

## **Examination Of The Effects Of Changes In Nutritional Habits And Diets Applied During The Covid-19 Pandemic**

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### **Abstract**

**Objective:** This study aimed to examine the effect of individual weight loss methods and popular diets on body weight applied by adults living in Bitlis province during the Covid-19 pandemic.

**Materials and Methods:** The research was carried out between July and December 2022 with 385 participants, 197 women and 188 men between the ages of 19-64 living in Bitlis. A sociodemographic form was applied to the participants, the popular diets they followed were questioned and the 24-hour recall intake record of the participants were taken. The Nutrition Information System (BeBiS) program was used to evaluate the 24-hour recall intake record and to determine the nutrients taken. SPSS 25.0 statistical package program was used to evaluate the data.

**Results:** According to the 24-hour recall intake record obtained from the research participants, the energy intakes were higher among male than female groups, and there was an increase in body weight during the pandemic period. As per the data collected, it was concluded that the obesity rate was higher for male than female participants. According to the research, there was no significant effect of educational status on obesity. It has been determined that the foods whose consumption has increased the most during the pandemic period are pastry products, and the foods whose consumption has increased the least are meat and meat products. In order to reduce body weight during the pandemic period, it has been observed that individuals apply diet pill use, laxative and diuretic use, slimming tea, exercise, skipping meals, fasting, diet / light products and methods of weight loss with acupuncture. It was observed that the individuals participating in the study followed a variety of popular diets. Dietary Approaches to Stop Hypertension (DASH) diet, Fasting diet, Atkins diet, Beverly Hills diet, Cabbage diet, Zone diet, Pritikin diet, Dukan diet, Karatay diet, Biggest diet, Asian diet and Attention to Body Shape Scale (ABS) diet are among the diets applied during the pandemic period. As a result, the Fasting diet was found to be the most beneficial diet in terms of weight loss. Following that, the most weight loss occurred Dukan and Karatay diet. The types of diets with the least weight loss were determined as Zone diet, Biggest diet, Asian diet and ABS diet.

**Conclusion:** Due to stress and inactivity during the Covid-19 pandemic period, it was observed that the majority of the people participating in the study had weight gain. At the end of the pandemic, it was determined that these individuals applied to different popular diets or individual weight loss methods. While the most weight loss occurred in the Fasting, Dukan and Karatay diets, it has been observed over the long periods that the individuals have stopped applying diet and gained weight.

**Keywords:** Covid-19, Diet, Popular Diets, Weight loss, Body Mass Index

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### **I. INTRODUCTION**

The Covid-19 pandemic first emerged as a global threat in Wuhan, China at the end of December 2019 (Del Rio et al., 2020). The Covid-19 pandemic has affected the whole world and led to various changes in the lives of individuals. During the Covid-19 pandemic period, the decrease in physical activity rates in all individuals has also been excessive stress. The decrease in energy expenditure due to the decrease in the movement status of the individuals has led to an increase in body weight. This has led to an increase in the obesity rate (Çelik ve Yenal, 2020; Gürbüz, 2020; Atalay, 2021).

The increase in the obesity rate has caused individuals to consult various weight loss methods, to receive dietitian support and to apply popular diets (Çulfa et al., 2021). Individual weight loss methods used because of weight gain during the pandemic period include the use of slimming teas and pills, weight loss methods with acupuncture, the use of laxatives and diuretics, eating less, fasting and exercising. Among the

diets applied by dietitians in order to reduce body weight during the pandemic phase are the Fasting diet, Dukan diet, Karatay diet, Dietary Approaches to Stop Hypertension (DASH) diet, Cabbage diet, Atkins diet, Beverly Hills diet, Zone diet, Pritkin diet, Biggest diet, Asian diet and ABS diet. The Fasting diet is a type of diet that covers a period ranging from 12 hours or several days (Beli et al., 2018). It is applied with the principle of reducing or limiting energy intake to zero completely by fasting. It is thought that this type of diet can regulate insulin and glucose metabolism. The most important difference of the fasting diet from other diets is that it allows unlimited eating on the days off (Öney and Soran, 2022). Dukan diet is a diet program consisting of 4 parts consecutively. The first part is the attack phase and lasts between 1 and 7 days. The first 2 phases contain high-protein nutrients. Chapter 3 is called a reward phase, which includes nutrients with a high carbohydrate, such as bread, grain sources, and fruit. The last phase contains some vegetables and fruits except grapes, bananas and cherries (Ölmez Zorlu, 2015). The Karatay diet is a type of diet that recommends and encourages the consumption of foods with a low glycemic index. Karatay diet is a form of nutrition that does not adhere to the daily calorie amounts recommended for many diets for years. It recommends consuming many types of fats that are prohibited or restricted for the process of reducing body weight. It is also known as a diet that attracts attention by emphasizing the importance of these fats (Karatay, 2011). Dash diet is defined as a sort of diet which consulted to normalize blood pressure levels in people with high blood pressure. In this type of diet, attention is paid to the preference of the foods being eaten as poor in cholesterol and fat. The Dash diet is a type of diet in which the daily consumption rate of foods and beverages with sugar is extremely limited. In this kind of diet, attention is paid to reducing the amount of sodium (Ölmez Zorlu, 2015). The Cabbage diet is one of the shock diet, which is based on the consumption of cabbage soup. In this kind of diet, cabbage soup is consumed instead of meals for a week. In this diet, it is aimed to quickly reduce weight (Yıldırım, 2009). The Atkins diet is a kind of diet that encourages high levels of protein and fat intake that restrict carbohydrate consumption. The Atkins diet limits carbohydrate consumption to 20 g per day. This diet includes foods rich in protein such as meat, chicken, fish and seafood. Lentils, rice, and fruit can also be consumed in low portions (Sack et al., 2009). The Beverly Hills diet is a type of diet that covers a 35-day period. It does not require calorie calculation or portion restriction. It promotes the consumption of vegetables and fruits. On most days individuals are exposed to low-calorie days and vital nutrient deficiencies that require them to consume only fruit (Bryngelsson and Asp, 2005). Zone diet is a kind of diet in which 30% of energy is provided by protein, 30% from fat and 40% from carbohydrates. The Zone diet has three main meals and two refreshments. It is argued that the zone diet provides protection against hidden heart disease, high blood pressure and diabetes by regulating metabolism (Ölmez Zorlu, 2015). Pritkin diet is a type of diet with less than unsaturated fat and more fiber intake, such as vegetarian diet. The amount of energy is approximately between 700-1200 kcal/day. 65% of the total energy is carbohydrates, 25% is proteins and 10% is fats. The Pritkin diet has been indicated to be deficient in vitamin B12 and calcium. It is known to reduce many factors for heart disease, including body weight and blood pressure (Bryngelsson and Asp, 2005). In the Biggest Loser diet, almost half of the list consists of carbohydrates. About 30% of this diet consists of proteins and 25% of unsaturated fats. The Biggest Loser diet is a type of diet that requires adaption to the pyramid called the classic pyramid 1,2,3,4. It also allows an additional 200 calories to be consumed by individuals at any time and in any way they want. In this type of diet, 4 servings of vegetables and fruits can be consumed per day, 3 servings of meat and meat products and (fat-free) milk and dairy products, and 2 servings of whole grain or whole wheat food types. In addition, for the extra 200 calories allowed, 1 serving of dessert can be optionally consumed as a type of dessert, an extra-fatty food or junk food such as chips, or as an alcoholic beverage (Bryngelsson and Asp, 2005). The Asian diet is a type of diet that aims to provide a calorie balance in small portions. The principle of the Asian diet is based on the consumption of rice. One of the important aspects of the Asian diet is that regular consumption of soy-containing foods can lower cholesterol and lead to a healthier life. Besides, it protects against many different types of cancer (Bryngelsson and Asp, 2005). The ABS diet is a type of diet that suggests consuming a total of six small meals per day instead of consuming three large main meals to meet daily nutrient needs. This diet continues for about 6 weeks. The most important point in this type of diet is to pay attention to the consumption of foods and beverages poor in fat and to avoid processed foods (Ölmez Zorlu, 2015).

In this study, the effect of popular diets and individual weight lose methods applied during the pandemic period on body weight was examined.

## **II. MATERIALS AND METHODS**

The study aims to evaluate some diets and individual weight loss methods prepared and followed by dietitians during the Covid-19 pandemic period of individuals living in Bitlis. This study was carried out among individuals living in Bitlis between July - December 2022. The research was conducted among 385 individuals, including 197 women and 188 men. In order to determine the general information (gender, height, body weight, age, etc.) of the individuals, a socio-demographic form was used by the questionnaire method. In order to find out the daily consumed foods, 24-hour recall intake record was taken in a 24-hour period. The outcomes of diets

and individual weight loss methods applied during the pandemic period by individuals aged 19-64 living in Bitlis province on body weight change were evaluated.

### 1.1 Sociodemographic Form

In order to find out the general information (age, body weight, height, gender, etc.) of the individuals participating in the study, a sociodemographic form consisting of 32 questions in which general information was questioned was applied. In the survey, Covid-19 catching status, sleep pattern, change in physical activity, change in fast-food consumption, change in ready-to-eat food consumption, change in body weight, diets applied, individual weight loss methods applied, etc. situations have been examined.

### 1.2 24-Hour Recall Intake Record

A 24-hour recall intake record was applied in order to obtain detailed portions, amounts and contents of food and beverages consumed by individuals in the last 24 hours. Participants were asked to fill in a 24-hour recall intake record. It is very important for the result to remember the food and beverage amounts in the questionnaires correctly. Training and information was provided by the researcher on how to fill in the food intake records of individuals. At the end of the day when the questionnaires were filled and completed. The records were checked and the deficiencies were completed (Dehne et al., 1999).

### 1.3 Data Analysis

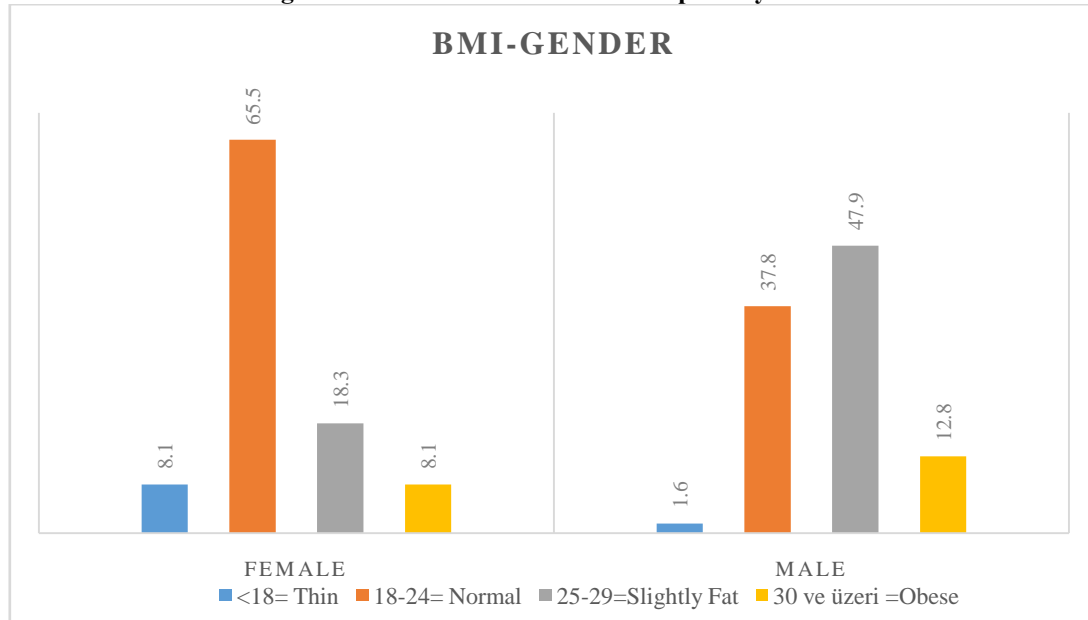
SPSS 25.0 (Statistical Package for the Social Sciences) statistical package program was used to evaluate the data.

The Nutrition Information System (BeBiS) program was used to evaluate the 24-hour recall intake record and to determine the nutrients taken (BeBiS, 2004).

## III. RESULTS

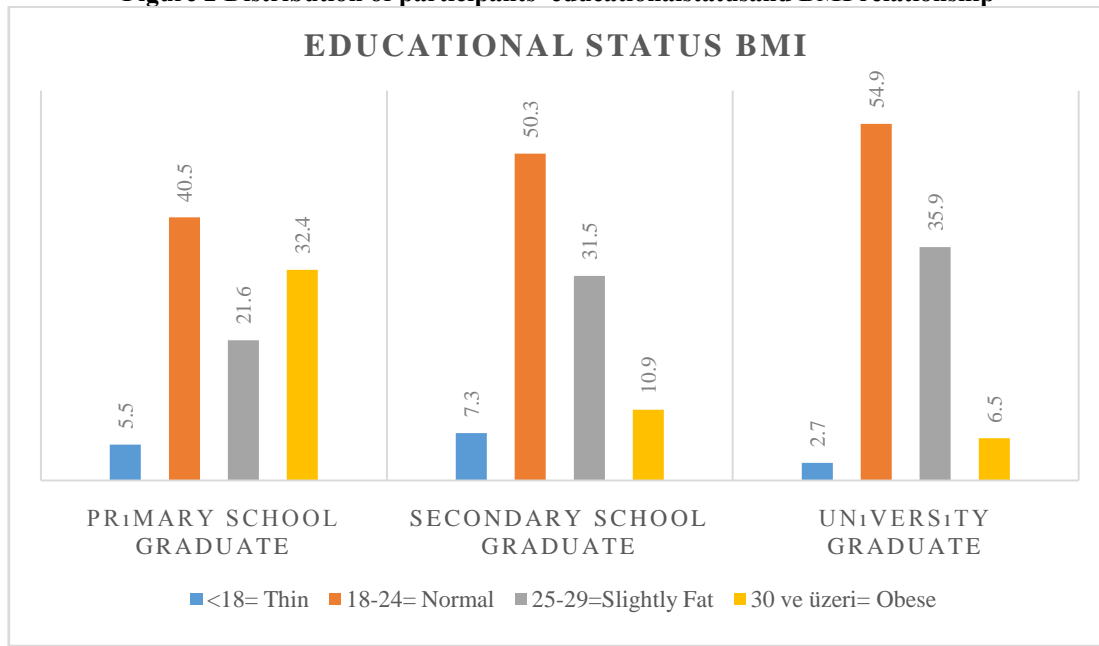
197 female and 188 male individuals participated in the study. It was observed that the rate of obesity in men was higher than in women, but the rate of being overweight was higher in women (Figure 1). However, the difference between obesity prevalence was found to be statistically insignificant ( $p>0.05$ ).

Figure 1. BMI Distribution of Participants by Gender



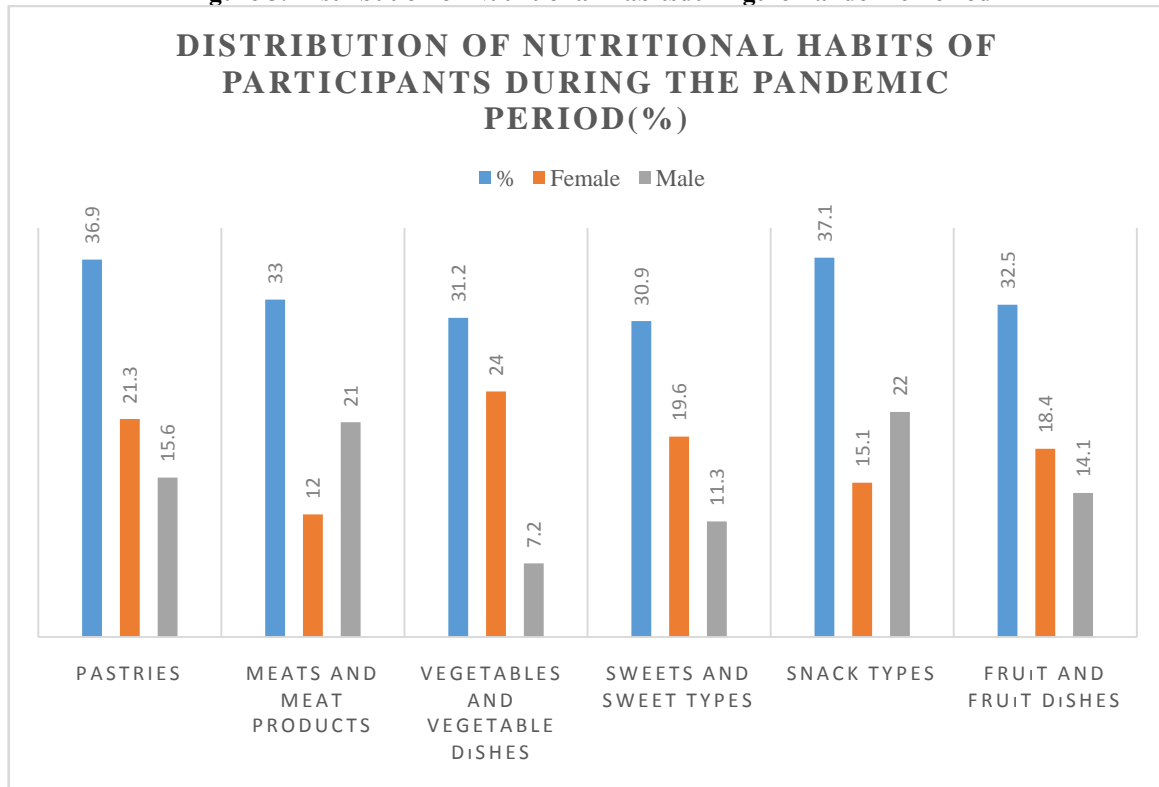
In the study, the effect of educational status on the body mass index of individuals was examined, but it was seen that there was no statistically significant relationship between them (Figure 2,  $p>0.05$ ).

**Figure 2 Distribution of participants' educational status and BMI relationship**



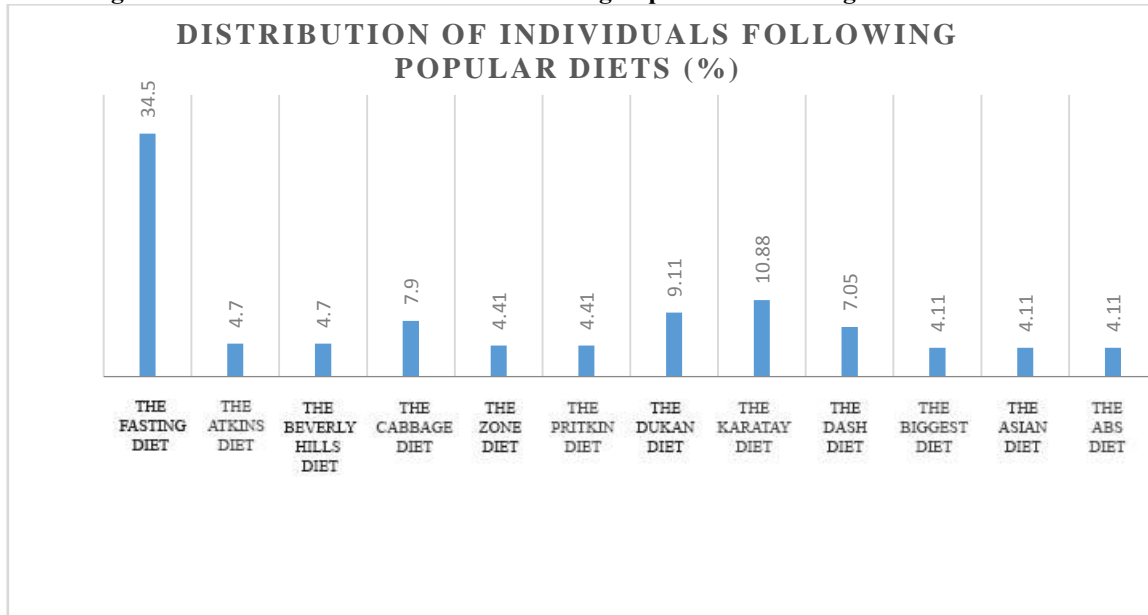
In this study, the foods consumed during the pandemic period were examined. It has been observed that there is an increase in the consumption of meals made at home (Figure 3). It was determined that especially pastries and snack foods were consumed more than other foods, nevertheless meat and meat products were the least consumed group (Figure 3). There is a significant relationship between the nutritional habits of individuals and their gender during the pandemic period; it was determined that women consumed more pastry, vegetable, fruit and dessert types (p<0.05).

**Figure 3. Distribution of Nutritional Habits during the Pandemic Period**



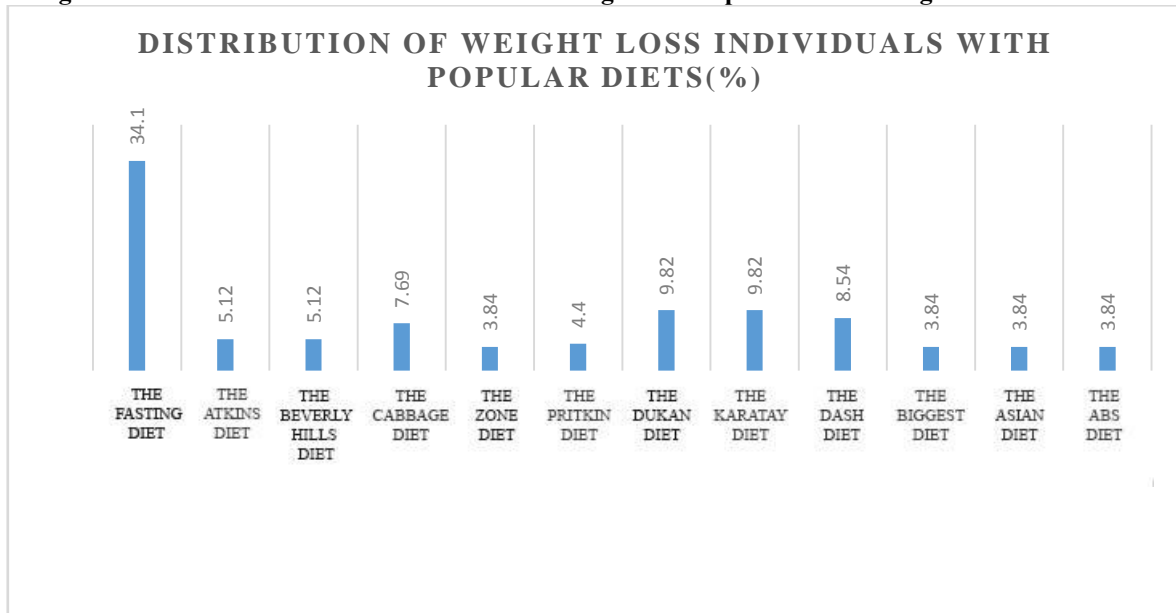
In the study, it was seen that the most popular diet type applied during the pandemic period was the Fasting diet. It was determined that the Karatay diet was in the second place. Atkins and Beverly Hills diets were the least popular diets in this period (Figure 4).

**Figure 4. Distribution of Individuals Following Popular Diets During the Pandemic Period**



During the pandemic, it was determined that the most weight loss, as 34.5% of the weight, was the result of the Fasting diet among individuals who followed some popular dietes. Other dietes that resulted in the most weight loss were the Dukan and Karatay diets. The dietes that resulted in the least weight loss were the Zone diet, the Biggest diet, the Asian diet, and the ABS diet (Figure 5).

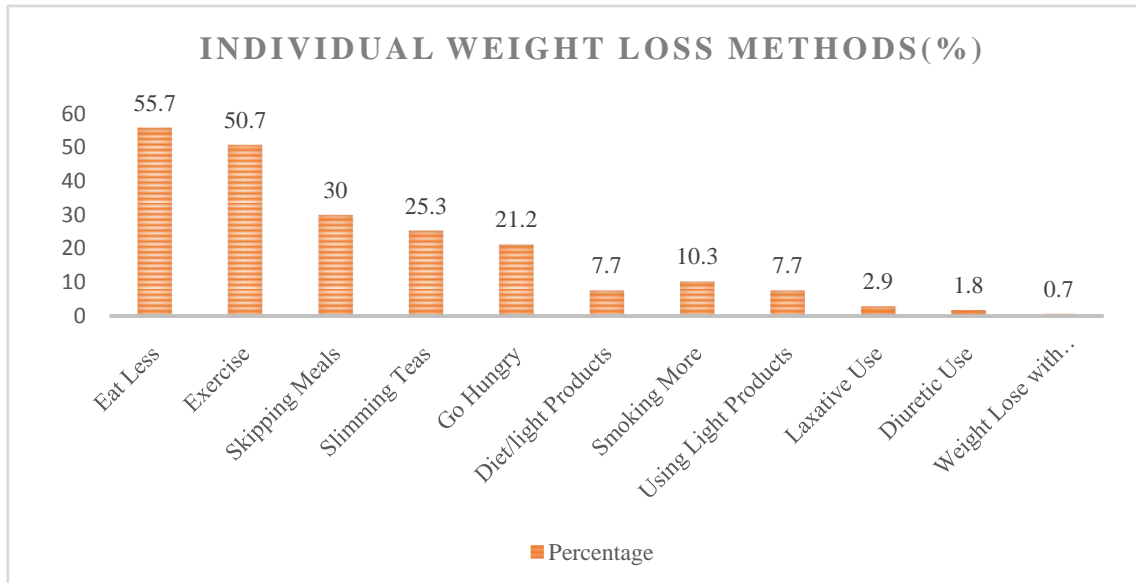
**Figure 5. Distribution of Individuals Who Lose Weight with Popular Diets During the Pandemic Period**



During the pandemic period, the most preferred method as an individual weight loss method was a diet practice in the form of starvation by eating less food. In addition, it has been discovered that the most preferred method for weight loss is to exercise.

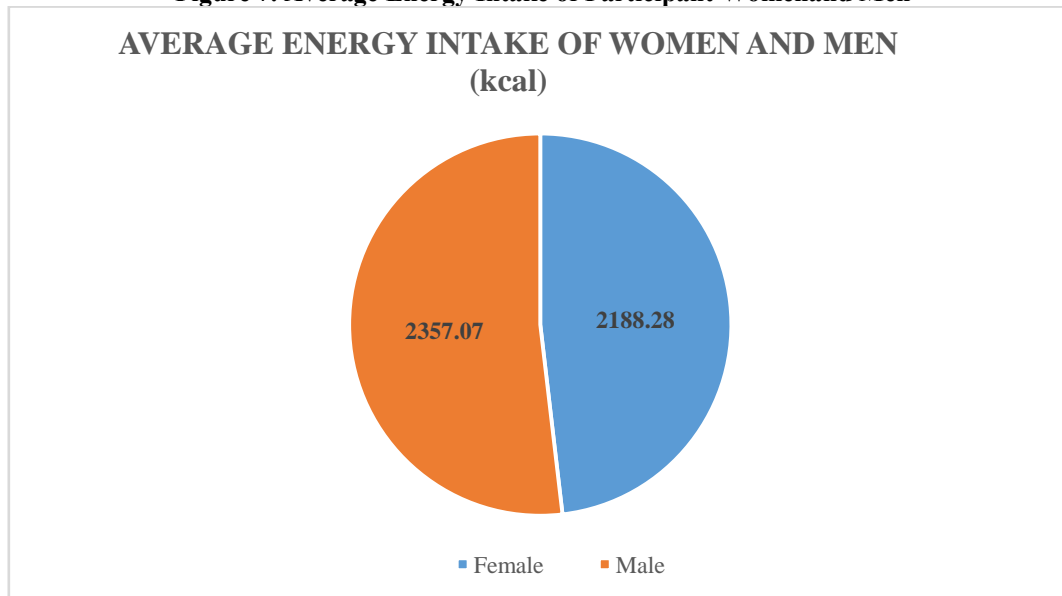
According to the data obtained, it was concluded that the participants preferred more than one weight loss method to reduce their weight during the pandemic period (Figure 6).

**Figure 6. Distribution of Individual Weight Loss Methods Preferred by Participants to Lose Weight During the Pandemic Process**



A 24-hour recall intake record was taken from the individuals participating in the study. It was observed that the amount of energy in the diets of men was higher than women (Figure 7)

**Figure 7. Average Energy Intake of Participant Women and Men**



#### IV. DISCUSSION

It is known that individuals gain weight because of the stress and inactivity during the pandemic period, and they try to lose weight under dietitian control or individually at the end of the pandemic. In this research, the effect of the pandemic on weight gain and the diets followed afterwards and the current situation were examined.

Due to the lack of awareness about nutrition in our country, the rate of obesity is especially high among young people (Ersü and Haberlioğlu, 2022). According to TUBER 2022 data, the energy required for women between the ages of 19-39 is 1800 kcal, and the average energy for women between the ages of 40-69 is 1600 kcal. The energy required for men between the ages of 18-49 is 2200 kcal, and the energy required for men between the ages of 50-59 is 2000 kcal (T.R. Ministry of Health, 2022). According to the 24-hour recall intake record taken from the individuals participating in the research, the average energy received by women was recorded as 2188.28 kcal, and the average energy received by men as 2353.07 kcal. In our research, it was observed that the energy



intake of men was higher than women. The average amount of energy received by men and women participating in our research was above the TUBER data.

In this study, it was found out that the body weights of individuals increased during the pandemic period. In various studies, it was stated that there was an increase in the body weight of individuals with the quarantine application during the pandemic period, similar to this study (Di Renzo et al., 2020; Gürbüz, 2020; Atalay, 2021).

It is thought that the increase in energy intake of individuals during the pandemic period and the increase in inactivity with the measures applied during the quarantine period may be the reason for the increase in body weight.

In this research, it was seen that obesity is more common in men than women. Similarly, it was reported that obesity is more common for women than men (Garipoğlu and Bozar, 2020).

As a result of the current research, it was seen that there was no significant relationship between BMI and educational status of the individuals participating in the study. It has been determined that the increase in body weights of individuals depends on their eating habits. In another research, it was observed that the BMI status of university students only changed depending on their eating habits and stress, and the educational status had no effect on this issue (Sibel et al., 2019). Yet another study, it was determined that the BMI status of secondary school students changed depending on their eating habits and stress (Uskun & Şabaplı, 2013).

As a result of the current research, it has been determined that the most consumed foods during the pandemic period are pastries and snacks. In another research, it was concluded that the most consumed foods and beverages during the pandemic period were tea, coffee and pastry (Garipoğlu and Bozar, 2020). In this study, one of the most consumed foods is pastries, which is similar to the current research. In other study, it was stated that in parallel with the current study, individuals consumed pastry-type foods more than other foods during the pandemic period (Yüce and Gamze, 2021). In accordance with a study conducted on adolescents during the pandemic period, the most consumed type of food and beverage during the quarantine period was sweet products, while the least consumed type of food and beverage was milk and dairy products (Ersü and Haberlioğlu, 2022).

In this study, Fasting diet was found to be the most beneficial diet in terms of weight loss. The success rate of this diet was found to be very high compared to other applications. Subsequently, the most weight loss diet types were Dukan diet and Karatay diet. In a study similar to the reseach, the Fasting diet, Cabbage diet and Karatay diet, which are popular diet methods applied during the pandemic period, provided more weight loss than

other diets (Odacı, 2017). However, after the diets are applied for a certain period of time, individuals gain weight again as a result of random feeding. The important thing is that with the BMI reaching below 25, the long-term application of this BMI appropriate diet, that is, continuity is important. This shows that it is important for individuals to be conscious about nutrition.

In conclusion, it has been seen that people stay at home because of the pandemic and gain weight as a result of over-nutrition. At the end of the pandemic, it was seen that individuals applied various methods to lose weight, but the most successful method was to lose weight by eating less and exercising. It has been observed that a good practice in weight loss would be obtaining less energy by limiting nutrient intake to the body alongside with exercising.

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