- [20] Mailick Seltzer M, Wyngaarden Krauss M. Quality of life of adults with mental retardation/developmental disabilities who

- live with family. *Dev Disabil Res Rev* 2001;7(2):105-114.
- [21] Osoba D, King M. Meaningful differences. In Fayers P, Hays R(Eds.) *Assessing quality of life in clinical trials: Methods and Practice* 2nd ed. Oxford, UK: Oxford University Press; 2005 pp.243-257.
- [22] Bastiaansen D, Koot HM, Ferdinand RF. Psychopathology in children: Improvement of quality of life without psychiatric symptom reduction?. *Eur Child Adolesc Psychiatry* 2005;14(7):364-370.
- [23] Kaufman J, Birmaher B, Brent D, Rao U, Flynn C, Moreci P et al. Schedule for affective disorders and schizophrenia for school-age children-present and lifetime version (K-SADS-PL): initial reliability and validity data. *J Am Acad Child Adolesc Psychiatry* 1997;36:980-988.
- [24] Gokler B, Unal F, Pehlivanurk B, Kultur EC, Akdemir D, Taner Y. Reliability and validity of schedule for affective disorders and schizophrenia for school age children-present and lifetime version-Turkish version (K-SADS-PL-T). *Turk J Child Adolesc Ment Health* 2004;11:109-116.
- [25] Varni JW, Seid M, Rode CA. The PedsQL™: measurement model for the pediatric quality of life inventory. *Med Care* 1999;37(2):126-139.
- [26] Varni JW, Burwinkle TM. The PedsQL™ as a patient-reported outcome in children and adolescents with Attention-Deficit/Hyperactivity Disorder: a population-based study. *Health Qual Life Outcomes* 2006;4(26):1-10.
- [27] Memik NC, Ağaoğlu B, Coşkun A, Karakaya I. The validity and reliability of Pediatric Quality of Life Inventory in 8-12 year old Turkish children. *Turk J Child Adolesc Ment Health* 2008;15:87-98.
- [28] Memik NÇ, Ağaoğlu B, Coşkun A, Üneri OS, Karakaya I. Çocuklar için yaşam kalitesi ölçeğinin 13-18 yaş ergen formunun geçerlik ve güvenilirliği. *Türk Psikiyatri Dergisi* 2007;18:353-363 (Turkish).
- [29] Kabak VY, Yakut Y, Çetin M, Düger T. Reliability and Validity of the Turkish Version of the PedsQL 3.0 Cancer Module for 2-to 7-Year-Old and the PedsQL 4.0 Generic Core Scales for 5-to 7-Year-Old: The Hacettepe University Experience. *Turkish Journal of Hematology*, 2016;33:236-243.
- [30] The Whoqol Group. The World Health Organization quality of life assessment (WHOQOL): development and general psychometric properties. *Soc Sci Med* 1998;46:1569-1585.
- [31] Eser E, Fidaner H, Fidaner C, Eser S, Elbi H, Goker E. Psychometric properties of the WHOQOL-100 and WHOQOL-BREF. *J Psychiatry Psychol Psychopharmacol* 1999;7:23-40.
- [32] Cohen P, Cohen J, Kasen S, Velez CN, Hartmark C, Johnson J et al. An epidemiological study of disorders in late childhood and adolescence—I. Age and Gender-Specific Prevalence. *J Child Psychol Psychiatry* 1993;34:851-867.
- [33] Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L et al. Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication—Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry* 2010;49:980-989.
- [34] Costello EJ, Mustillo S, Erkanli A, Keeler G, Angold A. Prevalence and development of psychiatric disorders in childhood and adolescence. *Arch Gen Psychiatry* 2003;60:837-844.
- [35] Gustafsson J-E, Allodi Westling M, Akerman A, Eriksson C, Eriksson L, Fischbein S et al. School, learning and mental health: A systematic review, Stockholm: The Royal Swedish Academy of Sciences, The Health Committee, 2010 p.31.
- [36] Martinsen KD, Neumer S-P, Holen S, Waaktaar T, Sund AM, Kendall PC. Self-reported quality of life and self-esteem in sad and anxious school children. *BMC Psychol* 2016;4:45.
- [37] Landgraf JM, Abetz L, Ware JE. *Child Health Questionnaire (CHQ): A user's manual*, Health Institute, New England Medical Center Boston, 1996 p.161.
- [38] Goker Z, Aktepe E, Kandil S. Self-esteem and Quality of Life in Children and Adolescents with Attention Deficit Hyperactivity Disorder. *New Symposium Journal* 2011;49(4):209-216.
- [39] Kandemir H, Kilic BG, Ekinci S, Yuce M. An evaluation of the quality of life of children with ADHD and their families. *Anatolian Journal of Psychiatry* 2014;15:265-271.
- [40] Gormez V, Avery B, Mann H. Switching from immediate release to sustained release methylphenidate in the treatment of children and adolescents with attention deficit/hyperactivity disorder. *Eur Rev Med Pharmacol Sci*, 2013;17:2345-2349.
- [41] Newcorn JH, Spencer TJ, Biederman J, Milton DR, Michelson D. Atomoxetine treatment in children and adolescents with attention-deficit/hyperactivity disorder and comorbid oppositional defiant disorder. *J Am Acad Child Adolesc Psychiatry* 2005;44:240-248.
- [42] Potvin M-C, Snider L, Prelock PA, Wood-Dauphinee S, Kehayia E. Health-related quality of life in children with high-functioning autism. *Autism* 2015;19:14-19.
- [43] Lee LC, Harrington RA, Louie BB, Newschaffer CJ. Children with autism: Quality of life and parental concerns. *J Autism Dev Disord* 2008;38:1147-1160.
- [44] Ozturk O, Erermiş S, Ercan ES, Gulen F, Başay BK, Başay O et al. Does the quality of life in autism spectrum disorder differ from other chronic disorders and healthy children? *Anatolian Journal of Psychiatry* 2016;17:419-426.