J Pediatr Res
DOI: 10.4274/jpr.galenos.2019.60134

Original Article

Effects of Chronic Gastritis on Sleep and Quality of Life in Adolescents

Yeliz Çağan Appak[1], Gonca Özyurt[2], Miray Karakoyun[3], Maşallah Baran[1,4]

[1]University of Health Sciences Tepecik Training and Research Hospital, Clinic of Pediatric Gastroenterology İzmir, Turkey
[2]University of Health Sciences Tepecik Training and Research Hospital, Clinic of Child and Adolescent Psychiatry, İzmir, Turkey
[3]Ege University Faculty of Medicine, Department of Pediatric Gastroenterology, İzmir, Turkey
[4]İzmir Katip Çelebi University Faculty of Medicine Department of Pediatric Gastroenterology, İzmir, Turkey

ABSTRACT

Aim: This study aims to evaluate the sleep quality and the quality of life of adolescents with chronic gastritis, and determine the related factors.
Materials and Methods: This study included patients who were diagnosed with chronic gastritis both clinically and histopathologically. The Pittsburgh Sleep Quality Index and Epworth Sleepiness Scale were used to assess the sleep quality, and the Pediatric Quality of Life Inventory was used to assess the quality of life. The control group included healthy volunteers with no chronic diseases and no gastrointestinal system complaints.
Results: Fifty-six patients with gastritis and 55 healthy volunteers were included. The patients with gastritis were found to have significantly lower overall quality of life subscale, and total scale scores, except the social functioning total score. Except for the subjective sleep quality, significant differences were seen between the groups in the sleep quality subscale, total scale, and sleepiness scale averages. The total score of sleep quality scale was significantly higher in patients who had lower incomes than expenses. There were no significant differences in between the obese or overweight patients with gastritis and rest of the gastritis patients in the study sample. There were no significant differences found between the *Helicobacter pylori* positive and negative gastritis patients in terms of the total quality of life and sleepiness scale scores.
Conclusion: This study is important because it is the first study in adolescents in this respect. The sleep and quality of life scores of the adolescents with chronic gastritis were lower than the control group.
Keywords: Gastritis, quality of life, sleep, adolescent

Introduction

Gastritis is defined as the enflammation of gastric mucosa with microscopic evidence (1). Gastritis and peptic ulcer disease are the results of an imbalance between the mucosal defensive and aggressive factors. Gastritis and peptic ulcer disease can be divided into two major categories: as primary and secondary (such as hypersecretory conditions, stress, granulomatous and immunologic/allergy situations) on the basis of the underlying etiology (2). Most cases of primary or unexplained gastritis are now known to be caused by *Helicobacter pylori (H. pylori)* (3). Data on acid secretion in children are limited and old and their interpretations complicated by the considerable overlap in acid secretion between children with and without ulcers (4). There are no accurate f-gures related to the precise incidence of gastritis in children. As for ulcer disease, ***H. pylori*** is probably no longer the major cause of gastritis in many parts of the world (5). In a prospective study of 100 children who underwent upper gastrointestinal system (GIS) endoscopy due to dyspeptic symptoms, 79% found have gastritis (none had ulcer disease), of whom only 33% had *H. pylori* enfection (6).

The Sydney classification of gastritis aims to combine topographic, morphologic, and etiologic enformations to form a clinically relevant scheme (7). This classification and grading, which now incorporates the use of a visual analogue scale, is accepted as the standard research method by which all gastric biopsies from adult patients commonly assessed (8). The updated Sydney system is currently the most widely accepted classification for gastritis, even in children (8).

Address for Correspondence
Yeliz Çağan Appak MD, University of Health Sciences Tepecik Training and Research Hospital, Clinic of Pediatric Gastroenterology İzmir, Turkey
Phone: +90 505 598 52 29 E-mail: yelizcagan@yahoo.com ORCID ID: orcid.org/0000-0002-4330-9281
Received: *12.01.2019* **Accepted:** *21.01.2019*

In gastritis cases, the etiological factors and the patient's response to the enflammation may change the clinical findings. The enflammation of the gastric mucosa is among the most frequent causes of abdominal pain in children (9). Gastritis can affect an individual's daily activities, and this creates an important health problem for both the social and economic points of view. Gastritis may lead to an observable worsening in the quality of life and affect the quality of sleep for adult patients (10,11). There are no studies in the contemporary international literature that is focused on the qualities of sleep and life in children and adolescents with gastritis. Therefore, this study aimed to conduct an evaluation of the sleep and life qualities of children and adolescents with gastritis and identify the relevant factors.

Materials and Methods

Study Population

This study included patients between the ages of 13 to 18 years old who applied to Izmir Tepecik Training and Research Hospital pediatric gastroenterology clinic between August 2017 and October 2017 and received clinical and histopathological chronic gastritis diagnoses. Those patients underwent upper GIS endoscopies; gastric biopsy samples were taken from the antrum and corpus due to gastrointestinal symptoms (such as chronic abdominal pain, dyspepsia, vomiting, and abdominal distention) that had been ongoing at least a month (8). Patients diagnosed with a disease other then gastritis via clinical, endoscopic, and histopathologic findings (such as eosinophilic esophagitis, reflux esophagitis, or enflammatory bowel disease) were not included in the study. In the literature, it has been shown that children may experience impaired quality of life and sleep in different chronic diseases (12-14). For this reason, gastritis patients with additional chronic diseases were excluded from this study. Upper gastrointestinal endoscopy biopsies were assessed according to Sydney classification by the pathologist. The adolescents who found to have chronic gastritis, with no additional chronic disease and additional histopathologic findings in the pathology reports and who agreed to participate in the study were included. The Pittsburgh Sleep Quality Index (PSQI) and Epworth Sleepiness Scale (ESS) were used to evaluate the sleep quality. The quality of life was evaluated via Pediatric Quality of Life Inventory (PedsQL) that was suitable for this age group. Only the children who could read, understand, and complete all of the used scales were included in this study.

The data obtained was assessed through comparisons with a healthy control group. Healthy controls were selected from healthy volunteers who presented to the pediatric gastroenterology and pediatric outpatient clinics. For the comparisons, the sleep and life quality scales were applied to a group of healthy volunteers of the same age and gender who did not have any chronic diseases or gastrointestinal system complaints. The patients' demographic findings, complaints during application, endoscopic findings, and *H. pylori* positivity status were identified and evaluated together with the life and sleep qualities. In addition, the relationship between the income levels of the patients and sleep quality was assessed. For this purpose patients were divided into three groups as follows; patients whose income is lower than expenses, patients whose income is equal to the expenses, and the patients whose income is higher than the expenses, the patients were asked to state their income status accordingly. Each patient's body mass index (BMI) percentile was determined according to their age and sex, and those with BMI ≥ 95 percentile were considered as obese, while those with BMI = 85–95 percentile were overweight (15). In addition, the relationship between BMI and the life and sleep qualities were assessed. Healthy volunteers with normal BMI ratios that are ranging between 5-95 were included in the control group. Children who were not in the 5-95 percentile range were not included in the control group. Both the patient and control groups had no drug use or acid suppressive treatment history and did not have disease that could affect sleep quality, such as sleep apnea.

This study is approved by the ethics committee of Tepecik Training and Research Hospital (approvel number:17.08.2017/18). We obtained informed consents from all the children who participated in this study, as well as their families.

Study Scales

PedsQL

The PedsQL was developed for children, and it is a widely used, easy, and generic quality of life measure that can be implemented in a short time period (16). There are two different scale forms, a self-reported scale and a parent scale. Each scale is modified according to the following age groups; 2–4, 5–7, 8–12, and 13–18 years-old and the modifications were designed by accounting the characteristics of each age group. The scale consists of four subgroups that are aiming to question the physical, emotional, social, and school related functions. The self-reported and parent forms each consist of 23 clauses. The score of the clauses is linearly converted to a value between 0 and 100, and a higher number of points indicate a higher quality of life. A Turkish validity and reliability study of the PedsQL has been conducted for adolescents (17).

PSQI

The PSQI is a self-reported scale consisting of 19 items that evaluate the sleep quality and sleep disorders over the last month. Each component is scored between 0–3 points, and the total of the 7 components (Subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, daytime dysfunction)

gives the total score of the scale. A total point score of over 5, indicates a "bad sleep quality" (18). The Turkish version of the PSQI was developed by Agargun et al (19).

ESS

The ESS is an 8-item self-administered scale that is easy to use, and it evaluates the general sleepiness of an individual in 8 different daily life situations. The ESS score ranges between 0 to 24 and higher ESS scores indicate greater daytime sleepiness (20). The ESS has a high sensitivity and a high specificity with a cut-off score of >10 for an abnormal level of daytime sleepiness (21). The Turkish validity and reliability study of the ESS was conducted by Izci et al (22).

Statistical Analysis

The quantitative variables were expressed as the mean and standard deviation, while the categorical variables were expressed as numbers and percentages. The conformity assessment of the normal distribution of the numerical data for a single sample was performed using the Shapiro-Wilk test. Bivariate comparisons were conducted with chi-square test (with Yates' and Fisher's corrections when needed), and for the independent groups, Student's t-test or Mann-Whitney U test was used depending on the normal the normal distribution. Bivariate correlations were conducted with Pearson's or Spearman's correlation analyses depending the normal distribution. All of the statistical tests were performed with the Statistical Package for the Social Sciences version 18.0 (SPSS, Inc., Chicago, IL, USA). A p-value of less than 0.05 was considered as statistically significant.

Results

This study focused on 56 patients with chronic gastritis and 55 healthy volunteers. The age and gender distributions of the patient and control groups were similar (Table I). Overall, at the time of the 60.7% of the patients with gastritis presented with complaints of dyspepsia, 30.4% had abdominal pain, 30.4% had vomiting, 17.9% had nausea, and 10.7% presented with complaints of abdominal distention. The endoscopic assessment revealed that 34 patients (60.7%) had pangastritis and 22 patients (39.3%) had antral gastritis. There was not any statistical difference between the complaints of children who had pangastritis and children who had antral gastritis according to the chi square analysis (p=0.758, z=6.548 respectively). Also, three patients had bulbus ulcers and one patient had an antral ulcer. Similarly, no statistically significiant difference was found between the complaints of adolescents with and without ulcer (p=0.909 z=0.958 respectively). The upper GIS endoscopy biopsy samples of the patients were evaluated histopathologically, and it was determined that 48 (85.7%) of the patients had non-atrophic pangastritis, 6 (10.7%) had antral predominant nonatrophic gastritis, and 2 (3.6%) had atrophic pangastritis.

It was determined that the patients with gastritis had lower scores than the healthy controls, which was statistically significant in all the quality of life subscale scores and in the total scale score, with the exception of the social functioning total score (Table II). A comparison of the sleep quality of the gastritis patients with that of the healthy control group showed that there was a statistically significant difference between the two groups in all the subscale scores and the total scale score averages, except for the subjective sleep quality (Table III). There was no statistically significant relationship between the sleep quality and symptoms (r=-0.069,p=0.612). Moreover, the average sleepiness scale score of the gastritis patients was significantly higher than the average of the healthy controls (Table III). A comparison between the female and male patients suggested that there was not a statistically significant difference between the genders regarding the quality of life, sleep quality, and sleepiness total scale score (p=0.27, p=0.07, and p=0.6, respectively).

There was no significant difference between the patient and the control groups regarding the income and expenses (Table I). Also, no statistically significant difference was found between the groups according to their economic conditions concerning the average of the life quality subscale and total scale scores and the sleepiness scale score. In the patient group the sleep quality scale total score of those with lower incomes than expenses was meaningfully higher when compared to those whose incomes were either equal to or higher than their expenses (p=0.024); while there was not any significant difference between the sleep quality of the control group and economic conditions (p=0.958). According to the Spearman correlation analysis, there was not any correlation between the sleep quality and socioeconomic status (r=-0.096 p=0.482).

Eleven (19.6%) of the patients with gastritis were considered to be obese or overweight. The comparisons of these patients with the other gastritis patients showed that there was no statistically significant difference regarding the quality of life, sleep quality total scale score, and sleepiness scale average score (p=0.28, p=0.17, and p=0.63, respectively).

H. pylori was detected in 25 (44.6%) of the patients who was confirmed to have gastritis via histopathology. The comparison of H. pylori positive patients with the H. pylori negative patients showed that there was no statistically significant difference between the two groups concerning the quality of life and sleepiness scale total scores (p=0.89 and p=0.38, respectively). The assessment of the two groups concerning the sleep quality showed that there was a statistically significant difference in the sleep duration subscale score (p=0.029), but not in the other subscales and total scale scores (p=0.96).

Table I. Sociodemographic data of the patients and controls			
	Patients	**Controls**	**p**
Age (mean years ± SD)	15.48±1.61	14.94±1.79	0.101
Gender			
Girls (n, %)	34 (60.7%)	28 (50.9%)	0.253
Boys (n, %)	22 (39.3%)	27 (49.1%)	-
Body mass index percentile (mean±SD)	38.7±36.5	54.5±26.2	0.01
Economic condition			
Less income than expenses (n, %)	24 (42.9%)	16 (29.1%)	
Equivalent income and expenses (n, %)	19 (33.9%)	16 (29.1%)	0.74
More income than expenses (n, %)	13 (23.2%)	23 (41.8%)	-

Table II. Assessment of the quality of life of the gastritis patients and the healthy controls			
	Patients	**Controls**	**p***
Pediatric Quality of Life Inventory			
Physical health total score (mean±SD)	74.1±15.65	94±4.97	<0.001
Emotional functioning total score (mean±SD)	64.82±19.9	86.81±9.54	<0.001
Social functioning total score (mean±SD)	90±12.48	90.81±7.97	0.715
School functioning total score (mean±SD)	62.41±20.71	84.90±9.35	<0.001
Total score (mean±SD)	72.34±15.51	87.43±6.43	<0.001

*: Student's t-test was applied. SD: Standard deviation.

Table III. Assessment of the Pittsburgh Sleep Quality Index and Epworth Sleepiness Scale results			
	Patients	**Controls**	**p****
Pittsburgh Sleep Quality Index			
Subjective sleep quality (mean±SD)	0.09±0.39	0.12±0.33	0.58
Sleep latency (mean±SD)	2.43±1.89	0.46±0.64	<0.001
Sleep duration (mean±SD)	0.50±0.68	0.05±0.23	0.013
Habitual sleep efficiency (mean±SD)	0.85±0.77	0.56±0.71	0.04
Sleep disturbances (mean±SD)	1.14±0.48	0.80±0.40	<0.001
Use of sleeping medication (mean±SD)	0.69±1.04	0.07±0.26	<0.001
Daytime dysfunction (mean±SD)	2.17±1.40	0.21±0.45	<0.001
Total score (mean±SD)	7.7±3.14	2.5±1.5	<0.001
Epworth Sleepiness Scale			
Total score (daytime sleepiness) (mean±SD)	4.01±2.34	2.81±1.18	0.001

**Student's t-test was applied, SD: Standard deviation

Discussion

Children with functional gastrointestinal disorders, such as functional abdominal pain, functional dyspepsia, and irritable bowel disease, have been reported to have significantly lower life quality than the healthy controls (12). Several studies point out deterioration in the quality of life together with the chronic gastrointestinal diseases such as gastroesophageal reflux, constipation, and enflammatory bowel disease during childhood (12,13,23). It has also been reported that the low qualities of life of children with constipation improved after they received constipation treatment (24). In a study conducted on dyspeptic pediatric patients who had esophagitis or normal histological

findings, after an average of 7.6 years of follow up, it was found that during the adolescence and young adulthood period the patients had lower quality of life scores, worse dyspeptic symptoms, and more functional insufficiency when compared to the control group (25). Nevertheless, there are no studies considering the life and sleep qualities together in adolescents who have gastritis in the literature.

The studies conducted on adults with gastrointestinal diseases, such as peptic ulcers and gastroesophageal reflux, have reported lower life quality scores than the normal population, but also found significantly increased life quality scores after the treatment (26,27). A study issuing adults showed that patients with chronic gastritis had lower average scores when compared to the patients with peptic ulcers in all the life quality subscales, except for the physical functioning scale score (10). When compared with the normal population, both groups of patients had lower qualities of life (10). In our study, we examined the effects of gastritis on the life and sleep qualities of adolescents, and observed that the adolescents with gastritis had lower life qualities in all the subscales, except for the social functioning scale score and the total score. In a previous study from China that was focused on adult patients with gastritis and peptic ulcers, indicated that women with low-income levels had lower qualities of life. The differences in the distribution of the women and men in both the patient groups were reported to affect those results (10). In our study, the quality of life assessment of the patients with gastritis depending on the gender and income level did not reveal a statistically significant difference

Sleeping is a fundamental and essential daily life activity that affects the life quality and health of human beings (28). The sleep quality can be affected by many factors, such as the lifestyle, environmental factors, work, social life, economic conditions, general health state, and stress (29,30). In our study, while sleep quality was poor in chronic gastritis patients whose expenses were higher then their incomes, in the control group the income level had no adverse effect on sleep quality. However, the limitation of this study is that our patients were not assessed for negative factors such as negative social environment and unhealthy living conditions (access to clean water and food, nonhygienic living space and nutrition characteristics). In our study, it is seen that the gastritis patients had worse sleep quality scores than the controls regarding all the subscale scores and the average of the total scale scores, except for the subjective sleep quality. Subjective sleep quality is a component that is based on someone's interpretation of what they think about their sleep quality. The fact that our patients are not significantly different from controls regarding subjective sleep quality may be related to their inability to interpret sleep qualities poorly or to be unaware of their sleep quality. Daytime sleepiness is an important clinical and public health problem that reduces the quality of life significantly. In our study, we determined that the gastritis patients have significantly higher daytime sleepiness scale scores than the healthy controls. We think that various symptoms related to gastritis, such as abdominal pain, dyspepsia, vomiting affect the daily functioning of the individual and the daytime sleep pattern. However, in our study, when the sleep quality and the symptoms were examined a statistically significant relationship was not found. In our study, the comparison between the male and female patients regarding the sleep quality and daytime sleepiness revealed that there was no statistically significant difference between the genders. Moreover, the detection of *H. pylori* in the gastritis patients did not have any effects on the quality of life, daytime sleepiness, or general sleep quality, but the sleep duration was shorter when compared to the *H. pylori* negative patients.

A study conducted by Filik et al. reported a significant relationship between gastritis or erosive esophagitis and short sleep duration in adults. This relationship was especially meaningfully higher in the overweight or obese patients (11). It has been reported that a high BMI can lead to sleep disorders in adults and that obese patients may suffer from sleep disorders and sleeping difficulties (31,32). Moreover, childhood obesity may lead to many complications that can damage the quality of life, such as poor academic performance, psychological findings, lifelong obesity, and cardiovascular disease (33). In one study of 144 obese and overweight children, the sleep quality scores assessed via the PSQI and were found to be worse than those of healthy children (34). In our study, 19.6% of the patients with gastritis were obese or overweight, and their sleep qualities and qualities of life were not worse when compared to the rest of the gastritis patients in the study sample.

Conclusion

This study is important because it was the first to evaluate the quality of life and sleep quality in adolescents with chronic gastritis. In our study, adolescents with chronic gastritis had poor sleep quality and lower quality of life scores. The limitations of this study are the small sample size and the unevaluated negative factors such as negative social environment and unhealthy living conditions. In addition, our patients were not able to assess the sleep and quality of life after gastritis treatment. For this reason, we think that future studies evaluating chronic gastritis adolescents will be useful.

Acknowledgements

We appreciate to Assoc. Prof. Dr. Ayse Gülden Diniz (Tepecik Training and Research Hospital) for pathological evaluations of the patients and to Research Assistant Busra Emir (Katip Celebi University) for statistical evaluation.

Ethics

Ethics Committee Approval: The study was approved by the SBU Tepecik Training and Research Hospital Ethics Committee (approvel number:17.08.2017/18).

Informed Consent: Consent form was filled out by all participants.

Peer-review: External and internal peer-reviewed.

Authorship Contributions

Medical Practices: Y.Ç.A, G.Ö, M.K., Concept: Y.Ç.A, G.Ö, M.K., Design: Y.Ç.A, G.Ö., M.B., Data Collection or Processing: Y.Ç.A, G.Ö, M.K., Analysis or Interpretation: Y.Ç.A, G.Ö., M.B., Literature Search: Y.Ç.A, G.Ö, M.K., Writing: Y.Ç.A, G.Ö.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Rowland M, Bourke B. Helicobacter pylori and Peptic Ulcer Disease. Kleinman RE. Walker's Pediatric Gastrointestinal Disease, 6th ed, People's Medical Publishing House Ltd, North Carolina, USA, 2018.p. 593-616.
2. Tytgat GN. Etiopathogenetic principles and peptic ulcer disease classification. Dig Dis 2011;29:454-8.
3. Koletzko S, Jones NL, Goodman KJ, et al. Evidence-based guidelines from ESPGHAN and NASPGHAN for Helicobacter pylori infection in children. J Pediatr Gastroenterol Nutr 2011;53:230-43.
4. Hyman PE, Hassall E. Marked basal gastric acid hypersecretion and peptic ulcer disease: medical magement with a combination H2-histamine receptor antagonist and anticholinergic. J Pediatr Gatreterol Nutr 1988;7:57-63.
5. Kalach N, Papadopoulos S, Asmar E, et al. In French children, primary gastritis is more frequent than Helicobacter pylori gastritis. Dig Dis Sci 2009; 54:1958-65.
6. Kalach N, Mention K, Guimber D, Michaud L, Spyckerelle C, Gottrand F. Helicobacter pylori infection is not associated with specific symptoms in nonulcer-dyspeptic children. Pediatrics 2005;115:17-21.
7. Price AB. The Sydney System: histological division. J Gastroenterol Hepatol 1991;6:209-22.
8. Dixon MF, Genta RM, Yardley JH, Correa P. Classification and grading of gastritis. The updated Sydney System. International Workshop on the Histopathology of Gastritis, Houston 1994. Am J Surg Pathol 1996;20:1161-81.
9. Macarthur C, Saunders N, Feldman W. Helicobacter pylori, gastroduodenal disease, and recurrent abdominal pain in children. JAMA 1995; 273:729-34.
10. Wen Z, Li X, Lu Q, et al. Health related quality of life in patients with chronic gastritis and peptic ulcer and factors with impact: a longitudinal study. BMC Gastroenterology 2014;14:149.
11. Filik L, Ozer N. Short sleep duration of overweight and obese patients with erosive esophagitis and gastritis. Indian J Gastroenterol 2015;34:408-9.
12. Varni JW, Bendo CB, Nurko S, et al. Pediatric Quality of Life Inventory (PedsQL) Gastrointestinal Symptoms Module Testing Study Consortium. Health-related quality of life in pediatric patients with functional and organic gastrointestinal diseases. J Pediatr 2015; 166:85-90.
13. Youssef NN, Langseder AL, Verga BJ, Mones RL, Rosh JR. Chronic childhood constipation is associated with impaired quality of life: A Case-Controlled Study. J Pediatr Gastroenterol Nutr 2005; 41:56-60.
14. Kostkova M, Durdik P, Ciljakova M, et al. Short-term metabolic control and sleep in children and adolescents with type 1 diabetes mellitus. J Diabetes Complications 2018; 32:580-5.
15. Neyzi O, Bundak R, Gökçay G, et al. Reference Values for Weight, Height, Head Circumference, and Body Mass Index in Turkish Children. J Clin Res Pediatr Endocrinol 2015; 7: 280-93.
16. Varni JW, Seid M, Rode CA. The PedsQL: The measurement model for the pediatric quality of life inventory. Med Care 1999; 37:126-39.
17. Cakin Memik N, Ağaoğlu B, Coşkun, A, Uneri OS, Karakaya I. The validity and reliability of the Turkish Pediatric Quality of Life Inventory for children 13-18 years old. Turk Psikiyatri Derg 2007; 18:353-63.
18. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry Res 1989; 28:193–213.
19. Agargun MY, Kara H, Anlar O. The validity and reliability of Pittsburgh Sleep Quality Index. Turk Psikiyatri Derg 1996; 7:107–11.
20. Johns MW. Sleepiness in different situations measured by the Epworth Sleepiness Scale. Sleep 1994; 17:703–10.
21. Johns MW. Sensitivity and specificity of the multiple sleep latency test (MSLT), the maintenance of wakefulness test and the Epworth Sleepiness Scale: failure of the MSLT as a gold standard. J Sleep Res 2000; 9:5-11.
22. Izci B, Ardıc S, Firat H, Sahin A, Altinors M, Karacan I. Reliability and validity studies of the Turkish version of the Epworth Sleepiness Scale. Sleep Breath 2008; 12:161-8.
23. Chouliaras G, Margoni D, Dimakou K, Fessatou S, Panayiotou I, Roma-Giannikou E. Disease impact on the quality of life of children with inflammatory bowel disease. World J Gastroenterol 2017; 23:1067-75.
24. Dolgun E, Yavuz M, Celik A, Ergün MO. The effects of constipation on the quality of life of children and mothers. Turk J Pediatr 2013; 55:180-5.
25. Rippel SW, Acra S, Correa H, Vaezi M, Di Lorenzo C, Walker LS. Pediatric patients with dyspepsia have chronic symptoms, anxiety, and lower quality of life as adolescents and adults. Gastroenterology 2012; 142:754-61.
26. Glise H. Quality of Life assessments in patients with peptic ulcer during treatment and follow-up. Scand J Gastroenterol Suppl 1993; 199: 34-35.
27. Glise H, Hallerback B, Johansson B. Quality of Life assessments in the evaluation of gastroesophageal reflux and peptic ulcer disease before, during and after treatment. Scand J Gastroenterol. Suppl 1995; 30:133-135.
28. Koulouglioti C, Cole R, Kitzman H. Inadequate sleep and unintentional injuries in young children. Public Health Nurs 2008; 25:106-14.
29. Wolfson AR, Carskadon MA. Sleep schedules and daytime functioning in adolescents. Child Dev 1998; 69:875-87.
30. Bootzin RR, Stevens SJ. Adolescents, substance abuse, and the treatment of insomnia and daytime sleepiness. Clin Psychol Rev 2005; 25:629-44.

31. Kirkness JP. Obesity-related ventilatory phenotypes of sleep-disordered breathing. Am J Respir Crit Care Med 2014; 190:853-4.
32. Pearson NJ, Johnson LL, Nahin RL. Insomnia, trouble sleeping, and complementary and alternative medicine: Analysis of the 2002 national health interview survey data. Arch Intern Med 2006; 166:1775–82.
33. Orio F, Tafuri D, Ascione A, et al. Lifestyle changes in the management of adulthood and childhood obesity. Minerva Endocrinol 2016; 41: 509-15.
34. Baran RT, Atar M, Pirgon O, Filiz S, Filiz M. Restless Legs Syndrome and Poor Sleep Quality in Obese Children and Adolescents. J Clin Res Pediatr Endocrinol 2018; 10:131-8.