

Relationship between junk foods intake and weight in 6-7 years old children, Shahin Shahr and Meymeh, Iran

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ABSTRACT

Background: Healthy nutrition is very important considering the weight status especially in children. The aim of this study was to assess the relationship between junk foods intake and weight in 6-7-years old children. **Materials and Methods:** This cross-sectional study was carried out in Shahin Shahr and Meymeh, Iran, in 2009. Anthropometrics measures were done and 24-hour food recall used for dietary information and analyzed with food processor 2 and then compared with dietary reference intakes 2008 (DRI). **Findings:** 61.1 percent of the subjects were residing in dormitories and 12.7 percent were married. Prevalence of overweight or obesity and abdominal obesity was 6.9 percent and 46.1 percent respectively. Mean (\pm SD) systolic blood pressure was 105.2 ± 15.6 mm/Hg and diastolic was 62.2 ± 10.4 mm/Hg. Totally, 3.9 percent of the subjects had hypertension. The analysis of food intake indicate that (B_{12} , folate, magnesium, potassium, calcium) with level below the recommended ones, and (vitamin C, E, pantothenic acid, B_1 , B_3 , phosphate, zinc) with up levels the recommended ones, and energy intake, macronutrient, vitamin A, pyridoxine, iron, selenium were in general appropriate. **Conclusion:** These results indicated appropriate level of macronutrients intake and unbalance mainly existed in micronutrients. It is recommended to increase intake important food groups such as dairy, vegetable, fruit that include good source of micronutrients, and also it is suggested that need for strategies can improve competence in the area of nutrition.

Key words: Children, junk foods, weight

INTRODUCTION

Many food habits and patterns are formed during childhood and will remain till the end of individual's life. Proper nutrition in this age causes development and child growth and also

reduces the risk of chronic diseases in adulthood.^[1] School-age children are formed a special group of social, health and nutritional health vulnerability. Because 7-year-old children are the first age group enter the school environment and often this causes some changes in some habits and lifestyle, particularly in their food habits. Moreover, the growth rate and health are closely interrelated with quality and quantity of foods and the information related to health status and nutrition status of this group is an important health issue in terms of prevalence of underweight, overweight and food habits.^[2,3]

Many studies in different regions of Iran have been done on children indicating the prevalence of underweight and overweight in this age group.^[4-8]

Evidences show that in early years of life, malnutrition causes slow body growth, short stature, and stunting in mental development and also prevalence of repeated infections and

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resistance to treatment as well as reduced physical activity. In children with malnutrition, in addition with physical growth retardation, the prevalence of mental disorders, academic failure and decreased efficiency are very common and these children in further stages of life would not be able to achieve their appropriate physical and mental abilities.^[9,10]

On the other hand, the prevalence of obesity and overweight in many developed and developing communities has an increasing trend and they are of the important health problems in today's communities.^[11,12] In many cases, adulthood obesity starts from childhood and effective prevention depends upon the way you cope with and control obesity in this age. Prevalence of obesity in 6 to 10-year-old children estimated 10 to 30 percent and is considered as one of the basic issues in this age group.^[13]

In addition to reduce working efficiency, obesity put the child at the risk of hypertension and cardiovascular diseases, diabetes etc. and can cause the incidence of underlying chronic disorders in adulthood.^[14]

Nowadays, consumption of junk foods as snacks is increasing especially among primary school students. Change of food consumption pattern during few recent decades caused replacement of valueless foods with nutritious snacks. Increasing trend of urban life, extensive TV advertising, attractive packaging and lack of nutritional knowledge and awareness by parents are the major causes of junk food consumption. The excessive consumption of junk foods maybe results in reduction of appetite takes away the opportunity of nutrition with foods containing nutrients from household table and child^[15] and on the other hands, because these junk foods contain high amounts of fats, salt and sugar, they are the underlying cause of chronic diseases including obesity, diabetes, cancer and so on in further years of life. High salt consumption during childhood is associated with hypertension in adulthood. On the other hand, other high-calorie foods provide the background of obesity for children that by itself are the causes of underlying diseases such as cardiovascular diseases, diabetes and hypertension.

MATERIALS AND METHODS

This was a cross-sectional descriptive analytical study conducted in 2009. The study population included 6 to 7-year-old children from Shahin Shahr and Meymeh, Isfahan-Iran. The children with normal weight were selected through convenient randomized sampling method from primary schools of the province and children with weight below the 5th percentile and above 95th percentile were selected by NCHS (the National Center for Health Statistics) by national plan for screening assessment on arrival at the primary school.

The participation of normal subjects in the study was voluntarily and for the group with below and under the standard percentile was obligatory and sign and seal of nutrition consultant was required in health certificate of

students in order to do the next registration steps. After completion of the inventory, nutrition consultant provided the necessary education to parents and children for improvement of nutrition in them.

Overall data collection of children (including name, date of birth and etc.) was conducted through an inventory and reviewing the food consumption status through Food Frequency Questionnaire (FFQ) and its reliability and validity were confirmed.^[12]

Child's weight was measured with no shoes and minimum clothing through a standard scale with accuracy of 0.1 kg. Height was measured with a height gauge with 1 cm accuracy while the shoulders were in normal position and head was in horizontal position. Child's age was determined based on year and month and NCHS charts were drew for weight and height in the health certificate of each student.

The food intake data was entered using the Software SPSS. Data description was done using numerical descriptive index including mean, standard deviation (SD), and median. The correlation between the weight status and independent variables was determined through Pearson correlation coefficient and Spearman correlation coefficient, if necessary.

Before starting the study, the study objectives were explained for the study subjects individually. Consent form was obtained from all of them.

This project has been approved in Research Council of Nutrition and Food Security Research Center in Isfahan University of Medical Sciences and was confirmed by Ethics Committee.

RESULTS

Mean and SD of junk foods intake (potato chips, snacks, crunchy, types of chocolates, candy and cacao, types of biscuits, cookies and soft drinks and unnatural juices), mean and SD of junk foods intake in children with below 5th percentile of NCHS was 38.43 ± 21.58 times a week, in children with normal weight was 34.65 ± 21.90 times a week and among children with above 95th percentile of NCHS was 40.29 ± 38.18 times a weeks; however, there was no significant correlation between the junk foods consumption and children's weight [Tables 1 - 4].

In children with weight below the 5th percentile and above the 95th percentile of NCHS, there was no significant correlation between the parental education level and the amount of junk foods intake; however, in children with normal weight, there was a significant correlation between the parental education level ($P = 0.007$) and the amount of junk foods intake.

Mean and SD of the exclusive breastfed duration in children with weight below the 5th percentile and above the 95th percentile respectively were 7.05 ± 5.12 and 5.89

Table 1: Mean and SD of junk foods intake in children with weight below the 5th percentile of NCHS in the studied subjects (n = 71)

	Mean ± SD	Min	Max
Cacao (times per week)	2.124 ± 2.54	0	7
Gums	3.632 ± 4.420	0	21
Candy	2.722 ± 4.290	0	28
Biscuit	3.885 ± 3.346	0	14
Wafer	1.955 ± 2.646	0	7
Snack	1.073 ± 1.820	0	7
Chips	0.921 ± 1.677	0	7
Chocolate	2.962 ± 4.165	0	21
Cake	3.750 ± 3.406	0	14
Seeds	1.120 ± 1.865	0	7
Nuts	1.545 ± 2.429	0	14
Fruit Stripes	1.638 ± 3.465	0	21
Gelatin Dragée	0.691 ± 1.679	0	7
Ice cream	2.751 ± 1.463	0.35	7
Soda	1.433 ± 3.357	0	23
Unnatural juice	2.209 ± 2.759	0	14
Syrup	4.014 ± 4.199	0	17.5

Table 3: Mean and SD of junk foods intake in children with weight over the 95th percentile of NCHS in the studied subjects (n = 56)

	Mean ± SD	Min	Max
Cacao (times per week)	3.310 ± 5.092	0	21
Gums	3.812 ± 4.773	0	21
Candy	2.630 ± 4.566	0	21
Biscuit	3.891 ± 4.275	0	21
Wafer	2.296 ± 3.915	0	21
Snack	1.817 ± 3.616	0	21
Chips	1.756 ± 3.617	0	21
Chocolate	2.255 ± 4.142	0	21
Cake	3.546 ± 3.856	0.25	21
Seeds	1.155 ± 3.060	0	21
Nuts	1.469 ± 2.003	0	7
Fruit Stripes	1.492 ± 3.031	0	14
Gelatin Dragée	0.579 ± 1.392	0	7
Ice cream	3.227 ± 2.581	0.02	14
Soda	1.657 ± 3.00	0	14
Unnatural juice	2.458 ± 3.11	0	14
Syrup	2.942 ± 4.133	0	17.5

Table 5: The frequency distribution of exclusive breastfeed duration based on weight percentile

Weight percentile	Mean and SD of exclusive breastfeed duration	Min	Max
<5	7.05 ± 5.12	0	27
N	5.98 ± 2.8	0	24
>95	5.89 ± 2.70	0	24

ANOVA test showed no significant correlation between the exclusive breastfeed duration and weight percentile

± 2.70 months and in normal weight children was 5.98 ± 2.80 months [Table 5].

Table 2: Mean and SD of junk foods intake in children with normal weight in the studied subjects (n = 58)

	Mean± SD	Min	Max
Cacao (times per week)	1.936 ± 4.610	0	28
Gums	2.199 ± 2.339	0	7
Candy	1.848 ± 2.269	0	10.5
Biscuit	3.254 ± 2.862	0	14
Wafer	1.979 ± 2.571	0	10.5
Snack	1.147 ± 1.745	0	7
Chips	0.841± 1.217	0	7
Chocolate	2.418 ± 4.738	0	28
Cake	3.783 ± 3.976	0	21
Seeds	1.946 ± 3.746	0	17.5
Nuts	2.289 ± 5.414	0	35
Fruit Stripes	1.442 ± 2.911	0	14
Gelatin Dragee	0.413 ± 1.044	0	7
Ice cream	2.499 ± 1.681	2	7
Soda	1.894 ± 4.489	0	28
Unnatural juice	1.505 ± 2.460	0	14
Syrup	3.257 ± 3.707	2	21

Table 4: Comparing the junk foods intake in children with weight below the 5th percentile of NCHS and normal and over the 95th percentile

Weight	Mean ± SD (times a week)
Weight below the 5 th percentile of NCHS	38.433 ± 21.584
Normal Weight	34.659 ± 21.909
Weight over the 95 th percentile of NCHS	40.298 ± 38.188

There was no statistical significant difference between the three above groups

The highest junk foods intake in these children was cookies, biscuit and syrup. Mean number of meals for underweight, normal and overweight children were 4.19 ± 1.3, 3.96 ± 1.09 and 4.91 ± 1.09 respectively, and there was a significant correlation between the weight percentile and the number of meals through Pearson correlation coefficient (0.023 ± 0.002).

Totally, 71.2 percent of the study subjects regularly received iron and multivitamin supplements before two years old and 28.8 percent of them did not regularly receive them. The correlation between weight and regular consumption of iron and multivitamin supplements was measured by Pearson correlation coefficient. The results showed no significant correlation between regular consumption of iron and multivitamin supplements with children weight which of course might be due to low number of sample size.

Out of the total study subjects, 76.2 percent used to eat breakfast. The percentages of breakfast consumption in underweight, normal and overweight children were 80.3, 84.5 and 62.5 percent respectively. There was no significant correlation between breakfast consumption and weight percentile.

DISCUSSION

In this study, it was observed that the amount of junk foods intake among children with weight below the 5th percentile of NCHS and also children with weight over the 95th percentile of NCHS was higher than children with normal weight. The children with weight over the 95th percentile of NCHS received the highest amount of junk foods; however, no significant correlation was found between the amount of junk foods intake and children weight, which this might be due to low number of study subjects.

Some of the conducted studies on junk foods consumption are as below:

In a study which evaluated the qualitative and quantitative food pattern in primary school aged children in Tehran, they showed that the students' snacks after fruits respectively were types of cakes, cookies, donuts, chocolate, confectionary and biscuits as the highest frequency of weekly intake. The percentage of cake and cookies in the first grade of school was twice the other grades.^[16, 17]

In a study on students of Khorram Abad, they showed that the snacks were respectively 20 and 18 percent junk foods and fruits among which chips and biscuits were the highest consumption than others.^[18]

In the study of Talebi *et al.* on students of Khorram Abad, daily salt snack reported 53%, fruit stripe 56%, gums 77% and soda 35%.^[19]

In a study by Naghib Zadeh *et al.* on students of Yazd, 20 percent of students consumed soda more than 4 times a week and 15% of them consumed salt snacks three times a week.^[20] However, in this study, 8.65 percent of the subjects consumed soda more than four times a week and 9.2 percent of them used salt snacks more than three times a week and reduction in consumption of such junk foods is due to awareness of parents from unhealthy nature of these products for children.

In the study of Asfarjani *et al.* in East part of Tehran, the highest items among the snacks of adolescents were types of cakes, sandwiches, fruits, chips, unnatural juice and soda.^[21]

In the study of Verger *et al.* in Scotland, chips with mean consumption of a pack per day was the highest consumption of snack among 7 to 8-year-old students.^[22]

In the study of Santich *et al.* on American youths, the highest consumption of foods among the snacks were types of candies and soda.^[23]

In a study by Ahmadi *et al.* in 2009 which was done to review the correlation between snacks of school-age children in Yasouj with anthropometric assessments, 1790 children (53.6% boys and 46.4% girls) were evaluated and it was indicated that the children who commonly had snack with them had grater height growth and the prevalence of stunting

in children received snack were lower than their classmates. Among the snacks, biscuit and cake, salt snack and chips, chocolate and candy respectively were the highest consumed items and nuts and dairy were the lowest consumed items.^[24]

In the study of Amini *et al.* on TV advertisements, they showed that advertisements related to foods in terms of number (frequency) had the second rank (25%) and in terms of playback duration, had the third rank (21%) among the TV ads. Among the food ads, the whole grains (types of snacks) had the highest frequency in playback (36%). Most of the advertised foods had low nutritional values and ads companies tired to encourage children to consume their products with different strategies.^[25, 26] However, in the present study, among the junk foods (chips, crunchy, snack, candy, chocolate, cacao, biscuits, cakes and cookies, soda and unnatural juices), cake, biscuit and syrup were the highest weekly frequency and it was perhaps because families thought they were more healthier than other junk foods and they were more accessible to children.

Among the above mentioned junk foods. Gelatin dragee had the lowest weekly frequency for consumption and perhaps it was an unknown product than other junk foods and also low ads on this product.

Given to increasing trend of junk foods ads and their excessive consumption, the risk of replacing low value junk foods with original foods which must provide necessary nutrients and development of children, is felt. And considering that there is not enough information about junk foods consumption status in Isfahan City and other Provinces, conducting the present study seemed necessary so that accordingly we can obtain a clear vision from food pattern of 6 to 7-year-old children and also the position of low value junk foods in their dietary program.

CONCLUSION

Totally, the consumption amount of junk foods intake among children with weight below the 5th percentile of NCHS and also children with weight over the 95th percentile of NCHS was higher than children with normal weight.

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