

Determination of obesity, stunting, and nutritional habits in disabled children and adolescents

Fatma Nişancı Kılınç, Biriz Çakır, Emine Merve Ekici, Çiler Özenir

Department of Nutrition and Dietetics, Faculty of Health Sciences, Kırıkkale University, Kırıkkale Turkey

E-mail: birizcakir@kku.edu.tr

Summary. *Objective:* This study was conducted to determine obesity, stunting and nutritional habits in children and adolescents with disabilities. *Methods:* The study was carried out in 612 disabled children and adolescents in a 2-19 age group enrolled in 8 special education practice and rehabilitation institutions in Kırıkkale city center in Turkey. The general characteristics and eating habits of the participants were examined and body mass indexes (BMI) were calculated (n=527) to determine obesity and stunting. *Results:* Of the participants (n=612), 39.2% were female and 60.8% were male, of whom 39.4% were mentally disabled, 37.1% were physically disabled, 12.3% were mentally and physically disabled, and 11.3% were suffering other types of disabilities (speech disorders, learning disability, etc.). Of the participants (n=527), 18.8% were overweight and 17.8% were obese. The rate of overweight (Male:18.5%, Female:19.2%) and obesity (Male:19.1%, Female:15.9%) was higher in males compared to females ($p>0.05$). The correlation between BMI classification and disability type, disability level, and income level was not statistically significant ($p>0.05$). The rate of stunting was 24.5%, which was lower in males compared to females (Male:20.4%, Female:30.8%) ($p>0.05$). There was no statistically significant difference between height-for-age classifications and the type of disability ($p>0.05$); however, the difference between disability level and income level was significant ($p<0.05$). It was observed that 50.0% of the participants had eating problems and 45.5% had the habit of skipping breakfasts. *Conclusion:* In this study, it was observed that overweight, obesity, and stunting are very high in disabled children and adolescents. This field warrants further research.

Key words: disabled children and adolescents, obesity, stunting, nutrition

Introduction

It was reported by the World Health Organization that approximately 15% of the world population have disabilities, and approximately 93 million children (5.1%) under the age of 15 have a moderate and severe disability (1). Due to several factors, such as unhealthy eating habits and inadequate physical activity, overweight and obesity are seen more frequently in mentally and/or physically disabled children and adolescents compared to their non-disabled peers (2). In addition to obesity, undernutrition (low weight, stunting) is also an important health problem for disabled children and adolescents (3, 4).

The proportion of the disabled population to the total population in Turkey is 12.3%, of which, 4.2%

is in the 0-9 age group and 4.6% is in the 10-19 age group (5). There exist few studies reporting obesity, stunting, and eating habits in disabled children and adolescents in Turkey (3,6,7).

This study was conducted to determine obesity, stunting, and nutrition habits of children and adolescents with disabilities.

Materials and Methods

This is a descriptive study, which depicts the participants in an accurate way, involving disabled individuals who are enrolled in all special education, practice, and rehabilitation institutions in Kırıkkale city center

and it was carried out under the project supported by the Ministry of Family and Social Policy, The Support Program for the Disabled (EDES) in cooperation with the Provincial National Education Directorate under the coordination of Kırıkkale Governorship. The project was a comprehensive effort to determine the nutritional status of the disabled individuals and their families, and some of the data on disabled children and adolescents were reported in this article.

The universe of the study was 679 disabled children and adolescents in the age range of 2-19 years attending special education practice and rehabilitation institutions in Kırıkkale city center in 2016. Since the disabled children and adolescents have different types of disabilities, such as mental, hearing, visual, orthopedic, Down syndrome, and autism spectrum disorder, no sampling was carried out and the whole universe was covered by the complete count method. In total, 612 children and adolescents who had provided informed consent from their parents and 305 mothers who answered the questionnaire were included in the study (Table 1).

The heights and body weights of the participants were measured. However, some of them were uneasy when taking the measurements and did not allow a complete measurement taking process, and some others could not be measured at all due to their disability status. For this reason, the obesity and stunting status of 527 children and adolescents in whom both height and body weight measurements were taken together were evaluated.

TANITA BC418MA and TANITA BC545N (for < 7 years old) scales for body weight measurements and a TANITA portable stadiometer for height measurement were used for measurements, which were made in accordance with proper techniques (8). As no international comparable reference values were available in the assessment of anthropometric measurements for disabled children and adolescents, obesity and stunting were determined using the BMI and height-for-age percentiles for healthy children and adolescents according to WHO (9,10). Based on these criteria, the following categories were developed: <3. percentile underweight/stunted, ≥ 3 .- <15. percentile risk of underweight/short, ≥ 15 .-<85. percentile normal, ≥ 85 .-<97. percentile overweight / tall, and ≥ 97 . percentile obese/very tall.

In the study, the types of disabilities were classified as “mentally disabled”, “physically disabled”, “mentally and physically disabled”, and “other”. In the “other” group, those who are not mentally or physically disabled, but with language and speech disorders, special learning difficulties, or pervasive developmental disorders were included.

Monthly income status of the families was investigated and evaluated according to the official minimum wage in Turkey. The official net minimum wage as of 2016 in Turkey was 1300.99 TL (Turkish liras) (\$ 433.66) (11). Based on this number, lower than 1000 TL was classified as “very low”, 1000-2000 TL as “low”, 2001-4000 TL as “medium”, and above 4000 TL as “high” income level.

The data were assessed based on the responses to the questionnaire and anthropometric measurements. Descriptive statistics are provided as number and percentage for categorical variables and median (Interquartile Range-IQR) for continuous variables that do not fit normal distribution.

Diagonal tables were created to analyze categorical variables and Chi-square values were calculated on the appropriate tables. The Mann-Whitney U test was used for comparisons by gender, and the Kruskal-Wallis non-parametric variance analysis was used for comparisons by age groups for continuous variables. Mann-Whitney U test with Bonferroni correction was applied in post-hoc binary comparisons to determine the different age group when the variance analysis revealed a difference. For statistical analysis and calculations, IBM SPSS Statistics 22.0 (12) and MS-Excel 2010 programs were used. Statistical significance level was accepted as $p < 0.05$.

This study was approved by Kırıkkale University Ethical Committee of Social Sciences and Humanities Research.

Results

Among the children and adolescents participating in the study ($n=612$), 39.2% ($n=240$) were female and 60.8% ($n=372$) were male, and the median age was 11.0 (IQR=6.0) for both genders. Of the participants, 39.4% were mentally, 37.1% were physically, and 12.3%

were mentally and physically disabled, and 11.3% had other types of disabilities (language and speech impairment, special learning difficulty, etc.) (Table 1).

Based on the BMI values, 18.8% of the participants were overweight and 17.8% were obese. While overweight (M: 18.5%, F: 19.2%) and obesity (M: 19.1%, F: 15.9%) rates were higher in males than females, the difference was not statistically significant ($\chi^2=2.156$, $p=0.707$). There was no statistically significant difference between the BMI classification and

age groups ($\chi^2=14.924$; $p=0.246$). Of the participants, 14.2% had short stature and 24.5% were stunted. Short stature (M: 13.8%, F: 14.9%) was higher in males and stunting was higher in females (M: 20.4%, F: 30.8%), but the difference was not statistically significant ($\chi^2=8.169$, $p=0.086$). No statistically significant difference was found between height-for-age classifications and the age groups ($p > 0.05$) (Table 2).

Obesity (21.2%) was higher in mental and physical disabilities, and overweight (21.3%) was higher

Table 1. Demographic data of the disabled children and adolescents participating in the study

		Female n (%)	Male n (%)	Total n (%)	Female vs Male
Gender		240 (39.2)	372 (60.8)	612 (100.0)	
Age (Year)	2-5	25 (10.4)	35 (9.4)	60 (9.8)	$\chi^2=0.602$; $p=0.896$
	6-9	62 (25.8)	92 (24.7)	154 (25.2)	
	10-14	94 (39.2)	157 (42.2)	251 (41.0)	
	15-19	59 (24.6)	88 (23.7)	147 (24.0)	
	Total	240 (100.0)	372 (100.0)	612 (100.0)	
	Median (IQR)	11.0 (6.0)	11.0 (6.0)	11.0 (6.0)	$Z=0.079$; $p=0.937$
Disability Type	Mental	95 (39.6)	146 (39.3)	241 (39.4)	$\chi^2=4.332$; $p=0.229$
	Physical	97 (40.4)	130 (34.9)	227 (37.1)	
	Mental and physical	22 (9.2)	53 (14.2)	75 (12.3)	
	Others	26 (10.8)	43 (11.6)	69 (11.3)	
	Total	240 (100.0)	372 (100.0)	612 (100.0)	
Disability Level (%) [*]	0-25	14 (5.8)	24 (6.5)	38 (6.3)	$\chi^2=1.514$; $p=0.679$
	26-50	100 (42.0)	136 (37.1)	236 (39.0)	
	51-75	62 (26.1)	105 (28.6)	167 (27.6)	
	76-100	62 (26.1)	102 (27.8)	164 (27.1)	
	Total	238 (100.0)	367 (100.0)	605 (100.0)	
Education Level ^{*§}	Illiterate	42 (44.7)	57 (40.1)	99 (41.9)	$\chi^2=2.321$; $p=0.677$
	Literate	20 (21.3)	37 (26.1)	57 (24.2)	
	Primary school	17 (18.1)	32 (22.5)	49 (20.8)	
	Secondary school	9 (9.6)	10 (7.0)	19 (8.1)	
	High school	6 (6.4)	6 (4.2)	12 (5.1)	
	Total	94 (100.0)	142 (100.0)	236 (100.0)	
Income level [*]	Very low	45 (33.8)	52 (28.1)	97 (30.5)	$\chi^2=2.972$; $p=0.396$
	Low	58 (43.6)	90 (48.6)	148 (46.5)	
	Middle	24 (18.0)	39 (21.1)	63 (19.8)	
	High	6 (4.5)	4 (2.2)	10 (3.1)	
	Total	133 (100.0)	185 (100.0)	318 (100.0)	

^{*}: Only those participated in the survey were included in the calculations.

[§]: 6-year and younger children were not included.

Table 2. The distribution of the disabled children and adolescents participating in the study based on BMI values by age group and gender, height by age classification

Age (Year)	Gender (n)	BMI					Height-for-age					χ^2 ; p	
		Total n (%)	Under-weight n (%)	Risk of under-weight n (%)	Normal n (%)	Overweight n (%)	Obese n (%)	χ^2 ; p	Stunted n (%)	Short n (%)	Normal n (%)		Tall n (%)
2-5	Female	18	4 (22.2)	0 (0.0)	7 (38.9)	5 (27.8)	2 (11.1)	10 (55.6)	1 (5.6)	6 (33.3)	1 (5.6)	0 (0.0)	N/A
	Male	28	3 (10.7)	1 (3.6)	16 (57.1)	4 (14.3)	4 (14.3)	9 (32.1)	2 (7.1)	13 (46.4)	3 (10.7)	1 (3.6)	N/A
	Total	46	7 (15.2)	1 (2.2)	23 (50.0)	9 (19.6)	6 (13.0)	19 (41.3)	3 (6.5)	19 (41.3)	4 (8.7)	1 (2.2)	
6-9	Female	53	5 (9.4)	5 (9.4)	27 (50.9)	7 (13.2)	9 (17.0)	18 (34.0)	6 (11.3)	20 (37.7)	8 (15.1)	1 (1.9)	0.348;
	Male	79	5 (6.3)	7 (8.9)	39 (49.4)	12 (15.2)	16 (20.3)	16 (20.3)	15 (19.0)	43 (54.4)	2 (2.5)	3 (3.8)	0.555
	Total	132	10 (7.6)	12 (9.1)	66 (50.0)	19 (14.4)	25 (18.9)	34 (25.8)	21 (15.9)	63 (47.7)	10 (7.6)	4 (3.0)	
10-14	Female	83	5 (6)	8 (9.6)	37 (44.6)	19 (22.9)	14 (16.9)	20 (24.1)	16 (19.3)	44 (53.0)	1 (1.2)	2 (2.4)	2.722;
	Male	135	9 (6.7)	15 (11.1)	55 (40.7)	28 (20.7)	28 (20.7)	25 (18.5)	17 (12.6)	82 (60.7)	9 (6.7)	2 (1.5)	0.099
	Total	218	14 (6.4)	23 (10.6)	92 (42.2)	47 (21.6)	42 (19.3)	45 (20.6)	33 (15.1)	126 (57.8)	10 (4.6)	4 (1.8)	
15-19	Female	54	2 (3.7)	6 (11.1)	29 (53.7)	9 (16.7)	8 (14.8)	16 (29.6)	8 (14.8)	30 (55.6)	0 (0.0)	0 (0.0)	3.187;
	Male	77	7 (9.1)	14 (18.2)	28 (36.4)	15 (19.5)	13 (16.9)	15 (19.5)	10 (13.0)	48 (62.3)	3 (3.9)	1 (1.3)	0.074
	Total	131	9 (6.9)	20 (15.3)	57 (43.5)	24 (18.3)	21 (16.0)	31 (23.7)	18 (13.7)	78 (59.5)	3 (2.3)	1 (0.8)	
Total	Female	208	16 (7.7)	19 (9.1)	100 (48.1)	40 (19.2)	33 (15.9)	64 (30.8)	31 (14.9)	100 (48.1)	10 (4.8)	3 (1.4)	8.535;
	Male	319	24 (7.5)	37 (11.6)	138 (43.3)	59 (18.5)	61 (19.1)	65 (20.4)	44 (13.8)	186 (58.3)	17 (5.3)	7 (2.2)	0.074
	Total	527	40 (7.6)	56 (10.6)	238 (45.2)	99 (18.8)	94 (17.8)	129 (24.5)	75 (14.2)	286 (54.3)	27 (5.1)	10 (1.9)	

N/A: incalculable

in physical disabilities, but no statistically significant difference was found between BMI classification and the type of disability, disability level, and income level ($p > 0.05$). Stunting was the highest (30.3%) in participants with mental and physical disabilities, and there was no statistically significant difference between height-for-age classifications and the type of disability ($\chi^2 = 15.699$; $p = 0.205$).

On the other hand, there was a significant difference between height classification and disability and income levels ($\chi^2 = 27.782$; $p = 0.006$ and $\chi^2 = 8.208$; $p = 0.004$, respectively). It was observed that stunting rate in those with over 50% disability level was significantly higher than that of those with 50% or less disability level ($\chi^2 = 19.903$; $p = 0.001$). Similarly, average height was lower in those with low or very low income compared to those with middle or high income level ($\chi^2 = 10.219$; $p = 0.037$) (Table 3).

Fifty percent of the participants had eating problems, 38.5% of them had a habit of skipping a main meal, the most frequently skipped meal was breakfast (45.5%), and 18.8% of them consumed rice-pasta, 18.8% potato chips-French fries, 13.2% chocolate-wafers, and as drinks, 37.6% consumed milk-ayran (yoghurt with water), 27.4% cola-carbonated beverages, and 24.0% consumed prepackaged fruit juices. In addition, 8.5% of the participants were found to be using nutritional supplements (Table 4).

Discussion

In this study, the majority of the participants were male, and mental disability (39.4%) was higher than physical disability (37.1%), although not statistically significant, and the level of disability of the 54.7% of the participants were over 50%. Similarly, it was reported by Kaya et al. that

Table 3. The distribution of the disabled children and adolescents based on BMI values by disability type, disability level, and income level, and height-for-age.

Disability Type	BMI					Height-for-age					χ^2 ; p	
	Total n	Under weight (%)	Risk of underweight (%)	Normal n (%)	Over weight n (%)	Obese n (%)	χ^2 ; p	Stunted n (%)	Short n (%)	Normal n (%)		Tall n (%)
MD	223	16 (7.2)	24 (10.8)	103 (46.2)	35 (15.7)	45 (20.2)		41 (18.4)	31 (13.9)	133 (59.6)	14 (6.3)	4 (1.8)
PD	183	21 (11.5)	15 (8.2)	82 (44.8)	39 (21.3)	26 (14.2)	20.072;	53 (29.0)	23 (12.6)	96 (52.5)	6 (3.3)	5 (2.7)
MPD	66	1 (1.5)	6 (9.1)	33 (50.0)	12 (18.2)	14 (21.2)	0.066	20 (30.3)	13 (19.7)	29 (43.9)	4 (6.1)	0 (0.0)
Others	55	2 (3.6)	11 (20.0)	20 (36.4)	13 (23.6)	9 (16.4)		15 (27.3)	8 (14.5)	28 (50.9)	3 (5.5)	1 (1.8)
Total	527	40 (7.6)	56 (10.6)	238 (45.2)	99 (18.8)	94 (17.8)		129 (24.5)	75 (14.2)	286 (54.3)	27 (5.1)	10 (1.9)
0-25	31	2 (6.5)	3 (9.7)	17 (54.8)	5 (16.1)	4 (12.9)		3 (9.7)	3 (9.7)	20 (64.5)	5 (16.1)	0 (0.0)
26-50	223	13 (5.8)	33 (14.8)	100 (44.8)	39 (17.5)	38 (17.0)	16.456;	39 (17.5)	34 (15.2)	132 (59.2)	14 (6.3)	4 (1.8)
51-75	142	8 (5.6)	10 (7.0)	66 (46.5)	31 (21.8)	27 (19.0)	0.171	42 (29.6)	21 (14.8)	70 (49.3)	6 (4.2)	3 (2.1)
76-100	126	17 (13.5)	10 (7.9)	52 (41.3)	23 (18.3)	24 (19.0)		42 (33.3)	17 (13.5)	63 (50.0)	2 (1.6)	2 (1.6)
Total	522	40 (7.7)	56 (10.7)	235 (45.0)	98 (18.8)	93 (17.8)		126 (24.1)	75 (14.4)	285 (54.6)	27 (5.2)	9 (1.7)
Very low	69	8 (11.6)	4 (5.8)	35 (50.7)	9 (13.0)	13 (18.8)		25 (36.2)	14 (20.3)	29 (42.0)	1 (1.4)	0 (0.0)
Low	105	6 (5.7)	12 (11.4)	48 (45.7)	22 (21.0)	17 (16.2)	19.228;	31 (29.5)	7 (6.7)	63 (60.0)	3 (2.9)	1 (1.0)
Middle	53	3 (5.7)	0 (0.0)	23 (43.4)	14 (26.4)	13 (24.5)	0.083	19 (35.8)	3 (5.7)	26 (49.1)	2 (3.8)	3 (5.7)
High	9	0 (0.0)	1 (11.1)	3 (33.3)	3 (33.3)	2 (22.2)		0 (0.0)	2 (22.2)	4 (44.4)	1 (11.1)	2 (22.2)
Total	236	17 (7.2)	17 (7.2)	109 (46.2)	48 (20.3)	45 (19.1)		75 (31.8)	26 (11.0)	122 (51.7)	7 (3.0)	6 (2.5)

MD: Mental Disability, PD: Physical Disability, MPD: Mental and Physical Disability, Others: Speech impairment, learning disability, etc.

most of the disabled individuals under 18-year age group were males, the rate of mental disability was higher than that of other types of disabilities, and 53.4% of the participants had over 60% disability level (13). The World Health Organization reported that disability is more common at low socio-economic levels (1). In this study, similarly, the majority of the families (77.0%) were found to have “very low” and “low” income levels.

Rimmer et al. reported that overweight and obesity were seen more frequently in male children and adolescents with disability (14), Llyod et al. reported that they were seen more frequently in girls (15), and Mikulovic et al. reported that there is no difference between genders (15). In addition, overweight and obesity have been reported to increase with age (3,14,15). Overweight and obesity were reported to be similar in 8-11 and 12-18 age groups (15). In the present study, obesity was found to be higher in males than females, although not statistically significant, which is consistent with the literature. In terms of age groups, obesity was higher in 10-14 age group compared to the other age groups.

In addition to obesity, low weight and stunting are also health problems seen in disabled children and adolescents (3,4). In Iran, it was reported that stunting rate was high in 6-12 year-old physically disabled children and it was more common in females (F:46.3%, M:38.5%) (4). In another study, it was stated that the rate of stunting in 10-18 year age group mentally handicapped individuals was 18.6%, it increased with age, and it was higher in females (F: 37.5%, M: 21.7%) (3). In the present study, general stunting frequency was found to be high (24.5%) and it was higher in females, but the difference was not statistically significant (p>0.05). It is considered that the reasons for the high incidence rate of stunting in the present study may be the nutritional problems that adversely affect normal growth and development in children and adolescents with disabilities and poor income levels of families. In addition, 10.6% (n=56) of the participants were found to be both overweight/obese and stunting/short, and 23.1% (n=122) were found to be normal in terms

Table 4. The distribution of the eating habits of the disabled children and adolescents (n=201)*

	n (%)	
Eating problems (lack of appetite, chewing, swallowing problems, being obsessive /addictive about certain foods etc.)	100 (50.0)	
Skipping main meals	77 (38.5)	
The most frequently skipped meal (n=85)	Breakfast	35 (45.5)
	Lunch	36 (46.7)
	Dinner	6 (7.8)
Habit of having snacks	173 (86.5)	
The number of having snacks(times/day) (n=203)	1	48 (27.7)
	2	68 (39.4)
	3	41 (23.7)
	>3	16 (9.2)
	Dairy (Yoghurt, cheese)	9 (7.0)
Food types preference (n=144)	Meat, chicken, fish	16 (12.5)
	Soudjouk, salami, sausage	6 (4.7)
	Egg	6 (4.7)
	Rice, pasta, soup	24 (18.8)
	Pie, pastry	6 (4.7)
	Fresh fruit	15 (11.7)
	Dessert (rice pudding, pudding etc.)	5 (3.9)
	Chocolate, wafers	17 (13.2)
	Potato chips, French fries	24 (18.8)
	Milk, ayran	55 (37.6)
Drink types preference (n=164)	Water	9 (6.2)
	Tea	7 (4.8)
	Prepackaged fruit juices	35 (24.0)
The use of nutritional supplements (n= 17)	Cola, carbonated beverages	40 (27.4)
		17 (8.5)
The type of supplement used (n=17)	Mineral supplement	2 (11.8)
	Vitamin supplement	8 (47.1)
	Mineral-vitamin supplement	4 (23.5)
	Other (omega-3, herbal products, etc.)	3 (17.6)

*Only those participated in the survey were included in the calculations.

of height and body weight with regard to age and sex. This outcome suggests that more effective efforts should be carried out to improve the nutritional status of children and adolescents with disabilities.

It was reported that the prevalence of obesity is higher in children and adolescents with disabilities compared to their peers (17). In a meta-analysis study conducted by Maiano et al., mentally disabled adoles-

cents were reported to have a 1.54 fold higher risk of overweight than their non-disabled peers, while obesity was reported to be 1.80 fold more likely to occur in the same group (18). In this study, there was no statistically significant difference between BMI classifications and the type of disability. Banks reported that poor living conditions brought by poverty, especially in low and middle-income countries, increased the risk

of disability (19). Overweight and obesity prevalence in this study is higher in high-income families in the present study, but this result is not statistically significant ($p > 0.05$). Similarly, stunting was higher in both mentally and physically disabled participants compared to the other three disability types (30.3%), and there was no statistically significant difference between height-for-age values and disability types ($p > 0.05$). In a previous study, stunting was observed in 12.8% of the healthy children in a 7-15 year age group, and stunting rate was reported to be higher in a school with a low socioeconomic level compared to a school with a high socioeconomic level (20).

In the present study, there was a statistically significant difference between height-for-age and disability and income levels ($p < 0.05$). Stunting in children and adolescents with over 50% disability level was significantly higher compared to those with 50% or less disability level ($p < 0.05$). On the other hand, children with "very low" and "low" income levels were found to be shorter than children with "middle" and "high" income levels ($p < 0.05$).

The eating problems of the disabled people, such as difficulties in chewing and swallowing, being addictive to certain food types, and being obsessive about certain food types, cause them to take inadequate or excessive energy (21). In the present study, it was observed that 50.0% of the participants had various eating problems. Inadequate and unbalanced eating habits of the disabled children and adolescents have been shown in various studies (4,22,23). In this study, the high prevalence of stunting and obesity also suggest that the disabled children and adolescents may not have adequate and balanced nutrition. Inadequate quality and quantity of dietary intake of the disabled people affects their health negatively (22). It is reported that 3 main meals should be consumed for adequate and balanced nutrition, and it is also declared that if necessary, snacks should be consumed, and because breakfast is the first source of energy in a day, it should not be skipped for continuation of cognitive and physical performance (24). In the present study, it was observed that the majority of the disabled children and adolescents had 3 main meals and 2 snacks. Of those who skipped the main meal, 45.5% skipped the breakfast, the most important meal of the day. Banta et

al. reported that mentally disabled children in the age range of 5-11 years consume more soda/sugary drinks, fried potatoes and fast-food compared to their mentally non-disabled peers (23). In this study, In the present study, it was observed that carbohydrate foods, such as rice and pasta, and oily foods (potato chips, French fries) were preferred by the disabled children and adolescents, followed by sugary (chocolate, wafer) foods. It was determined that milk and ayran were the most preferred beverages, and the second most frequent beverage group was cola and carbonated beverages.

It is known that some families have their children use vitamin / mineral supplements because of the dietary problems their children are suffering. In a previous study, 56% of the children with autism spectrum disorder received multivitamin / mineral supplement (25). In the present study, the consumption of nutritional supplementation was not common (8.5%).

In the present study, it was observed that overweight, obesity, and stunting are very high among the disabled children and adolescents. In order to prevent this, families should gain consciousness about adequate and balanced nutrition, and feeding of the disabled, and should cooperate with a multidisciplinary health team including a dietitian. There is a need for large-scale research regarding the assessment criteria of the anthropometric parameters and the assessment of the nutritional status of the disabled children and adolescents.

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Correspondence:

Biriz Çakır, PhD

Department of Nutrition and Dietetics

Faculty of Health Sciences, Kırıkkale University,

Kırıkkale, Turke

Tel: +903183573738/7540

E.mail: birizcakir@kku.edu.tr