



Poor Appetite in School Children: Is It a False Perception of Parents?

Okul Çağı Çocuklarında İştahsızlık Sorunu: Ailelerin Yanlış Algısı mı?

Nazan Kaymaz¹, Nurcan Bulur², Şule Yıldırım¹, Sibel Çevizci¹, Naci Topaloğlu¹, Mustafa Tekin¹, Fatih Köksal Binnetoğlu¹, Elif Nursel Özmert³

¹Çanakkale Onsekiz Mart University Faculty of Medicine, Department of Pediatrics, Çanakkale, Turkey

²Mardin Women and Children Hospital, Clinic of Pediatrics, Mardin, Turkey

³Çanakkale Onsekiz Mart University Faculty of Medicine, Department of Public Health, Çanakkale, Turkey

⁴Hacettepe University Faculty of Medicine, Department of Pediatrics, Social Pediatrics Unit, Ankara, Turkey

ABSTRACT

Aim: Poor appetite is a common symptom in childhood that can either be organic or nonorganic. Prolonged poor appetite may affect children's growth negatively. However picking at food or refusing to eat stresses parents out. In this study, we aimed to investigate the relationship between parental perception of the child's body measurements and appetite in school children who were admitted to the outpatient clinic with the complaint of sustained poor appetite.

Materials and Methods: A total of 105 school children (6-15 years old) with the complaint of poor appetite who were investigated several times previously with no organic reason were included in the study. The study was conducted with a questionnaire that was filled out by parents recording demographics. Anthropometric measurements including body weight and height were measured by the same researcher. Body mass index was calculated and BMI-for-age was determined. Patients with normal BMI percentile values and patients with low BMI percentile values were compared.

Results: 105 children (M/F: 51/54) with a mean age of 8.2±1.9 years were studied. Mean body weight and height of children were 23.8±5.7 kg and 124.1±11.6 cm, respectively. Mean BMI of children was 15.2±1.5. According to BMI percentiles 65.7% (n=69) of children were normal weight, 30.5% (n=32) were underweight, and 3.8% (n=4) were overweight. When compared in terms of BMI percentiles no difference was found between the groups.

Conclusion: Perception of the parents of their children's growth is influenced by many factors and usually does not reflect the facts. In our study, we found that the majority of the children with poor appetite were in normal weight range according to BMI percentile. Nevertheless, nearly one third of the children were underweight, a fact that should not be ignored.

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Key Words: Poor appetite, children, parental perception

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ÖZET

Amaç: Çocukluk çağıında iştahsızlık sık bir yakınma olup, organik ya da patolojik nedenlere bağlı olabilir. Uzun süreli iştahsızlık büyümeyi etkileyebilmekle birlikte aileleri sıkıntıya sokan bir durumdur. Bu çalışmada iştahsızlık yakınmasıyla polikliniğe getirilen okul çağı çocuklarında vücut ölçümleri ile aile algısı karşılaştırıldı.

Gereç ve Yöntem: Çalışmaya daha önce en az 2 kez iştahsızlık şikayetiyle polikliniğe getirilen ve altta yatan organik neden saptanmayan, bilinen hastalığı olmayan 105 çocuk (6-15 yaş) dahil edildi. Aileler tarafından çalışmaya spesifik hazırlanmış demografik özellikleri ve süt çocukluğu dönemindeki beslenme özelliklerini içeren anket dolduruldu. Hastaların antropometrik ölçümleri alınarak vücut kitle indeksleri (VKİ) hesaplandı. VKİ persantil değerleri normalin altında ve normal olan hastalar karşılaştırıldı.

Bulgular: Ortalama yaşı 8,2±1,9 yıl olan 105 hasta (51 erkek, 54 kız) çalışmaya dahil edildi. Hastaların ortalama VKİ değerleri 15,2±1,5 idi. VKİ persantiline göre %65,7 (n=69) hasta normal, %30,5 (n=32) hasta düşük ağırlıklı olup, %3,8 (n=4) hasta ise fazla kilolu idi. Bu hastaların demografik ve süt çocukluğundaki beslenme özellikleri karşılaştırıldığında fark saptanmadı.

Sonuç: Çocuklarının büyüme konusunda ebeveynlerin algısı pek çok faktörden etkilenir ve genellikle gerçeği yansıtmaz. Bu çalışmada, iştahsızlık şikayeti ile getirilen çocukların büyük kısmının VKİ persantil değerlerinin yaşına göre normal aralıkta olmasına rağmen yaklaşık üçte birinin zayıf olduğu görüldü. Organik bozukluk saptanmayan, normal fizik muayene bulguları olan hastalarda aile algısının göz ardı edilmemesi gerektiğini düşünmekteyiz. *The Journal of Pediatric Research 2015;2(1):11-6*

Anahtar Kelimeler: İştahsızlık, çocuk, aile algısı

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Address for Correspondence/Yazışma Adresi

Nazan Kaymaz M.D., Çanakkale Onsekiz Mart University Faculty of Medicine, Department of Pediatrics, Çanakkale, Turkey
Phone: +90 536 678 84 15 E-mail: drnazan_erdal@hotmail.com

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Introduction

Refusal to eat and having a poor appetite are common behaviors among children that stress parents. It may be due to emotional need for mother's care or in order to show growing autonomy, to show anger towards the mother or to attract attention. Between 20-35% of healthy children have eating problems (1). Usually, the children eat enough, but that does not fulfill parental expectations, especially if they have overweight siblings (2).

Although it can be a sign of an organic problem that results in failure to thrive, many cases of poor appetite still have normal growth (3). Poor appetite and weight gain should be assessed together.

In some societies, to be overweight or have a large body is more respectable. It may be the perception of normality for those parents and they evaluate the growth of their children based on this (4,5). Most of parents cannot estimate their child's weight status correctly most of time (6-8). In this study, we aimed to investigate the relationship between parental perception of their child's body measurements and appetite in school-age children who were admitted to the outpatient clinic with the complaint of poor appetite.

Materials and Methods

Study Design

One hundred and five school-age children (6-15 years old) who had been previously investigated several (at least 2) times for poor appetite and with no organic reason were included in the study. The investigations included complete blood count, blood chemistry, urinalysis, urine culture, vitamin B12 and folic acid levels, thyroid function tests, antigliadin antibodies, stool parasite tests and abdominal ultrasonography. All the participants were healthy children and had no complaint except poor appetite. This study was performed with questionnaires completed by parents. People who could not recall the answers to any of the survey questions were excluded from the study. Participants had normal physical examination findings, and were treated with multivitamin, zinc and iron therapy at least 1 month in the previous year but did not develop any change in their level of appetite.

The Content of the Questionnaire

The questions were asked by one person in a separate room and answered by parents. The parents of children who agreed to participate in the study were asked questions on a survey form filled out during a face-to-face interview. The questions collected information about the child's name, age, gender, gestational week at birth, type of birth, birth weight, infant feeding habits, maternal age and education, socioeconomic status of the family. People who could not recall the answers to any of the survey questions were excluded from the study. Informed consent was obtained from the families.

Anthropometric Measurements

Anthropometric measurements including body weight and height were measured by the same researcher (I.E).

Participants were weighed in their underwear, without external clothing. Height was measured standing using the standard measurements. Body mass index (BMI) was calculated as the ratio of weight to the square of height (kg/m^2). The reference values that was created for the Turkish children was used to determine children's age- and sex-specific percentiles for weight, height and BMI (9).

Excluding Criteria

Children with chronic illness, abnormal laboratory findings and patients whose family practiced the method of punishment for not eating and reward after eating were excluded.

Statistical Analysis

Statistical analyses were performed using SPSS software version 19.0. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to describe groups of numerical data and the basic features of the data. The variables were investigated using visual (histograms, probability plots) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk's test) to determine whether or not the data was normally distributed. Since the variables BMI, birth weight, mother's age, duration of breastfeeding, duration of formula intake, beginning time of cow's milk, duration of pacifier usage and number of children in the family were not normally distributed; Mann-Whitney U nonparametric test was conducted to compare these parameters between the groups. Chi-square test and Fisher's Exact Test were used to examine the association between categorical variables.

Results

A total of 105 children (M/F: 51/54) with a mean age of 8.2 ± 1.9 years were included in the study. Demographic characteristics of the patients are summarized in Table I.

Fifty-four point eight percent of the patients received breast milk longer than 12 months. The mean of total duration of breast milk was 15.1 ± 8.2 months. There was statistically significant correlation between duration of breastfeeding and BMI percentiles (Kendall's correlation=0.218, $p=0.015$).

The average number of children in families was 4.1 children (min-max: 1-9). The mean number of siblings of patients was 4.1 ± 2.0 . In our study most of the patients (32.4%) were the eldest child in the family. There was no statistically significant difference between number of siblings and BMI percentiles of patients.

In the study, timing of introduction of complementary feeding was 7.9 ± 2.1 (min: 4-max: 12) months. The most common time was at six months ($n=28$). However, 52.4% of patients began complementary feeding after eight months.

When classification of children's weight was asked to mothers, all of them thought that their children were wasted (Figure 1). So 69.5% of the mothers' had a false perception of their child's feeding status. The characteristics of children, characteristics of feeding during infancy period and characteristics of mothers were summarized in Table II, III and IV.

Discussion

Poor appetite is a common symptom in childhood. In the evaluation of pediatric patients admitted with poor appetite it is important to record a detailed diet, developmental and family history. As growth and development continues in children they can be affected by nutritional deficiencies more than other age groups. The percentage of healthy children admitted with the complaint of poor appetite is 20-35% (10).

In our study group all children defined as wasted by their mothers were found to be mostly normal weight. This finding makes us think that the energy content consumed per meal by children is sufficient. In a study, the frequency of eating and portion sizes of children were compared and the energy content was found to be inversely proportional to the portion size in children up to 11 months of age (11). As a result, while the mother may think that her children don't eat, the child may consume small portions with high energy content. Fox et al. (11) reported that children can control their own energy in take, therefore to insist on feeding a child can damage this control. Similarly, Kral et al. (12) showed that children aged 3-6 years can regulate their energy intake.

Families may show more interest in their first child. In our study most of the patients (32.4%) were the eldest child in the family. As the number of children increases, parents' experience increases. However, individual care and attention to each child may decrease. Bayrı et al. (13) reported that as the number of siblings increase the incidence of malnutrition also increases. However, in our study there was no statistically significant difference between number of siblings and BMI percentiles of patients.

Studies showed that weight status of boys are more likely to be underestimated by parents compared to girls (14,15). Social values seem to be effective in this respect. While weight and body image of girls are more considerable by mothers, it is thought to be a physical advantage in terms of boys. In the present study 51% of children were girls and there was no difference between sexes with respect to BMI.

Variables	Mean ± SD
Age (years)	8.2±1.9
Body weight (kg)	23.8±5.7
Height (cm)	124.1±11.6
BMI percentiles	15.2±1.5
Mother age	33.3±6.4
Birth weight (gr)	3092.9±465.5
Duration of breastfeeding (mo) *	15.1±8.2
Duration of formula intake (mo) **	15.5±7.7
Timing of complementary feeding (mo)	7.9±2.1
Timing of beginning cow's milk feeding (mo)***	11.0±5.9
Number of children in the family	4.1±2.0
Total number of children	105

*: 10 nonbreastfed children, **: 61 non formulafed children, ***: 64 not intake of cow's milk

	Group 1 (n=32)	Group 2 (n=73)	
Variables	n (%)	n (%)	p*
Child's age group			
6-12 years	29 (29.6)	69 (70.4)	0.433
≥12 years	3 (42.9)	4 (57.1)	
Sex			
Girls	15 (27.8)	39 (72.2)	0.537
Boys	17 (33.3)	34 (66.7)	
Delivery type			
NSVD	29 (33.7)	57 (66.3)	
C/S	3 (15.8)	16 (84.2)	0.171
Birth weight			
<2500 g.	2 (28.6)	5 (71.4)	
2500-4000 g.	29 (30.2)	67 (69.8)	0.829
≥4000 g.	1 (50.0)	1 (50.0)	
Total number of children	32 (30.5)	73 (69.5)	105

*: Chi-Square Tests, Group 1: Children who were wasted according to BMI measurement, Group 2: Children who were normal in weight according to BMI measurements, NSVD: Normal spontaneous vaginal delivery, C/S: Caesarean section

	Group 1 (n=32)	Group 2 (n=73)	
Variables	Mean ± SD	Mean ± SD	p*
Duration of breastfeeding (mo) ^a	14.90±8.69	15.24±8.03	0.886
Duration of formula intake (mo) ^b	15.00±5.02	14.00±10.49	0.949
Timing of complementary feeding (mo)	6.83±2.14	7.75±2.53	0.572
Timing of beginning cow's milk feeding (mo) ^c	10.10±7.09	11.33±6.73	0.376
Total number of children	32	73	105

Group 1: Children who were wasted according to BMI measurement, Group 2: Children who were normal in weight according to BMI measurements, a: Nonbreastfed children was 2 for group 1 and 8 for group 2, b: Non formula fed children was 18 for group 1 and 43 for group 2, c: 22 children had not intaken of cow's milk for group 1 and 42 for group 2

Table IV. Mothers' characteristics in groups

Variables	Group 1 (n=32)		Group 2 (n=73)		p
	Mean±SD	Median (min-max)	Mean±SD	Median (min-max)	
Mother age	33.84±6.83	32.00 (24.00-47.00)	33.07±6.29	32.00 (21.00-50.00)	0.777**
	n	%	n	%	p
Mother age					
20-35 years	23	31.5	50	68.5	
>35 years	9	28.1	23	71.9	0.729*
Gravida of pregnancy					
First	10	29.4	24	70.6	
Second	7	35.0	13	65.0	0.888*
≥3	15	29.4	36	70.6	
Gestational age at birth (wk)					
<37	-	-	5	100	
≥37	32	32.0	68	68.0	0.320*
Mother's education status					
≤8 years	18	32.1	38	67.9	
>8 years	14	28.6	35	71.4	0.692*

*: Chi-Square Tests, ** Mann-Whitney U Test group 1: Children who were wasted according to BMI measurement, Group 2: Children who were normal in weight according to BMI measurements

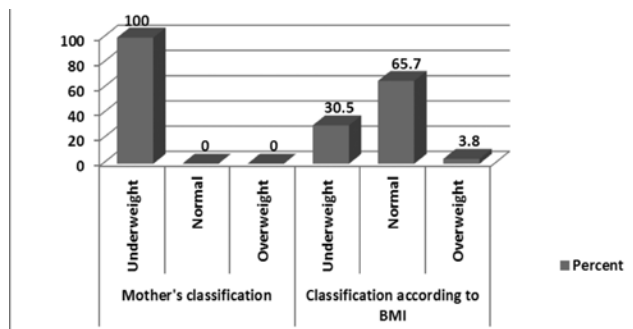


Figure 1. Measured BMI percentiles of children compared with mothers' thought

Lee et al. (16) found that appetite status reported by mothers was found to be compatible with calorie intake and weight gain among Korean school-age children. In the same study, the authors also emphasized that it is necessary to rely on the determination of parents regarding appetite state and that the regulation of nutritional status should be done according to the parents' opinions (16). In our study we found that 65.7% of children with poor appetite were in normal weight range according to BMI percentile, nevertheless 30.5% of children were wasted, a fact that should not be ignored.

In a survey including 455 children at 30-months old, 89 (20%) children had eating problems according to their parents, with the most common problems; 17% accepting

a limited number of nutrients, 13% prefer drink to eat, 8% picky eaters, 6% chewing a long time, and 5% of participants were not interested in meals. According to that study; eating behavior problems may be a normal part of children's development in this period. In the same study, it was also determined that children with eating problems were more wasted and shorter than the children without poor appetite and the study showed that drinking more milk may reduce appetite (17).

Children's characteristics such as age, sex and measured weight status as well as mothers' educational level all influence the maternal/parental misperception (6,7,18). Baughcum et al. (7) revealed that mothers educational level is associated with the classification of their children's weight status. High educational level implies a better knowledge. Moreover, high-educated mothers are more likely to be aware of the physical, social and emotional consequences of obesity, in both very young children and adults. Five (4%) mothers in our study were university graduated, 44 mothers were high school graduated. The low number of postgraduates in our study may indicate indirectly that high educational level of mothers is associated with more correct classification of their child's weight status or that high-educated mothers better compete with this situation. In the present study, mother's educational status of the patients was classified in two groups as less than 8 years and more than 8 years. There was no statistically significant difference according to 8 years between two groups.

Hendricks et al. (19) reported that mothers forcing children to eat is a risk factor affecting weight gain negatively.

Therefore, foods should be offered to children, but the child must make the decision as to which food nutrients should be eaten (20).

In a study it was detected that feeding with only breast milk for a long time may cause malnutrition (21). In our study, the average duration of feeding with breast milk only was 7.9 ± 2.1 (4-12) months.

Beginning complementary foods more after the sixth month may lead to malnutrition (22). It is known that a delay in starting complementary feeding can cause deficiency of energy and iron intake. A baby's growth rate gradually reduces after the 6th month but because of their increased activity, their energy requirements also increase. Chewing skills may not be gained if complementary food intake does not start on time and important nutritional problems may occur in the future. In addition, iron deficiency anemia is more common when complementary feeding is delayed after the 6th month. In our study, the average month for starting complementary feeding was 7.9 ± 2.1 . When participants were separated into two groups, complementary feeding begun before and after 8 months, there was no statistically significant difference between the two groups in terms of BMI percentiles.

Recent studies indicate that zinc supplementation can increase both body weight and height. This effect is more prominent in children with malnutrition and is also associated with increased appetite and decreased infections (23). In our study, the participants were treated with administration of zinc, multivitamins and iron for at least 1 month during the previous one year and did not notice a positive change in the level of appetite.

Our findings should be understood in the context of some limitations. First, this is a regional study of appetite and the results may not generalize to other areas of Turkey. Therefore, cases found in the top socio-economic group may not be sufficiently represented. Secondly, socioeconomic status was not extensively evaluated in this study.

Conclusion

In conclusion, children who apply to outpatient clinics with poor appetite should be evaluated to see if there is also growth and development retardation and whether there is an underlying organic cause or not. Many parents' expectations about feeding their children may differ from real nutrition and growth status. Usually, the children eat enough, but that does not fulfill parental expectations. Similar to our findings, although many children can have normal development, children may be brought to the physician because they reject parents' requests. In such cases, it should be explained to the family that the growth rate of each child is different and this capacity might be influenced by genetic factors. The child's diet must be arranged according to the needs of the child and the appetite of the child must be respected during feeding. Mistaken attitudes in child feeding may result in picky eating behavior or rejection of some foods.

References

1. Chatoor I, Ganiban J. Food refusal by infants and young children: diagnosis and treatment. *Cogn Behav Pract* 2003; 10: 138-46.
2. Campbell MW, Williams J, Hampton A, Wake M. Maternal concern and perceptions of overweight in Australian preschool-aged children. *Med J Aust* 2006; 184: 274-7.
3. Wright CM, Parkinson KN, Shipton D, Drewett RF. How do toddler eating problems relate to their eating behavior, food preferences, and growth? *Pediatrics* 2007; 120: e1069-75.
4. Kumanyika S, Wilson JF, Guilford-Davenport M. Weight-related attitudes and behaviors of black women. *J Am Diet Assoc* 1993; 93: 416-22.
5. Jain A, Sherman SN, Chamberlin LA, Carter Y, Powers SW, Whitaker RC. Why don't low-income mothers worry about their preschoolers being overweight? *Pediatrics* 2001; 107: 1138-46.
6. Maynard LM, Galuska DA, Blanck HM, Serdula MK. Mothers' perceptions of weight status of children. *Pediatrics* 2003; 111: 1226-31.
7. Baughcum AE, Chamberlin LA, Deeks CM, Powers SW, Whitaker RC. Mothers' perceptions of overweight preschool children. *Pediatrics* 2000; 106: 1380-6.
8. Carnell S, Edwards C, Croker H, Boniface D, Wardle J. Parental perceptions of overweight in 3-5 y olds. *Int J Obes (Lond)* 2005; 29: 353-5.
9. Neyzi O, Günöz H, Furman A, Bundak R, Gökçay G, Darendeliler F, Baş F. Türk çocuklarında vücut ağırlığı, boy uzunluğu, baş çevresi ve vücut kitle indeksi referans değerleri. *Çocuk sağlığı ve Hastalıkları Dergisi* 2008; 51: 1-14.
10. Ünal F. İştahsız Çocuğa Yaklaşım. *Güncel Pediatri* 2011; 9: 79-84.
11. Fox MK, Devaney B, Reidy K, Razarnorakoto C, Ziegler P. Relationship between portion size and energy intake among infants and toddlers: evidence of self regulation. *J Am Diet Assoc* 2006; 106: 77-83.
12. Kral TV, Stunkard AJ, Berkowitz RI, Stallings VA, Brown DD, Faith MS. Daily food intake in relation to dietary energy density in the free-living environment: a prospective analysis of children born at different risk of obesity. *Am J Clin Nutr* 2007; 86: 41-7.
13. Bayrı S. 0-24 Aylık Çocuklarda Malnütrüsyon Prevalansı ve Bunu Etkileyen Faktörler. Uzmanlık Tezi. Hacettepe Ün, Tıp Fak. Toplum Hekimliği Bilim Dalı. Ankara, 1980.
14. Jeffery AN, Voss LD, Metcalf BS, Alba S, Wilkin TJ. Parents' awareness of overweight in themselves and their children: cross sectional study within a cohort (EarlyBird 21). *BMJ* 2005; 330: 23-4.
15. Campbell MW, Williams J, Hampton A, Wake M. Mothers' concern and perceptions of overweight in Australian preschool-aged children. *Med J Aust* 2006; 184: 274-7.
16. Lee K, Song YM. Parent-reported appetite of a child and the child's weight status over a 2-year period in Korean children. *J Am Diet Assoc* 2007; 107: 678-80.
17. Wright CM, Parkinson KN, Shipton D, Drewett RF. How do toddler eating problems relate to their eating behavior, food preferences, and growth? *Pediatrics* 2007; 120: e1069-75.
18. Huang JS, Becerra K, Oda T, Walker E, Xu R, Donohue M, Chen I, Curbelo V, Breslow A. Parental ability to discriminate the weight status of children: results of a survey. *Pediatrics* 2007; 120: e112-9.
19. Hendricks K, Briefel R, Novak T, Ziegler P. Maternal and child characteristics associated with infant and toddler feeding practices. *J Am Diet Assoc* 2006; 106: 135-48.

20. Orrell-Valente JK, Hill LG, Brechwald WA, Dodge KA, Pettit GS, Bates JE. "Just three more bites": an observational analysis of parents' socialization of children's eating at mealtime. *Appetite* 2007; 48: 37-45.
21. Özçalışkan A, Gürel, G, Soysal T. Malnütrüsyonlu Çocuklarda Serum ve İdrarda Magnezyum Değerleri. *Atatürk Ün Tıp Fak Bül* 1979; 11: 199.
22. Örtten K. Yiğittaşı Sağlık Ocağı Bölgesi'nde 0-24 Aylık Çocukların Beslenme Büyüme ve Gelişme durumu Üzerine Bir Araştırma. Uzmanlık Tezi. Atatürk Ün.Tıp Fak. Halk Sağlığı Anabilim Dalı. Erzurum, 1984.
23. Umeta M, West CE, Haidar J, Deurenberg P, Hautvast JG. Zinc supplementation and stunted infants in Ethiopia, a randomised controlled trial. *The Lancet* 2000; 355: 2021-6.