

## ORIGINAL RESEARCH

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# Assessing the conformance of foods in school canteens in terms of health in Malatya a city of Turkey

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### Abstract

A healthy diet for students is an important concept in terms of school health. In this regard, selling unhealthy foods in the school canteens causes a serious threat. With this study, we aimed to determine how well the “Turkey Healthy Nutrition and Active Life Program” with the number 2010/22 released by the Prime Minister’s Office was applied at schools, and to reveal how reliable school canteens were in this context. This is a descriptive study. The sample size was calculated as 37 by considering the ‘rate of chips sales in the school canteen as 2.65%’ with a power of 80% and a confidence level of 95%. Stratified sampling method was used to stratify the schools; after which 18 primary schools, 13 secondary schools and 6 high schools were selected. Statistics were expressed in numbers and percentages. It was observed that despite the prohibition, fruit-flavored beverages were sold in 51.4% of the schools included in the study, cokes were sold in 10.8% of the schools. Moreover, chips and french fries were present in the canteens in 18.9% and 8.1% of the included schools, respectively. Among the foods and drinks recommended in the circular, these school canteens had ayran (89.2%), milk (83.8%), yoghurt (18.9%), fresh fruits (8.1%) and fresh-squeezed fruit-vegetable juices (5.4%). Although the sales of healthy beverages in the school canteens were high, the sales of unhealthy beverages were also high. The sales of yoghurt, fresh fruit and fresh-squeezed fruit-vegetable juices were lower. Moreover, French fries and chips that should not be present in the canteens were also sold, which is thought-provoking.

**Keywords:** School canteens, food, sales

### Introduction

The most basic and necessary factor of reaching the level of developed countries is to succeed in raising healthy and strong individuals. In this respect, the real wealth of countries is healthy and productive human power. Raising healthy generations is related with acquiring the adequate and balanced nutrition habits [1]. Nutrition is the consumption of nutrients to grow and develop, sustain life, protect and develop health. Nutrition habits of individuals are affected by many factors like the production and consumption of nutrients. A healthy nutrition habit is only possible when the safety of nutrients is provided [2].

With the increasing urbanization in our present day, and with the help of the development of technology, fast changes in the lifestyles and dietary habits of individuals have caused that individuals were dragged to a sedentary lifestyle, to excessive consumption of nutrients that have high energy levels and have resulted in decreased physical activity [3]. Although obesity is considered

as a disease of adult population, the increasing prevalence of it in children and adolescents especially in developing countries in recent decade is an important indicator showing that the childhood obesity will be a major public healthcare problem in the future [4]. According to the data released by the World Health Organization, one out of every two adults and one out of five children living in the European Zone are overweight. One third of these children is obese, and the numbers are rising each year. In Childhood Obesity Surveillance, which was conducted by the World Health Organization European Zone Department in 2010 for the purpose of monitoring the obesity status of the children at school age, it was reported that nearly 40% of school age children were over normal weight, and 15% of these children were fat [5]. The rate of being overweight is at the highest level in Europe at school children in Spain with 35% in 6-9 age group; in Portugal with 32% in 7-9 age group; and at the highest level in countries like Slovakia with a rate of 15% in 7-9 age group, in Switzerland with 18% in 6-9 age group and in Iceland with 18% in 9 age group [6]. In our country, being overweight and obesity cause that the lifespan of individuals is decreased, and life quality is influenced in a negative way. In this context, it is extremely important that the prevalence of obesity is reduced and the fight against it is started at early ages when children are at school [7].

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The main goal of national healthcare policies is to reach a society which consists of healthy individuals. For this purpose, policies must be developed to empower the cooperation between sectors in the field of health. Since obesity is a major problem in our present day, there are several action plans about obesity in our country. One of these is the regulation with the number 2010\22 “Turkey Healthy Nutrition and Active Life Program”. This is a circular of the Prime Minister’s Office, and a “Fight and Control Program for Obesity” was prepared in this context. In the light of this regulation, the selling of the foods that may cause obesity and that have high energy levels but low nutritional values like energy drinks, fizzy drinks, aromatic drinks, fried food and potato chips are limited, and the automatic machines that sell these types of foods are prohibited. Some foods that are allowed to be imported or produced by the Ministry of Food, Agriculture and Animal Husbandry like milk, ayran, yoghurt, fruit juice, fresh-squeezed fruit juice and fruits that may be sold in pieces are allowed. With this project, it was aimed that schools and the practices in this context were encouraged to form healthy nutrition habits, and obesity would be reduced at schools [8]. With this study, we aimed to determine how well the “Turkey Healthy Nutrition and Active Life Program” with the number 2010\22 released by the Prime Minister’s Office was applied at schools, and to reveal how reliable school canteens were in this context.

## Material and Method

This study was planned in the Descriptive Design and was conducted in the canteens of several schools in Malatya provincial center and in the counties of Malatya between May-June 2016. Ethical permission was obtained from Scientific Research Ethical Board of Inonu University and from the National Directorate of Education in Malatya.

The universe of the study consisted of 170 primary schools, 124 secondary schools and 57 high schools in the provincial center and countries of Malatya. When the sample size was calculated, it was found as 37 when the confidence level was considered as 95%, and 80% reference, and when “The rate of selling chips at canteens of the schools” was taken as 2.65% [9]. Stratified sampling method was used to stratify the schools, after which 18 primary schools, 13 secondary schools and 6 high schools were selected. These schools were visited by the researchers, and the questionnaires were filled.

The questionnaire form was created by making use of the existing regulation and the literature. The existence of the foods that were stated in the questionnaire was asked to the canteen attendants and then the canteen was visited to see the existence of these foods. The data were analyzed in the SPSS Package Program, and the results were given as descriptive statistics, numbers and percentages.

## Results

The distribution of the canteens of the schools that were included in the study is given in Table 1. According to Table 1, when the distribution of the canteens is considered, it is observed that the number of the canteens at Primary Schools was 18 (48.6%), the number of the canteens at Secondary Schools was 13 (35.1%), the number of the canteens at High Schools was 6 (16.2%).

The distribution of the foods that were sold in the canteens and

that were not allowed according to the abovementioned regulation are given in Table 2. As seen in Table 2, in 51.4% of the school canteens fruit-flavored beverages, in 43.2% of the school canteens flavored beverages containing drink powder, in 40.5% of the school canteens flavoured natural mineral beverages, in 18.9% of the school canteens chips, in 10.8% of the school canteens coke, in 8.1% of the school canteens French fries, in 2.7% of the school canteens sports drinks were sold. No energy drinks were sold at the schools that were included in our study.

**Table 1.** The Distribution of the Canteens of the Schools

|                          | n  | %    |
|--------------------------|----|------|
| <b>Primary Schools</b>   | 18 | 48,6 |
| <b>Secondary Schools</b> | 13 | 35,1 |
| <b>High Schools</b>      | 6  | 16,2 |
| <b>Total</b>             | 37 | 100  |

**Table 2.** The distribution of the foods that were sold in the canteens and that were not allowed according to the regulation

|                                                    | n  | %    |
|----------------------------------------------------|----|------|
| <b>Fruit-Flavoured Beverages</b>                   | 19 | 51,4 |
| <b>Flavoured Beverages Containing Drink Powder</b> | 16 | 43,2 |
| <b>Flavoured Natural Mineral Beverages</b>         | 15 | 40,5 |
| <b>Chips</b>                                       | 7  | 18,9 |
| <b>Coke</b>                                        | 4  | 10,8 |
| <b>French Fries</b>                                | 3  | 8,1  |
| <b>Sports Drinks</b>                               | 1  | 2,7  |
| <b>Syrup</b>                                       | 1  | 2,7  |
| <b>Energy Drinks</b>                               | 0  | 0    |

The distribution of the foods that were allowed by the regulation and that were sold at the canteens are given in Table 3. When Table 3 is considered, it is observed that at the schools canteens that were include in the study in 97,3% of the school canteens sugar-candy were sold, 94.6% of the school canteens bagel were sold, 86.8% of the school canteens natural mineral water was sold, 83.8% of the school canteens ice-cream was sold, 73% of the school canteens sugar chewing-gum was sold, 70.3% of the school canteens fruit nectar was sold, 67.6% of the school canteens tea-sugar-free chewing-gum-toasts were sold, 64.9% of the school canteens coffee was sold, 59.5% of the school canteens meat-chicken wrapped-bread-hamburger were sold, in 51.4% of the school canteens ketchup was sold, in 48.6% of the school canteens fruit drink, in 45.9% of the school canteens fresh salad was sold, in 37.8% of the school canteens ice tea-nuts-cheese were sold, in 24.3% of the school canteens fruit natural mineral drink-mineral water were sold, in 18.9% of the school canteens mayonnaise was sold, in 16.2% of the school canteens boiled eggs were sold, in 10.8% of the school canteens homemade pudding was sold, in 8.1% of the school canteens cakes-croissant-eclairs-mosaic-cake were sold, in 5.7% of the school canteens natural mineral water was sold, in 2.7% of the school canteens fruit syrup-fruit juice were sold.

In all of the schools that were included in our study, chocolate-waffle were sold.

The foods that are sold at schools included in our study and that are recommended with the abovementioned regulation are given

in Table 4. Ayran was sold in 9 out of 10 of the schools that were included in our study, milk was sold in 8 out of 10, natural mineral water was sold in 2 out of 5, yoghurt was sold in 1 out of 5, fresh-squeezed fruit-vegetable juice was sold in 1 out of 20.

**Table 3.** The Distribution of the Foods that were Allowed by the Regulation and that were Sold at the Canteens

|                                              | n  | %    |
|----------------------------------------------|----|------|
| Chocolate-Waffle                             | 37 | 100  |
| Sugar-Candy                                  | 36 | 97,3 |
| Bagel                                        | 35 | 94,6 |
| Natural Mineral Water                        | 32 | 86,8 |
| Ice-Cream                                    | 31 | 83,8 |
| Sugar Chewing-Gum                            | 27 | 73,0 |
| Fruit Nectar                                 | 26 | 70,3 |
| Tea                                          | 25 | 67,6 |
| Sugar-Free Chewing-Gum                       | 25 | 67,6 |
| Toasts                                       | 25 | 67,6 |
| Coffee                                       | 24 | 64,9 |
| Meat-Chicken Wrapped-Bread-Hamburger         | 22 | 59,5 |
| Ketchup                                      | 19 | 51,4 |
| Fruit Drink                                  | 18 | 48,6 |
| Fresh Salad                                  | 17 | 45,9 |
| Ice Tea                                      | 14 | 37,8 |
| Nuts                                         | 14 | 37,8 |
| Cheese                                       | 14 | 37,8 |
| Fruit Natural Mineral Drink                  | 9  | 24,3 |
| Mineral Water                                | 9  | 24,3 |
| Mayonnaise                                   | 7  | 18,9 |
| Boiled Eggs                                  | 6  | 16,2 |
| Homemade Pudding                             | 4  | 10,8 |
| Canteens Cakes-Croissant-Eclairs-Mosaic-Cake | 3  | 8,1  |
| Natural Mineral Water                        | 2  | 5,4  |
| Fruit Syrup                                  | 1  | 2,7  |
| Fruit Juice                                  | 1  | 2,7  |
| Dry Fruit                                    | 0  | 0    |

**Table 4.** The foods that are sold at schools included in our study and that are recommended with the regulation

|                                      | n  | %    |
|--------------------------------------|----|------|
| Ayran                                | 33 | 89,2 |
| Milk                                 | 31 | 83,8 |
| Natural Mineral Water                | 15 | 40,5 |
| Yoghurt                              | 7  | 18,9 |
| Fresh Fruit                          | 3  | 8,1  |
| Fresh-Squeezed Fruit-Vegetable Juice | 2  | 5,4  |

No automatic machines selling foods were observed in any of the schools that participated in our study.

## Discussion

The term “school health” is playing an increasing role in the formation of health policies and in studies conducted in the field of healthcare. In this context, it is necessary to investigate this point to solve the problems related with nutrition in children. The majority of the nutritive needs of children, who spend their most of times at schools, are covered partly by school canteens and by school refectories. For this reason, the variety of the foods that are sold at school canteens is extremely important. Although obesity, which is observed frequently in school years, which is also the

case in the entire world, is a multifactorial problem, the underlying main factor is the excessive nutrition intake due to nutrition [10]. For the purpose of fighting against obesity, the “Turkey Healthy Nutrition and Active Life Program”, which was released by the Prime Minister’s Office with the number 2010\22, and the “Fight and Control Program for Obesity” were started; however, no studies were conducted to determine how well these regulations were obeyed at school canteens.

In 70.3% of the school canteens included in the study fruit nectar was sold; in 51.4% of the school canteens included in the study fruit-flavored beverages was sold, in 43.2% of the school canteens included in the study flavored beverages containing drink powder was sold; in 40.5% of the school canteens included in the study flavored natural mineral beverages was sold, in 48.6% of the school canteens included in the study fruit drink was sold; in 37.8% of the school canteens included in the study ice-tea was sold; in 24.3% of the school canteens included in the study fruit natural mineral drink-soda were sold; in 2.7% of the school canteens included in the study fruit syrup were sold directly. According to the regulation on Turkish Food Codex, Non-alcoholic Beverages Declaration (Declaration No: 2007/26), which was released in the Official Gazette with the number 26553 dated June 15, 2007, non-alcoholic beverages are fruit juice, aromatic drinks, fruit syrup, aromatic syrup, fruit drink powder, aromatic drink powder, fruit natural mineral drink, aromatic natural mineral drink, artificial soda, coke, tonic and aromatic water [11].

In a study investigating the relation between obesity and non-alcoholic beverage consumption in adolescents, a positive correlation was reported between adiposity measurements of individuals at puberty and non-alcoholic beverage consumption [12-13]. In the light of these data, trying to reduce the rates of sales at schools will be a proper action to prevent the risk factors in terms of obesity.

Fresh fruit was sold only in 8.1% of the school canteens that were included in the study, and fresh-squeezed fruit-vegetable juice is sold only in 5%. In a previous study, it was reported that the total fat and saturated fatty acids in the body reduced in children after the consumption of vegetable and fruit was increased within the nutrition periods of children [14-15-16]. Nutrients like fruits and vegetables must be sold at the canteens more to prevent many chronic diseases mainly obesity as a result of the reduction in saturated fatty acids within the body.

In the present regulation, which is applied in our country, the machines that sell several foods automatically were prohibited at schools, and no such machines were observed in our visits to the schools that were included in our study. In a cross-sectional study which investigated the effect of nutrition policies, it was reported that 55.5% of students decreased beverage consumption, and 52,6% decreased snack consumption after the prohibition of selling beverages and snacks in automatic machines or in direct ways [17]. In this context, the lack of automatic machines at schools will prevent the sales of high-calorie low-nutrient foods to children at schools.

In 59.5% of the canteens at schools that were included in the present study, meat-chicken rolls-hamburger were sold; in 67.6% toasts were sold; in 18.9 chips were sold; 10.8% coke was sold, in

8.1% French fries were sold. It was reported in previous studies that the tendency of children, who are inclined to purchase fast food, to gain weight was high. In addition, in areas where fast food sales are high, the prevalence of obesity was reported to be higher [18]. For this reason, children are in direct contact with such foods at school canteens, which makes it inevitable to avoid the selling of these foods. However, the present situation is contrary to these expectations.

In 2.7% of the school canteens that were included in the study, drinks for sportsmen were sold, and energy drinks were not sold in any of these schools. The energy and sports drinks, which are produced for the purpose of increasing the performance of sports players during their trainings and to form endurance, are also sold to children who are not supposed to be considered in this category. The consumption of such drinks is gaining popularity among children, and the consumption has been nearly doubled. In a previous study, alarmingly, adolescents stated that they consumed these drinks during physical activity in social events [19]. Sports drinks have high sugar and acidity levels. With the consumption of such drinks, unnecessary high calorie will be taken to the body; and in addition, these drinks will cause caries and dental erosion in teeth in children who consume them, which must not be overlooked [20].

There was ayran in 9 out of 10 schools participating in our study, milk in 8 out of 10, and yoghurt in 1 out of 10 schools. In a previous study, which aimed to change the consumption profiles of children, the consumption of alcoholic beverages was decreased, and the consumption of milk and dairy products increased [21-22]. With the application of the abovementioned regulation in our country, the consumption of the foods that have no beneficial effects on development of children and that are even harmful for them may be prohibited, and the consumption of beneficial food may be increased.

## Conclusion

Based on the abovementioned assumptions, although it is a proper action to prohibit the sales of foods that are not suitable for the development of children and trying to increase the sales of healthier foods are wise actions, the targeted nutrition policies still have a weak point. Limiting the access to such foods may be useful in the short term; however, for long-term benefits, it will be useful to train children on nutrition, healthcare; and changes must be made in the food services. Such activities must be organized with the participation of the students, parents, and school administrations in a coordinated manner to improve the nutrition medium at schools. In addition, the application of the policies must be audited to ensure proper use of them.

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## Competing interests

*The authors declare that they have no competing interest.*

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