Progress in Nutrition 2019; Vol. 21, Supplement 1: 104-114 DOI: 10.23751/pn.v21i1-S.5582

Original article

Evaluation of nutritional status and social conditions of street children: Kayseri province from Turkey

Gülşah Kaner[1], Neriman inanç[2], Gizem Ünal[2], Emine Sivri[2], Nilgün Seremet Kürklü[3]

[1]İzmir Katip Çelebi University, Faculty of Health Sciences, Department of Nutrition and Dietetics; [2]Nuh Naci Yazgan University, Faculty of Health Sciences, Department of Nutrition and Dietetics; [3]Akdeniz University,Faculty of Health Sciences, Department of Nutrition and Dietetics

Summary. *Aim:* To evaluate the nutritional status and social conditions of a group of street children in Central Anatolia. *Methods:* A general questionnaire was applied to 75 children via a face-to-face interview. Body weight and height were measured and body mass index was calculated. Children were distributed according to the height for age and weight for height by using WHO 2007 reference criteria. *Results:* The majority of the children were boys. Approximately half of the children were attending primary school. Incidence of working on the street was higher in 10-12 age groups. It was seen that 37.3% of the children working on the street were having 2 main meals, while 56.0% were having 3; that the 72.0% of them were skipping meals. The nutritional status of children did not seem satisfactory, since none of them gained sufficient energy and nutrients intakes. The distribution of height-for-age showed that 12.0% of the children were stunted. More than half of the children were normal weight; while 36.0% of them were overweight. *Conclusion:* The children who are put to work in the streets do not have a balanced diet. This subject is in need of extensive studies with control groups including all the cities in Turkey.

Key words: nutritional status, street children, social conditions

Introduction

United Nations International Children's Emergency Fund (UNICEF) defines a street child as someone in whose life the street takes a bigger place than a family and means a home without any protection, superintendence or guidance from responsible grownups (1). According to UNICEF, there are two overlapping groups of street children: On-the-street and of-the-street. The former includes children who are street-based but primarily spend the night at home while the latter consists of children who seldom, if ever, return to their homes. As the general agreement in the literature points out, majority of the street children are in on-the-street group rather than of-the-street one (2-5).

Recently, the number of children who live and/or work on the streets of Turkey has prominently increased. Many parents compel their children into working on the streets in order to get financial support to family budget. Some of the children who have abusive families come to streets and seek shelter. Since many of them cannot have a chance to receive education, these children have to drop out of school and are left with little hope of becoming qualified for a skilled job. Moreover, they become vulnerable to various dangers such as maltreatment, diseases, sexual and/or physical abuse, malnutrition and substance abuse (6).

Nutrition, which plays a crucial role in development and growth, was usually absent. By eating only to be full, they met their major need. A healthy and balanced diet was not their main purpose (7). Up to now, no accurate data has been collected regarding the nutritional status of street children. Irregular dietary habits and food quality which is lower than the nutri-

tional standard cause these children to be vulnerable to various health problems. Nutritional deficiency, which causes the body's natural immune system to weaken, is one of the factors.

Such statements regarding the street children's nutritional status are mostly obtained from anectodes, estimates and assumptions for the number of surveys having tried to gather direct anthropometric data and food records to describe their status is very low. This paper introduces a study which is the first to evaluate the nutritional status and social conditions of a group of street children in Kayseri, Central Anatolia, Turkey.

Figure 1. Kayseri, a city in the Central Anatolia of Turkey

Material and Methods

The study was a descriptive study performed in Kayseri, a city in the Central Anatolia of Turkey (Figure 1). The total population at the time of the study was 1.341.056 million and of the 5-19 year age group was 342.907 (8).

The data was collected from 75 children (all of them were on the street children) who referred to the Society for Street Children of Kayseri between October 5, 2015 and June 30, 2016. Written consent was obtained from all participants at the beginning of study which was approved by the Ethics Committee of the Nuh Naci Yazgan University, Kayseri, Turkey (Approval number: 23/03/2015). This study was supported by The Scientific and Technological Research Council of Turkey (TUBITAK) 2209-A Projects Funding Program (Approval number: 1919B011500638).

Data collection

Design of the questionnaire

In the study, a general questionnaire was applied to all children via a face-to-face interview. The questionnaire was validated, and designed to probe for detail on food frequency, dietary nutrient intakes, and anthropometric status.

Anthropometric measurements

Body weight was measured using a digital scale (Oncomed SC 102) with an accuracy of ± 100 g. All subjects were weighed without shoes and in light clothes. Height was measured using a tape measure with the subjects standing barefoot, keeping their shoulders in a relaxed position, arms hanging freely and held in the Frankfort horizontal plane (9). Body mass index (BMI) was calculated.

The percentile evaluation of the BMI values and the height measurements has been carried out according to age and gender by using the "WHO-2007 reference values for 5-19 age group". According to age and sex specific BMI percentiles (WHO), children were classified as severely underweight (<3rd percentile), underweight (≥3rd - <15th percentile), normal weight (≥15th - <85th percentile), overweight (≥85th - <97th percentile), and obese (≥97th percentile). According to age and sex specific height for age percentiles, children were classified as severely stunted (<3rd percentile), stunted (≥3rd - <15th percentile), normal height (≥15th - <85th percentile), tall (≥85th - <97th percentile), very tall (≥97th percentile) (10).

Dietary assessment

The dietary intake of the participants were assessed by 24-hour dietary recall tool. Participants were interviewed for record all the foods and beverages consumed previous 24 hours. A Nutrient Database (BeBiS, Ebispro for Windows, Germany; Turkish Version/BeBiS 7) was used to produce dietary data. Energy and nutrient intake data were compared with the Dietary Guidelines of Turkey (11,12). Portion sizes were estimated with 2-dimensional food models and a food atlas including 3 to 5 portion size images of 120 foods (11,13).

Statistical Analysis

All data collected from the research was evaluated by using the SPSS 22.0 software. Simple and cross distributions of the counted data were given as number and percentage tables. Differences among groups were analyzed using the "chi-square test". Descriptive statistics (mean and standard deviation) were calculated for data such as anthropometric measurements, daily consumption amount of food groups, energy and nutrients intake, and number of meals. Independent Samples t-test was used for normally distributed data, and Mann-Whitney U test for non-normally distributed data.

Intake percentages (%) were calculated by comparing daily average consumption of energy and nutrition elements to their suggested amounts (Dietary Guidelines of Turkey) with regards to age and sex. Meeting percentages of recommended dietary allowance were given. According to these values, intake levels between 67-133% were accepted as sufficient, ≤67% as insufficient and ≥133% as excessive (11).

Results

The majority of the children were reported to be boys and older than 10. It was detected that approximately half of the children (48.0%) were attending primary school and also working on the street whereas 29.3% dropped out of school. It was observed that the incidence of working on the street was higher in 7-9 (29.3%) and 10-12 (32.0%) age groups and that half of the children (50.7%) were selling tissues, gums and flowers on the street. Out of total, 50.7% of the children stated that their purpose of working was to provide financial support for their families and 24.0% of them aimed to meet their needs. Approximately half of the children (42.7%) indicated that the monthly income they earned was lower than 150 TRY (47 Euros) (Table 1).

The general characteristics of the children's families are demonstrated in Table 2. It was observed that one third of the children's parents were between 36-40 years and almost half of them were primary school graduates. Whereas the majority of the children's mothers were housewives (86.7%), their fathers were self employed workers (50.7%). 60.0% of the children reported that their family incomes were more than 600 TRY (189 Euro) per month.

It was seen that 37.3% of the children working on the street were having 2 main meals, while 56,0% were

Table 1. General characteristics of children

	n	%
Age (years)		
7-9	8	10.6
10-13	32	42.7
14-18	35	46.7
X±SD	12.7±2.87	
Gender		
Boy	63	84.0
Girl	12	16.0
Education status		
Never attended	7	9.3
Attending primary school	36	48.0
Primary school graduate	10	13.3
Left school	22	29.3
Occupation of the children		
Bagels seller	18	24.0
Shoe polisher	10	13.3
Handkerchief, gum, flower seller	38	50.7
Paper, garbage collector	4	5.3
Porter	5	6.7
Reasons for working		
Contribution to the family	38	50.7
Family pressure	5	6.7
Money saving	5	6.7
Getting a profession	9	12.0
Satisfying one's own needs	18	24.0
Monthly income		
≤150 TRY (47 Euro)	32	42.7
151-250 TRY (48-77 Euro)	17	22.7
251-350 TRY (78-108 Euro)	15	20.0
≥351 TRY (109 Euro)	11	14.7

Table 2. General characteristics of children's family

	n	%
Maternal age (years)		
≤35	23	30.7
36-40	29	38.7
41-45	15	20.0
≥46	8	10.6
Paternal age (years)		
≤35	7	9.3
36-40	24	32.0
41-45	24	32.0
≥46	20	26.6
Mother's educational status		
Illiterate	16	21.3
Literate	22	29.3
Primary school	35	46.7
High school	2	2.7
Father's educational status		
Illiterate	14	18.7
Literate	18	24.7
Primary school	37	49.3
High school	6	8.0
Mother's occupation		
Housewife	65	86.7
Self-employment	7	9.3
Worker	3	4.0
Father's occupation		
Unemployed	13	17.3
Self-employment	38	50.7
Officer	1	1.3
Worker	23	30.6
Family income (per month)		
≤200 TRY (65 Euro)	2	2.7
201-400 TRY (66-125 Euro)	8	10.7
401-599 TRY (126-188 Euro)	20	26.7
≥600 TRY (189 Euro)	45	60.0
Number of family members		
≤3	5	6.7
4-6	56	74.7
7-9	10	13.3
≥10	4	5.3

having 3; that the majority of them (72.0%) were skipping meals, and that the most skipped one was lunch (58.2%). Most of the children who were skipping meals stated that the reason was for doing so were the lack of desire to eat (38.2%) and no time because of working (23.6%). It was found that 56.0% of the children were having snacks and they mostly preferred snacks such as biscuits, crackers (42.9%) or beverages (30.9%) (Table 3).

Table 3. Distribution of the children according to number of meals, status of skipping meals, and reasons for skipping meals

	n	%
Number of meals		
2	28	37.3
3	42	56.0
4	3	4.0
≥5	2	2.7
Skipping meals		
Yes	54	72.0
No	20	26.7
Sometimes	1	1.3
Skipped meals		
Breakfast	11	20.0
Breakfast and lunch	10	18.2
Lunch	32	58.2
Dinner	2	3.6
Reasons for skipping meal		
There is no one at home to prepare	5	9.1
I cannot find time to eat from working	13	23.6
I do not feel like to eat	21	38.2
I do not want to spend the money I earn	6	10.9
I do not have the habit	7	12.7
I do not always have enough money	3	5.5
Having snack		
Yes	42	56.0
No	33	44.0
The choice of food consumed as snacks		
Nuts	2	4.8
Bagels/pastry	9	21.4
Biscuit, cracker	18	42.9
Beverages	13	30.9

The daily average of energy and some nutrients of the children who were classified according to their age groups are demonstrated in Table 4; while meeting percentages of recommended dietary allowance (RDA) were given in Table 5. The distribution of children according to the sufficiency of their energy, protein, fiber, vitamin and mineral intake is displayed in Table 6.

It was detected that the great majority of the boys (87.3%) and girls (75.0%) cannot receive the daily energy they need. Likewise, one fourth of the boys (25.4%) and one third of the girls (33.3%) protein intake is not enough. Most of the boys cannot consume sufficient fiber (79.4%), vitamin C (69.8%) and phosphorus (65.1%). Almost all the boys (98.4%) and all of the girls (100.0%) cannot receive enough calcium. Furthermore, nearly all the girls (91.7%) take insufficient fiber. It was found that almost half of the boys (47.6%) and the majority of the girls (75.0%) cannot meet their iron recommendations.

Prevalence of the malnutrition is displayed in Table 7. It was found that more than half of the children (54.7%) were normal weight; while 36.0% of them were overweight according to their body mass index for age. In addition, according to their height for age, 70.7% of children were normal and 12.0% were stunted (Table 7).

Discussion

Both developed and developing countries face an increasing problem of children living and working on the streets. A great number of people have moved from rural areas to cities in Turkey because of financial challenges and, in some cases, social unrest. Families in poverty have mainly chosen the option of internal immigration to survive. Trying to adjust to the city life, those people confront with unemployment and being unqualified. As a result, street children have come out (14,15).

This phenomenon is similar to the current study's population. Majority of the children on whom the study was conducted were from multiple areas of Turkey. Although there are various and different studies on street children in Turkey, none of them concentrate on their nutritional status. This study which evaluates the general characteristics and nutritional status of the street children in Kayseri is quite unique in that it is the first study to have such an aim.

Studies conducted in Nigeria, Columbia, Ethiopia, Afghanistan and Brazil put forward that street children are between 9-12 years old (16,19). The mean age of children in this study was 12.7 years. This result is in compliance with the previous study's findings carried out in Zaheda (20), Southeast Iran; however, it is lower than that of another study in Tehran (21) and Turkey (15).

Boys constitute the biggest group among street children in low and middle-income countries (22-24). In general, they spent more time on the street compared to girls. Girls, on the other hand, tended to interact more with their families (23). It was hypothesized by a lot of studies that girls may have faced more severe breakdowns in their families since poverty-stricken boys are more likely to be sent to streets to supplement their family budget. Nevertheless, girls usually stay at home to help with chores (25). In accordance with the literature, it was detected in this study that the majority of these children (84.0%) were boys.

Street children, the participants, were not going to school as most of them were reported to drop out of primary school (24,26). Their literacy rates were observed to be low. In particular, one study reported that of-the-street children's literacy was lower than on-the-street ones (24,27-29). Although they often engage in work activities and long working hours, many of them managed to attend classes in the present study. This situation may have sprung from the fact that all of the participants were on-the-street children. A study in Jakarta (30), producing a similar outcome to ours indicated that 43 (48.0%) of the cildren were going to school when the study was carried out.

Parental backgrounds, occupations and incomes of the respondents, which were precessor variables helping us apprehend the pathways of street children, were also investigated. The information obtained from the repondents' parental backgrounds revealed that 17.3% of the fathers were unemployed. Nearly one fifth of them were not educated. Moreover, 50.0% of the working fathers were self-employed. On the other hand, the majority of the mothers (86.7%) were housewives. This incidence of unemployement among

Table 4. The average daily nutrients and energy intake of the children categorized by age groups

		Boys (n=63)		Girls (n=12)		
Energy and nutrients	**Age Groups**	**X**	**SD**	**X**	**SD**	**p**
Energy (kcal/day)	7-9	1192.5	287.14	1078.8	122.03	0.458
	10-13	1364.7	247.75	1373.7	290.42	0.932
	14-18	1731.3	419.14	1195.8	0.00	0.245
Protein (g/day)	7-9	42.0	13.85	33.5	17.91	0.320
	10-13	48.0	16.45	43.3	10.50	0.478
	14-18	65.8	26.04	37.8	0.00	0.323
Protein (%)	7-9	14.5	4.36	12.2	5.18	0.394
	10-13	14.2	4.02	13.0	3.05	0.434
	14-18	15.8	5.63	13.0	0.00	0.639
Fat (g/day)	7-9	42.2	13.87	42.2	2.41	0.999
	10-13	47.6	15.91	46.5	15.37	0.876
	14-18	68.2	23.79	46.7	0.00	0.403
Fat (%)	7-9	31.5	8.89	35.0	4.32	0.473
	10-13	30.6	8.16	30.1	8.85	0.877
	14-18	34.7	7.43	36.0	0.00	0.875
Carbohydrate (g/day)	7-9	31.5	8.89	139.7	18.98	0.491
	10-13	30.6	8.16	189.1	47.90	0.718
	14-18	34.7	7.43	141.0	0.00	0.275
Carbohydrate (%)	7-9	53.7	10.05	52.7	3.09	0.844
	10-13	54.9	8.00	56.8	9.80	0.584
	14-18	49.4	6.81	50.0	0.00	0.936
Fiber (g/day)	7-9	11.7	4.17	10.4	5.37	0.619
	10-13	16.2	5.55	14.9	6.03	0.604
	14-18	16.1	6.35	8.8	0.00	0.292
Vitamin C (mg/day)	7-9	25.3	27.46	7.7	3.65	0.229
	10-13	43.2	34.15	113.7	159.88	0.016*
	14-18	25.3	17.30	43.8	0.00	0.326
Calcium (mg/day)	7-9	373.6	175.92	283.1	89.05	0.342
	10-13	399.8	127.19	418.8	210.92	0.748
	14-18	456.5	154.28	425.2	0.00	0.843
Phosphorus (mg/day)	7-9	647.6	161.06	498.4	115.03	0.106
	10-13	726.2	173.78	671.2	181.58	0.450
	14-18	910.9	261.71	584.4	0.00	0.256
Iron (mg/day)	7-9	6.0	2.35	4.6	2.83	0.345
	10-13	7.6	2.45	7.4	2.11	0.809
	14-18	8.5	2.77	6.0	0.00	0.390
Zinc (mg/day)	7-9	5.9	2.83	4.1	1.27	0.243
	10-13	6.9	2.62	5.6	0.78	0.203
	14-18	8.8	4.07	5.6	0.00	0.461

Indipendent t test, P<0.05

Table 5. Percentages of recommended dietary allowance (RDA) of children

	Age groups	Boys (n=63)		Girls (n=12)		
		X	SD	X	SD	p
Energy	7-9	64.5	6.45	56.1	7.05	0.135
	10-13	52.6	12.29	54.1	6.71	0.841
	14-18	53.7	12.34	62.4	11.74	0.122
Protein	7-9	100.0	12.97	93.2	53.34	0.787
	10-13	88.0	33.95	75.1	11.99	0.524
	14-18	96.8	34.55	74.9	17.43	0.143
Fiber	7-9	49.3	14.65	38.0	24.60	0.440
	10-13	47.1	17.58	54.4	8.31	0.492
	14-18	59.3	20.49	54.7	27.22	0.635
Vitamin C	7-9	46.2	30.76	15.5	4.13	0.146
	10-13	50.3	47.04	74.1	17.40	0.397
	14-18	47.2	38.49	153.9	231.12	0.019*
Calcium	7-9	50.7	20.89	38.7	10.80	0.403
	10-13	31.2	11.70	38.2	4.79	0.323
	14-18	30.9	10.60	34.2	15.37	0.532
Phosphorus	7-9	126.5	19.77	102.8	27.09	0.199
	10-13	54.3	14.99	53.8	7.71	0.956
	14-18	66.2	16.85	52.5	14.96	0.075
Iron	7-9	58.4	7.75	45.7	34.72	0.436
	10-13	67.2	27.14	80.3	26.08	0.430
	14-18	84.8	23.32	40.3	13.28	0.000*
Zinc	7-9	108.5	18.67	88.0	28.34	0.256
	10-13	58.5	27.66	51.8	9.22	0.682
	14-18	72.9	28.69	56.5	7.55	0.180*

Independent t test p<0.05

the fathers was in line with the results of a previous study conducted in Adana, Turkey (15). However, it was lower than that of another study in Pakistan (31).

Street children make use of informal economies to make money such as being a vendor, parking attendant, street performer, garbage collector, recycler, shoe shiner, sex worker or petty thief (24-26, 32). In the study conducted on street children in the south of Turkey, it was seen that shoe polishing (22.0%), selling different goods (22.0%) and scavenging (33.0%) were the most prevalent works (15). In our study, it was observed that half of the children working on the street were selling tissues, gums and flowers.

Poverty was found to be the common precondition which leads them to start working in an early stage of their lives. Studies carried out in Brazil, Columbia, Ethiopia and Nigeria also affirm this (31). In harmony with the literature, this study reported that 50.7% of the street children engaged in working in order to provide their families with financial support.

Studies conducted in developed or developing countries highlight that the risk of substance use and addiction, which has been increased by urbanization and socialization, is higher especially in children (15). It has been found in a study conducted in İzmir and Ankara in Turkey, that respectively 20% and 19% of

Table 6. Distribution of the children according to their energy, protein, fiber, vitamin and mineral intake sufficiency

		Boys (n=63)		Girls (n=12)		p
Energy and nutrients		**n**	**%**	**n**	**%**	
Energy	Insufficient	55	87.3	9	75.0	
	Sufficient	8	12.7	3	25.0	0.270
	Excessive	-	-	2	-	
Protein	Insufficient	16	25.4	4	33.3	
	Sufficient	39	61.9	7	58.3	0.811
	Excessive	8	12.7	1	8.3	
Fiber	Insufficient	50	79.4	11	91.7	
	Sufficient	13	20.6	1	8.3	0.316
	Excessive	-	-	-	-	
Vitamin C	Insufficient	44	69.8	8	66.7	
	Sufficient	15	23.8	3	25.0	0.961
	Excessive	4	6.3	1	8.3	
Calcium	Insufficient	62	98.4	12	100.0	
	Sufficient	1	1.6	-	-	0.660
	Excessive	-	-	-	-	
Phosphorus	Insufficient	41	65.1	7	58.3	
	Sufficient	20	31.7	4	33.3	0.687
	Excessive	2	3.2	1	8.3	
Iron	Insufficient	30	47.6	9	75.0	
	Sufficient	33	52.4	3	25.0	0.082
	Excessive	-	-	-	-	
Zinc	Insufficient	37	58.7	9	75.0	
	Sufficient	24	38.1	3	25.0	0.523
	Excessive	2	3.2	-	-	

Pearson chi-square test p<0.05

the children smoke regularly (33). Likewise, in a study in Adana, Turkey, 19% of the children were found to be heavy or medium smokers (15). A research carried out on 105 youngsters who were living and working on the streets in Brazil, displayed that the 58% of them were smoking regularly and 25% of them were alcohol consumers (34). Also the present study shows that 29.3% of the children smoke regularly.

On-the-street children seemed to have more regular meals than of-the-street children. Children who stayed at home with their families usually had at least one meal with the family, before school or working time (30). The majority of the children reported that they had two or three meals a day, while some stated that they ate when they got hungry or when they had money. Suffering from hunger for long periods was not experienced by any of the children, as they usually shared their meals with their friends (30). In addition, this research demonstrated that more than half of the children (56.0%) consumed three main meals a day, however, the majority of them (72.0%) skipped meals and that the most skipped one was noon meal.

In the study in question, the nutritional status of children did not seem satisfactory, since none of them gained sufficient energy, protein and vitamins and minerals based upon their reports using 24-h recall dietary intake. For this reason, this matter needs a remarkable highlight, because the street children (the

Table 7. Prevalance of malnutrition among children

Nutritional status	n	%
Height for age (cm)		
<3. percentile (severely stunted)	2	2.7
≥3. - <15. percentile (stunted)	9	12.0
≥15. - <85. percentile (normal)	53	70.7
≥85. - <97. percentile (tall)	6	8.0
≥97. percentile (very tall)	5	6.7
Body mass index for age (kg/m²)		
<3. percentile (severely underweight)	-	-
≥3. - <15. percentile (underweight)	2	2.7
≥15. - <85. percentile (normal weight)	41	54.7
≥85. - <97. percentile (overweight)	27	36.0
≥97. percentile (obese)	5	6.7

respondents) are young and adolescents who still need a balanced nutrition for their growth. Otherwise, the deficiency can be a handicap for growing, if the consumption is not balanced with the needed calories for growing and other activities (35).

Several studies have displayed the participants' insufficient nutritional or growth status, mostly using measures of body mass index or stunting (15,24,26,31,36). Both males and females in the Philippines have been reported to be seriously underweight and under-height (37). Also, malnutrition among street children has been found to be prevalent according to reports from Kenya (38) and India (39).

Another report revealed that half of the sampled Canadian youngsters in streets are exposed to hunger or food deprivation (40). It was discovered that in South Africa, boys were relatively more malnourished than girls (41). According to some studies, of-the-street children have poorer nutritional values compared to on-the-street children, which puts forward that street children who have bounds with their families and society are better in terms of growth. However, some suggest that of-the-street children are healthier in terms of nutritional and growth status than those who are on the margins between home and the street (22,24,42). On the contrary, studies conducted in Indonesia (30), Columbia and Nepal (42), have found the health and nutrition status of street children to be better than their socioeconomic peers, and as a US study have presented, no difference was observed in weight-height percent tiles of street children compared with the National Center for Health Statistics (NCHS) standard (43). Studies report that the prevalence of childhood obesity fluctuates in different countries, from 10% in Africa and Asia, which is well below average, to over 20% in the Americas and Europe (44,45). Although Turkey is a developing country, childhood obesity has become an endemic problem. The studies conducted in certain regions of our country have stated the occurrence rate of obesity in children and adolescents to be 6.0-16.0%, and of being overweight to be 11.0-20.6% (46-49). According to the data from the Turkey Nutrition and Health Survey, which is the most comprehensive study done in our country to determine the prevalence of obesity, 15.7% of the children and adolescents in the 6-18 age group are overweight and obese (50).

This study has determined that the prevalence of obesity and being overweight in the children working in the streets is higher than (36.0% and 6.7%, respectively) what is stated in the literature. That the participating children live with their families and constitute a small sized sample is considered to be why the prevalence of being overweight is high. Along with this, in this study, the rate of stunting (12.0%) has been found to be lower than the rates found in Jakarta (30) (52.0%) and Pakistan (31) (20.0%), and similar to the rates obtained from the Turkey Nutrition and Health Research (50) (8.0% for the children in the 6-18 age group in the Central Anatolian Region). The fact that the study has been conducted in Kayseri, a city in Central Anatolia, might be the cause of finding similar results in the rates of stunting.

Conclusion

In conclusion, this study has determined that the children who are put to work in the streets do not have a balanced diet in terms of energy intake and nutritional elements, and that the majority of these children skip meals. Contrary to the predictions, it has been stated that more than half of the children have normal body weight, and one in every three children is overweight. The high rate of being overweight might be

originating from skipping meals and the absence of a balanced diet pattern. Additionally, the fact that half of the children in our research group are working in fields requiring only light physical activity such as vending flower, paper tissues and chewing gum on the streets might have affected the rate of being overweight to be found high. This subject is in need of extensive studies with control groups including all the cities in Turkey.

Acknowledgements

We would like to thank the children who devoted their time to the data collection.

References

1. UNICEF Executive Board. Exploitation of working children and street children. U.N. Doc. E/ICEF/1986/CRP. 1983; 1986.
2. Hutz CS, Koller SH. Methodological and ethical issues in research with street children. New Dir Child Adolesc Dev 1999; 85: 59-70.
3. Raffaelli M, Koller SH, Reppold CT, et al. Gender differences in Brazilian street youth's family circumstances and experiences on the street. Child Abuse Negl 2000; 24(11): 1431-1441.
4. Vahdani P, Hosseini-Moghaddam SM, Gachkar L, Sharafi K. Prevalence of hepatitis B, hepatitis C, human immunodeficiency virus, and syphilis among street children residing in southern Tehran, Iran. Arch Iran Med 2006; 9(2): 153-155.
5. Jones GA, Herrera E, Thomas de Benítez S. Tears, trauma and suicide: Everyday violence among street youth in Puebla, Mexico. Bull Latin Am Research V 2007; 26(4): 462-479.
6. UNICEF. Making a Difference for Children: Street Children. Access date: 27/06/2016 http://www.unicef.org/turkey/dn/cp8.html
7. Talukder MU, Alam M, Islam A, Kumar Paul G, Islam T, Akther F. Study on the Nutritional Status of the Street Children at Shabagh Area of Dhaka City. Int J Nutr Food Sci 2015; 4(3): 240-245.
8. Turkish Statistical Institute. Population of Provinces by Years. Access date: 03/07/2016. http://www.turkstat.gov.tr/PreTablo.do?alt_id=1059
9. Mahan KL, Escott-Stump S. Measurement of Height and Weight, The Assessment of Nutritional Status, Krause's Food, Nutrition and Diet Therapy. W.B. Saunders Company, 9th edition 1996: 371.
10. 10.World Health Organization. Growth reference 5-19 years. Access date: 03/07/2016 http://www.who.int/growthref/who2007_bmi_for_age/en/
11. The Ministry of Health of Turkey, The General Directorate of Primary Health Care and Hacettepe University Department of Nutrition and Dietetics. Dietary Guidelines for Turkey: Recommended Safe Level of Intake of Energy and Nutrients for Turkey. 2006, 58-60.
12. Ebispro for Windows, Stuttgart, Germany, BEBİS, Turkish version and Data Bases: Bundeslebenmittelschlüssell, 11.3 and other sources. Nutrition Information Systems, 2004.
13. Rakıcıoğlu N, Tek Acar N, Ayaz A, Pekcan G. Food and Nutrition Photo Catalog: dimensions and quantities. 2009, 2 nd edit. Ankara: Ata Ofset Typography.
14. Akşit B, Karancı N, Gündüz Hoşgör A. Working street children in three metropolitan cities: a rapid assessment. ILO IPEC 2001; 1-88.
15. Türkmen M, Okyay P, Ata O, Okuyanoğlu S. A descriptive study on street children living in a southern city of Turkey. Turk J Pediatr 2004; 46(2): 131–136.
16. Aderinto AA. Social correlates and coping measures of street-children: A comparative study of street and nonstreet children in South-Western Nigeria. Child Abuse Negl 2000; 24(9): 1199–1213.
17. Lalor KJ. Street children a comparative perspective. Child Abuse Negl 1999; 23(8): 759–770.
18. Senanayake MP, Ranasinghe A, Balasuriya C. Street Children: A preliminary study. Ceylon Med J 1998; 43(4): 191–193.
19. Swiss Foundation of Terre des hommes, ASCHIANA Street Children Project, Central Statistics Office of Afghanistan. Needs assessment of children working in streets of Kabul. 2002; 1-36.
20. Ansari H, Ansari Moghaddam A, Mohammadi M, et al. Health Status and Life Situation of Street Children in Zahedan, Southeast of Iran. Health Scope 2015; 4(4): 62-67.
21. Ahmad Khaniha AR, Hakim Shooshtari M, Mohammadian M, Bidaki R, Pourrashidi Boshrabadi A. Familial characteristics of street children in tehran, iran. Iran J Psychiatry Behav Sci 2014; 8(2): 86–89.
22. Greksa LP, Rie N, Islam AB, Maki U, Omori K. Growth and health status of street children in Dhaka, Bangladesh. Am J Hum Biol 2007; 19(1): 51-60.
23. de Carvalho FT, Neiva-Silva L, Ramos MC, et al. Sexual and drug use risk behaviors among children and youth in street circumstances in Porto Alegre, Brazil. AIDS Behav 2006; 10(4): 57-66.
24. Woan J, Lin J, Auerswald C. The health status of street children and youth in low- and middle-income countries: a systematic review of the literature. J Adolesc Health 2013; 53(3): 314-321.
25. Abdelgalil S, Gurgel RG, Theobald S, Cuevas LE. Household and family characteristics of street children in Aracaju, Brazil. Arch Dis Child 2004; 89(9): 817-820.
26. UNICEF. Street and unsupervised children of Mongolia. 2003, 1-58.
27. Bal B, Mitra R, Mallick AH, Chakraborti S, Sarkar K. Nontobacco substance use, sexual abuse,HIV, and sexually transmitted infection among street children in Kolkata, In-

dia. Substance Use Misuse 2010; 45(10): 1668-1682.
28. Elkoussi A, Bakheet S. Volatile substance misuse among street children in upper Egypt. Substance Use Misuse 2011; 46(1): 35-39.
29. Ikechebelu JI, Udigwe GO, Ezechukwu CC, Ndinechi AG, Joe-Ikechebelu NN. Sexual abuse among juvenile female street hawkers in Anambra State, Nigeria. Afr J Reprod Health 2008; 12(2): 111-119.
30. Gross R, Landfried B, Herman S. Height and weight as a reflection of the nutritional situation of school-aged children working and living in the streets of Jakarta. Soc Sci Med 1996; 43(4): 453-458.
31. Ali M, Shahab S, Ushijima H, de Muynck A. Street children in Pakistan: A situational analysis of social conditions and nutritional status. Soc Sci Med 2004; 59(8): 1707-1717.
32. Kudrati M, Plummer ML, Yousif ND. A study of the daily lives of street children in Khartoum, Sudan, with intervention recommendations. Child Abuse Negl 2008; 32(4): 439-448.
33. Polat O. Street children in Turkey. Çocuk Forumu 1999; 2: 1-9.
34. Forster LM, Tannhauser M, Barros HM. Drug use among street children in southern Brazil. Drug Alcohol Depend 1996; 43(1-2): 57-62.
35. Patriasih R, Widiaty I, Dewi M, Sukandar D. Nutrients İntake and Nutritioanl Status of Street Children in Bandung. J Nutr Food 2010; 5(3): 177-183.
36. Thapa K, Ghatane S, Rimal SP. Health problems among the street children of Dharan municipality. Kathmandu Univ Med J (KUMJ) 2010; 7(27): 272-279.
37. Hixon AL. Social correlates of malnutrition among Filipino street children. Conn Med 1993; 57(6): 373–376.
38. Ayaya SO, Esamai FO. Health problems of street children in Eldoret, Kenya. East Afr Med J 2001; 78(12): 624-629.
39. Nigam S. Street children of India: A glimpse. J Health Manag 1994; 7(1): 63-67.
40. Antoniades M, Tarasuk V. A survey of food problems experienced by Toronto street youth. Can J Public Health 1998; 89(6): 371-375.
41. Nzimakwe D, Brookes H. An investigation to determine the health status of institutionalized street children in a place of safety in Durban. Curationis 1994; 17(1): 27-31.
42. Panter-Brick C, Todd A, Baker R. Growth status of homeless Nepali boys: Do they differ from rural and urban controls? Soc Sci Med 1996; 43(4): 441-451.
43. Fierman AH, Dreyer BP, Quinn L, Schulman S, Courtlandt CD, Guzzo R. Growth delay in homeless children. Pediatrics 1991; 88(5): 918-925.
44. Kosti RI, Panagiotakos DB. The epidemic of obesity in children and adolescents in the world. Cent Eur J Public Health 2006; 14(4): 151-159.
45. Gupta N, Goel K, Shah P, Misra A. Childhood Obesity in Developing Countries: Epidemiology, Determinants, and Prevention. Endocr Rev 2012; 33(1): 48-70.
46. Akçam M, Boyacı A, Pirgon Ö, Dündar B. Evaluation of the change in the prevalence of childhood obesity in ten schools of Isparta city. Turk Arch Ped 2013; 48: 152-155.
47. Gözü A. Prevalance of overweight and obesity among 6-15 year aged school children at elementary schools in Mardin. Tıp Araştırmaları Dergisi 2007; 5(1): 31-35.
48. Öztürk A, Aktürk S. Obesity prevalence and associated risk factors in school-aged children. TAF Prev Med Bull 2011; 10(1): 53-60.
49. Simsek E, Akpinar S, Bahcebasi T, Senses DA, Kocabay K. The prevalence of overweight and obese children aged 6–17 years in the West Black Sea region of Turkey. Int J Clin Pract 2008; 62(7): 1033-1038.

Correspondence:
Gülşah Kaner, PhD
İzmir Katip Çelebi University
Faculty of Health Sciences
Department of Nutrition and Dietetics
E-mail: kanergulsah