International
Journal of Human Sciences
ISSN:2458-9489

Volume 17 Issue 2 Year: 2020

A study on the examination of eating behaviors and eating habits of individuals with Down syndrome

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Abstract
Down syndrome, which is one of the most common chromosal disorders, is caused by an extra chromosome in the 21st chromosome pair of people as a result of genetic irregularity. The attitudes of individuals with Down syndrome towards nutritional behavior were examined and interview technique, one of the qualitative research methods, was used in this study. 20 individuals with a diagnosis of Down syndrome between the ages of 14-36, who live in the city of Denizli and who have the capacity to answer the questions asked to them, participated in the study. 80% of the individuals included in the research have above normal body mass index, 65% are in the category of slightly fat and 15% are in the category of fat. When the findings related to the nutritional habits of individuals were examined, it was seen that 85% of the individuals had 3 meals, 10% of the individuals had 5 meals and 5% of the individuals had 4 meals. This shows that none of the individuals skipped meals. When the participants were asked, "Are you trying not to eat some foods because they cause you to gain weight?" All of the responses from the participants were "No, I cannot give up, because I love to eat". This situation supports the fact that individuals included in the research could not control their weight. This result shows that the individuals included in the research do not have the knowledge that obesity may threaten their health. For this reason, it is essential to educate these individuals about nutrition. Nutrition education should be given both to individuals with down syndrome and their parents.

Keywords: Nutrition; Down syndrome; eating behavior; obesity; individuals with Down syndrome; gastronomy.

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Submitted: 02/03/2020 Published: 20/05/2020

Doğan, E., Çekal, N., & Körükçü, Ö. (2020). A study on the examination of eating behaviors and eating habits of individuals with Down syndrome. *Journal of Human Sciences*, *17*(2), 684-699. doi:10.14687/jhs.v17i2.5966

1. Introduction

1.1. Nutrition

Nutrition is the science that investigates the nutrients, their optimum quantities and qualities necessary for living things to perform their functions such as surviving, reproducing and growing. Nutrition is one of the basic requirements of all living things and is defined as the bridge between food and health (Sencer, 1991; Kavas, 2000; Baysal, 2018a). The process of providing or receiving the necessary food for health and growth defines nutrition. Nutrition, which has great importance in every period of life, is at the top of human needs (Demirel, 2018).

Healthy eating is possible with adequate and balanced nutrition. Adequate intake of each essential nutrient is essential for regeneration of tissues, vital activities and for sustaining a productive life (Yılmaz et al., 2012). Nutritional elements are agents that people need for their vital activities. Nutrients in all foods are examined in 6 groups as proteins, fats, vitamins, carbohydrates, minerals and water (Arlı et al., 2010; Güneş, 2005; Kavas, 2000; Merdol, Kutluay, 2012; Osmanoğlu, 2011).

Adequate and balanced nutrition is the absorption of energy and nutrients necessary for growth and development and for the protection of health with the required quantity, quality and variety (Şanlıer and Ersoy, 2004). Adequate and balanced nutrition is the basis of health, as there will be disruptions in the growth, development and normal functioning of the body as a result of inadequate and unbalanced nutrition (Baysal, 2018b). The role of adequate and balanced nutrition in maintaining and regaining health is becoming increasingly important (Arlı et al., 2010).

1.2. Malnutrition

Inadequate and unbalanced nutrition is the main cause of diseases such as rickets, marasmus, beriberi, scorbutus, pellagra, as well as preparing the ground for easy transmission of diseases such as tuberculosis, measles and diarrhea (Baysal, 2018b). Malnutrition occurs as a result of underfeeding and malnourishment. Malnutrition, which is used to describe the condition of physical development retardation, means nutritional failure (Bulduk, 2013).

Elia (2000) explained "malnutrition" as a physical condition that causes the deterioration of the biological functions of the body as a result of missing or unbalanced intake of energy, protein and other nutrients. According to WHO (2018), malnutrition (nutritional failure) is defined as the deficiencies, excesses or imbalances of the person in terms of energy or food intake. Malnutrition occurs when the essential nutrients are not taken at the level required by the body or taken inadequately. There are two reasons for malnutrition (Arslan et al., 2001; Baysal, 2018a; Bulduk, 2013; Merdol, Kutluay, 2012):

- Primary Insufficiency: It occurs as a result of not getting the nutrients in the amount required by the body, not getting enough food, famine, poor eating habits, socioeconomic insufficiency and consuming large amounts of refined food.
- Secondary (Seconder) Insufficiency: It occurs as a result of increased need for some nutrients due to different reasons (pregnancy, lactation, etc.), failure to meet the increased need, increased destruction or excretion of the nutrient in the body.

1.3. Excessive nutrition

As with nutritional deficiencies, serious nutritional problems occur in excessive nutrition. Cancer, obesity, diabetes and heart diseases, which are known as common diseases today, lay the groundwork for health problems that may result in death (Kavas, 2000). While millions of people fight deaths and diseases caused by hunger and malnutrition, there are many people in developed countries who have lost their lives at an early age or become unable to work due to problems caused by excessive nutrition and malnutrition. For these reasons, malnutrition and excessive nutrition problems are among the factors that impair people's health (Baysal, 2018a).

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Large expenditures are made in the fight against cardiovascular diseases, diabetes, high blood pressure, cancer, osteoarthritis (arthritis, deterioration of cartilage tissue in the joints, joint disease caused by abrasion and destruction) and psychological problems. Approximately 300,000 people die every year in obesity-related diseases in the world. The World Health Organization (WHO) and similar organizations warn all countries against rapidly spreading diseases related with excessive nutrition (Applegate, 2011).

1.4. Down syndrome

Down syndrome occurs in about one in every 700 live births. This syndrome is caused by an extra copy of the 21st chromosome. While it is not known why extra chromosomes exist, it can be caused by the sperm of the man or the egg of the woman (Santrock, 2012). The number of individuals diagnosed with down syndrome is 6 million worldwide. Despite the lack of any clear data, there are about 70,000 people with down syndrome in Turkey according to the description of the Down syndrome Association of Turkey. The number of live births in Turkey in 2017, was reported as 1.341.831. Taking into account the incidence of live births, it is expected that approximately 1677 Down syndrome will be born within a year (Korkut et al., 2018).

Intelligence of children with Down syndrome can range from very severe intelligence to very mild mental disability. IQ levels can range from 50 to 70 at a medium level or 35 to 50 at a low level. There are some of these symptoms in the individual and some may not. These children have features such as slanted eyes, thick lips, big tongue, wide and small hands with short fingers, short and thick neck. The social adjustment of the children, who are generally overweight, is quite good and their imitation skills are improved (Aral and Gürsoy, 2007; Demir and Güler 2013).

Parents with children with Down syndrome should pay special attention to children's weight gain. In studies conducted with children with Down syndrome, it was found that 30% of these children had obesity on average. Obesity generally consists of a combination of overeating and immobility. However, another factor is that children are rewarded with sugar and high-calorie foods for their activities. It should be noted that early feeding habits and choices made in this direction lie in a lifelong nutrition education (Riley and Gersh, 2013).

Starting to show interest in physical appearance is another dimension of identity formation. People tend to feel insecure about their appearance in a society where beauty and weakness are glorified. Behaviors exemplifying respect and acceptance of his own body should be taken in order to make the child feel good about his appearance. Speeches such as "I am very fat" or "I wish I was thinner" should be avoided. In situations that require changes in diet or exercise, it is necessary to underline healthy and good living conditions such as "I need to lower my cholesterol, eat more vegetables, I want to feel more energetic" instead of stating goals focused on the improvement of physical appearance (Couwenhoven, 2013).

There is no cure for Down syndrome, since the genetic structure of living things cannot be changed. It is necessary to define Down syndrome as a formation rather than disease. Children with Down syndrome generally grow slower, learn more slowly, and have more difficulty in problem solving and decision making than other children. Although children with Down syndrome are cute, cheerful, peaceful with the world, who can establish intimacy immediately regardless of their age or position, at the same time, they have the feature of being stubborn, not doing what they do not want, to have someone else do their own work. Intelligence levels are lower than normal. However, with a good and early education, a significant increase in intelligence levels can be encountered and they can continue their lives as a normal individual. Whenever possible, they can get a profession. They can reach a level that can sustain their own lives. Thanks to the advances in medicine and the advantages of educational options, the legends and stereotypes that have deprived individuals with Down syndrome in the past, have been replaced by hopes and facts (Demir and Güler 2013; Kozma, 2013).

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2. Aims

Parents with children with Down syndrome should pay special attention to children's weight gain. In related studies with Down children, it was found that 30% of these children had obesity on average. Obesity generally consists of a combination of overeating and immobility. However, another underlying factor in obesity is to reward children with sugar and high-calorie foods for their activities. It should be noted that early feeding habits and choices made in this direction lie in a lifelong nutrition education (Riley and Gersh, 2013).

In this study, it was aimed to reveal the nutritional status and habits of individuals with Down syndrome in order to raise awareness for families and experts about the nutrition of the Down syndrome group that needs special attention in terms of nutrition.

3. Method and Material

In the literature, there are studies on individuals with Down syndrome having many chronic diseases such as heart problems, intestinal disorders, diabetes and obesity as a result of chromosal disorder. Habits of eating behavior of individuals with Down syndrome are more important than normal individuals. Therefore, it is very important to raise awareness of individuals with Down syndrome towards eating behavior. In this study, the attitudes and behaviors of individuals with Down syndrome regarding nutritional behaviors were examined.

The structured interview technique was used in order to determine the eating behaviors of the individuals included in the research, and interviews were conducted between December 2018 and February 2019 using the Interview Form prepared by the researchers. In the preparation of the questionnaire, 'A new method in investigation of obesity-related eating behaviors 'three-factor eating questionnaire" by Kıraç et al., 2015 was used. The universe of the research was composed of individuals with Down syndrome working at Down Cafe in Denizli Province (Turkey) and the entire universe was included in the scope of the research. If the universe is very small and there is no difficulty in reaching the whole universe, the entire universe can be included in the research by using the counting method (Büyüköztürk et al., 2018; Gürbüz and Şahin, 2017). Twenty individuals with a diagnosis of down syndrome were interviewed one-on-one at Down Café. The data obtained were evaluated by the researchers. In calculating the body mass index of individuals, https://www.sbn.gov.tr/BKindeksi.aspx. site was used.

3.1. The Limitations of the Study

Since the research covers only individuals with down syndrome has limited the study because there are not many places where they can coexist and it is not easy to communicate since they are in a private group. Therefore, the individuals with down syndrome working in the service and kitchen in the Down Cafe in Denizli Province were included the study because it was considered that their intellectual levels and communication skills may be better. The number of scientific studies on the nutritional status and eating habits of individuals with Down syndrome is quite insufficient. This is a negative situation in terms of revealing the nutritional problems affecting the health of individuals with down syndrome and investigating solution suggestions in this regard. These studies will create awareness in terms of revealing the nutritional and health status of individuals with down syndrome and solving existing problems. After that, in order to reach more individuals in the studies to be planned on this group, their parents should be informed about the importance of such studies and they should be motivated to participate in the studies on nutritional habits and nutritional status.

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4. Results / Findings

4.1. General Information on the Individuals

4.1.1. Gender and Age of the Individuals

The gender and age of the individuals are shown in Table 1. When Table 1 is examined, the total participants consist of 20 people, of which 12 (60.0%) are female and 8 (40.0%) are male. Half of the individuals (50.0%) are in the age group of 19 and under, the other half (50.0%) are in the age group of 20 and over.

Table 1. Gender and Age of the Individuals

Gender	n	percent
Male	8	40,0
Female	12	60,0
Total	20	100,0
Age	n	percent
≤ 19	10	50,0
≥ 20	10	50,0
Total	20	100,0

4.1.2. Sibling Numbers of the Individuals

When the number of siblings of the individuals included in the research is examined in Table 2, it is understood that 10 of the individuals (50.0%) have 2 siblings; 4 (20.0%) of the individuals have 3 siblings; 2 (10.0%) of individuals have 4 or more siblings; 2 (10.0%) of the individuals have 1 sibling and 2 of the individuals (10.0%) do not have a sibling. As a result, it can be said that half of the individuals included in the research have 3 siblings.

Table 2. Sibling Numbers of the Individuals

Sibling Numbers	n	percent
The individuals with no siblings	2	10,0
The individuals with 1 sibling	2	10,0
The individuals with 2 siblings	10	50,0
The individuals with 3 siblings	4	20,0
The individuals with 4 ≥ siblings	2	10,0
Total	20	100,0

4.1.3. The Individuals' Income Levels

Figure 1 shows the income levels of the families of the individuals who make up the sample group. Six of the individuals' families (30.0%) have an income level of 0-1500 ₺; 4 of them (20.0%) have 1500-2500 ₺ income level; 9 (45.0%) of the families of the individuals have an income level of 2500-5000 ₺ and 1 of the families of the individuals (5.0%) have an income level of 5000 ₺ and above. This explains that, considering the income of the families of the individuals included in the research, the highest rate is those whose monthly income varies between 2500-5000 ₺.

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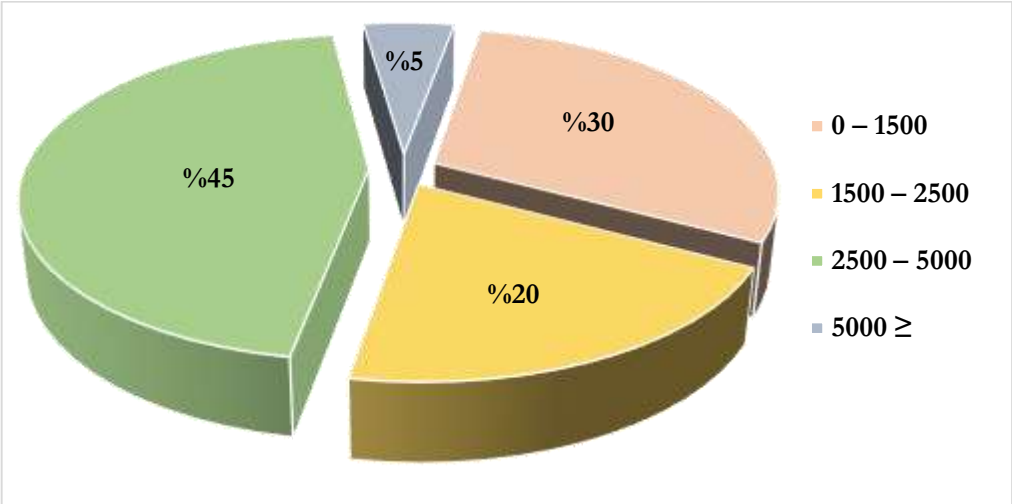

Figure 1. The Individuals' Income Levels

4.1.4. Education Levels of the Individuals' Parents

The education levels of the parents of the individuals included in the study are examined in Table 3. It was understood that 9 (45.0%) of the mothers of the individuals are primary school graduates; 6 of them (30.0%) are high school graduates; 3 of them (15.0%) are secondary school graduates; 2 (10.0%) of them received undergraduate education. It was estimated that eight (40.0%) of the fathers of the individuals are primary school graduates; 6 of them (30.0%) are high school graduates; 3 of them (15.0%) are secondary school graduates; 3 (15.0%) of them received undergraduate education. As a result, it can be said that almost half of the individuals with Down syndrome have their families who are primary school graduates.

Table 3. Education Levels of the Individuals' Parents

Education Levels of the Individuals' Mothers	n	percent
Primary school graduates	9	45,0
Secondary school graduates	3	15,0
High school graduates	6	30,0
Undergraduate education	2	10,0
Total	20	100,0
Education Levels of the Individuals' Fathers	n	percent
Primary school graduates	8	40,0
Secondary school graduates	3	15,0
High school graduates	6	30,0
Undergraduate education	3	15,0
Total	20	100,0

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4.1.5. Number of the Individuals in the Family

Table 4 shows the number of individuals in the family. It was determined that the number of individuals in the family of 12 (60%) of the individuals included in the study consisted of 4 people. The number of individuals in the family of 4 (20%) participants consisted of 5 people. The number of individuals in the family of 2 (10%) participants consisted of 3 people. The number of individuals in the family of 1 (5%) participant consisted of 6 people and the number of individuals in the family of 1 (5%) participant consisted of 7 people. The family of 90% of individuals with Down syndrome consists of 4 or more people.

Table 4. Number of the Individuals in the Family

Number of the Individuals in the Family	n	percent
3	2	10,0
4	12	60,0
5	4	20,0
6	1	5,0
7	1	5,0
Total	20	100,0

4.2. The Health Status of the Individuals

4.2.1. Body Mass Index of the Individuals

Body mass indexes of individuals included in the study are shown in Table 5. 13 (65.0%) of the individuals are slightly obese; 4 of the individuals (20.0%) are normal and 3 of the individuals (15.0%) have fat body mass index. Only 20% of the individuals are of normal weight according to body mass index, and 80% of them are above their normal weight: (https://www.sbn.gov.tr/BKindeksi.aspx). This result indicates that the vast majority of individuals with Down syndrome are faced with the problem of obesity. Scientists from The USA revealed in their study to determine the nutritional status of children with Down syndrome aged 6 months to 6 years olds found that 80% of 6-year-olds were overweight and obese (Pipes PL. and Holm. VA., 1980). These study results are similar to our study.

Table 5. Body Mass Index of the individuals

Body Mass Index	n	percent
Normal weight (18,5 - 24,9)	4	20,0
Slightly obese (25 - 29,9)	13	65,0
Fat body / obese (30 ≥)	3	15,0
Total	20	100,0

4.2.2 Continuous Diseases of the Individuals

Chronic diseases of the individuals are seen in Figure 2. A total of 17 people have chronic illness; 5 of the individuals (29.4%) have diabetes; 4 (23.5%) of individuals have thyroid disease; 3 of the individuals (17.6%) have goiter disease; 2 of the individuals (11.8%) have heart disease; 2 of the individuals (11.8%) are blood pressure patients and 1 of the individuals (5.9%) has allergic asthma. Only 3 of the individuals (15%) have any disease. Among the diseases, diabetes has the highest rate. Down syndrome is a metabolic disease that is among the genetic syndromes associated with diabetes mellitus. When the causes are examined, it is caused by disorders caused by insulin secretion due to differences in genetics, environmental factors and lifestyles (Tanrıverdi, Çelepkolu and Aslanhan, 2013).

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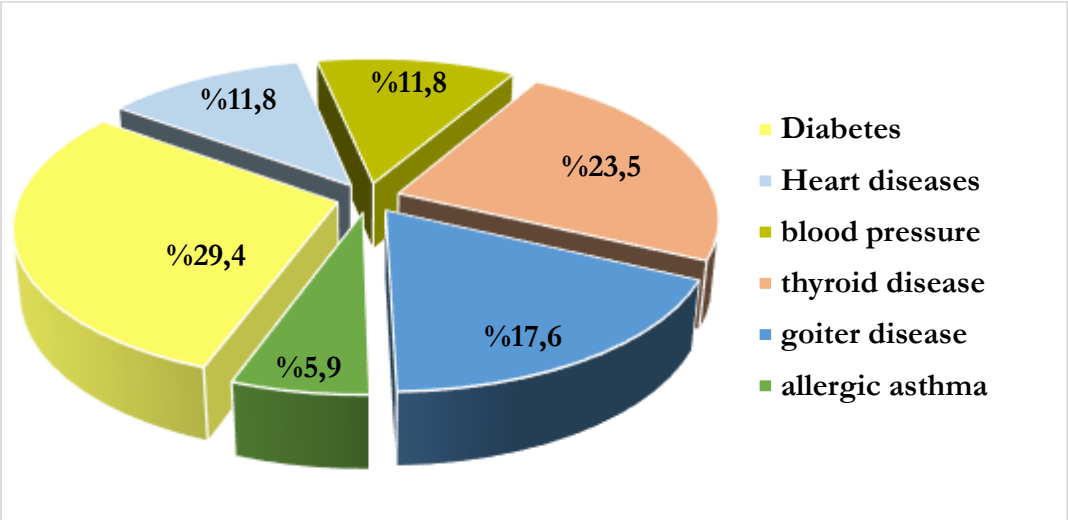

Figure 2. Continuous diseases of the individuals

4.3. Eating Habits of the Individuals

4.3.1. The Individuals' Number of Meals

The number of meals of individuals included in the research is shown in figure 3. The number of meals of 17 (85.0%) of the individuals is 3; 2 of the individuals (10.0%) have 5 meals and 1 of the individuals (5.0%) has 4 meals. In order to have a sufficient and balanced diet, it is a good eating habit to consume the foods in 3 meals. Not only individuals with Down syndrome, but also each person should have the habit of eating 3 meals a day, and if four of the 4 food groups are found in each meal, the benefits to the body increase. For this reason, daily food should be taken in 3 meals, and each group should contain food from each group (Baysal, 2018a). The result shows us that individuals with Down syndrome have positive habits about the number of meals consumed daily.

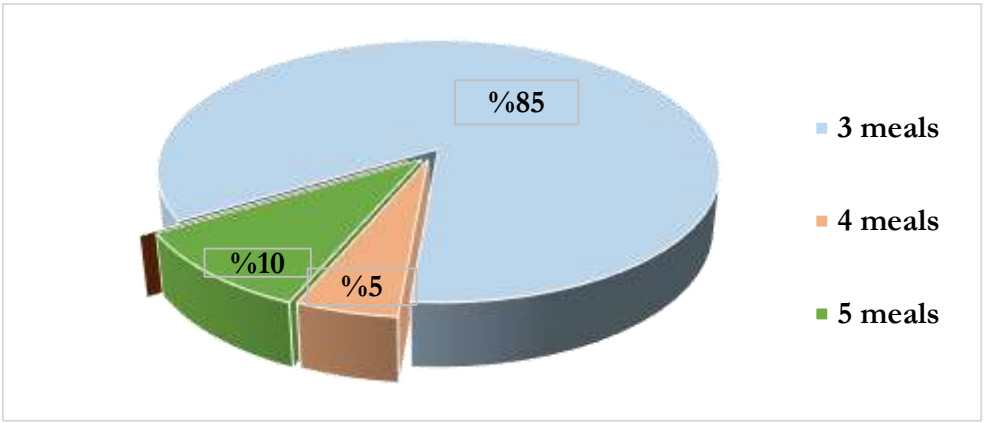

Figure 3. The individuals' number of meals

4.3.2. The Nutrition Consumed by Individuals at each Meal

The meals consumed by individuals are examined in Figure 4. It is seen that meat dishes take the first place with 11.4%, and this rate is followed by soup, pasta and yoghurt with 9.7%. The consumption rates of rice and fried vegetables are equal to each other and are 9.1%. This rate is followed by egg dishes, vegetable dishes and puddings with 6.3%. Fruit desserts, leguminous dishes, salads, halva and dumpling desserts have the rates of 5.7%, 5.1%, 4.7%, 3.5%, 3.4% respectively. The fact that meat takes the first place among the meals preferred by individuals with Down syndrome emphasizes the issue that individuals prefer foods of animal origin.

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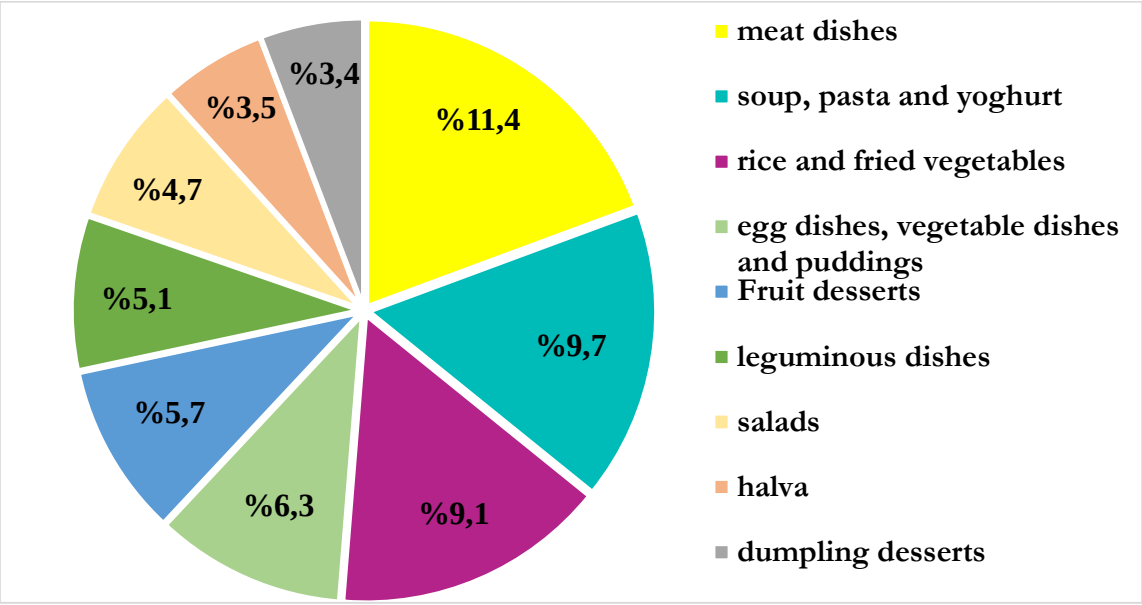

Figure 4. The meals consumed by individuals at each meal

4.3.3. Foods consumed by individuals between meals

Figure 5 shows the foods consumed between meals. Accordingly, it is seen that among the foods consumed between meals, cake, pastry and pies take the first place with 22.8%. This rate is followed by fruit with 21.5% and chocolate with 16.5%. The rate of consumption of biscuits and crackers between meals is 15.2%, the rate of consumption of packaged products is 12.6%, and the rate of sugar consumption is 11.4%. These results reveal that the most consumed foods between meals are carbohydrate-based foods. Some studies show that individuals with Down syndrome prefer foods that contain simple carbohydrates, which are easy to chew and swallow. In addition, as a result of researches, it has been revealed that fresh fruits and vegetables are rarely consumed in their diets. It has been proven by studies that children with Down syndrome are overweight, their fat metabolism is impaired and type II diabetes is frequent (Goluch-Koniuszy Z., Kunowski M., 2013; Myrelid A., Gustafsson J., Ollars B., Anneren G., 2002; Sadowska L., Mysłek-Prucnal M., Choińska A. M., Mazurek A., 2009; Smarkandy M. M., Mohamed B. A., Al-Hamdan A. A., 2012; Yahia S., El-farahaty R. M., El-hawary A. K., El-hussinym A., Abdel-maseih H., 2012). Grammatikopoulou et al., 2008; In their study conducted in Greece, they included a total of 34 individuals (18 girls and 16 boys) with Down syndrome aged 2 to 18. With the 24-hour reminder method, it was determined that carbohydrate was consumed too much in food consumption situations.

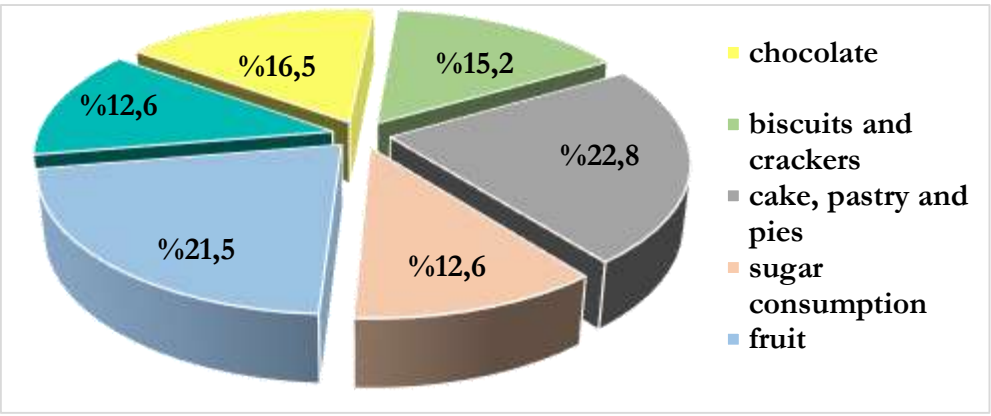

Figure 5. Foods consumed by individuals between meals

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4.3.4. Drinks Consumed By Individuals Between Meals

As seen in Figure 6, it is seen that ayran takes the first place among the drinks consumed by individuals with 12.8%. This rate is followed by milk with 11.3%, freshly squeezed juice (11.3%) and black tea (11.3%). Concentrated juice consumption is 9.2%. The consumption rates of hot chocolate, soda and Turkish coffee are 6.4% and are equal to each other. The consumption rates of Nescafe and Coke are equal (5.7%). Salep and herbal tea consumption rates are 5%. The consumption rate of turnip is 2.8% and the consumption rate of boza is 0.7%. The fact that individuals consume ayran and milk at high rates and give priority to beverages containing proteins of calcium and animal origin indicate that they have a positive eating habit in this regard.

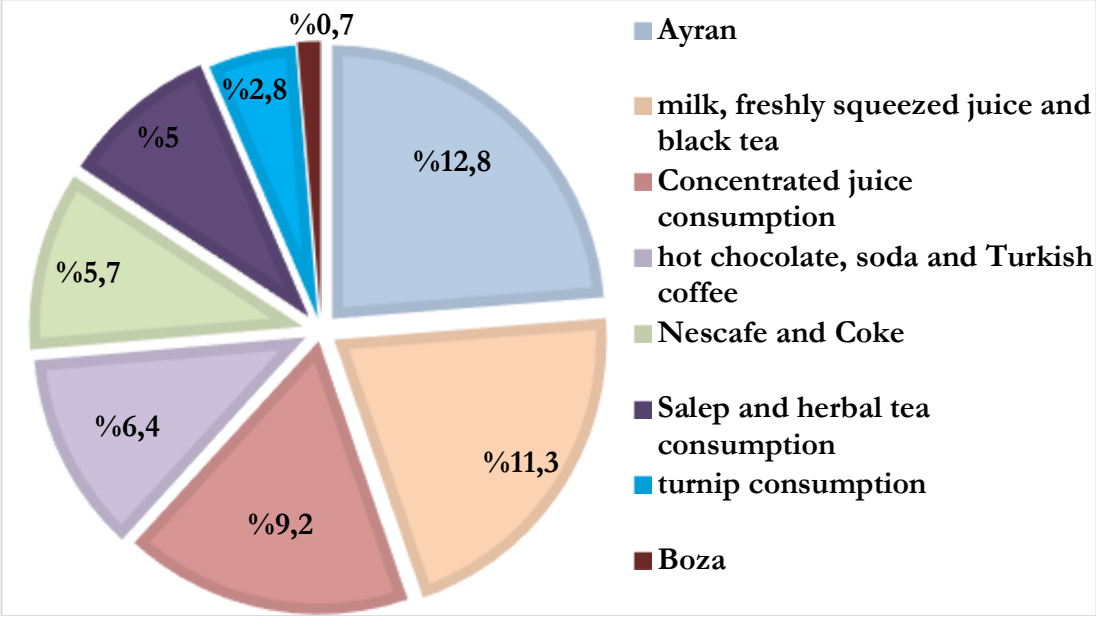

Figure 6. Drinks consumed by individuals between meals

4.3.5. Frequency and Status of Individuals Eating Out in the Morning, at Noon and in the Evening

In Table 6, individuals with Down syndrome were asked at what intervals they eat outside, and all of the individuals stated that they ate outside at different frequencies. The frequency of eating out in the morning, afternoon and evening of individuals was examined. It is understood that 3 (15.0%) of the individuals don't eat out in the morning; 3 (15.0%) of the individuals eat out two mornings a week; 1 (5.0%) of the individuals eat out one morning a week; 13 (65.0%) of individuals ate infrequently outside in the morning. When the frequency of eating out at noon is examined, it is understood that 1 of the individuals (5.0%) don't eat out at noon; 1 (5.0%) of the individuals eat outside every two days; 4 of the individuals (20.0%) eat twice a week; 2 of the individuals (10.0%) eat out once a week; 12 of the individuals (60.0%) rarely eat out at noon. Finally, when the frequency of eating out in the evening is examined, it is understood that one of the individuals (5.0%) don't eat out in the evening; 4 of the individuals (20.0%) eat out twice a week; 3 of the individuals (15.0%) eat out once a week; 12 (60.0%) of individuals rarely eat out. Individuals stated that they rarely eat outside both in the morning (76.5% of individuals), at noon (63.2% of individuals) and in the evening (63.2% of individuals). In other words, individuals with Down syndrome rarely eat out.

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Table 6. Frequency and status of individuals eating out in the Morning, at Noon and in the Evening

The frequency of eating out in the Morning	n	percent
Twice a week	3	17,6
Once a week	1	5,9
Rarely eat out	13	76,5
Total	17	100,0
The frequency of eating out at Noon	n	percent
Every two days	1	5,3
Twice a week	4	21,1
Once a week	2	10,5
Rarely eat out	12	63,1
Total	19	100,0
The frequency of eating out in the Evening	n	percent
Twice a week	4	21,1
Once a week	3	15,8
Rarely eat out	12	63,1
Total	19	100,0

4.3.6. What Type of Businesses Individuals Choose to Eat Out

As can be seen in Figure 7, it was asked what type of businesses the individuals included in the research chose to eat out. 10 of the participants (41.7%) preferred kebabs and pita bread; 7 of the participants (29.1%) preferred Turkish fast food; 6 of the participants (25%) preferred fast food restaurants and 1 of the participants (4.2%) preferred restaurants that serve home cooking. Most of those who eat out (41.7%) stated that they preferred pita and kebab restaurants.

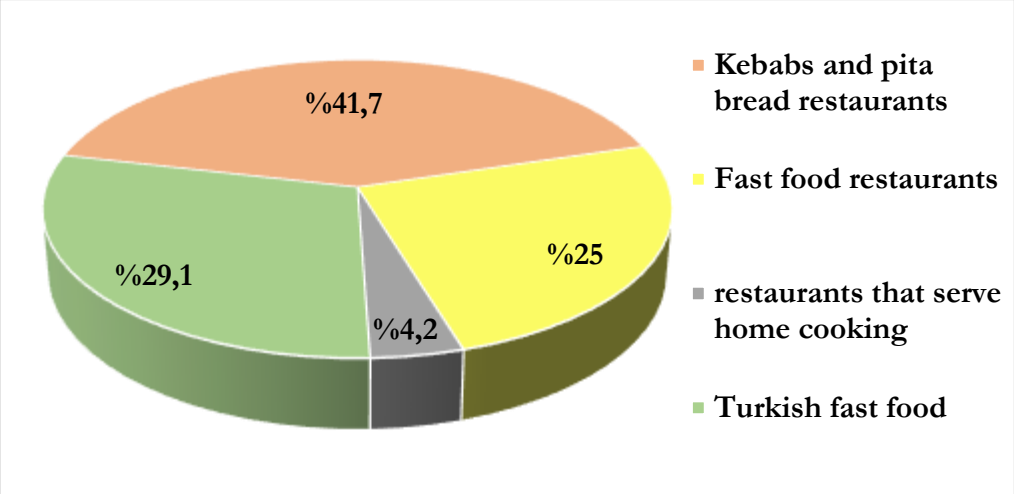

Figure 7. What type of businesses individuals choose to eat out

4.3.7. Reasons of Individuals Eating Out

When the reasons for eating out are examined in Figure 8, it was determined that 13 of the participants' (65.0%) families wanted to eat out with them; 4 of the participants (20.0%) ate outside during celebrations and special days; 2 (10.0%) of the participants ate one meal at school and 1 of the participants (5.0%) ate one meal at work.

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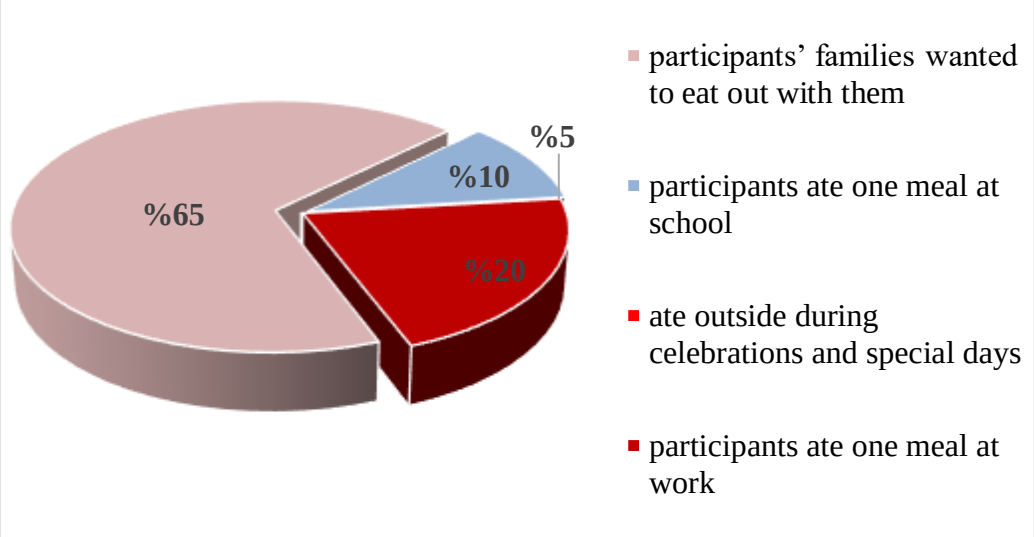

Figure 8. Reasons of individuals eating out

4.3.8. Individuals' Food and Beverage Shopping either from the School Canteen or the Supermarkets

The situations of individuals buying food and beverages from the school canteen or market are examined in Figure 9. It was determined that 7 (14.2%) of the individuals did not shop from the school canteen or market. Twelve (24.5%) of shoppers bought ayran; 9 (18.3%) individuals bought bagels, 8 (16.3%) individuals bought toast or pies, 5 (10.2%) individuals bought cola drinks or soda, 4 of them (8.2%) bought chocolate, 2 of the individuals (4.2%) bought milk, 2 (4.1%) of individuals bought crackers and biscuits. It is seen that the most purchased food in school canteens and grocery shopping is ayran with the rate of 24.5%. This is a positive behavior in terms of nutrition.

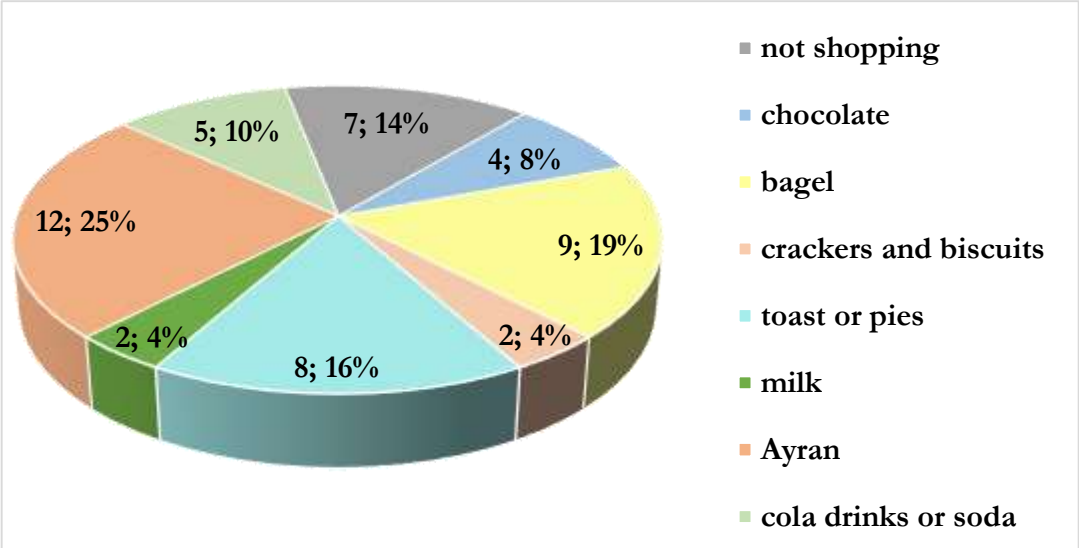

Figure 9. Individuals' food and beverage shopping either from the school canteen or the supermarkets

4.4. Nutritional Behavior of Individuals

Interview was conducted to determine the nutritional behaviors of individuals with Down syndrome by using the structured questionnaire previously created and the evaluations regarding the data obtained are given below.

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Participants were asked the question "Would you like to eat even if you are full?": While 17 participants said "Yes, I do", 3 participants used the word "sometimes".

The participants were asked the question, "Would you try not to eat too much food in order not to gain weight?" 16 participants replied, "No, I do not pay attention to my weight, I will eat everything." 1 participant replied, "My mom sometimes tells me to eat less and puts my plate very little". The last 2 participants answered "I am very hungry for doing sports, so I try to pay attention".

The participants were asked the question: "Do you consume too much food when you feel bad?": 5 participants replied, "Yes, I eat too much, I always want to eat too much.". 7 participants used the phrase "No, I lose my appetite when I feel bad". 8 participants responded, "When I feel bad, there is no change in my appetite."

The participants were asked the question "Do you feel hungry too often?": While 13 participants used the phrase "Yes, I am always hungry", 6 participants answered "sometimes". The last participant said, "No, I don't feel hungry often because I eat a lot."

The participants were asked the question: "Do you try not to eat some foods because they cause you to gain weight?"; All of the responses from the participants were "No, I cannot give up because I love to eat".

Participants were asked the question "Are you trying not to buy the foods you like to eat?": 16 participants used expressions such as "No, I buy them immediately" and 4 participants used the expression "sometimes".

5. Conclusions and Recommendations

Nutrition is an important consideration for children with mental development disorder. Because mental development is negatively affected due to eating problems observed in these children (Gal, E., Hardal-Nasser, R. and Engel-Yeger, B., 2011). 80% of the individuals included in the research have above normal body mass index, 65% are in the category of slightly fat and 15% are in the category of fat. AbdAllah et al., 2007; In order to evaluate the nutritional status of mentally retarded children in Egypt on the basis of anthropometric indicators and laboratory data, they conducted a study on 639 mentally disabled children aged 6-14. As a result of the research; It was determined that 14.1% of individuals have low weight prevalence. In our study, it was revealed that the majority of individuals had body mass indexes above normal and faced obesity problem. Sabuncular, G. (2013); In the study to determine the nutritional status of 53 children with Cerebral Palsy between the ages of 6 and 18 who applied to İzmir Tepecik Training and Research Hospital with the aim of determining their nutritional status, they determined that 67.9% of children with cerebral palsy were normal weight, 17% were weak, and 15.1% were overweight. In our study, there is an opposite situation and 80% of the individuals with Down syndrome included in the study were found to have a body mass index above normal. Soler Marin and Xandri Graupera (2011); In their study to determine the nutritional status of 38 individuals with Down syndrome between the ages of 16 and 38, they found that 76.3% of the individuals had a body mass index above normal. These results support the results of our study.

When the findings related to the nutritional habits of the individuals are examined, it is seen that none of the individuals skipped meals. While the number of meals of 17 (85.0%) of the individuals is 3, the number of meals of 2 (10.0%) is 5 and the number of meals of 1 (5.0%) is 4. It is a good eating habit to consume 3 meals in a day to have a sufficient and balanced diet. Özbaş et al., 2018; In the study carried out to determine the nutritional status of children with mental disabilities, 3-day food consumption records of 45 students with mental disabilities were obtained and 32 people whose records were complete and correct were included in the research. The amounts of energy, protein, vitamins and minerals taken by each child were calculated. The intake of nutrients was evaluated according to the age and gender of the children. It was determined that 43.8% of the children had problems with nutrition and 28.1% skipped meals, and 90.6% of the

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children consume snacks other than the main meals and the children receive more energy than the average daily calorie intake (1004±435 kcal). Similar findings were obtained in our study.

When the meals consumed by individuals are examined, it is seen that meat dishes took the first place with 11.4%, and this rate was followed by soup, pasta and yogurt with 9.7%. The consumption rates of rice and fried vegetables were equal to each other and were 9.1%. This rate was followed with 6.3% by egg dishes, vegetable dishes and puddings equally. The rates of fruit desserts, leguminous dishes, salads, halva and dumpling desserts were 5.7%, 5.1%, 4.7%, 3.5%, 3.4% respectively. Among the preferred meals of individuals with Down syndrome, meat meals are in the first place, which emphasizes the issue that individuals prefer primarily foods of animal origin.

The individuals included in the study were asked about the food and drinks they consumed between meals and it was observed that the cake, pie and pastry took the first place with 22.8%. This finding shows that individuals prefer foods with high carbohydrate content between meals. This result also explains why the majority of individuals have high body mass index. When it comes to the most consumed beverage preferences, 18 participants (12.8%) preferred ayran; 16 participants (11.3%) preferred milk; the remaining participants were found to prefer black tea and freshly squeezed juice at the same rate.

Individuals were asked whether they had a meal outside the home and 85% of the individuals had breakfast outside the home with varying frequency. When looking at the frequency of having breakfast outside, 65% of them were found to have breakfast outside infrequently. It was determined that 95% of them ate lunch and dinner outside with varying frequency and 60% of them rarely ate lunch and dinner out. Individuals were asked what type of business they chose to eat out, and it is understood that 10 (41.7%) of the respondents preferred kebab restaurants and pita bread; 7 of the participants (29.2%) preferred Turkish fast food companies; 6 (25%) of the participants preferred fast food businesses and 1 of the participants (4.3%) preferred home cooking. When individuals' reasons for eating out were examined, it is understood that the families of 13 of the participants (65.0%) wanted to eat out with them; 4 of the participants (20.0%) ate outside only during celebrations and special days; 2 of the participants (10.0%) had one meal at school; that one of the participants (5.0%) had one meal at the workplace.

Interview was conducted to determine the nutritional behaviors of individuals with Down syndrome by using the structured questionnaire previously created and the evaluations regarding the data obtained are given below.

Participants were asked the question "Would you like to eat even if you are full?": While 17 participants said "Yes, I do", 3 participants used the word "sometimes". The participants were asked the question, "Would you try not to eat too much food in order not to gain weight?" 16 participants replied, "No, I do not pay attention to my weight, I will eat everything." 1 participant replied, "My mom sometimes tells me to eat less and puts my plate very little". The last 2 participants answered "I am very hungry for doing sports, so I try to pay attention". The participants were asked the question: "Do you consume too much food when you feel bad?": 5 participants replied, "Yes, I eat too much, I always want to eat too much.". 7 participants used the phrase "No, I lose my appetite when I feel bad". 8 participants responded, "When I feel bad, there is no change in my appetite." The participants were asked the question "Do you feel hungry too often?": While 13 participants used the phrase "Yes, I am always hungry", 6 participants answered "sometimes". The last participant said, "No, I don't feel hungry often because I eat a lot." The participants were asked the question: "Do you try not to eat some foods because they cause you to gain weight?"; All of the responses from the participants were "No, I cannot give up because I love to eat". Participants were asked the question "Are you trying not to buy the foods you like to eat?": 16 participants used expressions such as "No, I buy them immediately" and 4 participants used the expression "sometimes".

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These results support the fact that individuals with Down syndrome included in the study love to eat, they cannot control themselves too much about food consumption and do not try to pay attention to their weight. In the study, it was found that 30% of children with Down syndrome has obesity. Obesity generally consists of a combination of overeating and immobility. However, another factor is that children are rewarded with sugar and high-calorie foods for their activities (Riley and Gersh, 2013). In our study, it was determined that the majority of the individuals with Down syndrome included in the study were in the group of obese and slightly obese. Obesity is a risk factor for various chronic diseases, including diabetes, cardiovascular diseases and hypertension. For this reason, parents and teachers have a big and important duty. Starting from a young age, children with Down syndrome should be given nutritional education with the cooperation of parents and teachers, and the individual should prefer healthy ones in food selection and develop and maintain those positive eating habits. In addition, efforts should be made to increase the physical activities of children and direct them to sports activities, and it should be made to transform this situation into a lifestyle. Nutrition education can be given to individuals with Down syndrome in cooperation with family and teachers. Nutrition education at early ages will help prevent obesity, type II diabetes, various vitamin and mineral deficiencies encountered by individuals with Down syndrome (Mazurek and Wyka, 2015).

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