T.C.

YEDİTEPE UNİVERSİTY

INSTITUTE OF HEALTH SCIENCES

MASTER'S PROGRAM IN NUTRITION AND DIETETICS

THE EFFECTS OF FOOD CHOICE AND DEMOGRAPHIC CHARACTERISTICS ON ADULT'S BEHAVIOR TOWARDS SUSTAINABLE NUTRITION: COMPARISON OF FOUR DIFFERENT GENERATION

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İSTANBUL-2025

THESIS APPROVAL FORM

Institute: Yeditepe University of Health Institute

Programme: Department of Nutrition and Dietetics

Title of the Thesis: The Effects of Food Choice and Demographic Characteristics on Adult's Behavior Towards Sustainable Nutrition: Comparison of Four Different Generation

Owner of the Thesis: Ceren PEKDAŞ

Examination Date: 16.06.2025

This study have approved as a Master Thesis in regard to content and quailty by the Jury.

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APPROVAL

This thesis has been deemed by the jury in accordance with the relevant articles of Yeditepe University Graduate Education and Examinations Regulation and has been approved by Administrative Board of Institute with decision dated ..... and numbered .....

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DECLARATION

I hereby declare that this thesis is my own work, that I have not had any unethical behavior at any stage from planning to writing, that I have obtained all the information in the thesis within academic and ethical rules, that I have cited sources for all information and comments not obtained through the thesis work and included these sources in the list of references, and that I have not violated patent and copyright rights during the thesis study and writing.

Ceren PEKDAŞ

ACKNOWLEDGEMENT

I would like to propound my sincere thanks to my advisor, Assoc. Prof. Dr. İrem Kaya Cebioğlu, who enlightened my path with her valuable knowledge and experience at every stage of this thesis study and never withheld her support and interest. Being her graduate student has been a great source of inspiration for me. Her academic approach, constructive feedbacks and patience have made this process both instructive and developmental for me.

DEDICATION

I would like to sincerely thank my dear friends Sanem Aydın, Clinical Psychologist Burcu Averi and Berkay Özgür, who made me feel that they were always with me throughout my master's thesis process, brightened my path in moments of difficulty and contributed to my progress without losing my motivation.

I would like to thank my dear father, mother and brother for their love, trust and support in this process as in every moment of my life, and for encouraging me by standing behind me under all circumstances. You have always been my biggest source of strength with your understanding and support. I am glad to have you.

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LIST OF SYMBOLS AND ABBREVIATIONS

CFCs:	Chlorofluorocarbons
CH4:	Methane gas
CO2:	Carbon dioxide
COP21:	The 21st Session of the Conference of the Parties
DASH:	Dietary Approaches to Stop Hypertension
FAO:	Food and Agriculture Organization
GHG:	Greenhouse Gas
IPCC:	Intergovernmental Panel for Climate Change
LCA:	Life Cycle Assessment
MD:	Mediterranean Diet
ND:	Nordic Diet
NO:	Nitric oxide
N2O:	Nitrous oxide
O3:	Ozone gas
SDGs:	Sustainable Development Goals
UN:	United Nations
UNFCCC:	United Nations Framework Convention on Climate Change
WCED:	World Commission on Environment and Developmen
WHO:	World Health Organization

ABSTRACT

Pekdaş, C. (2025). The Effects of Food Choice and Demographic Characteristics on Adult's Behavior Towards Sustainable Nutrition: Comparison of Four Different Generation. Yeditepe University, Institute Of Health Science, Department of Nutrition and Dietetics, Master Thesis. İstanbul

The rapidly growing world population, the transformation of dietary habits and the negative effects of climate change on environmental and individual health are increasing the interest in sustainable nutrition every day. This study was planned to examine the influences of demographic characteristics on the behaviors towards to sustainable nutrition and food choices of adults aged between 18 and 65 years living in Türkiye and to compare these influences among four generations. Between November 2024 and March 2025, a total of 591 individuals, 435 women and 156 men, between the ages of 18 and 65 living in Türkiye participated in this study. Participants' demographic characteristics, behaviors towards sustainable nutrition and food choices were collected by online survey method. The mean score of sustainable dietary behavior was 108.72 ± 20.03 out of 145. Sustainable nutrition differs among the four generations. It was found that the score of sustainable nutrition behavior increased with rising age. The level of behavior towards sustainable nutrition differs according to sex and employment status. According to the findings of the study, women and retired individuals were found to have higher scores of behavior towards to sustainable nutrition. Food choices differ among the four generations. For the participants, health, natural, weight, familiar, environment, animal and social justice motivations were found to be effective on food choices. As a conclusion, further studies are needed to understand sustainable dietary behaviors and the motivations affecting food choices.

Keywords: Sustainable Nutrition, Food Choice, Generational Differences, Healthy Nutrition

ÖZ

Pekdaş, C. (2025). Yetişkinlerin Sürdürülebilir Beslenmeye Yönelik Davranışları ve Besin Seçimleri Üzerinde Demografik Özelliklerin Etkisi: Dört Farklı Jenerasyonun Karşılaştırılması. Yeditepe Üniversitesi, Sağlık Bilimleri Enstitütüsü, Beslenme ve Diyetetik Bölümü, Yüksek Lisans Tezi. İstanbul.

Hızla artan dünya nüfusu, beslenme alışkanlıklarının dönüşümü ve iklim değişikliğinin çevresel ve bireysel sağlık üzerindeki olumsuz etkileri, sürdürülebilir beslenmeye yönelik ilgiyi her geçen gün artırmaktadır. Bu çalışma, Türkiye'de yaşayan 18 – 65 yaş arası yetişkin bireylerin sürdürülebilir beslenmeye yönelik davranışları ve besin seçimleri üzerine demografik özelliklerin etkilerinin incelenmesi ve bu etkilerin dört nesil arasında karşılaştırılması amacıyla planlanmıştır. Kasım 2024 – Mart 2025 tarihleri arasında, Türkiye'de yaşayan, 18 – 65 yaş arası 435'i kadın 156'sı erkek olmak üzere toplam 591 kişi bu çalışmaya katılım sağlamıştır. Katılımcıların demografik özellikleri, sürdürülebilir beslenmeye yönelik davranışları ve besin seçimleri online anket yöntemi ile toplanmıştır. Sürdürülebilir beslenmeye yönelik davranış puan ortalaması 145 üzerinden 108,72 ± 20,03 olarak bulunmuştur. Sürdürülebilir beslenme dört nesil arasında farklılık göstermektedir. Yaş arttıkça sürdürülebilir beslenmeye yönelik davranış puanının arttığı saptanmıştır. Sürdürülebilir beslenmeye yönelik davranış düzeyi cinsiyet ve çalışma durumuna göre farklılık göstermektedir. Çalışma bulgularına göre, kadınların ve emekli bireylerin sürdürülebilir beslenmeye yönelik davranış puanları daha yüksek saptanmıştır. Besin seçimleri dört nesil arasında farklılık göstermektedir. Katılımcılar için sağlık, doğal, vücut ağırlığı, aşinalık, çevre, hayvan ve sosyal adalet motivasyonları besin seçimi üzerinde etkili olduğu bulunmuştur. Sonuç olarak sürdürülebilir beslenmeye yönelik davranışların ve besin seçimini etkileyen motivasyonların anlaşılması için daha fazla çalışma yapılması gerekmektedir.

Anahtar Kelimeler: Sürdürülebilir Beslenme, Besin Seçimi, Nesil Farklılıkları, Sağlıklı Beslenme

1. INTRODUCTION

For thousands of years, the relationship between all life forms on Earth and the climate has been in a fragile balance to ensure the continuation of life on the planet (1). This balance has started to change especially since the Industrial Revolution and has shown a huge change with the rapid rise in the human population and technological developments (1,2). By 2050, the global human population is estimated to reach approximately 10 billion (3).

The rapid rise in the world population is also rapidly raising consumption and the need for food. The rise in consumption and the food choices made by individuals unfavourably influence this balance that has existed for years. Human beings have been making food choices based on health claims for centuries. Nevertheless, the choices made influence not only health but also the environment and the planet (4,5).

The current food systems are one of the largest sectors with negative influences on planetary health. The current food systems and agriculture-related land use changes account for approximately 25 – 35% of global greenhouse gas emissions (6,7). In addition, food systems cover almost half of habitable land. Rising greenhouse gas emissions leads to increment on the temperatures of world (6,8,9). This increment and current food systems are leading to diminishing fresh water reserves, infertility in soil, loss in biodiversity, air pollution, nutrient losses, and changes about the climate (9–12). Nearly 8 billion people on Earth have caused the extinction of many species living in the universe (13,14). By 2050, food systems are predicted to raise environmental pressures around to 90% (3).

In recent years, the food choices of many communities around the world have begun to evolve towards a Western-style dietary pattern (3,15). This dietary pattern, that is greeater in fat, refined sugars, red meat and processed products, leads to health problems such as obesity, cardiovascular diseases and contributes to raised greenhouse gas emissions and climate change (5,10,16).

Changes on the environmental and problems of health caused by current food systems and food choices have brought the concepts of sustainability and sustainable

nutrition to the agenda (17,18). The concept of sustainability was first mentioned in the Brundtland Report published in 1987 by the World Commission on Environment and Development (WCED), now known as the Brundtland Commission. According to this report, sustainability is at the basis of making more influential use of the limited resources of the ecosystem we live in, and leaving a better world to meet the requirements of both the present and the future. Changes in the current food systems are needed for a more sustainable ecosystem and public health. Changes in food choices are also thought to make a significant contribution to the sustainability (7,18–20).

In order to preserve the environment and ameliorate human health, it is necessary to promote sustainability as a societal level (21). Sustainability, which includes both an environmental and nutritional approach, has influenced the formation of sustainable nutrition (10,22). Sustainable nutrition needs to be addressed to lessen the negative influence of the current food systems and improve societies' dietary habits (6).

A sustainable diet should include local and seasonal foods, lessen food loss and waste, and aim to decresase footprints on the environment. In line with these goals, it is imperative to review the food choices and dietary patterns of the society (6). In this context, raising public awareness and establishing the necessary policies are necessary to ensure behavioral changes in individuals (23). Dietitians have a significant role to play in implementing these behavioral changes (21).

Sustainable nutrition focuses on a dietary pattern that is accessible, environmentally friendly and health-enhancing for present and future generations (6,23). The concepts of Sustainability and Sustainable Nutrition have been included in the Turkey Nutrition Guide 2022 (22). Reviewing level of knowledge about the sustainable nutrition and behaviors can support the organization of education programs and development of policies on this issue. In addition, examining food choices at the societal level and understanding the motivations influencing food choices can also provide guidance for the creation of a model of sustainable nutrition (4,24,25).

In the existing literature, there are limited number of studies on sustainable nutrition in Türkiye. In order to raise the awareness of sustainable nutrition, that is becoming increasingly important worldwide, to organize the necessary trainings and develop policies on this issue, and to contribute to the literature, this study was planned to evaluate demographic factors on the behaviors and food choices of adults aged

between 18 and 65 years living in Türkiye towards sustainable nutrition and to compare them between four generations.

2. LITERATURE REVIEW

2.1. The Concept of Sustainability

Throughout the world, all the relationships are based on the concept of consumption (17). Since the industrial revolution, rapid growth around the world has rised global food demand dramatically (18,26). As technological advancements begin to take place, consumption reaches serious heights. As a result of that, environmental degradation is occurring (17,18,27). Raised land and water use, inefficiency of natural resources, greenhouse gas emissions, pollution, global warming, and climate crisis are examples of environmental degradation (17,19,28). The current food systems are a primal cause of degradation of the environment and environmental degradation and exhaustion of natural resources. In addition to these, the current food systems lead to soil degradation, deforestation and loss of biodiversity (6,28). These problems has brought out the concepts of "sustainable development" and or "sustainability" in the 1970s (18).

The concept of sustainable development and or sustainability was for the first time mentioned in the Brundtland Report supported by the United Nations in 1987. This report was published by the former World Commission on Environment and Development (WCED), now known as the Brundtland Commission (17,29). In this report, the concept of sustainability was defined as: The development that meets the requirements of the present without compromising the capacity of future generations to meet their own needs (30,31).

The 2030 Agenda for Sustainable Development, adopted by the United Nations Member States in 2015, expresses a shared vision for peace and prosperity for people and the planet, both today and in the future (32,33). In substance are the 17 Sustainable Development Goals (SDGs), that are urgent calls for action to ensure a global partnership for all nations. These SDGs are aimed at ending poverty, reducing inequality, combating climate change, improving health, and protecting oceans and forests (33,34).

The industrial revolution, technological developments, and rapidly growing economy are induce of environmental degradation that are putting pressure on the planet day after day and the limited natural resources as a result of excessive consumption are being depleted (10,35). Humans are presently using the equivalent of

1.7 Earths (35). The concept of sustainability, that refers to ensuring that resources found in nature are used without harming the capacity of future generations to meet their requirements, is composed of nutrition and health, economic, ecological and socio-cultural sub-dimensions (10,17). Hence, sustainable development and all its sub-dimensions need to be addressed simultaneously.

2.2. The Sustainability and Ecological Crisis

The term "ecological crisis" refers to global changes that threaten the planet as a result of unsustainable production and consumption rather than sustainability. In other words, an ecological crisis happens to when alterations in the environment of a species or population begin to threaten its ability to survive (36).

Global environmental changes, which have accelerated in recent years, are affected by conditions such as plastic pollution, food waste, loss of biodiversity and rapid population growth (3,16,18). At the same time, global environmental changes lead to many sociocultural, economic and ecological problems. Examples of these problems are greenhouse gas emissions, air pollution, global warming, hunger crisis, climate change and so on (18,37).

2.2.1. The Greenhouse Effect

Greenhouse gases are atmospheric gases that raise the surface temperature of the Earth and other planets. In other terms, greenhouse gases (GHGs) are known as gases that affect and raise the heat-trapping capacity of the atmosphere (38). GHGs, unlike the other gases, can absorb infrared radiation that escapes from the Earth's surface and is reflected back to the Earth. In this manner, GHGs induce the planet to naturally warm up as a result of heat retention, that is the greenhouse effect (27,38).

If there were no greenhouse gases in the atmosphere, the surface temperature of our planet would be about -20°C. Water resources on the Earth would freeze, and life would not exist in its current form (27).

The main GHGs are water vapor, nitrous oxide (N2O), carbon dioxide (CO2), methane gas (CH4), chlorofluorocarbons (CFCs), fluorinated gases, and ozone (O3) (38). The effects of GHGs vary depending on their concentration, length of time in the atmosphere, and ability to trap heat. For example, methane (CH4) has a greater ability

to trap infrared light than carbon dioxide (CO2). However, since CO2 is the most prevalent greenhouse gas, it is the major cause of the greenhouse effect (39).

There are two possible ways that GHGs are produced: natural and anthropogenic, in other words caused by human activities. However, the majority of GHGs are produced anthropogenically as a consequence of activities of human (38,39). The earthquakes, forest fires, and mud volcanoes are examples of natural occurrences of GHGs. While the major human activity is the using of fossil fuels, changes in land use, deforestation, agriculture, animal husbandry, and industrial processes are other examples of anthropogenic pathways (13,38). The using of energy sources were responsible for 70% of GHG emissions in 2015 (39).

According to data from Türkiye, emissions from the energy, waste and agricultural sectors have raised significantly in the last 30 years. According to data given by the Turkish Statistical Institute in 2022, the sector that contributes the most to GHG emissions is the energy sector. In 2022, emissions from the energy sector were calculated as 400.6 Mt CO2 equivalent and increased by 179.8% compared to 1990 (143.1 Mt CO2). The impact of GHGs by different sectors is shown in Figure 2.1. When the distribution of GHG emissions in terms of GHGs is examined, it is seen that CO2 has the greatest impact (79.1%). The impact of GHG is shown in Figure 2.2 (40).

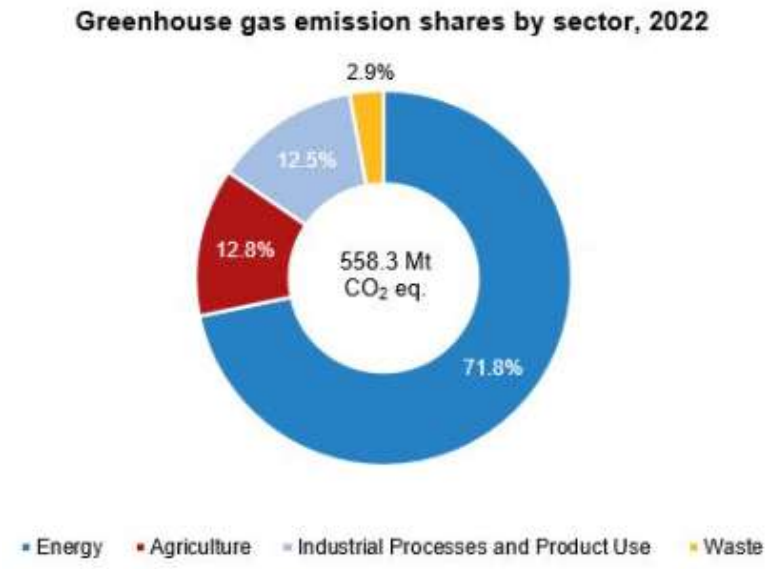

Figure 2. 1. The Impacts of Greenhouse Gases by Different Sectors
Source: 40. Turkish Statistical Institute. TUIK. Greenhouse Gas Emissions Statistics, 1990-2022. Available from: https://data.tuik.gov.tr/Bulten/Index?p=Greenhouse-Gas-Emissions-Statistics-1990-2022-53701&dil=2#:~:text=In 2022%2C the energy sector,the waste sector with 2.9%25.

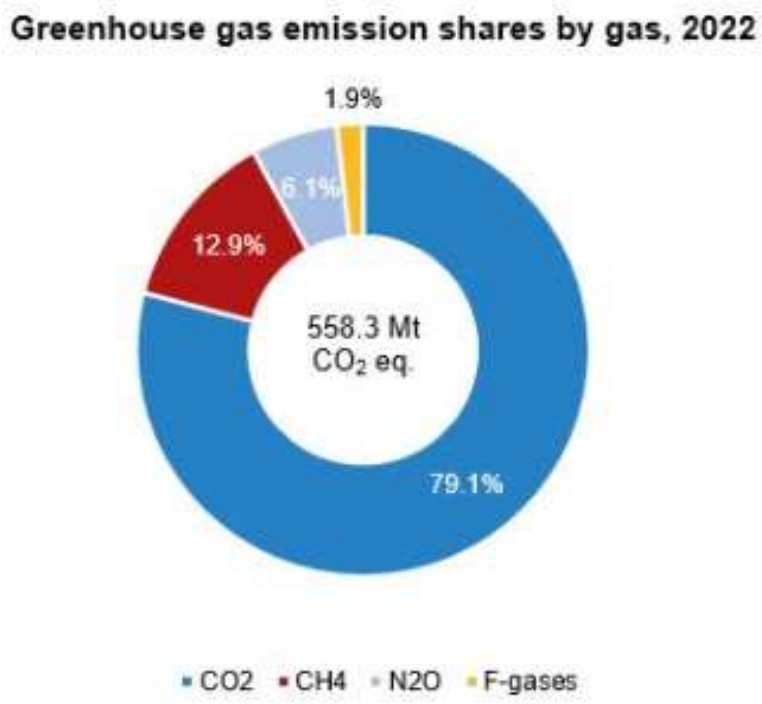

Figure 2. 2. The Impact of Greenhouse Gas

Source: 40. Turkish Statistical Institute. TUIK. Greenhouse Gas Emissions Statistics, 1990-2022. Available from: https://data.tuik.gov.tr/Bulten/Index?p=Greenhouse-Gas-Emissions-Statistics-1990-2022-53701&dil=2#:~:text=In 2022%2C the energy sector,the waste sector with 2.9%25.

Current food systems and land use changes related to agriculture account for approximately 30–35% of global GHG emissions (41,42). Besides, the food systems cover 50% of the global habitable land (7). Agriculture alone is responsible for 70% of freshwater use around the World (43). Decreasing freshwater reserves, increasing temperatures and changes in the use of agricultural lands endanger biodiversity (8,44). Although the world population constitutes only 0.01% of all living things in the universe, it is known that humans have induced the extinction of almost 80% of wild mammals and marine mammals, nearly half of plants and 15% of fish since the existence of civilizations (13).

Since the 1950s, approximately 35% of arable agricultural land has become unusable due to anthropogenic reasonings (13). In addition to the reduction of agricultural lands, agricultural practices such as the utilization of pesticides and fertilizers, and soil cultivation induce the emission of GHGs such as CO2 and CH4, thus endangering the sustainability of food production necessary for humanity (9,13). The increment in the global human population have impact on the using of agricultural resources (9). The increment in the global human population also increase the demand

for food. The increment in the global food demand makes it difficult to use natural resources sustainably (8). It is forecasted that global food consumption will raise global temperature by approximately 1◦C by 2100, making it difficult to achieve the goal of limiting the temperature raise to 1.5◦C (1,8).

In a study conducted in the United Kingdom in 2012, examined the GHG emission effects of different foods produced and classified them as low, medium and high. According to this study, GHG emissions of foods derived from animals are over than foods derived from plants. Additionally this study demonstrates that sensitive fruits and vegetables grown in more protected conditions have over GHG effects among plant-based foods (45).

In the United Kingdom, It has been determined that roughly 30% of total GHG emissions come from the food sector. GHG emission effect is highest level in ruminant animals such as cows and sheep, whose digestive systems produce methane gas naturally. These animals are followed by chickens and pigs (9,11). In the production of plant-based foods, this emission effect is at a lower level. Rice is the food with the highest GHG emission among plant-based foods. Because it requires a lot of irrigation during production and produces methane gas in high levels. Livestock production has higher demands on land use and water use than other food commodities (11). Therefore one possible way to reduce environmental impact is to cut down meat (especially beef) consumption (7,11).

Changing dietary patterns with raising population and income are contrasts the GHG emission reduction targets set by the Paris Agreement. Limiting the raising of GHG emissions is essential for food and nutrition security in low-income countries. The countries that have the highest GHG emissions are high-income countries (11). Developing middle-income countries are shifting towards a diet that is known to induce high GHG emissions, typical of high-income countries. This diet pattern is predominantly animal-based; rich in sugar, fat and processed products (11,46).

2.2.2. Global Warming and Climate Change

Shelter has become become a problems as people migrate from rural to urban regions and the increment in the population. Residences built by removing green areas

induce degradations in ecosystem. That is to say, increment in growth indirectly induce climate change (13).

Uncontrolled population growth, rapid industrialization, and rising environmental pollution in the world pose a great threat to the earth's atmosphere (38). Energy systems and other industries cause CO2, CH4, N2O, and other gases to accumulate in the atmosphere, dramatically changing the composition of the gases in the atmosphere (38,39). The accumulation of gases creates a layer between the sun and the earth's surface. Some of the energy coming to the Earth is absorbed by greenhouse gases in the atmosphere because the gases are transparent to the sun's rays that hit the Earth, but much less transparent to the ground's rays that are emitted back. Consequently, the Earth warms more than expected, inducing a phenomenon called the Greenhouse Effect (39,47).

The increment in concentration of GHG in the atmosphere causes the greenhouse effect. Rising surface temperature of the Earth caused by greenhouse gas emissions lead to global warming (38). While global GHG emissions are on the rise, unsustainable energy use, inequality between production and consumption, expanding sea levels, rising ocean acidification and alterations in land use continue to contribute to the problem (19,38,48). These unfavourable results negatively affect water and food security, public health, and the economy, and lead to losses concerned about nature and humanity (44,49). Global warming have impacts on weather events and climate in every region of the World (44). Global warming that is a consequence of the greenhouse effect, leads to climate change (39).

Climate change is a global environmental problem that has affected the entire world, especially in recent years (39). Although the climate has been altering since the beginning of the world, climate change continues to occur very dramatically in today due to human activities. According to the United Nations Framework Convention on Climate Change (UNFCCC), climate change is pointed out "a change in climate resulting from human activities that directly or indirectly ruin the composition of the global atmosphere, in addition to the natural climate change observed in comparable periods of time" (13).

Climate change is the cause of extreme weather events such as hewat waves, droughts, floods, and forest fires. Extreme weather events lead to ecosystem

degradation, such problems in accessing food and clean water, an increment in the number of illness and death, and a diminsh in the quality of human life (1,13,48). Furthermore, climate change negatively influences the nutritional value and productivity of agricultural products. It is anticipated that the issue of extreme climate-related calamities that negatively influence agricultural production has almost doubled since 1990 (8,49).

Türkiye is one of the countries that will be most unfavorably affected due to climate change. The Mediterranean Basin is one of the regions most vulnerable towards to changes in climate. The decline in fish numbers in the Mediterranean basin endangers food sustainability. Annual average temperatures are 1.5°C warmer in the Mediterranean Region compared to the pre-industrial period (13).

Fossil fuels that have been used by humans for centuries, are one of the major cause of the climate change. When a carbon-based product such as oil, coal, and natural gas is burned, CO2 is released, absorbs heat and releases CO2 into the environment. As a conclusion of the using of fossil fuels, excessive amounts of CO2 are added to the naturally occurring gases in the atmosphere, warming the world and triggering global warming (13,19,50). Levels of CO2, one of the most significant GHGs, have reached levels not seen in many years (19). Also leads to an increment in air pollution and pollution-related cancer cases (1).

The major cause of climate change is correlated with human activities. Because the environment and environmental problems are influenced by the using of fossil fuels, urbanization, forest fires, and damages in the habitat (19,50). On the other hand, human activities are also necessary to stop global warming and climate change caused by greenhouse gases released as a consequence of human activities (39). The United Nations, the most essential example of international cooperation, carries out fundamental studies on environmental pollution, global warming and climate change (19).

The Intergovernmental Panel on Climate Change, whose principal purpose is to assess climate change, raise awareness and lead to way of studies in this area, was established in 1988 with the support of the United Nations. The report published by the IPCC in 2023 set out that the surface temperature in the first twenty years of the 21st century was 0.99°C over than the period between 1850 and 1900 (19,48).

The United Nations Framework Convention on Climate Change (UNFCCC), which aims to minimize and control GHG emissions, was opened for signature at the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil in 1992 by the United Nations (UN) and entered into force in 1994 (39,51). Every year, member countries hold a meeting of the parties under the UNFCCC. The Kyoto Protocol was adopted in Kyoto, Japan, in 1997 at the Third Meeting of the Parties on the Implementation of the UNFCCC. The Kyoto Protocol was signed under the UNFCCC to limit and minimize GHG emissions (39,52).

The 21st Conference of the Parties (COP21) held in 2015 was held in Paris, the capital of France. The Paris Agreement was accepted at COP21 (51,53). The Paris Agreement, which is acknowledged a milestone, intends to keep the global average temperature increment at 2°C above pre-industrial levels and to limit the temperature increase to 1.5°C above pre-industrial levels (11,48,52).

In 2015, the UN member states was regard as the Sustainable Development Goals that is a universal call to action to save the planet and combat climate change, end poverty and ensure that all people live in peace and prosperity by 2030 (11,33). The 17 Sustainable Development Goals (SDGs) are shown in Figure 2.3 (33). Two of these SDGs are directly concerned about nutrition security and sustainable diets: target 2 is to reduce hunger and target 3 is to promote nutrition security and good health (11,32).

Figure 2. 3 - The 17 Sustainable Development Goals

Source: 33. United Nations. The 17 Goals. Available from: https://sdgs.un.org/goals

2.2.3. Climate Crisis and Environmental Problems

The Earth is a planet that contains numerous ecosystems. Natural resources are used by every living organism in this ecosystem to sustain its life (35). For thousands of years, the relationship between life forms in the ecosystem and the weather patterns has been in a fragile balance, favorable to the existence of all life forms on the Earth (1). This delicate balance started to change with the Industrial Revolution and this change started to evolve in an unfavorable direction for all life forms. In addition to the Industrial Revolution, increment in human population and technological developments have accelerated this change (1,35). At that, this change has become a grand threat to human life and the sustainability of ecosystem and biodiversity (10). Compared to the time period of 1850 – 1900, the global average temperature raised by 0.98°C in 2018 (13).

The increment in global temperature leads to various environmental problems as well as global warming. These problems give rise to critical and negative impacts on the environment and human health (7,23). The impacts are resulted from global warming include severe threats such as soil degradation, reduction of freshwater resources and water scarcity, jeopardizing global food security, hunger and poverty, loss of biodiversity, climate change (10,16,53).

The climate crisis is one of the greatest threats facing the our planet currently. The human activities have aggrevated climate change, leading to the emergence of the global climate crisis. The most significant motive that leads to the climate crisis is global warming, also known as temperature rise (7,11). The latest report of the IPCC has been exposed that the major driver of the temperature rise is anthropogenic, so that human-induced, factors (13,48). The climate crisis have effect on not only underdeveloped countries as well as developing and developed countries. In some underdeveloped and low-income countries, malnutrition and nutrient deficiencies are primal public health problems (13,23).

The former step in reducing the environmental impacts of anthropogenic activities is awareness (54). It is required to accept the existence of environmental problems, to establish what causes these problems, and to produce and implement the necessary solutions in the context of sustainability. In order to take the former step, the direct and indirect impacts of human beings on nature must be assessed. The most

frequently and widely measurement method used nowadays is the "ecological footprint" (9,36,54). The impacts are resulted by human beings from production to consumption constitute the ecological footprint (21,54).

2.2.3.1. The Ecological Footprint

The ecological footprint is used to denote the natural resources that a society uses to produce the ecological assets and basis goods and services it needs and to dispose of waste or by-products (9). The idea of ecological footprint was propounded by Dr. Mathis Wackernagel and Prof. Dr. William Rees in the 1900s. The concept of ecological footprint, that adressess the dependence of human beings on nature, makes environmental sustainability measurable. This concept numerically states how much natural space living beings on earth use to supply their consumption while continuing their lives (12,35,54).

The assessment of this concept can be used on an individual, society or product basis. For instance, numerous factors are included in an individual's ecological footprint, from the amount of water they use to wash their face when waking up in the morning to the type of clothes they wear to work or school. For a product, for instance, the assessment is made by including all stages from the materials to be used in the production of a canned product to the annihilation of waste that may occur during distribution process (35,54).

The footprints express human pressure on the environment and the environmental impacts arising from this pressure (9,35). Environmental footprints are a beneficial indicator of the environmental influences associated with the production and consumption of food products (12).

There are two other footprints that are signigicant for the concept of sustainability, like the ecological footprint, which are used to examine the environmental pressures of human being: the carbon footprint and the water footprint (9,28). The carbon footprint, the fastest expanding component among the footprints, is around 60% of humanity's total ecological footprint in these days (55). The carbon footprint is simply a representation of the overall amount of GHG. Humanity's ever-increasing ecological footprint is accelerating climate change (9,35).

2.2.3.2. The Carbon Footprint

The ecological footprint includes all components related to global warming and anthropogenic emissions. Briefly, it is expressed as an indicator for GHG emissions in the production of products or services. This item, that is converted into a carbon equivalent that includes products and services throughout the whole life cycle from cradle to grave, is called the Carbon Footprint (9).

Although there is no universally accepted definition for the carbon footprint, it can be declared as follows: an estimate of the total amount of GHG emitted from the product from a life cycle perspective, thus an estimation of the contribution to climate change from the product or service provided (12).

The carbon footprint analysis is acknowledged as a measure of impact about climate change. The carbon footprint uses the life cycle analysis methodology to commenate the potential impact of activities and individuals onto global warming (12). Life Cycle Assessment (LCA) is defined as "the compliation and assessment of inputs, outputs and possible environmental influences of a product system throughout its life cycle". LCA is used to evaluate the ecological load of a product during or at one point of its life cycle (7,12,51).

The carbon footprint is explained in terms of carbon dioxide equivalent (CO2eq). The amount of emissions of different gases is converted to CO2 equivalent utilizing the global warming potential. In other words, the carbon footprint contains the overall amount of all GHGs such as CO2, N2O, CH4 generating from activities such as transportation, agriculture and so on (9,12). It is a type of footprint that contains cumulative GHG emissions (9).

The carbon footprint, which is a major constituent of the ecological footprint, can demonstrate more than 50% of the all ecological footprint of an agricultural product (9). From tillage to distribution, each stage of agricultural practices contributes to CO2 emissions and the environmental impacts. Agricultural practices such as tillage, pesticide use, irrigation, and harvesting have several carbon footprint impacts. The primal sources of GHG from agriculture are organic wastes such as compost, N2O coming from the soil through inorganic fertilizer, CH4 from enteric fermentation of ruminant animals and CO2 emitted from rice fields (9,12,38). According to the carbon footprint unit, animal-based foods, especially ruminant meat, have a higher negatory

impact on the environment in comparison to plant-based foods because animal-based foods emit upper levels of GHG (2,28).

One other factor that have influence on the carbon footprint is food waste. Food waste constitutes a severe portion of all waste and contributes significantly to the GHG emission, exacerbating global warming (12). The GHG emission influence of preventable food waste is calculated at 2.0 to 3.6 Mg CO2eq per food waste on a basis of dry weight. This value must be minimized (9). Decreasing and reusing waste is an essential objective for the concept of sustainability and sustainable nutrition. Upcycled food waste can ensure nutrition for communities in need, also may bringing economical benefits (23).

Another factor that has a great impact on the carbon footprint is the using of fertilizers, herbicides, and pesticides. Its increasing use, particularly in Asia and Latin America, has also increased over the years in Türkiye (9). In Türkiye, compared to 2019, the amount of fertilizer that is pure plant nutrients (N, P2O5, K2O) consumed at the last of 2020 raised by approximately 30% and reached 3,210,698 tons (56). Using of Nitrogen fertilizer have impact on the carbon footprint resulting from production, practice, and direct N2O emission from soil after fertilizer application. One study reported that 75% of total emissions in crop production were associated with using of Nitrogen fertilizer (9). Agricultural pesticide use bring about soil impoverishment, pollution in water resources and loss of biodiversity(12).

2.2.3.3. The Water Footprint

The Water Footprint is another footprint obtained from the ecological footprint and significant for the concept of sustainability (12). The amount of fresh water required to produce a product or service is measured across the whole supply chain, giving the water footprint. The water footprint figures that at every stage of the process, from raw material processing to product use by the consumer (7,57).

The water footprint also uses the LCA methodology to calculate the overall volume of water used throughout the production chain (12). The water footprint is classified into three categories: blue, green and grey (57).

The blue water footprint typifies the capacity of freshwater used from groundwater and surface sources throughout the system that is not recharged to the basin or source. This footprint is based on water consumption for both irrigation and production (12,57,58). The green water footprint typifies the volume of rainwater evaporation from the ground and cultivated vegetation (57,58). The grey water footprint typifies the volume of polluted water relevant to the production or service of a good product. In other words, the grey water footprint puts across the degradation in the quailty of water. It is measured as the amount of water required to dilute contaminants sufficiently to theoretically meet the quality standards of water (57–59).

Activities of agriculture are the greatest user of water resources (59,60). Agricultural processes for 92% of the water footprint (7). Production of agricultue needs to raise by almost 50% by 2050 in comparison with 2012 to meet the rising demand. This situation stands for that more water is required. Worldwide water demand is expected to raise by 20 to 30% between 2010 and 2050 (59).

Around the world, approximately one third of the overall water footprint about agriculture is correlated with the production of products of derived from animals. The water footprint of food products varies considerably. Any product derived from animals has a higher water footprint than a plant-based one with the equivalent nutritional value (7). The study by Mekonnen and Hoekstra has been revealed that the average water footprint per calorie for beef is twenty times greater than that of starchy plants (57). In particular, beef has a larger water footprint than chicken or pork. The water footprint of selected animal and plant products is given in Figure 2.4 (59).

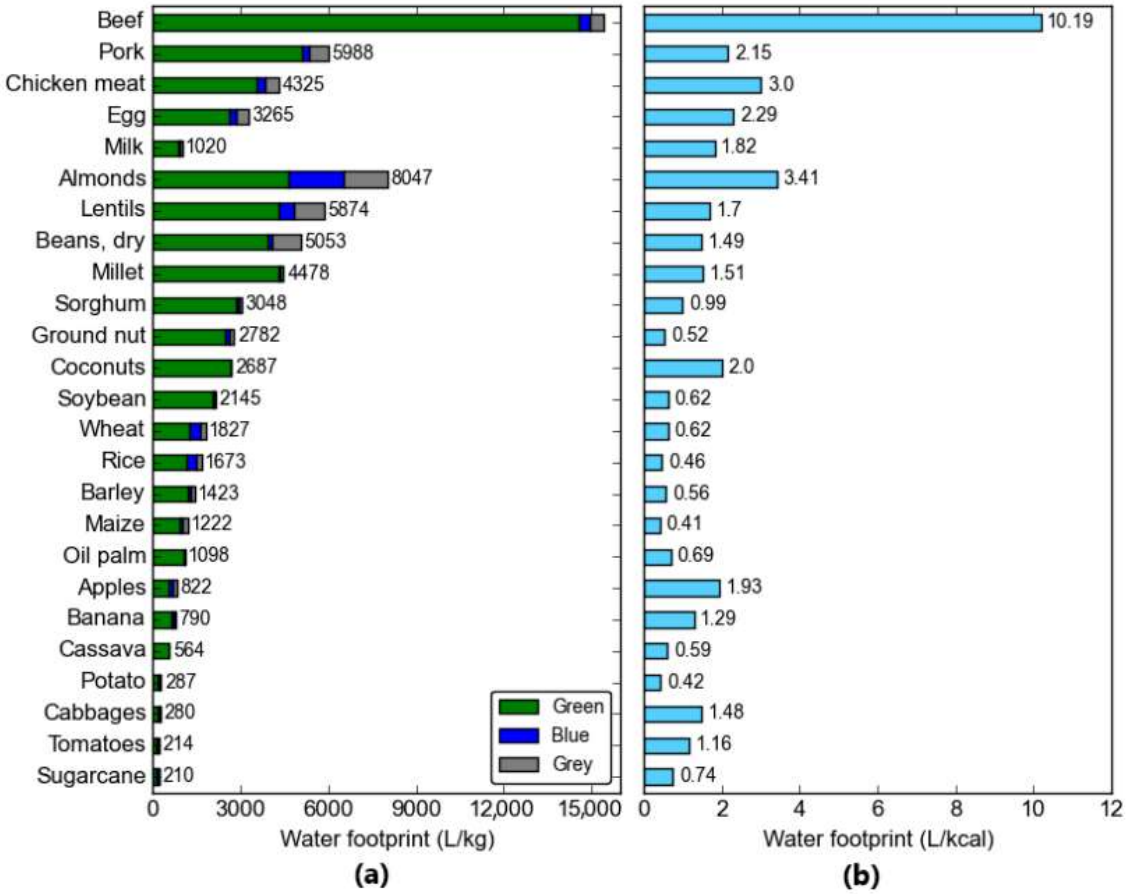

Figure 2. The WF of selected crop and animal products: (**a**) WF in a liter of water per kg of product, (**b**) WF in a liter of water per kcal of nutritional energy contained in the product. Data source from Mekonnen and Hoekstra [29] and Mekonnen and Hoekstra [37].

Figure 2. 4. The Water Footprint of Selected Crop and Animal Products

Source: 57. Mekonnen MM, Hoekstra AY. A Global Assessment of the Water Footprint of Farm Animal Products. 2012;401–15.

2.3. Sustainable Nutrition

Nutrition, health and the environment are closely interconnected. There is a two-way connection between the current food systems and environmental alterations (4,7). The mechanism of the food systems can be affected by environmental alterations in the way of food safety, productivity and quality, and one the most severe factors contributing to environmental alterations is the processes and outputs of food systems (4,61). The consequences of the current food systems can be exemplified as losses in nutritional, food waste, difficulty in accessing food, deterioration of soil quality, loss of biodiversity, pollution in water and climate crisis (9–12). The emissions from the

current food systems account for 25–30% of whole emissions caused by mankind activities, and this value is rising at a rate of 1% per year (9).

The current food systems fail to ensure food and nutritional security for all human beings and leads to severe harm to the planet. On the other hand, the climate crisis is making global food and nutrition security even more challenging (11). In the world, especially in developing countries, undernutrition and overnutrition are significant health problems (16). The 2017 Global Nutrition Report revealed that nearly 2 billion adults are overweight or obese, and approximately 41 million children are overweight around the world. In 2015, 777 million people were said to go to bed hungry, while this number raised to 815 million in 2017 (62).

Our planet produces enough food to fulfil the requirements of the world's population, but over than a third of the population challenges with the malnutrition (12). Nearly a third of the food every year is wasted or lost. Around the world, in the rough 1.3 billion tons of food are wasted. Additionally, food waste contributes to GHG emissions (63). While countries waste food at different rates, the United States throws away higher amount of food than any other countries (12,63).

At the present time, while the population is rising rapidly, the requirement for food is also rising (4). The fact that natural resources are limited and swiftly descending assures that the concept of sustainability is on the agenda (17). The concept of sustainability is at the basis of using the limited resources of the ecosystem we live in more efficiently and leaving a preferable world for future generations (7). For a more sustainable ecosystem and improved public health, the current food systems need to be transformed, benefit from the technological changes in agriculture, minimizing food waste and wastage, and focusing on individuals' food choices and societies' dietary patterns (20). In order to lessen the environmental influences of the current food systems and feed the population, the dietary patterns of societies need to be reviewed and sustainable nutrition should be taken action (6).

A sustainable food system aims to provide security about the food and nutrition by protecting the environmental and socioeconomic essentials on that present and future generations depend (8). Sustainable nutrition concentrates on a diet that is readily accessible, environmentally friendly, and health-promoting for present and future generations (10,23). The latest report by the IPCC emphasize that "adaptation of healthy

and sustainable diets offers a major opportunity to lessen emissions originated from food systems and enhance health" (48).

2.3.1. The Influences of Food Choices on the Environment

Around the world, the population is rising quickly, also the consumption is rising in parallel. Increment in consumption and choices of food consumption have impact on the GHG emissions (4). For years, people have been choosing foods based on health claims. However, the impact of an individual's food choices is not limited to only health. And it is risingly observed that choices about the food have a spacious effect, influencing the planet and the environment (5). It is conceived that the changes in food choices may make a significant contribution to the sustainability movement (24).

The environmental influences of food production are intimidating. Food production is responsible for a substantial percentage of greenhouse gas emissions (12). Global GHG emissions from food production are shown in Figure 2.5 (64).

The amount of GHG emissions emitted during the cultivation and production of food shows variations from food to food (16). GHGs originating from agricultural activities are N2O and CH4. GHGs originating from animal production are CH4 and nitrogen oxide (NO) (17,21). In the general, foods of animal origin emit over levels of GHG emissions than foods of plant origin (11). The impact of foods of animal origin and plant origin on GHG emissions is shown in Figure 2.6 (16).

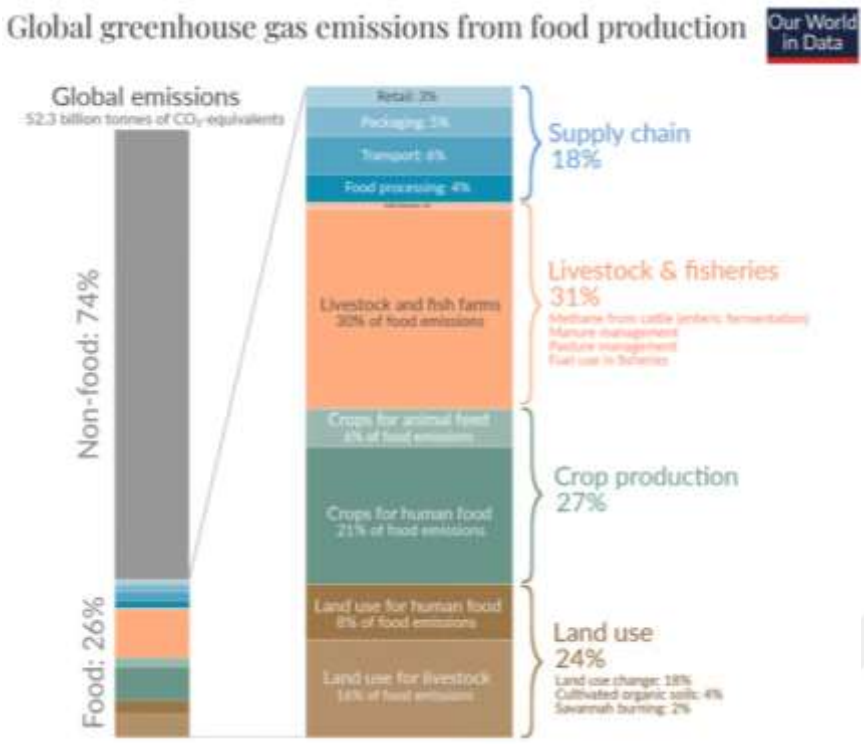

Figure 2. 5. Global Greenhouse Gas Emissions from Food Production

Source: 64. Ourworldindata [Internet]. Food Production is Responsible for One-quarter of the World's Greenhouse Gas Emissions. Available from: https://ourworldindata.org/food-ghg-emissions

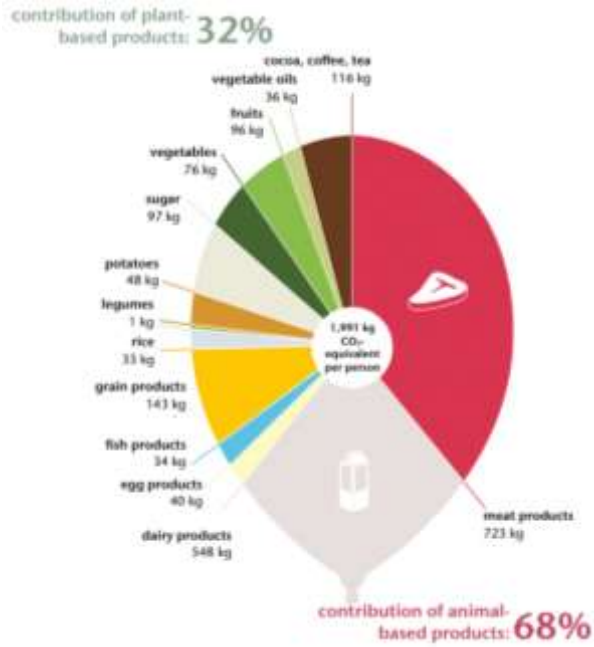

Figure 2. 6. The Impact of Foods of Animal Origin and Plant Origin on Greenhouse Gas Emissions

Source: 16. Von Koerber K, Waldenmaier J, Cartsburg M. Nutrition and The Guiding Principle of Sustainability. Ernahrungs Umschau. 2020;67(2):32–41.

Activities of agriculture overran 40% of the world. Around 70% of water resources are used for activities of agriculture. The productin of foods of animal origin has the greatest share of about the water consumption (16). The amount of water consumed for one portion of beef and beans was measured and expressed to be 1211 and 220 liters, respectively (50).

The main causes of GHG emissions in the diet patterns are meat and dairy products (16). CH4 and N2O are more potent GHGs than CO2. Methane is also a byproduct of the digestive process of ruminant animals, produced by enteric fermentation. This is why the carbon footprint of beef and lamb is greater than other animal products (12,17). Milk and dairy products have similar levels of GHG emissions to meat and meat products (16).

The increment in consumption and animal-based food choices raises the GHG effect. In a similar vein, the rate of imported food raises the impacts about the environment (24). Foods that are grown locally is more environmentally friendly than foods that is shipped long distances. The GHG effects of sensitive vegetables and fruits grown in more protected conditions is greater than other plant-based foods (7).

With urbanization and ascending income, individuals' food choices are shifting more towards animal-based foods and processed foods (12,16). These choices are followed by total calories per capita, while refined sugar, fat and alcohol consumption advances (8,12,45). Assuming that these choices continue in this line, it is predicted that there will be a 34% increment in use of blue water and a 44% increment in GHG emissions by 2050. For this reasong, making changes in the food choices is significant to minimize harmful influences on the environment (8).

The regions in the world that emit the fewest GHG also tend to be the most sensitive against to climate change. Limiting global GHG emissions is substantial for achieving food security and adequate and balanced nutrition in countries with a low income such as Sub-Saharan Africa. The countries that contribute the greatest GHG emissions are high-income countries. As a consequence, making changes in food choices should be particularly highlighted for high-income countries (11).

Middle-income countries are also transitioning to the unhealthy and high effect of GHG diet patterns that identfied of high-income countries (46). This diet pattern is

expressed as raised origin of animal products, refined sugar, fat and processed foods, and is devoid of fibre. This diet pattern raises both the impact on the environment and the prevalence of non-communicable diseases (11,16,65).

The range of foods and drinks, the amount consumed, the combinations and the frequency of consumption originate the diet patterns (12). Diet patterns are influenced by various factors: demographic factors, culture, sensory features, the number of meals consumed out of the home, the portion size of the meal, the rising influence of trade on the food sector and so on (12,65,66). As a result of, the consumption of red meat, processed and ultra-processed products, that are abundant in sodium, additive ingredients, refined sugar, saturated and trans fats, is also rising. Nonetheless, this pattern does not have favourable impacts for either health or the environment. A sustainable and healthy diet should contain fewer amounts of red meat, processed and ultra-processed products (12,22,65).

The impact of minimizing meat and meat products differs according the food and food prodcts that replace meat and meat products. The source of protein that can replace meat and meat products should be of great quality in terms of nutritional value, have fewer impact on the environment and be culturally acceptable. For instance, in the way of the nutrition, insects are an efficient source of protein, zinc and iron and have a fewer GHG influence. However, the cultural acceptability of insect consumption differs from society to society. Therefore, impacts on the environment of distinct diet patterns composed of food choices should be examined, not on a single product basis (11).

2.4. The Sustainable Diets

Global dietary patterns have begun to change substantially in the last 50 years (53). Individuals are making alteaations on their food choices in favor of the so-called Western Diet Model, that is low in nutritional value, high in energy, great in processed products and origin of animal foods, abundant in refined sugar, trans and saturated fat. From production to processing, distribution to waste, the food choices have consequences for the economy, health, environment and society (50,61). These choices create a severe threat to the planet and public health (53).

The food sector has one of the greatest portions in the crisis about climate, that creates a severe threats to the planet (50). The food consumption contributes roughly a third of the total impacts on the environment of households (67). These impacts on the

environment include air pollution, water scarcity, biodiversity loss, climate crisis (18,21,47,65). Unless there is a change in the habitual patterns of production and consumption, the climate crisis will become more severe (54). It is to be supposed to take action immediately against the climate crisis that our planet is facing (13).

Today, the idea of sustainability is a prominent issue (21). Within the framework of the idea of sustainability, one of the most significant essentialness for a sustainable life is the adoption of sustainable diets (24). The term sustainable diet was spoken of by Gussow and Clancy in 1986 to characterize recommendations for healthy food choices that respect the borders of natural life in the future (23). The concept of sustainable diet associates environmental damage with food choices (7). Changes in dietary food choices can lessen diet-induced GHG emissions and land use by up to almost 50% (21). Removing origin of animal foods, specifically meat and meat products, from the diet can achieve a difference of 60 to 80% on the GHG emission effect (24).

It is essential to protect the ecosystem and the environment, to pursue a sustainable policy for the welfare of current and future generations (50). Sustainable diets have been stated to be influential as part of the concept of sustainability (65). In 2010, at the conference organised by the Food and Agriculture Organization (FAO) and the International Commission on Biodiversity, a sustainable diet is referred to as follows: a diet that contributes to food and nutritional security, to the healthy life of current and future generations, and has a fewer influence on the environment (46,65).

Sustainable diets should be diets that support individual health and welfare; have a fewer impact on environment; are accessible and affordable to all; and are culturally acceptable, fair and safe. Sustainable diets should aim to provide optimal human growth and development, lessen malnutrition and the risk of diet-related non-communicable diseases, and protect ecosystems and biodiversity (22,23,65).

The core components of a sustainable diet should include: welfare and health, environment and biodiversity, seasonal and local nutrition, equality and fair trade, cultural heritage, accessibility, food security, food and nutrient requirements (22,65).

Not every sustainable diet is healthy and not every diet that is considered healthy is a sustainable diet (21). For instance, foods like sugar have a fewer GHG emissions but are not recommended to be raised in the composition of the diet due to impacts on

health (11). Therefore, for a sustainable and healthy diet, impacts on the both environmental and health should be evaluated together.

The common ground of dietary patterns considered sustainable is that they are abundant in origin of plant foods and support the consumption of fresh, seasonal and local foods (22,65). A sustainable and healthy diet should include greater origin of plant foods and fewer origin of animal foods. Consumption of processed and packaged foods that are higher in energy and poor in nutrition should be limited. This dietary pattern should encourage individuals to not exceed their daily recommended energy intake (7,22,65,68).

Recent dietary recommendations recommend minimizing protein from origin of animal sources and rising protein from origin of plant sources due to environmental concerns (22,50).

2.4.1. The Mediterranean Diet

The Mediterranean diet is a diet pattern known for its favourable sides to both health and sustainability (50). The Mediterranean Diet was expressed as the best diet by U.S. News & World Report 2025 (69). The Mediterranean Diet (MD) is known as the most sustainable diet (10). In addition to sustainability, the MD is a diet model that in biodiversity, local food, nutrition and culture are closely interconnected (70). The MD comes from the Greek word "diatia" meaning a way of living or lifestyle, that is to say that it does not only include the nutrition (14). In 2010, the MD has been gain acceptance by UNESCO as the Intangible Cultural Heritage of Humanity (15).

The concept of MD is used to define the typical eating patterns of countries bordering the Mediterranean region around the world. The food choices that this population makes in daily life influence their lifestyles (17). The MD model, adapted to today's lifestyle, contains recommendations on the amount and frequency of food consumption, seasonality, culinary activities, culturality and moderation, socialization, physical activity and adequate rest (10,21).

The MD promotes a greater intake of foods based on origin of plants and a few consumption of red meat, processed meats and products that over in refined sugar. In general, the MD is diet model that characterized by the intake of fresh fruits and

vegetables, mainly olive oil, mostly unrefined grains, seeds and nuts, and moderate amounts of eggs, fish and sea products, poultry and dairy products (10,17,22,65,70).

The MD diet pyramid is designed to convey fundamental information about the notional proportions and frequency of portions of foods and food groupings in the MD dietary pattern. The MD Pyramid is shown in Figure 2.7. The purpose of the pyramid is to provide a basic notion about healthy food choices (71).

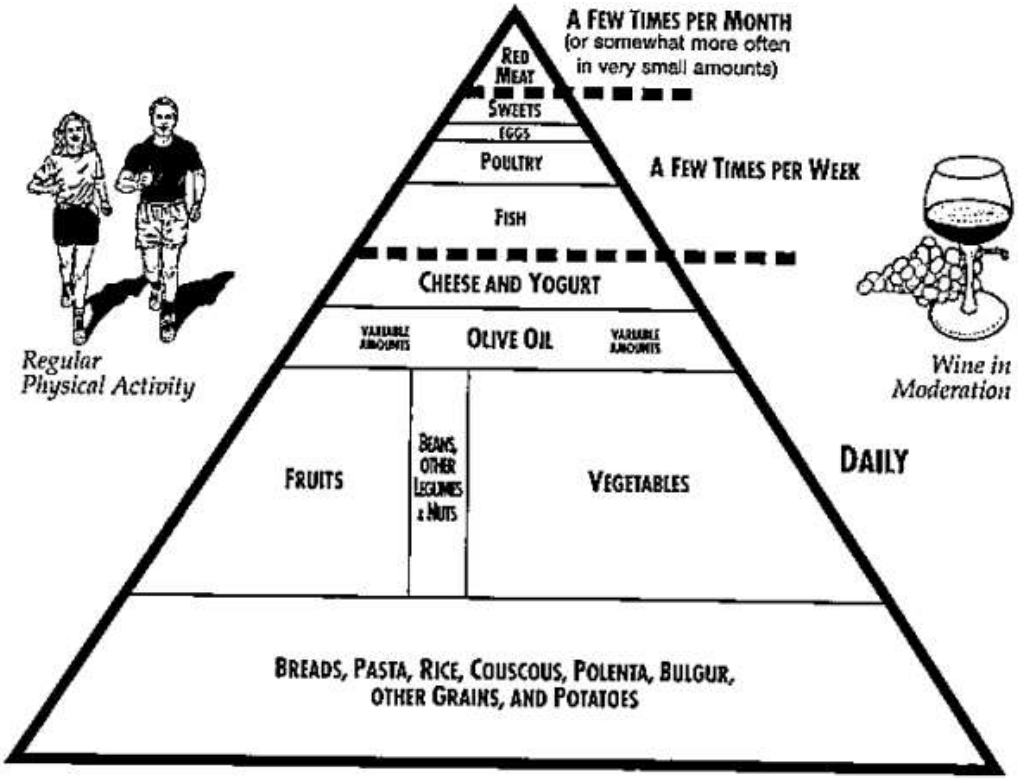

Figure 2. 7. The Mediterranean Diet Pyramid

Source: 71. Willett WC, Sacks F, Trichopoulou A, Drescher G, Ferro-Luzi Anna, Helsing E, et al. Mediterranean Diet Pyramid; A Cultural Model for Healthy Eating. American Society for Clinical Nutrition. 1995;61.

This pyramid has been updated in the light of contemporary research. The new pyramid has been designed by adapting to the dietary requirements of several Mediterranean countries as well as their socio-cueltural, geographical and economic circumstances (10,70). The New MD Pyramid highlights locality, freshness and seasonality and attaches importance to environmental health and biodiversity. The foods at the sole of pyramid represent the greatest intake level in terms of grams per day. The protein from animal-based source has been positioned with a fewer consumption

frequency by shifting from daily consumption to weekly consumption. At the top, there is a foods that are allowed to be consumed occasionally such as sugary beverages, pastries and so on (70). The New MD Pyramid is shown in Figure 2.8

Figure 2. 8. The New Mediterranean Diet Pyramid

Source: 70. Serra-Majem L, Tomaino L, Dernini S, Berry EM, Lairon D, de la Cruz JN, et al. Updating the Mediterranean Diet Pyramid Towards Sustainability: Focus on Environmental Concerns. Int J Environ Res Public Health. 2020;17(23):1–20.

Recently, the MD has become a very favorite dietary pattern. The interest in this diet is substantially related to the beneficial health influences revealed by the studies (17,22). The MD has been connected with a fewer risk of diseases about heart and vessels, according to several systematic reviews and meta-analyses (28,61,70). The study by Qiaoye Wang and colleagues used data from the 21,900 adults aged 40 to 79 years who were part of the European Cancer Research-Norfolk Cohort. The consequence of this study have demonstrated that baseline adherence to the MD is potentially related with a decreased risk of progression from cardiometabolic multimorbidity to first cardiometabolic disease (72). The beneficial health influences of

the MD are not limited to cardiovascular diseases; there are studies states that it provides favourable results for many diseases and risk factors such as efficient control of inflammatory markers, regulation of blood pressure levels, and effective management of type 2 diabetes (10,61).

2.4.2. The Double Pyramid Model Diet

The United States Department of Agriculture released the first food pyramid based on the MD Model to encourage healthy eating habits in the 1992 (21). In the food pyramid, the basic food groups are expressed with the recommended number of portions to be eaten Daily (22).

Daily food choices have impact on both the health of indvidual and society level and the environment. Current food production and consumption patterns are demonstrated as the major reason of degradation on the environment (28,70). In recent years, consumers have begun to understand that their food choices may have impact on the environment and their health, but more awareness is required on this matter (28). The Barilla Food and Nutrition Center in Italy has designed the Double Pyramid Model to raise awareness on this matter and to set an instance for the transition to a more sustainable and healthier diet (15,17,28). The Double Pyramid Model is shown in Figure 2.9 (73).

Figure 2. 9. The Double Pyramid Model

Source: 73. Allievi F. Meat Consumption As A Wicked Problem: Evidence From Data and Policie [Internet]. 2017. Available from: https://www.researchgate.net/publication/327075762

The Barilla Food and Nutrition Center has classified foods based on their impacts on both health and the environment (15). As a result of this classification, foods with a fewer impact on the environment were placed at the bottom of the pyramid, and foods with greater impact on the environment were placed at the top of the pyramid, creating an inverted environmental pyramid. In order to revealing reflect multiple impacts on the environment in the Environmental Pyramid, the ecological footprint was taken as a reference. The "Double Pyramid Model" was created by juxtaposing the Environmental Pyramid and the Food Pyramid (21,28). In this combined model, the impacts on the environment of each nutrient was forecasted by the LCA methodology (15,28).

The MD's guiding principles from the basis of the Double Pyramid Model, that is presented as a sustainable diet by the FAO (15). This dietary pattern also argues that plant-based nutrition has a fewer impacts on the environment (17).

2.4.3. The DASH Diet

Dietary Approaches to Stop Hypertension, DASH, diet model is a medical nutrition therapy approach developed to stop hypertension, that is the one of the leading preventable causes of mortality (4). The studies have revealed that it is efficient in decrease the high blood pressure (4,22).

The increment in hypertension cases in the United States in the 1990s accelerated the duration of finding a solution to manage this disease. As a result of that, the DASH diet model was evolved (17). The DASH diet is a dietary model that aims to decrease blood pressure to prevent hypertension and chronic diseases that are significant risk factors for cardiovascular diseases (22,24). Recommended to support human health and manage hypertension, the DASH diet is also recommended for environmental health (61).

The DASH diet is a dietary model that characterized by low in content of sodium and high in content of potassium, magnesium, and calcium (18). In the DASH diet, recommendation is to consume no more than 2300 mg of sodium intake per day (22). Clinical studies have demonstrated that lessen intake of sodium helps lower blood pressure levels (61).

The DASH diet is based on the consumption of whole grains, vegetables and fruits. In addition to, low / semi-skimmed milk and products, poultry, fish and legumes are also allowed in this diet model. The intake of red meat and processed meat products, foods and beverages are that over in sugar content is limited (17,22,74).

The favourable impacts on the health of the DASH diet are attributed to the fact that the nutrients in the diet are origin of plant sources and have an anti-inflammatory profile (18). A study by Daniel B. Ibsen and colleagues found that long-term adherence to the DASH diet decreased the risk of heart failure in a cohort of middle-aged and older Swedish adults. Substituting one serving per day of vegetables, legumes, fruits or whole grains for one serving of red and processed meat has been linked to roughly 10% descend in the risk of heart failure (74).

The health-promoting properties of the DASH diet may also be supportive of impact on the environment. A cross-sectional study conducted by Pablo Monsivais and colleagues in the United Kingdom, has been investigated that the relationship between the DASH diet and GHG emission effect. The consequence of this study showed that adoption of the DASH diet could lessen dietary GHG emissions and ameliorate public health (75).

2.4.4. The Nordic Diet

The regional diets have been culturally affected by the movement of people and food over time, but have remained connected to specific geographical boundaries. Such dietary models, is characterized in a way that is accordance with environmental, cultural, social and economic contexts. Japanese Diet, Mediterranean Diet, Nordic Diet can be given as an example of such regional diets (65). The Nordic Diet is a dietary pattern based on traditional eating habits in the Scandinavian countries of Denmark, Sweden, Norway, and Finland (76).

The Nordic Diet (ND), which is based on the respect to the environment, food culture and taste, healthy lifestyle, is a plant-based dietary pattern that origin of animal sources are consumed in low or moderate amounts. In the ND model, it is significant that food products are local and organic (17,65). The ND model is described as a great amount of local frutis and vegetables, especially cabbage, root vegetables, apples and pears. In addition to, fresh herbe, wild rural plants, mushrooms, legumes, potatoes, nuts, whole grains, local fish, seaweed and shellfish takes place in this diet model. There is

also allowance for free-ranging livestock (including poultry and pigs) and game meat (32,65,76).

According to recent research on the impacts of this diet model on health, the ND is inversely correlated with risk factors for cardiovascular disease, inflammatory markers linked to obesity, colorectal cancer risk, and overall mortality (32,65). Furthermore, adherence to ND model has been correlated with a reduced impacts on the environment in comparison with the dietary patterns that abundant in animal-based foods (65,76).

2.4.5. The Planetary Health Diet

By 2050, the global population is estimated to grow to 10 billion and global revenue to nearly triple (3). Food choices of socities have evolved towards a Western Style dietary pattern dominated by abundant content of sugar and fat, and great intake of red meat and products. By 2050, pressures on the environment from the current food systems are estimated to raise from 50% to %90 (3,15). These alterations and pressures on the environment are pushing planetary boundaries and leading to numerous problems around the world, from hunger to climate crisis (16,20).

In order to lessen pressure on the environment and meet the requirements about nutrition, a more sustainable food system and healthy nutrition are required (77). The EAT-Lancet Commission with the aim of ensuring these requirements has designed a sustainable and healthy reference dietary model based on clinical and observational studies and healthy nutrition guidelines that can provide beneficial impacts for both human health and planetary health. This reference dietary model known as the EAT-Lancet Dietary Model or the Planetary Health Diet is a pattern abundant in whole grains, legumes, vegetables, fruits, nuts and unsaturated fat sources (77,78). This model recommends consumption of lower amounts of poultry and seafood. On the other hand, for this model, there is some restricted foods such as red meat, processed meat, added sugar, refined grains, starchy vegetables and so on (3,77).

The global scenarios adopted by the Planetary Health diet model were modelled and compared to GHG emission effect target set by the Paris Agreement, which is compatible with an average global temperature raise of 1.5°C by 2100 (3,78). The consequences of comparison suggest that continuing the dietary patterns as usual have the potential to double GHG emission effect by 2050 (78). However, it has been

demonstrated that switching to dietary patterns which abundant in origin of plant foods can lessen GHG emission effects by up to 80% (3,78).

2.4.6. The Vegetarian Diet Models

Global dietary patterns need to be replaced with the dietary patterns that contains with high-quailty based on plant origin foods to in order to alleviate pressures on the environment and improve health in public and individual level (20). Hence, dietary patterns that based on plant origin foods are both more sustainable for the environment and planet and, if properly planned, may help decrease the risk correlated with chronic diseases such as cardiovascular diseases and type 2 diabetes (50). Dietary patterns that based on plant origin foods are generally characterized by great amounts of whole grains, legumes, fresh vegetables and fruits, nuts, and seeds (65). This dietary patterns is inversely correlated with the risk of chronic disease because of its rich content in fiber, antioxidant, polyphenol and various micronutrients (79).

Vegetarian diet models are considered as more sustainabile dietary patterns because of their content of based on plant origin foods and are recommended as a efficient alternative for the diet - environment - health trilogy (4,32). Additionally, there are studies showing that replacing current dietary patterns with vegetarian diet models may have a severe impact on GHG emission effect (32).

Vegetarian diet models include lacto-vegetarian, ovo-vegetarian, lacto-ovo vegetarian, pescatarian, polo-vegetarian and vegan diet models (17,80). Lacto-vegetarians consume foods are origin from plants, and only milk and dairy pdocuts from the animal-based food sources. Red meat, eggs, fish and seafood, chicken and poultry products are prohibitied in this diet model. Ovo-vegetarians consume foods are origin from plants, and only egg from the animal-based food sources. Red meat, fish and seafoods, chicken and poultry prdocuts, milk and dairy products are not allowed in this diet model (17,22,80). Lacto-ovo vegetarians, who frequently consume foods are origin from plants, do not consume killed animal products, but include milk and eggs produced by the animal while it is alive in their dietary pattern (20,80). In these days, it is the most frequently preffered vegetarian diet model (22). Pescatarians consume seafood such as fish and shellfish in addition to plant-based food sources (17,81). Eggs, milk and dairy products are also proper for this diet model (17,20,80). Polo-vegetarians consume chicken and poultry meat in addition to plant-based foods (81). On the other

hand, according to Vegetarian Society this diet model is not accepted as a vegetarian diet model (17).

The Vegan Diet Model or Veganism is a concept that is diffrent from the other vegetarian diet models and is a rather strict dietary pattern. Veganism is a philosophy and way of life that aims to exclude, to the utmost, overall shapes of exploitation and cruelty of animals for nutrition, dressing or anything else (82). The vegan diet models consists of fruits, legumes, whole grains, vegetables, and oilseeds (20,22). Vegan people reject somethings based on animals such as honey because it comes from bees, gelatin because it comes from boiling bones, leather, wool, silk and so on (20,81).

There are some subtypes of vegan diet model; raw vegan, fruitarian, windfall vegan, zenmacrobiotic diet (80,81). Rawists are only allow in their dietary patterns that vegetable foods that are not heated above 42◦C, fruits and vegetables, seeds, grains, and sprouted legumes (17,80,81). Frutarians only include to their dietary patterns are fruits and vegetables such as tomatoes and zucchini, which are accepted as fruits from a botanical perspective (81). In addition to, fat sources such as olives or avocados are allowed. Windfall vegans consume foods such as fruits and seeds that fall from trees spontaneously (80). Some vegans who follow a zenmacrobiotic diet model eat grains, legumes, fruits and vegetables, while others only eat products from grains (81).

The nutritional value of vegetarian diet models varies depending on the diversity of allowed nutrients. A vegetarian diet that is planned poorly can cause micronutrient deficiencies such as Iron, Calcium, Vitamin D, B12 and so on (17,22). Since this dietary pattern consists mostly foods that based on plant origin, the cholesterol and saturated fat levels are low level while the amounts of unsaturated fat, complex carbonhydrates, fiber and phytochemicals are great. Because of this nutritional content, the risk of chronic diseases such as obesity, diabetes, cardiovascular diseases and some types of cancer such as bowel cancer is decreaed potentially (22,79).

Vegetarian diet models are recommended to decrease pressures on the environment because of their content of plant-based that has lower GHG emission effects, carbon footprint, land use and water footprint (17,18,20). According to a study conducted by Holly L. Rippin and her colleagues in the United Kingdom, non-vegetarian diets have 59% greater GHG emissions than vegetarian diet patterns (42). A review by Ujué Fresán and colleagues examined 25 studies on the environmental

sustainability of vegetarian diet models. According to this review, GHG emissions from vegan and ovolacto-vegetarian diet models are roughly 50% and 35% lower, respectively, than many of omnivorous diets. Additionally, there is a decrement in the using of natural resources (20).

2.4.7. The Flexitarian Diet

The Flexitarian Diet model is a dietary pattern derived from the English words flexible and vegetarian (18). The Flexitarian Diet, also referred to as semi-vegetarian, express a flexible plant-based dietary pattern in which foods are origin from animals are consumed limitedly (22).

The Flexitarian Diet does not set strict rules, however, this diet model recommends the consumption of foods that origin from plants and includes milk and dairy products and eggs in moderate amounts (4,17,22). The consumption of fish and poultry meat is allowed in amounts in more limited (20,22). Additionally, it is recommended to limit sugary products consumption and minimize the products of processed meat for this diet model (22). The notable difference from vegetarian diet models is that this dietary pattern is more flexible and provides the forms of nutritional deficiencies that may occur in vegetarian diet models. For this reason, Flexitarian individuals are not accepted as fully vegetarian (18).

Varied studies have shown that the flexitarian diet model has a numerous beneficial impacts on the health, from managing weight to decreasing the risk of type 2 diabetes (22,83). In a cross-sectional study with young adult women (n = 9113), it was observed that Flexitarian individuals have lower body mass index in comparison with to non-vegetarian individuals. Another cross-sectional study have demonstrated that the prevalence of diabetes was lower in vegan individuals and flexitarian individuals than in non-vegetarian individuals (83).

The Flexitarian Diet model, such as the MD and DASH diet model, is also recommended for protection against to cardiovascular diseases (22). In addition to benefical impacts on the health, this diet model is presented as a dietary pattern that respect of planetary welfare and is susceptible to problems about environment. The shift from a Western-style dietary patterns to a Flexitarian Diet model has been revealed to decrement nearly 10% in GHG emission effect (18).

2.5. The Role of Dietitians in Sustainable Nutrition

The climate crisis and the environmental problems that leads to influence food production negatively by decreasing productivity of agricultural and food consumption by aggravating food insecurity (16,19,20). Numerous solutions to these problems have been developed; improvements in technology about the agricultural should be made, food losses and wastage should be minimized, food choices of individuals' food choices and societies' dietary patterns should be changed (8,12,20,70). Among these solution suggestions, make changes in food choices and dietary patterns has the greatest potential to contribute to lessen GHG emission effect. The quantity and type quantity of food consumed by human beings directly have impact on the quantity and type quantity of food produced (20). Dietary patterns that have evolved into the Western Style dietary pattern have unfavourable influences on both the environment and health of human beings (11,20). The degradation of ecosystems and unfavourable health outcomes necessitate the re-examination of food systems and dietary patterns within the context of the sustainable development agenda (10).

The concept of sustainability combines both a nutritional and an environmental approach (10,22). A sustainable diet should comprise of local and seasonal foods, minimize food loss and waste, make a decrement on environmental footprint and the lessen consumotion of red meat and processed meat products, over-processed foods and sugary products (12,22).

In recent times, sustainable diets have become a challenging public health issue (10). The requirement for National Dietary Guidelines to take this into account is emphasized (84). The inclusion of sustainability directions in National Dietary Guidelines is on the agenda to make diets healthier and more sustainable for the society and environment. A number of countries have incorporated sustainability into their national dietary guidelines, including Sweden, the Netherlands, and Brazil (10). The concepts of sustainability and sustainable nutrition have been included in the Turkey Nutrition Guide – 2022 (22). The presence of energy and nutrient requirements in dietary guidelines is for the use of dietitians and health professionals (21).

For the purpose of protecting the environment and ameliorate human health, social sustainability needs to be supported (21). At this point, making the necessary policies promoting public awareness may play an essential part in making alterations on

the individuals' behavior (23). Dietitians have an extremely significant role in implementing these behavioral alterations (21). Health professionals and dietitians consider the current nutrition system and its environmental, health and social impacts as a whole (7). According to a study conducted with 190 students in Türkiye, it was designated that the concept of suvstainable nutrition was heard mostly by dietitians (25). As trained educators, dietitians have a significant role to play in promoting sustainable nutrition system principles and diets (7).

2.6. The Status of Sustainable Nutrition

Adequate, balanced and sustainable nutrition is the most basic requirement for maintaining health and preventing diseases. Nutrition is defined as the conscious action taken to obtain the macro and micro nutrients that the body requires in a variety of ways and in sufficient quantities at the appropriate time (7,85).

The correction of unhealthy eating habits acquired in adulthood, childhood and adolescence is significant in terms of adopting healthy eating behaviors and being a role model for future generations. Adopting healthy and sustainable eating behaviors plays an essential role in maintaining a healthy life (22). According to the consequences of the ongoing Global Burden of Disease Study, one in five deaths around the world, mostly from diseases about heart and vessels, and cancer, is related with unhealthy dietary patterns (85).

The planet currently produces food in enough amount for the requirement of population, but more than a third of the global population faces malnutrition and related nutrient deficiencies (12). In the meantime, the population with overweight and obesity is rising globally (16). According to the United Nations data of 2019, 690 million people are struggling with hunger. It is estimated that approximately 2 billion people is lack of having a regular access to safe, nutritious and sufficient amonuts of food (21). One of the regions at greatest risk for malnutrition and nutrient deficiencies is sub-Saharan Africa where is dominated by agriculture activities, families often have many children, low levels of education and poverty prevail (16).

Dietary patterns are affected by many economic, physical, social and psychological factors such as accessibility and availability, socioeconomic diversity, income level, education level, beliefs, mood, appetite and so on (12,16,86). For example, high-income countries have a over variety of foods, which can improve diet

quality. With urbanization and increasing economic income, there is a shift in dietary patterns towards more products that origin from animal and processed foods (16). Adaptation of a Western Style dietary pattern further harms the environment and have impacts on the population health negatively (20). Research indicates that consumer awareness of the environmental influences of diet models is not advanced level (2).

At an individual level, our health depends on health of planet (42). The impacts on the environment of population-level food choices is important (20). Environmental footprints demonstrate the environmental influences of food from production to consumption. Thus, the footprints can provide guidance for healthier and more sustainable food choices (12). It is important that we make choices that may lessen pressures on the environment and make a transition to sustainable nutrition (42,85). Considering the rates of under- and over-nutrition and the fact that 20% of food is wasted, this transition will be difficult to achieve without a change in the food choices of individuals (85).

2.7. The Food Choices

The act of eating is an action that intersects with physiological, psychological, cultural, social and ecological processes (87). According to the World Health Organization (WHO), nutrition is an essential part of health and development (88). Nutrition is a act that meets physiological requirements, also associated with factors such as social norms, culture, beliefs, environmental awareness, health and so on (87). Food is a social tool that enables cultural exchange (26).

Today, there have been important changes in lifestyles of indiviudals, consumers' food choices and the food industry around the world in comparison with the past. Changing lifestyles of individuals', rising working hours and reduced time for food preparation have impact on the food choices (67,87,89). The Corona Virus Disease pandemic, which has influenced the whole world in recent years, has induced to an economic crisis, unfavourably influenced both food supply and food safety, and has notably influenced food choices (89–91).

Food consumption is responsible for almost one-third of the overall impacts on the environment of households (67). It is thought that a person consumes more than 60,000 meals in their lifetime and makes approximately 200 food choice decisions a day (91). Understanding the motivations that drive individuals’ food choices is key to

ameliorating and developing both human and environmental health and sustainability (67).

Factors affecting food choice include a number of factors that have impact on individuals' decisions regarding food choice and consumption (92). Numerous studies have repeatedly demonstrated that motivation of health is one of the most significant factors in food choice (87,92,93). Although it is a prominent factor, motivation of health is not the only efficient factor (87,91–93). Consumers consider several cognitive and sensory factors when making food choices (93). According to studies, many factors have impact on food choices. These factors can generally be expressed as sociocultural, economic, sociodemographic, environmental, psychological and individual factors (26,66,93).

One of the most widely used classifications for food choices is the classification of food choice motives conducted by Steptoe and colleagues (87,91). This classification includes mood, sensory appeal, health motivations, natural ingredients, familiarity, weight control, convenience, cost and ethical concerns (26). Cost is one of the most notable factors in decision of food choice (67,87). In a study conducted by Steptoe and his colleagues, was observed that cost was the most significant factor after senroy appeal, health and convenience in food choice (26). Several studies have shown that low-income individuals have more unhealthy eating habits than middle- and high-income individuals, resulting in an raised risk of health problems such as obesity. Making a decrement in cost may enhance the likelihood of individuals switching to healthier products (67).

Food choices have been closely linked to cultural interactions throughout history (91). Cultural norms such as tradition, value, ritual, and beliefs lead to differences in the usual consumption of a food, and according to some beliefs, to its exclusion from the diet. Cultural norms are learned from an early age and their impacts continue throughout life (26,93).

Tastes, habits and food choices change according to age at different stages of life (66,93). Our basic eating habits are formed during infancy and early childhood and are the most difficult to change (94). Children can be influenced pressures from peers (66). Several changes in dietary habits are also observed during periods when people

live in pairs, establish their own traditions, and at other significant points in life such as divorce and retirement (94).

Socioeconomic status refers to the level of welfare. In populations where socioeconomic status is inadequate, diet and physical activity are also influenced, unfavourably having impact on the quality of life of individuals and rising rates of both mortality and morbidity. In this regard, the individuals' socioeconomic status also have impact on the food choice (86). In addition to these factors, education level, profession and the neighborhood in which one lives can also have impact on the choices. A study has figured out that women worker class consume greater amount in meat, milk and oil, and lower amount in vegetables, fruits and grains than the middle and upper class (92).

The sex is another notable factor in food choice (91,93,95). In a study examining motivations to purchasing organic food, it was observed that women were more inclined to purchase organic food in comparing to men (95). Another study revealed that women care more about mood when choosing food than men (91). Emotions that have impact on the mood, such as stress and sorrow, also influence food choices (26,66). Some people eat more when stressed, while the others consume fewer amounts (66). In addition to mood, sensory properties of foods such as appearance, smell and taste also have impact on the food choice (66,87).

In decision of food choice, the other impactful factors are availability, experiences, expectations and so on (26,67,90). Concerns about body image, appearance and body weight also have impact on the choices (26,96). A study carried out in the United Kingdom showed that women, especially women aged 18-30, are more likely than men to take this into account when making decisions about the food choice (96).

During all the years that go by religious, political and ecological dimensions were added to these factors. In the recent past, ethical concerns, animal rights and environmental awareness were added to food choices (87). More and more individuals are starting to consider the environmental friendliness of their food (67). All these factors demonstrate that health motivations is only one of the factors that have impact on the food choice (26). Good food choices have impact on several areas of human life around the global (67). Making an efficient alterations of dietary patterns requires an understanding of food choice and influencing factors (26).

2.7.1. The Age

Food choices vary from person to person because the different experiences individuals have throughout life (93). Dietary habits are thought to depend on vulnerable time periods of life. The first five years of life are considered to be a period in that food-related experiences that may affect the rest of life occur to on a large scale. It is believed that most of the basic dietary habits are formed during infancy and early childhood (94,97).

In general, older people give more importance to health motivations and make choices more sensitive to environmental. Young consumers focus more on convenience and taste when choosing food. However, there are also several studies in the literature that suggest that young people receive more environmental education and are more aware than older individuals (92).

Food choices are also influenced by settled consumption habits. The older generations have achieved good levels of physical fitness because of their propensity for unprocessed foods, while the younger generations are more interested in the healthfulness of their diet (67). According to a study carried out in the United Arab Emirates, the tendency towards healthy eating is greater in the adult group of 18-24 and 25-29 years of age in comparion with older adults (86). Another study indicated that the tendency towards unhealthy eating habits are greater in the group of 18-30 years of age, especially in man individuals (96). In a Mexico study, it was shown that individuals aged 41 and over make more environmentally concscious choices about the foods than group of 18-29 years of age. This conclusion may be attributed to the fact that older individuals are exposed to environmental problems for a londer periods of time and have a more stable situation financially. This study supports that individuals make food choices with greater attention to health and sustainability as they age (92).

In the study performed by Katarzyna Szalonka and her colleagues, it was observed that label information of the product was read most frequently by the group of 19-24 and 40-55 years of age before purchasing food (67). Another study that examining the use of labels when choosing food stated that the younger group of 18-30 years of age do not read labels, while the adult group of 31-59 years of age use labels and find them positive. The same study stated that individuals aged 60 and over have

difficulty reading due to the font size and therefore have difficulty examining labels (96).

2.7.2. The Sex

Factors such as age, sex, marital status, and level of education have impact on the individuals' food choices (87,98). According to research, there is a notable relationship between sex and food choice. Women give more importance to motivation of health (87).

According to studies, women prefer foods that are typically considered healthier. While the intake of red meat and processed meat products is more wide amounts in men, consumption of foods considered as healthier, such as vegetables, tofu, dark chocolate, soy milk and whole grains, is observed at greater levels in women (99). In a study performed by Ceren Bulak and her colleagues, it was revealed that women generally tend to eat fresh and healthy foods in comparison with men. This result suggests that sex is a determinant factor in food choice (98). Another study found that women were more motivated by health, emotional and environmental motivations when choosing food in comparison with men (86).

In a study examining the association between food choices and depression, the sensory characteristics of the participants were assessed using technology of face-reading. The study showed that sex is an efficient driver for most emotional motivations and that this situation is greater in women. For instance, women are more likely to crave and turn to sweet foods when they feel depressed (87,100). In several studies about the neuroimaging, raised activation has been observed in some regions of the brain of women (99).

It is thought that one of the reasons why women tend to healthy foods more than men may be related to the desire to be thinner and the desire to reach the ideal body image (96,100). Adolescent girls were more obsessed in their body weight, talked about diet more often and feel uncomfortable eating in the presence of other people in comparison with adolescent boys of the same age (100).

In duration of purchasing food, consumers also pay attention to label information of the products and it is thought that label information is also notable driver

in food choice. According to a study, it was observed that women pay more attention to label information of the food product in comparison with men (98).

2.7.3. The Education Level

The education level is one of the sociodemographic factors that have impact on the food choices (89,92,101). Several studies have highlighted the relationship between education level and eating habits and health-related behaviors (92,102). According to numerous studies, there is a same direction relationship between greater levels of education and consuming healthier foods such as vegetables and fruits. It has also been noted that individuals with lower levels of education consume more amounts foods that have a greater impact on the environment such as red meat and products (102).

Food labeling and food logos are essential for communicating with consumers to understand the issue of sustainability. Logos can help individuals make more environmentally friendly and ethical choices. In a study, it was observed that individuals with undergraduate and postgraduate education level had a greater status of knowledge about this concept (89). A study in Mexico, was extrapolated that those with greater education levels were more likely to be driven by health motivations, natural ingredients and environmental awareness in their food choices (92). In a study carried out in Türkiye, it was observed that the natural food factor was found to be more significant among postgraduate graduates in comparison with associate degree and undergraduate graduates (91).

In a study carried out in the Netherlands, the food choices of consumers with low, medium and high education levels and the influence of these choices on the environment were evaluated. According to the consequences of this study, the amount of GHG emissions from fish consumption was found to be greater levels in the group with higher level of education. The amount of GHG emissions from the consumption of vegetables and fruits was found to be approximately one fourth higher in the group with lower level of education in comparison with the group with higher level of education (102).

2.7.4. The Occupation Status

In addition to factors such as sex, age, and education level, occupation status is also an important driver in food choice (86). Individuals which have a profession attach more importance to food identiy (92). In a study conducted in Türkiye, it was observed

that convenience and availability are more significant drivers in food choice for students and civil servants in comparison with the employers. In the same study, it was concluded that civil servants and retirees attach more importance to the factors of natural food in comparison with students. The other deduction of this study is students, workers, civil servants, retirees, housewives and unemployed attach more importance to the price factor in comparison with employers (90). In a study of housewives and women worker in Brazil, it was shown that women who worked full-time ate fewer meals with their families and consumed lesser amounts of fruits and vegetables. In this study, education level was also mentioned as a significant driver food for choice because a positive relationship was found between high level of education and healthy nutrition among working and housewives (103).

Time scarcity decreases the time individuals can spend on healthy eating and activities that essential requirements for a healthy life. The working hours and commute time are both recognized to contribute to time scarcity. A study conducted in Australia observed that as the length of time individuals spend working and commute time raises, the time they spend cooking at home lessen and they buy greater amounts of food from outside the home. This also leads to a decrement in the intake of fruits and vegetables (104).

For the student group, the transition to university is often associated with weight gain and unhealthy eating habits (105). However, in one another study, it was found out that students' perceptions of healthy nutrition was greater than that of working individuals (86).

2.7.5. The Income Level

There is a significant association between expenditure on food and income level (67). In a study carried out in United Kingdom, it was emphasized that respondents paid the most attention to cost when choosing food purchases. In this study, health motivations was observed as the third most effective factor (96). Lower socioeconomic status is associated with prioritizing price over health (92). Individuals with higher income levels are more prone to change their food choices (67).

Individuals experiencing food insecurity prioritize price more when making food choices, indicating that the socioeconomic status (SES) strongly have impact on the food choices across the different sociodemographic groups (46).

In one study, it was observed that men with higher SES give less importance to health motivations, environmental sensitivity and nutrient content and more importance to convenience when choosing food (92). In another study, a strong association was found between high level of household income and the importance given to healthy nutrition (86).

Individuals with low family incomes believe that they do not have enough money and time to maintain a nutritious diet (96). Low income level is related with poor diet quality frequently (106). Individuals with lower income level consume fewer amounts of fruits and vegetables and greater amounts of sugary beverages in comparison with high-income individuals (46,106). Individuals with lower income levels were found to have higher risk prone to have obesity (66,106).

In a study of 202 urban households in Chicago, the diet quality of households with lower income level was found to be lower than that of high-income households. When grocery expenditures are analyzed, it is observed that households with lower income levels spend a few percentage of their budget on fruits and vegetables and a greater percentage on sugary beverages and frozen desserts (106).

3. MATERIAL AND METHODS

3.1. Research Design

This research is a survey-based observational study. In this study, it was aimed to examine the effects of demographic characteristics on the sustainable nutrition behaviors and food choices of adult individuals between the ages of 18 and 65 and to compare these effects in terms of four different generations (107).

In order to conduct this study, “Ethics Committee Approval” was obtained from Yeditepe University Non-Interventional Clinical Research Ethics Committee on 11.10.2024. Ethics committee application number is 202310Y0660.

3.2. Population and Sample of the Sudy

The population and sample of the study consist of adults between the ages of 18 and 65 living in Türkiye. Participation in the research is based on voluntary basis. The sample of the study was calculated as at least 384 people based on 95% confidence interval, d = 5% and $p < .05$ according to the sampling formula.

Data collection was conducted online via Google Forms between November 2024 and March 2025 using convenient sampling technique. Out of the total 596 participants five of them did not content to participate on a voluntary basis were excluded from the study.

In the first part of the data collection form, demographic characteristics of the participants were questioned. The second section includes the “Sustainable Nutrition Behavior Scale” developed by Gökçen Garipoğlu and her colleagues to determine the participants' sustainable nutrition behavior levels and its validity and reliability (108). The third section includes the “Single Item Food Choice Test” adapted into Turkish by Mehmet Haydaroğlu and his colleagues to understand the motivations affecting the participants' food choices (109).

3.3. Data Collection Tools

In the data collection phase, an online survey method was used via Google Forms. The data collection form, which consists of three sections and 46 questions, including demographic characteristics of the participants (generation, age, sex,

education level, occupation status and household income level), Behaviors Scale Towards Sustainable Nutrition and A Single-Item Food Choice Questionnarie.

3.3.1. Behaviors Scale Towards Sustainable Nutrition

In this study, the “Behaviors Scale Towards Sustainable Nutrition", which was developed by Gökçen Garipoğlu, Bilge Meral Koç and Tuğçe Özlü in 2023, and whose validity and reliability were conducted, was used (108). The developed scale is a tool that measures the sustainable nutrition behaviors of adult individuals between the ages of 18 and 65. The scale is a Likert-type five-point scale consisting of 29 items and 4 sub-dimensions. This scale measures the level of sustainable nutrition behaviors of adult individuals. The first six items are related to food preference, items 7 through 15 are related to food waste reduction, items 16 through 23 are related to seasonal and local food consumption, and items 24 through 29 are related to food purchase. Each dimension is evaluated from 1 to 5 on a scale from “never” to “always”. All items in the scale are positive. The lowest score that can be obtained from the scale is 29 and the highest score is 145. Higher sub-dimension scores and total score indicate that the individual has more sustainable nutrition behavior. The Cronbach Alpha value of the scale is 0.92 and the test-retest reliability coefficient is 0.96 (108).

3.3.2. A Single-Item Food Choice Questionnarie

In this study, “A Single-Item Food Choice Questionnarie” developed by M.C. Onwezen, M.J. Reinders, M.C.D. Verain and H.M. Snoek in 2019 and “A Single-Item Food Choice Questionnarie” adapted into Turkish by Mehmet Haydaroğlu, Derya Dikmen and Pelin Bilgiç in 2024 were used (109,110). The adapted scale assesses consumers' motivations for food choices. This scale is a Likert-type seven-point scale. The questions ask about the dimensions of health, mood, convenience, sensory, natural, price, weight, familiar, environment, animal and social justice. Each dimension is rated from 1 to 7 on a scale from “not at all important” to “very important”. This scale does not include a total score. Each dimension is evaluated separately and a maximum of 7 points can be obtained from each dimension. The Cronbach Alpha value of the scale is 0.947, and the test-retest analysis correlations vary between 0.407 and 0.673 (109).

3.4. Statistics

The IBM Statistics Program for Social Science (SPSS) 30 version was used for the statistical analysis of the obtained data. The compliance with normal distribution for

the data used in the study was determined by checking with the Kolmogorov-Smirnov test and Skewness and Kurtosis values (-2 and +2). For normally distributed data, Independent Sample t-Test was used as a parametric test for comparison between two groups. One Way Analysis of Variance test (ANOVA) was used to compare multinominal categorical data in the study. Pearson Correlation Analysis was used for correlation analysis of numeric data in the study. Frequency, percentage, mean and standard deviation values related to descriptive statistics were included. Statistical significance was accepted at the level of $p < .05$ and confidence interval was set to 95%.

4. RESULTS

4.1. Descriptive Characteristics of Participants

In this study, 596 adults aged between 18 and 65 participated. 5 participants were excluded because they did not consent to voluntary participation. Demographic characteristics of the participants were examined, including generation, age, sex, education level, occupation status, and household income level.

The mean age of the individuals who participated in this study was 38.6 ± 12.25. The descriptive statistics about age was shown in Table 4.1.

Table 4.1. The Descriptive Statistics About Age

	n	Min.	Max.	Mean ± S.D.
Age	591	18.0	65.0	38.6 ± 12.25

n: frequency, Min.: minimum, Max.: maximum, S.D.: standard deviation

Four different generations were included in this study: Baby Boomers Generation, Generation X, Generation Y, and Generation Z (107). Generation X had the highest participation rate with 220 respondents and Baby Boomers Generation had the lowest participation rate with 12 respondents. The number of respondents by generation is shown in Table 4.2.

Table 4.2. The Number of Respondents by Generation

	n	%
Baby Boomers Generation	12	2.0
Generation X	220	37.2
Generation Y	151	25.5
Generation Z	208	35.2
Total	**591**	**100.0**

n: frequency, %: percentage

Of the adult individuals participating in this study, 73.6% (n=435) were woman and 26.4% (n=156) were man. The descriptive characteristics of the respondents were shown in Table 4.3.

The education levels of the adult individuals participating in the study were determined based on the last school they graduated from. Accordingly, individuals who are literate, primary school graduates, secondary school graduates and high school graduates were included in the “basic education” group; individuals with undergraduate and higher education degrees were included in the “higher education” group. Of the individuals who participated in the study, 87.1% were in the “higher education” group. The descriptive characteristics of the respondents were shown in Table 4.3.

The occupation status of the adult individuals participating in the study was categorized into four categories: “unemployed”, “retired”, “student” and “employed”. Accordingly, the largest group in the study consists of employed individuals with 412 people, while the smallest group consists of students with 58 people. The descriptive characteristics of the respondents were shown in Table 4.3.

The household income level of the adult individuals participating in the study was categorized into three categories as “income>expenditure”, “income=expenditure” and “income<expenditure”. According to the research findings, the household income level of 271 respondents was determined as “income>expenditure”, while the household income level of 70 respondents was determined as “income<expenditure”. The descriptive characteristics of the respondents were shown in Table 4.3.

Table 4.3. The Descriptive Characteristics of the Respondents

		Baby Boomers Generation	Generation X	Generation Y	Generation Z	Total
		% (n)	% (n)	% (n)	% (n)	% (n)
Sex	Woman	41.7% (n=5)	65.0% (n=143)	81.5% (n=123)	78.8% (n=164)	73.6% (n=435)
	Man	58.3% (n=7)	35.0% (n=77)	18.5% (n=28)	21.2% (n=44)	26.4% (n=156)
Education Level	Basic	25.0% (n=3)	11.8% (n=26)	9.9% (n=15)	15.4% (n=32)	12.9% (n=76)
	Higher	75.0% (n=9)	88.2% (n=194)	90.1% (n=136)	84.6% (n=176)	87.1% (n=515)
Occupation Status	Unemployed	8.3% (n=1)	6.8% (n=15)	10.6% (n=16)	13.5% (n=28)	10.2% (n=60)
	Retired	75.0% (n=9)	21.8% (n=48)	2.6% (n=4)		10.3% (n=61)
	Student			1.3% (n=2)	26.9% (n=56)	9.8% (n=58)
	Employed	16.7% (n=2)	71.4% (n=157)	85.4% (n=129)	59.6% (n=124)	69.7% (n=412)
Household Income Level	Expenditure > Income	33.3% (n=4)	47.7% (n=105)	41.1% (n=62)	48.1% (n=100)	45.9% (n=271)
	Expenditure = Income	50.0% (n=6)	43.6% (n=96)	39.7% (n=60)	42.3% (n=88)	42.3% (n=250)
	Expenditure < Income	16.7% (n=2)	8.6% (n=19)	19.2% (n=29)	9.6% (n=20)	11.8% (n=70)

n: frequency, %: percentage

4.2. Behaviors Scale Towards Sustainable Nutrition

The Behaviors Scale Towards Sustainable Nutrition consists of 29 questions with four sub-dimensions: Food Preference, Food Waste Reduction, Seasonal and Local Food Consumption and Food Purchase. The lowest total score that the adult respondents in the study can get from the scale of behaviors towards sustainable nutrition is 29 and the highest score is 145. The mean score of the adult individuals who participated in the study was 108.72 ± 20.03 for behaviors towards sustainable nutrition. The lowest score was 29 (n=1) and the highest score was 145 (n=5).

The highest mean score of the sub-dimensions of this scale was obtained from the "Food Waste Reduction" sub-dimension with 35.59 ± 7.06. The lowest mean score

was obtained from the “Food Preference” sub-dimension with 19.95 ± 54.61. The data about the sub-scores and total score of the behaviors scale towards sustainable nutrition were given in Table 4.4.

Table 4.4. The Data about the Sub-scores and Total Score of the Behaviors Scale Towards Sustainable Nutrition

	n	Min.	Max.	Mean ± S.D.
Total Sustainable Nutrition	591	29	145	108.72 ± 20.03
Food Preference	591	6	30	19.95 ± 5.46
Food Waste Reduction	591	9	45	35.29 ± 7.06
Seasonal and Local Food Consumption	591	8	40	30.82 ± 6.13
Food Purchase	591	6	30	22.36 ± 20.34

n: frequency, Min.: minimum, Max.: maximum, S.D.: standard deviation

There was a significant difference was found between generations and Food Preference-related behavior score (p=<.001). According to the data obtained as a result of Food Preference and intergenerational comparison, there was a statistically significant difference between Generation X, Generation Y and Generation Z (p=<.047; p=<.001; respectively). There was a statistically significant difference between Generation Y, Generation X and Generation Z (p=<.047; p=<.001; respectively). The comparison of intergenerational and The Behaviors Scale Towards Behaviors Sustainable Nutrition scores was shown in Table 4.5.

There was a significant difference was found between generations and Food Waste Reduction-related behavior score (p=<.001). According to the data obtained as a result of Food Waste Reduction and intergenerational comparison, there was a statistically significant difference between the Baby Boomers Generation and Generation Y (p=<.001). There was a statistically significant difference between Generation X, Generation Y and Generation Z (p=<.001; p=<.001; respectively). There was a statistically significant difference between the Generation Y; the Baby Boomers Generation, the Generation X and the Generation Z (p=.001; p =<.001; p=.020;

respectively). The comparison of intergenerational and The Behaviors Scale Towards Sustainable Nutrition Scores was shown in Table 4.5.

There was a significant difference was found between generations and Seasonal and Local Food Consumption-related behavior score (p=<.001). According to the data obtained as a result of Seasonal and Local Food Consumption and intergenerational comparison, there was a statistically significant difference between the Baby Boomers Generation and Generation Y (p=<.001). There was a statistically significant difference between Generation X, Generation Y and Generation Z (p=<.001; p=.003; respectively). There was a statistically significant difference between Generation Y; Baby Boomers Generation, Generation X and Generation Z (p=.002; p=<.001; p=.002; respectively). The comparison of intergenerational and The Behaviors Scale Towards Sustainable Nutrition Scores was shown in Table 4.5.

There was a significant difference was found between generations and Food Purchase-related behavior score (p=<.001). According to the data obtained as a result of Food Purchase and intergenerational comparison, there was a statistically significant difference between the Baby Boomers Generation and Generation Y (p=.005). There was a statistically significant difference between Generation X, Generation Y and Generation Z (p=<.001; p=.006; respectively). There was a statistically significant difference between Generation Y; Baby Boomers Generation, Generation X and Generation Z (p=.005; p=<.005; p=.005; respectively). The comparison of intergenerational and The Behaviors Scale Towards Sustainable Nutrition Scores was shown in Table 4.5.

There was asignificant difference was found between generations and Total Sustainable Nutrition-related behavior score (p=<.001). According to the data obtained as a result of Total Sustainable Nutrition and intergenerational comparison, there was a statistically significant difference between the Baby Boomer Generation and Generation Y (p=<.001). There was a statistically significant difference between Generation X, Generation Y and Generation Z (p=<.001; p=<.001; respectively). There was a statistically significant difference between Generation Y; Baby Boomers Generation, Generation X and Generation Z (p=<.001; p=<.001; p=.001; respectively). The comparison of intergenerational and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.5.

Table 4.5. The Comparison of Intergenerational and The Behaviors Scale Towards Sustainable Nutrition

	Baby Boomer Generation (n=12)	Generation X (n=220)	Generation Y (n=151)	Generation Z (n=208)	Significance
	Mean ± S.D.	**Mean ± S.D.**	**Mean ± S.D.**	**Mean ± S.D.**	**p value***
Total Sustainable Nutrition	110.83 ± 27.61	115.95 ± 17.39	112.04 ± 17.52	98.54 ± 19.82	**< .001**[a,b] **
Food Preference	21.0 ± 6.42	22.01 ± 4.43	20.66 ± 5.17	17.20 ± 5.47	**< .001**[a,b] *
Food Waste Reduction	35.67 ± 9.68	37.71 ± 6.30	36.06 ± 6.69	33.0 ± 7.13	**< .001**[a,b] *
Seasonal and Local Food Consumption	31.08 ± 8.20	32.91 ± 5.35	32.08 ± 4.81	27.68 ± 6.39	**< .001**[a,b] *
Food Purchase	23.08 ± 6.33	23.32 ± 4.36	23.24 ± 4.69	20.66 ± 5.12	**< .001**[a,b] **

*S.D.: standard deviation, One Way ANOVA p values were calculated by *Games-Howell and **Bonferroni*

[a], the difference was only significant for Generation X and Generation Z; [b], the difference was only significant for Generation Y and Generation Z

There was a statistically significant difference was found between sex and Food Preference, Food Waste Reduction, Seasaonal and Local Food Consumption, Food Purchase and Total Sustainable Nutrition-related behavior scores (p=<.001; p=.008; p=<.001; p<.001; p=<.001; respectively). The comparison of sex and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was no statistically significant difference between education level and Food Preference, Food Waste Reduction, Seasaonal and Local Food Consumption, Food Purchase and Total Sustainable Nutrition-related behavior scores (p=.674; p=1.000; p=.867; p=.259; p=.831; respectively). The comparison of education levels and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was a statistically significant difference was found between occupation status and Food Preference-related behavior score (p=<.001). According to the data

obtained as a result of Food Preference and occupation status, there was a statistically significant difference between the unemployed group and the student group (p=.005). There was a statistically significant difference between the retired group, the student group and the employed group (p=.005; p=.001; p=.022; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=.005; p=<.001; p=.022; respectively). The comparison of occupation status and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was a statistically significant difference was found between occupation status and Food Waste Reduction-related behavior score (p=<.001). According to the data obtained as a result of Food Waste Reduction and occupation status, there was a statistically significant difference between the unemployed group and the student group (p=.001). There was a statistically significant difference between the retired group, the student group and the employed group (p=<.001; p=<.001; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=.001; p=<.001; p=.020; respectively). The comparison of occupation status and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was a statistically significant difference was found between occupation status and Seasonal and Local Food Consumption-related behavior score (p=<.001). According to the data obtained as a result of Seasonal and Local Food Consumption and occupation status, there was a statistically significant difference between the unemployed group and the student group (p=.002). There was a statistically significant difference between the retired group, the student group and the employed group (p=<.001; p=.003; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=.002; p=<.001; p=.002; respectively). The comparison of occupation status and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was a statistically significant difference was found between occupation status and Food Purchase-related behavior score (p=<.001). According to the data obtained as a result of Food Purchase and occupation status, there was a statistically significant difference between the unemployed group and the student group (p=.005). There was a statistically significant difference between the retired group, the student

group and the employed group (p=<.001; p=.006; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=.005; p=<.001; p=.005; respectively). The comparison of occupation status and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was a statistically significant difference was found between occupation status and Total Sustainable Nutrition-related behavior score (p=<.001). According to the data obtained as a result of Total Sustainable Nutrition and occupation status, there was a statistically significant difference between the unemployed group and the student group (p=<.001). There was a statistically significant difference between the retired group, the student group and the employed group (p=<.001; p=<.001; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=<.001; p=<.001; p=.001; respectively). The comparison of occupation status and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was a statistically significant difference was found between household income levels and Food Preference-related behavior score (p=.034). According to the data obtained as a result of Food Preference and household income levels, there was a statistically significant difference between the Income>Expenditure group and the Income<Expenditure group (p=<.036). The comparison of household income levels and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was a statistically significant difference was found between household income levels and Food Waste Reduction-related behavior score (p=.049). According to the data obtained as a result of Food Waste Reduction and household income levels, there was a statistically significant difference between the Income=Expenditure group and the Income<Expenditure group (p=<.050). The comparison of household income levels and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

There was no statistically significant difference between household income levels; Seasonal and Local Food Consumption, Food Purchase and Total Sustainable Nutrition-related behavior score (p=.654; p=.272; p=.320 respectively). The comparison of household income levels and The Behaviors Scale Towards Sustainable Nutrition was shown in Table 4.6.

Table 4.6. The Comparison of Demographical Characteristics and The Behaviors Scale Towards Sustainable Nutrition

		Total Sustainable Nutrition	Food Preference	Food Waste Reduction	Seasonal and Local Food Consumption	Food Purchase
		Mean ± S.D.	**Mean ± S.D.**	**Mean ± S.D.**	**Mean ± S.D.**	**Mean ± S.D.**
Sex	Woman	110.77 ± 18.99	20.41 ± 5.22	36.06 ± 6.78	31.38 ± 5.93	22.93 ± 4.64
	Man	103.01 ± 21.75	18.67 ± 5.90	34.30 ± 7.66	29.26 ± 6.44	20.77 ± 5.32
Sig.	p value*	**<.001**	**<.001**	**.008**	**<.001**	**<.001**
Education	Basic	108.26 ± 21.81	20.20 ± 5.85	35.59 ± 6.98	30.71 ± 6.85	21.76 ± 5.46
	Higher	108.79 ± 19.78	19.91 ± 5.40	35.59 ± 7.07	30.84 ± 6.03	22.45 ± 4.83
Sig.	p value*	.831	.674	1.00	.867	.259
Occupation	Unemployed	112.38 ± 17.24	20.77 ± 4.95	36.93 ± 5.98	31.67 ± 5.45	23.02 ± 3.92
	Retired	120.10 ± 16.60	22.72 ± 4.16	39.30 ± 5.71	33.61 ± 5.09	24.48 ± 4.58
	Student	97.91 ± 18.30	17.62 ± 5.11	32.60 ± 6.28	27.67 ± 6.65	20.02 ± 5.19
	Employed	108.03 ± 20.21	19.75 ± 5.57	35.27 ± 7.24	30.73 ± 6.09	22.28 ± 4.92
Sig.	p value*	**<.001**[c,d,e,f] **	**<.001**[c,d,e,f] *	**<.001**[c,d,e,f] *	**<.001**[c,d,e,f] **	**<.001**[c,d,e,f] **
Income	Income> Expenditure	107.52 ± 21.14	19.45 ± 5.63	35.42 ± 7.28	30.57 ± 6.32	22.09 ± 5.12
	Income= Expenditure	110.15 ± 18.58	20.12 ± 5.23	36.24 ± 6.53	31.05 ± 5.89	22.74 ± 4.71
	Income< Expenditure	108.27 ± 20.56	21.29 ± 5.36	33.96 ± 7.77	30.99 ± 6.29	22.04 ± 4.79
Sig.	p value*	.320	**0.34**[g] **	**.049**[h] **	.654	2.72

*S.D.: standard deviation, Occupation Status and Household Income Levels were analyzed with One Way ANOVA, Sex and Education Levels were analyzed with Independent Samples T-Test, p values were calculated by *Games-Howell and **Bonferroni*

[a], the difference was only significant for Generation X and Generation Z; [b], the difference was only significant for Generation Y and Generation Z; [i], the difference was only Baby Boomers Generation and Generation Z; [c], the difference was only significant for unemployed group and student group; [d], the difference was only significant for retired group and student group; [e], the difference was only significant for retired group and employed group; [f], the difference was only significant for student group and employed group; [g], the difference was only significant for income>expenditure and income=expenditure; [h], the difference was only significant for income>expenditure and income<expenditure

4.3. The Single-Item Food Choice Questionnaire

The Single-Item Food Choice Questionnaire consists of 11 questions with eleven sub-dimensions: health, mood, convenience, sensory, natural, price, weight, familiar, environment, animal and social justice. The lowest score for each question is 1 and the highest score is 7. There is no total score for this scale.

There was a statistically significant difference was found between generations and health motivation during food choice (p=<.001). According to the data obtained as a result of health motivation and intergenerational comparison, there was a statistically significant difference between Generation X and Generation Z (p=<.001). There was a statistically significant difference between Generation Y and Generation Z (p=<.001). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

There was a statistically significant difference was found between generations and natural motivation during food choice (p=<.001). According to the data obtained as a result of natural motivation and intergenerational comparison, there was a statistically significant difference between the Baby Boomers Generation and Generation Z (p=.041). There was a statistically significant difference between the Generation X and Generaion Z (p=<.001). There was a statistically significant difference between the Generation Y and Generaion Z (p=<.001). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

There was a statistically significant difference was found between generations and weight weight during food choice (p=.012). According to the data obtained as a result of weight motivation and intergenerational comparison, there was a statistically significant difference between Generation X and Generation Z (p=.009). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

There was a statistically significant difference was found between generations and familiar motivation during food choice (p=.023). According to the data obtained as a result of familiar motivation and intergenerational comparison, there was a statistically significant difference between Generation X and Generation Z (p=.032). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

There was a statistically significant difference was found between generations and environment motivation during food choice (p=<.001). According to the data obtained as a result of environment motivation and intergenerational comparison, there was a statistically significant difference between Baby Boomers Generation and Generation Z (p=.025). There was a statistically significant difference between Generation X and Generation Z (p=<.001). There was a statistically significant difference between Generation Y and Generation Z (p=<.001). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

There was a statistically significant difference was found between generations and animal motivation during food choice (p=<.001). According to the data obtained as a result of animal motivation and intergenerational comparison, there was a statistically significant difference between Generation X and Generation Z (p=<.001). There was a statistically significant difference between Generation Y and Generation Z (p=<.001). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

There was a statistically significant difference was found between generations and social justice motivation during food choice (p=<.001). According to the data obtained as a result of social justice motivation and intergenerational comparison, there was a statistically significant difference between Generation X and Generation Z (p=<.001). There was a statistically significant difference between Generation Y and Generation Z (p=<.001). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

There was no statistically significant difference between generations and mood, convenience, sensory, price motivations during food choice (p=.622; p=.771; p=.598; p=.106; respectively). The comparison of intergenerational and The Single-Item Food Choice Questionnarie was shown in Table 4.7.

Table 4.7. The Comparison of Intergenerational and The Single-Item Food Choice Questionnarie

	Baby Boomer Generation (n=12)	Generation X (n=220)	Generation Y (n=151)	Generation Z (n=208)	Significance
	Mean ± S.D.	Mean ± S.D.	Mean ± S.D.	Mean ± S.D.	p value*
Health	5.75 ± 1.71	5.90 ± 1.23	5.79 ± 1.42	5.15 ± 1.41	**<.001**[a,b] *
Mood	4.42 ± 1.92	4.54 ± 1.64	4.72 ± 1.69	4.51 ± 1.59	.622
Convenience	5.17 ± 1.85	5.47 ± 1.31	5.54 ± 1.48	5.54 ± 1.31	.771
Sensory	5.08 ± 1.88	5.19 ± 1.59	5.25 ± 1.62	5.38 ± 1.44	.598
Natural	5.75 ± 1.71	5.89 ± 1.31	5.72 ± 1.52	4.61 ± 1.42	**<.001**[a,b,i] *
Price	5.08 ± 1.92	5.23 ± 1.55	4.81 ± 1.63	5.07 ± 1.54	.106
Weight	4.58 ± 1.92	5.26 ± 1.53	5.07 ± 1.75	4.75 ± 1.67	**.012**[a] *
Familiar	4.92 ± 1.83	5.43 ± 1.38	5.07 ± 1.60	5.03 ± 1.44	**.023**[a] *
Environment	5.42 ± 1.67	5.36 ± 1.44	5.21 ± 1.69	4.07 ± 1.60	**<.001**[a,b,i] *
Animal	4.58 ± 1.97	5.36 ± 1.63	5.03 ± 1.82	4.16 ± 1.84	**<.001**[a,b] *
Social Justice	4.42 ± 2.10	5.47 ± 1.64	5.06 ± 1.83	4.15 ± 1.96	**<.001**[a,b] *

*S.D.: standard deviation, One Way ANOVA, p values were calculated by *Games-Howell*

[a], the difference was only significant for Generation X and Generation Z; [b], the difference was only significant for Generation Y and Generation Z; [i], the difference was only Baby Boomers Generation and Generation Z

There was a statistically significant difference was found between sex and natural, price, environment, animal and social justice motivations during food choice (p=.023; p=.015; p=.005; p=<.001; p=.034; respectively). The comparison of sex and the Single-Item Food Choice motivations was shown in Table 4.8.

There was no statistically significant difference between sex and health, mood, convenience, sensory, weight and familiar motivations during food choice (p=.324;

p=.562; p=.136; p=919; p=.163; p=.096; respectively). The comparison of sex and the Single-Item Food Choice motivations was shown in Table 4.8.

Table 4.8. The Comparison of Sex and The Single-Item Food Choice Questionnaire

	Woman	Man	Significance
	Mean ± S.D.	**Mean ± S.D.**	**p value***
Health	5.64 ± 1.35	5.51 ± 1.49	.324
Mood	4.60 ± 1.62	4.51 ± 1.68	.562
Convenience	5.56 ± 1.36	5.37 ± 1.37	.136
Sensory	5.27 ± 1.56	5.26 ± 1.54	.919
Natural	5.48 ± 1.48	5.15 ± 1.62	**.023**
Price	4.97 ± 1.59	5.33 ± 1.51	**.015**
Weight	5.07 ± 1.61	4.85 ± 1.77	.163
Familiar	5.13 ± 1.53	5.36 ± 1.32	.096
Environment	4.99 ± 1.59	4.54 ± 1.87	**.005**
Animal	5.08 ± 1.69	4.18 ± 2.05	**<.001**
Social Justice	4.98 ± 1.83	4.60 ± 2.05	**.034**

*S.D.: standard deviation, *The Independent Samples T-Test*

There was no statistically significant difference between education levels and health, mood, convenience, sensory, natural, price, weight, familiar, environment, animal and social justice motivations during food choice (p=.918; p=.479; p=.558; p=.280; p=.203; p=.473; p=.652; p=.596; p=.994; p=.905; p=.959; respectively). The comparison of education levels and the Single-Item Food Choice motivations was shown in Table 4.9.

Table 4.9. The Comparison of Education Levels and The Single-Item Food Choice Questionnarie

	Basic	Higher	Significance
	Mean ± S.D.	Mean ± S.D.	p value*
Health	5.59 ± 1.47	5.61 ± 1.38	.918
Mood	4.45 ± 1.67	4.59 ± 1.63	.479
Convenience	5.59 ± 1.41	5.49 ± 1.36	.558
Sensory	5.45 ± 1.54	5.24 ± 1.55	.280
Natural	5.18 ± 1.67	5.42 ± 1.50	.203
Price	5.18 ± 1.74	5.04 ± 1.55	.473
Weight	5.09 ± 1.78	5.00 ± 1.64	.652
Familiar	5.11 ± 1.46	5.20 ± 1.48	.596
Environment	4.87 ± 1.85	4.87 ± 1.65	.994
Animal	4.82 ± 1.99	4.84 ± 1.81	.905
Social Justice	4.87 ± 2.07	4.88 ± 1.87	.955

*S.D.: standard deviation, *The Independent Samples T-Test*

There was a statistically significant difference was found between occupation status and health motivation during food choice (p=<.001). According to the data obtained as a result of health motivation and occupation status, there was a statistically significant difference between the unemployed group and the student group (p=.002). There was a statistically significant difference between the retired group, the student group and the employed group (p=<.001; p=.041; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=.002; p=<.001; p=.047; respectively). The comparison of occupation status and the Single-Item Food Choice motivations was shown in Table 4.10.

There was a statistically significant difference was found between occupation status and natural motivation during food choice (p=<.001). According to the data

obtained as a result of natural motivation and occupation status, there was a statistically significant difference between the unemployed group, the retired group and the student group (p=.028; p=<.001; respectively). There was a statistically significant difference between the retired group; the unemployed group, the student group and the employed group (p=.028; p=<.001; p=<.001; respectively). There was a statistically significant difference between the sutdent group; the unemployed group, the retired group and the employed group (p=<.001; p=<.001; p=<.001; respectively). The comparison of occupation status and the Single-Item Food Choice motivations was shown in Table 4.10.

There was a statistically significant difference was found between occupation status and environment motivation during food choice (p=<.001). According to the data obtained as a result of environment motivation and occupation status, there was a statistically significant difference between the unemployed group, and the student group (p=<.001). There was a statistically significant difference between the retired group, the student group and the employed group (p=<.001; p=.009; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=<.001; p=<.001; p=.003; respectively). The comparison of occupation status and the Single-Item Food Choice motivations was shown in Table 4.10.

There was a statistically significant difference was found between occupation status and animal motivation during food choice (p=<.001). According to the data obtained as a result of animal motivation and occupation status, there was a statistically significant difference between the unemployed group and the student group (p=<.001). There was a statistically significant difference between the retired group, the student group and the employed group (p=<.001; p =.011; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=<.001; p=<.001; p=.013; respectively). The comparison of occupation status and the Single-Item Food Choice motivations was shown in Table 4.10.

There was a statistically significant difference was found between occupation status and social justice motivation during food choice (p=<.001). According to the data obtained as a result of social justice motivation and occupation status, there was a statistically significant difference between the unemployed group, the student group and

the employed group (p=<.001; p=.004; respectively). There was a statistically significant difference between the retired group, the student group and the employed group (p=<.001; p=.032; respectively). There was a statistically significant difference between the student group; the unemployed group, the retired group and the employed group (p=<.001; p =<.001; p=<.001; respectively). The comparison of occupation status and the Single-Item Food Choice motivations was shown in Table 4.10.

There was no statistically significant difference between mood, convenience, sensory, price, weight and familiar motivations and occupation status (p=.585, p=.818, p=.266, p=.463, p=.134, p=.060; respectively). The comparison of occupation status and the Single-Item Food Choice motivations was shown in Table 4.10.

Table 4.10. The Comparison of Occupation Status and The Single-Item Food Choice Questionnarie

	Unemployed	Retired	Student	Employed	Significance
	Mean ± S.D.	**Mean ± S.D.**	**Mean ± S.D.**	**Mean ± S.D.**	**p value***
Health	5.90 ± 1.08	6.05 ± 1.25	5.07 ± 1.34	5.58 ± 1.43	**<.001**[c,d,e,f] *
Mood	4.42 ± 1.38	4.46 ± 1.84	4.41 ± 1.52	4.63 ± 1.66	.585
Convenience	5.42 ± 1.23	5.54 ± 1.40	5.38 ± 1.42	5.53 ± 1.38	.818
Sensory	4.98 ± 1.50	5.30 ± 1.60	5.55 ± 1.28	5.26 ± 1.58	.266
Natural	5.52 ± 1.25	6.13 ± 1.13	4.33 ± 1.19	5.42 ± 1.57	**<.001**[c,d,e,f,j] *
Price	5.02 ± 1.62	5.30 ± 1.68	5.24 ± 1.34	5.01 ± 1.58	.463
Weight	5.33 ± 1.36	5.31 ± 1.63	4.83 ± 1.53	4.95 ± 1.71	.134
Familiar	4.82 ± 1.63	5.52 ± 1.52	5.07 ± 1.21	5.21 ± 1.47	.060
Environment	5.27 ± 1.27	5.51 ± 1.46	4.02 ± 1.58	4.84 ± 1.72	**<.001**[c,d,e,f] *
Animal	5.30 ± 1.57	5.48 ± 1.52	4.03 ± 1.69	4.79 ± 1.88	**<.001**[c,d,e,f] *
Social Justice	5.55 ± 1.40	5.49 ± 1.66	3.83 ± 1.79	4.84 ± 1.94	**<.001**[c,d,e,f,j] *

*S.D.: standard deviation, One Way ANOVA, p values were calculated by*Games-Howell*

[c], the difference was only significant for unemployed group and student group; [d], the difference was only significant for retired group and student group; [e], the difference was only significant for retired group and employed group; [f], the difference was only significant for student group

and employed group; [j], the difference was only significant for unemployed group and retired group

There was a statistically significant difference was found between household income status and mood motivation during food choice (p=.003). According to the data obtained as a result of mood motivation and household income levels, there was a statistically significant difference between the Income>Expenditure group; the Income=Expenditure group and the Income<Expenditure group (p =.014; p=.017; respectively). There was a statistically significant difference between the Income=Expenditure group and the Income>Expenditure group (p=.014). The comparison of household income levels and the Single-Item Food Choice motivations was shown in Table 4.11.

There was a statistically significant difference was found between household income levels and environment motivation during food choice (p=.012). According to the data obtained as a result of environment motivation and household income levels, there was a statistically significant difference between the Income>Expenditure group and the Income=Expenditure group (p=.037). The comparison of household income levels and the Single-Item Food Choice motivations was shown in Table 4.11.

There was a statistically significant difference was found between household income levels and animal motivation during food choice (p=.009). According to the data obtained as a result of environment motivation and household income levels, there was a statistically significant difference between the Income>Expenditure group and the Income<Expenditure group (p =.008). The comparison of household income levels and the Single-Item Food Choice motivations was shown in Table 4.11.

There was no statistically significant difference between household income levels and health, convenience, sensory, natural, price, weight, familiar and social justice motivations during food choice (p=.883; p=.548; p=.786; p=.495; p=.064; p=.145; p=.112; p=.229; respectively). The comparison of household income levels and the Single-Item Food Choice motivations was shown in Table 4.11.

Table 4.11. The Comparison of Household Income Levels and The Single-Item Food Choice Questionnarie

	Income > Expenditure	Income = Expenditure	Income < Expenditure	Significance
	Mean ± S.D.	**Mean ± S.D.**	**Mean ± S.D.**	**p value***
Health	5.60 ± 1.37	5.60 ± 1.38	5.69 ± 1.51	.883
Mood	4.33 ± 1.74	4.74 ± 1.51	4.91 ± 1.51	**.003**[g,h] *
Convenience	5.46 ± 1.35	5.58 ± 1.32	5.41 ± 1.58	.548
Sensory	5.22 ± 1.56	5.32 ± 1.52	5.27 ± 1.64	.786
Natural	5.32 ± 1.54	5.43 ± 1.53	5.54 ± 1.44	.495
Price	4.90 ± 1.60	5.23 ± 1.52	5.09 ± 1.64	.064
Weight	4.92 ± 1.68	5.02 ± 1.66	5.36 ± 1.52	.145
Familiar	5.07 ± 1.55	5.34 ± 1.33	5.14 ± 1.65	.112
Environment	4.65 ± 1.71	5.02 ± 1.64	5.17 ± 1.56	**.012**[g] **
Animal	4.65 ± 1.84	4.89 ± 1.84	5.39 ± 1.65	**.009**[h] **
Social Justice	4.73 ± 1.89	5.00 ± 1.90	5.03 ± 1.91	.229

*S.D.: standard deviation, One Way ANOVA, p values were calculated by *Games-Howell and **Bonferroni*

[g], the difference was only significant for income>expenditure and income=expenditure; [h], the difference was only significant for income>expenditure and income<expenditure

4.4. The Correlation Analysis

In this research, The Pearson Correlation Analysis was conducted for correlation analysis.

There was a weak, positive and statistically significant relationship was found between Food Preference-related behavior score and age (r=.389, p=<.001). There was a weak, positive and statistically significant relationship was found between Food Waste Reduction-related behavior score and age (r=.303, p<.001). There was a weak weak, positive and statistically significant relationship was found between Seasonal and Local Food Consumption-related behavior score and age (r=.366, p<.001). There was a weak weak, positive and statistically significant relationship was found between Food Purchase-related behavior score and age (r=.260, p <.001). There was a weak weak,

positive and statistically significant relationship was found between Total Sustainable Nutrition-related behavior and age (r=.389, p< .001). The correlation analysis between the Behaviors Scale Towards Sustainable Nutrition and age was shown in Table 4.12.

Table 4.12. The Correlation Analysis Between The Behaviors Scale Towards Sustainable Nutrition and Age

	Age
Total Sustainable Nutrition	**.389 ****
Food Preference	**.389 ****
Food Waste Reduction	**.303 ****
Seasonal and Local Food Consumption	**.366 ****
Food Purchase	**.260 ****

**stands for p values < 0.05; ** stands for p values < 0.001, Pearson Correlation*

There was a weak, positive and statistically significant relationship between health motivation and age during food selection (r=.253, p=<.001). There was no statistically significant relationship between mood motivation and age (r=-.004, p=.918). There was no statistically significant relationship between convenience motivation and age (r=-.026, p=.520). There was no statistically significant cor relationship relation between sensory motivation and age (r=-.050; p=.224). There was a moderate, positive and statistically significant relationship between natural motivation and age (r=.397, p<.001). There was no statistically significant relationship between price motivation and age (r=.034, p=.410). There was a very weak, positive and statistically significant relationship between weight motivation and age (r=.120, p=.004). There was a very weak, positive and statistically significant relationship between familiar motivation and age (r=.110, p<.001). There was a weak, positive and statistically significant relationship between environment motivation and age (r=.339, p=<.001). There was a weak, positive and statistically significant relationship between animal motivation and age (r=.261, p<.001). There was a weak, positive and statistically significant relationship between social justice motivation and age (r=.290, p<.001). The correlation analysis between the Single-Item Food Choice Questionnarie and age was shown in Table 4.13.

Table 4.13. The Correlation Analysis Between The Single-Item Food Choice Questionnarie and Age

	Age
Health	**.253** **
Mood	-,004
Convenience	-.026
Sensory	-.050
Natural	**.397** **
Price	.034
Weight	**.120** *
Familiar	**.110** *
Environment	**.339** **
Animal	**.261** **
Social Justice	**.290** **

**stands for p values < 0.05; ** stands for p values < 0.001, Pearson Correlation*

There was a strong, positive and statistically significant relationship between health motivation and Food Preference-related behavior among Baby Boomers Generation (r=.752, p=.005). There was a very strong, positive and statistically significant relationship between mood, natural and weight motivations and Food Preference-related behavior among Baby Boomers Generation (r=.814, p=.001; r=.661, p=.019; r=.734, p=.007; respectively). There was no relationship between convenience, sensory, natural, price, familiar, environment, animal and social justice motivations amd Food Preference-related behavior among Baby Booomers Generation (r=.543, p=.068; r=.346, r=.271; r=.308; p=.330; r=.355; p=.257; r=.540; p=.070; r=.444, p=.148; r=.382, p=.220; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Baby Boomers Generation was shown in Table 4.14.

There was a strong, positive and statistically significant relationship between convenience, sensory, price, animal and social justice motivations and Food Waste Reduction-related behavior among Baby Boomers Generation (r=.855, p=<.001; r=.652, p=.021; r=.750; p=.005; r=.668, p=.018; r=.657, p=.020; r=.679, p=.015; respectively). There was a very strong, positive and statistically significant relationship between health, natural, familiar and environment and Food Waste Reduction-related behavior

among Baby Boomers Generation (r=855, p=<.001; r=.860, p=<.001; r=.915, p=<.001; r=.927, p=<.001; respectively). There was no relationship between mood and weight motivations and Food Waste Reduction-related behavior among Baby Booomers Generation (r=.446, p=.146; r=.537, p=.072; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Baby Boomers Generation was shown in Table 4.14.

There was a strong, positive and statistically significant relationship between mood, convenience, price, weight, familiar, environment and animal motivations and Seasonal and Local Food Consumption-related behavior among Baby Booomers Generation (r=.658, p=.020; r=.753, p=.005; r=.763, p=.004; r=.611, p=.035; r=.726, p=.008; r=.790, p=.002; r=.625, p=.030; respectively). There was a very strong, positive and statistically significant relationship between health, sensory and natural motivations and Seasonal and Local Food Consumption-related behavior among Baby Booomers Generation (r=823, p=; r=.842, p=.001; r=849, p=<.001; respectively). There was no relationship between social justice and Seasonal and Local Food Consumption-related behavior among Baby Booomers Generation (r=.555, p=.061). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Baby Boomers Generation was shown in Table 4.14.

There was a strong, positive and statistically significant relationship between sensory, familiar, environment and animal motivations and Food Purchase-related behavior among Baby Booomers Generation (r=.747, p=.005; r=.683, p=0.14; r=750, p=.005; r=628, p.029=; respectively). There was a very strong, positive and statistically significant relationship between health, convenience, natural and price motivations and Food Purchase-related behavior among Baby Booomers Generation (r=.941, p=.001; r=.868, p=<.001; r=.824, p=.001; r=.863, p=<.001; respectively). There was no relationship between mood, weight and social justice motivations and Food Purchase-related behavior among Baby Booomers Generation (r=.458, p=.134; r=.346, p=.271; r=.508, p=.092; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Baby Boomers Generation was shown in Table 4.14.

There was a strong, positive and statistically significant relationship between mood, convenience, sensory, price, weight, familiar, animal and social justice

motivations and Total Sustainable Nutrition-related behavior among Baby Booomers Generation (r=.647, p=.023; r=.778, p=.003; r=.765, p=.004; r=.731, p=.007; r=.620, p=.032; r=.776, p=.003; r=.664, p=.019; r=.609, p=.036; respectively). There was a very strong, positive and statistically significant relationship between health, natural and environment movitations and Total Sustainable Nutrition-related behavior among Baby Booomers Generation (r=.912, p=<.001; r=.897, p=<.001; r=.858, p=<.001; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Baby Boomers Generation was shown in Table 4.14.

Table 4.14. The Correlation Analysis Between The Single-Item Food Choice Questionnarie and The Behaviors Scale Towards Sustainable Nutrition According to Baby Boomers Generation

	Total Sustainable Nutrition	Food Preference	Food Waste Reduction	Seasonal and Local Food Consumption	Food Purchase
Health	**.912** **	**.752** *	**.855** **	**.823** **	**.841** **
Mood	**.647** *	**.814** **	.446	**.658** *	.458
Convenience	**.778** *	.543	**.652** *	**.753** *	**.868** **
Sensory	**.765** *	.346	**.750** *	**.842** **	**.747** *
Natural	**.897** **	**.661** *	**.860** **	**.849** **	**.824** **
Price	**.731** *	.308	**.668** *	**.763** *	**.863** **
Weight	**.620** *	**.734** *	.537	**.611** *	.346
Familiar	**.776** *	.355	**.915** **	**.726** *	**.683** *
Environment	**.858** **	.540	**.927** **	**.790** *	**.750** *
Animal	**.664** *	.444	**.657** *	**.625** *	**.628** *
Social Justice	**.609** *	.382	**.679** *	.555	.508

**stands for p values < 0.05; ** stands for p values < 0.001, Pearson Correlation*

There was a very weak, positive and statistically significant relationship between mood and convenience motivations and Food Preference-related behavior among

Generation X (r=.153, p=.023; r=.175, p=.009; respectively). There was a moderate, positive and statistically significant relationship between health, natural, weight, environment, animal and social justice motivations and Food Preference-related behavior among Generation X (r=.550, p=<.001; r=.544, p=<.001; r=.496, p=<.001; r=.576, p=<.001; r=.487, p=<.001; r=.454, p=<.001; respectively). There was no relationship between sensory, price and familiar motivations and Food Preference-related behavior among Generation X (r=-.084, p=.215; r=.097, p=.151; r=.077, p=.254; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.15.

There was a very weak, positive and statistically significant relationship between price motivation and Food Waste Reduction-related behavior among Generation X (r=.191, p=.005; respectively). There was a weak, positive and statistically significant relationship between convenience and social justice motivations and Food Waste Reduction-related behavior among Generation X (r=.200, p=.003; r=.378, p=<.001; respectively). There was a moderate, positive and statistically significant relationship between health, natural, weight, environment and animal motivations and Food Waste Reduction-related behavior among Generation X (r=.512, p=<.001; r=.509, p=<.001; r=.442, p=<.001; r=.497, p=<.001; r=.412, p=<.001; respectively). There was no relationship between mood, sensory and familiar motivations and Food Waste Reduction-related behavior among Generation X (r=.063, p=.352; r=.045, p=.509; r=.106, p=.118; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.15.

There was a very weak, positive and statistically significant relationship between mood and price motivations and Seasonal and Local Food Consumption-related behavior among Generation X (r=.139, p=.040; r=.178, p=.008; respectively). There was a weak, positive and statistically significant relationship between convenience motivation and Seasonal and Local Food Consumption-related behavior among Generation X (r=.329, p=<.001). There was a moderate, positive and statistically significant relationship between weight, environment, animal and social justice motivations and Seasonal and Local Food Consumption-related behavior among Generation X (r=.449, p=<.001; r=.599, p=<.001; r=.454, p=<.001; r=.460, p=<.001;

respectively). There was a strong, positive and statistically significant relationship between health and natural motivations and Seasonal and Local Food Consumption-related behavior among Generation X (r=.615, p=<.001; r=.611, p=<.001; respectively). There was no relationship between sensory and familiar motivations and Seasonal and Local Food Consumption-related behavior among Generation X (r=.010, p=.878; r=.109, p=.197; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.15.

There was a very weak, positive and statistically significant relationship between mood and price motivations and Food Purchase-related behavior among Generation X (r=.187, p=.005; r=.167, p=.013; respectively). There was a weak, positive and statistically significant relationship between convenience motivation and Food Purchase-related behavior among Generation X (r=.215, p=.001). There was a moderate, positive and statistically significant relationship between health, natural, weight, environment, animal and social justice motivations and Food Purchase-related behavior among Generation X (r=.517, p=<.001; r=.552, p=<.001; r=.534, p=<.001; r=.557, p=<.001; r=.485, p=<.001; r=.456, p=<.001; respectively). There was no relationship between sensory and familiar motivations and Food Purchase-related behavior among Generation X (r=.006, p=.931; r=.070, p=.300; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.15.

There was a very weak, positive and statistically significant relationship between mood and price motivations and Total Sustainable Nutrition-related behavior among Generation X (r=.152, p=.024; r=.191, p=.005; respectively). There was a weak, positive and statistically significant relationship between convenience motivation and Total Sustainable Nutrition-related behavior among Generation X (r=.273, p=<.001). There was a moderate, positive and statistically significant relationship between weight, animal and social justice motivations and Total Sustainable Nutrition-related behavior among Generation X (r=.559, p=<.001; r=.535, p=<.001; r=.509, p=<.001; respectively). There was a strong, positive and statistically significant relationship between health, natural and environment motivations and Total Sustainable Nutrition-related behavior among Generation X (r=.646, p=<.001; r=.650, p=<.001; r=.652,

p=<.001; respectively). There was no relationship between sensory and familiar motivations and Total Sustainable Nutrition-related behavior among Generation X (r=-.001, p=.994; r=.109, p=.3106; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.15.

Table 4.15. The Correlation Analysis Between The Single-Item Food Choice Questionnarie and The Behaviors Scale Towards Sustainable Nutrition According to Generation X

	Total Sustainable Nutrition	Food Preference	Food Waste Reduction	Seasonal and Local Food Consumption	Food Purchase
Health	**.646** **	**.550** **	**.512** **	**.615** **	**.517** **
Mood	**.152** *	**.153** *	.063	**.139** *	**.187** *
Convenience	**.273** **	**.175** *	**.200** *	**.329** **	**.215** **
Sensory	-.001	-.084	.045	.010	.006
Natural	**.650** **	**.544** **	**.509** **	**.611** **	**.552** **
Price	**.191** *	.097	**.191** *	**.178** *	**.167** *
Weight	**.559** **	**.496** **	**.442** **	**.449** **	**.534** **
Familiar	.109	.077	.106	.109	.070
Environment	**.652** **	**.576** **	**.497** **	**.599** **	**.557** **
Animal	**.535** **	**.487** **	**.412** **	**.454** **	**.485** **
Social Justice	**.509** **	**.454** **	**.378** **	**.460** **	**.456** **

**stands for p values < 0.05; ** stands for p values < 0.001, Pearson Correlation*

There was a very weak, positive and statistically significant relationship between mood, convenience and price motivations and Food Preference-related behavior among Generation Y (r=.162, p=.046; r=.174 p=.032; r=.167, p=.040; respectively). There was a weak, positive and statistically significant relationship between weight motivation and Food Preference-related behavior among Generation Y (r=.290, p=<.001). There was a

moderate, positive and statistically significant relationship between health, natural, animal and social justice motivations and Food Preference-related behavior among Generation Y (r=.525, p=<.001; r=.519, p=<.001; r=.488, p=<.001; r=.489, p=<.001; respectively). There was a strong, positive and statistically significant relationship between environment motivation and Food Preference-related behavior among Generation Y (r=.659, p=<.001). There was no relationship between sensory and familiar motivations and Food Preference-related behavior among Generation Y (r=-.050, p=.544; r=-.081, p=.324; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.16.

There was a weak, positive and statistically significant relationship between health, natural, price, weight and animal motivations and Food Waste Reduction-related behavior among Generation Y (r=.286, p=<.001; r=.253, p=.002; r=.233, p=.004; r=.286, p=<.001; r=.367, p=<.001; respectively). There was a moderate, positive and statistically significant relationship between environment and social justice mtoivations and Food Waste Reduction-related behavior among Generation Y (r=.478, p=<.001; r=.420, p=<.001; respectively). There was no relationship between mood, convenience, sensory and familiar motivations and Food Waste Reduction-related behavior among Generation Y (r=-.020, p=.810; r=.129, p=.114; r=-.043, p=.650; r=-.042, p=.608; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.16.

There was a very weak, positive and statistically significant relationship between convenience motivation and Seasonal and Local Food Consumption-related behavior among Generation Y (r=.169, p=.038). There was a weak, positive and statistically significant relationship between weight motivation and Seasonal and Local Food Consumption-related behavior among Generation Y (r=.212, p=.009). There was a moderate, positive and statistically significant relationship between health, animal and social justice motivations and Seasonal and Local Food Consumption-related behavior among Generation Y (r=.486, p<.001=; r=.419, p<.001=, r=.490, p<.001=; respectively). There was a strong, positive and statistically significant relationship between natural and environment motivations and Seasonal and Local Food Consumption-related behavior among Generation Y (r=.643, p=<.001; r=.626, p=<.001;

respectively). There was no relationship between mood, sensory, price and familiar motivations and Seasonal and Local Food Consumption-related behavior among Generation Y (r=.084, p=.306; r=-.021, p=.795; r=.048, p=.561; r=.022, p=.791; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation X was shown in Table 4.16.

There was a very weak, positive and statistically significant relationship between price motivation and Food Purchase-related behavior among Generation Y (r=.169, p=.038). There was a weak, positive and statistically significant relationship between weight motivation and Food Purchase-related behavior among Generation Y (r=.390, p=<.001). There was a moderate, positive and statistically significant relationship between health, natural, animal and social justice motivations and Food Purchase-related behavior among Generation Y (r=.493, p=<.001; r=.534, p=<.001; r=.486, p=<.001; r=534, p=<.001; respectively). There was a strong, positive and statistically significant relationship between environment motivation and Food Purchase-related behavior among Generation Y (r=.658, p=<.001). There was no relationship between mood, convenience, sensory and familiar motivations and Food Purchase-related behavior among Generation Y (r=.060, p=.467; r=.117, p=.154; r=-.141, p=.084; r=.010, p=.902; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation Y was shown in Table 4.16.

There was a very weak, positive and statistically significant relationship between convenience and price motivations and Total Sustainable Nutrition-related behavior among Generation Y (r=.187, p=.028 ; r=.197, p=.015; respectively). There was a weak, positive and statistically significant relationship between weight motivation and Total Sustainable Nutrition-related behavior among Generation Y (r=.357, p=<.001). There was a moderate, positive and statistically significant relationship between health, natural, animal and social justice motivations and Total Sustainable Nutrition-related behavior among Generation Y (r=.530, p=<.001; r=.569, p=<.001; r=.530, p=<.001; r=.582, p=<.001; respectively). There was a strong, positive and statistically significant relationship between environment motivation and Total Sustainable Nutrition-related behavior among Generation Y (r=.725, p=<.001). There was no relationship between mood, sensory and familiar motivations and Total Sustainable Nutrition-related

behavior among Generation Y (r=.079, p=.333; r=-.075, p=.363; r=-.031, p=.703; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation Y was shown in Table 4.16.

Table 4.16. The Correlation Analysis Between The Single-Item Food Choice Questionnarie and The Behaviors Scale Towards Sustainable Nutrition According to Generation Y

	Total Sustainable Nutrition	Food Preference	Food Waste Reduction	Seasonal and Local Food Consumption	Food Purchase
Health	**.530** **	**.525** **	**.286** **	**.486** **	**.493** **
Mood	.079	**.162** *	-.020	.084	.060
Convenience	**.178** *	**.174** *	.129	**.169** *	.117
Sensory	-.075	-.050	-.043	-.021	-.141
Natural	**.569** **	**.519** **	**.253** *	**.643** **	**.534** **
Price	**.197** *	**.167** *	**.233** *	.048	**.169** *
Weight	**.357** **	**.290** **	**.286** **	**.212** *	**.390** **
Familiar	-.031	-.081	-.042	.022	.010
Environment	**.725** **	**.659** **	**.478** **	**.626** **	**.658** **
Animal	**.530** **	**.488** *	**.367** **	**.419** **	**.486** **
Social Justice	**.582** **	**.489** **	**.420** **	**.490** **	**.534** **

**stands for p values < 0.05; ** stands for p values < 0.001, Pearson Correlation*

There was a weak, positive and statistically significant relationship between health and weight motivations and Food Preference-related behavior among Generation Z (r=.339, p=<.001; r=.307, p=<.001; respectively). There was a moderate positive and statistically significant relationship between natural and social justice and Food Preference-related behavior among Generation Z (r=.424, p=<.001; r=.492, p=<.001; respectively). There was a strong, positive and statistically significant relationship between environment and animal motivations and Food Preference-related behavior among Generation Z (r=.612, p=<.001; r=.613, p=<.001; respectively). There was no relationship between mood, convenience, sensory, price and familiar motivations and

Food Preference-related behavior among Generation Z (r=.105, p=.132; r=.033, p=.633; r=-.017, p=.809; r=.051, p=.468; r=.025, p=.716; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation Z was shown in Table 4.17.

There was a very weak, positive and statistically significant relationship between weight motivation and Food Waste Reduction-related behavior among Generation Z (r=.196, p=.005). There was a weak, positive and statistically significant relationship between health, natural, environment, animal and social justice motivations and Food Waste Reduction-related behavior among Generation Z (r=.312, p=<.001; r=.313, p=<.001; r=.396, p=<.001; r=.392, p=<.001; r=.381, p=<.001; respectively). There was no relationship between mood, convenience, sensory, price and familiar motivations and Food Waste Reduction-related behavior among Generation Z (r=.040, p=.565; r=.054, p=.441; r=.051, p=.460; r=.088, p=.204; r=-.010, p=882; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation Z was shown in Table 4.17.

There was a very weak, positive and statistically significant relationship between convenience motivation and Seasonal and Local Food Consumption-related behavior among Generation Z (r=.136, p=.050). There was a weak, positive and statistically significant relationship between health and weight motivations and Seasonal and Local Food Consumption-related behavior among Generation Z (r=.349, p=<.001; r=.279, p=<.001; respectively). There was a moderate, positive and statistically significant relationship between natural and animal motivations and Seasonal and Local Food Consumption-related behavior among Generation Z (r=.527, p=<.001; r=.490, p=; respectively). There was a strong, positive and statistically significant relationship between environment, animal and social justice motivations and Seasonal and Local Food Consumption-related behavior among Generation Z (r=.600, p=;<.001; r=.490, p=<.001; r=.522, p=<.001; respectively). There was no relationship between mood, sensory, price and familiar motivations and Local Food Consumption-related behavior among Generation Z (r=.059, p=.394; r=.032, p=.644; r=.089, p=.203; r=.116, p=.095; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation Z was shown in Table 4.17.

There was a weak, positive and statistically significant relationship between weight, price and familiar motivations and Food Purchase-related behavior among Generation Z (r=.332, p=<.001; r=.163, p=.019; r=.137, p=.048; respectively). There was a moderate, positive and statistically significant relationship between health, natural, environment, animal and social justice motivations and Food Purchase-related behavior among Generation Z (r=.435, p=<.001; r=.460, p=<.001; r=.595, p=<.001; r=.511, p=<.001; r=.521, p=<.001; respectively). There was no relationship between mood, convenience and sensory motivations and Local Food Consumption-related behavior among Generation Z (r=.070, p=.318; r=.069, p=.325; r=-.029, p=.678; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation Z was shown in Table 4.17.

There was a weak, positive and statistically significant relationship between weight motivation and Total Sustainable Nutrition-related behavior among Generation Z (r=.331, p=<.001). There was a moderate, positive and statistically significant relationship between health, natural and social justice motivations and Total Sustainable Nutrition-related behavior among Generation Z (r=.431, p=<.001; r=.519, p=<.001; r=.576, p=<.001; respectively). There was a strong, positive and statistically significant relationship between environment and animal motivatons and Total Sustainable Nutrition-related behavior among Generation Z (r=.659, p=<.001; r=.601, p=<.001; respectively). There was no relationship between mood, convenience, sensory, price and familiar motivations and Total Sustainable Nutrition-related behavior among Generation Z (r=.080, p=.248; r=.090, p=.195; r=.017, p=.810; r=.116, p=.094; r=.076, p=.274; respectively). The correlation analysis between the Single-Item Food Choice Questionnarie and the Behaviors Scale Towards Sustainable Nutrition according to Generation Z was shown in Table 4.17.

Table 4.17. The Correlation Analysis Between The Single-Item Food Choice Questionnarie and The Behaviors Scale Towards Sustainable Nutrition According to Generation Z

	Total Sustainable Nutrition	Food Preference	Food Waste Reduction	Seasonal and Local Food Consumption	Food Purchase
Health	**.431** **	**.339** **	**.312** **	**.349** **	**.435** **
Mood	.080	.105	.040	.059	.070
Convenience	.090	.033	.054	**.136** *	.069
Sensory	.017	-.017	.051	.032	-.029
Natural	**.519** **	**.424** **	**.313** **	**.527** **	**.460** **
Price	.116	.051	.088	.089	**.163** *
Weight	**.331** **	**.307** **	**.196** *	**.279** **	**.332** **
Familiar	.076	.025	-.010	.116	**.137** *
Environment	**.659** **	**.612** **	**.396** **	**.600** *	**.595** **
Animal	**.601** **	**.613** **	**.392** **	**.490** **	**.511** **
Social Justice	**.576** **	**.492** **	**.381** **	**.522** *	**.521** **

**stands for p values < 0.05; ** stands for p values < 0.001, Pearson Correlation*

5. DISCUSSION

In this study, the main purpose is to evaluate the impact of demographic characteristics on the sustainable nutrition behaviors and food choices of adults between the ages of 18 and 65 and to compare then among four different generations. The findings obtained reveal the extent to which demographic characteristics have impact on sustainable nutrition behaviors and food choices on a generational basis.

Out of a total of 591 individuals, there was a predominance of woman in the analysis of the sex distribution of participants consistent with other studies in the literature (111,112).

The existing literature demonstrates that behavior towards sustainable nutrition differs between generations. This is because each generation grows up with different historical events and is affected by social context and changes (90,113). In our study in line with the literature, the orientation behaviors towards sustainable nutrition differed between four different generations.

Intergenerational behaviors towards sustainable nutrition scores were examined and it was found that Generation X and Generation Y scored significantly higher than Generation Z. This result indicates that Generation X has a higher tendency towards sustainable nutrition compared to younger generations. In a similar way, in a generation-based study of 686 participants in Portugal, it was concluded that the generation with more sustainable attitudes and behaviors was Generation X and the generation with less sustainable attitudes and behaviors was Generation Z. It was thought that the reason for the lower level of sustainable nutrition behaviors of the younger generation compared to the older generations is due to the limited involvement of the younger generation in kitchen activities and household shopping (112).

Our study results indicate that Generations X and Y are more predisposed to Food Preference, Food Waste Reduction, Seasonal and Local Food Consumption and Food Purchase than the Generation Z, the youngest generation of our study. Generation-based studies in the literature show that previous generations have higher sustainable purchasing behaviors compared to Generation Z (112,114). Two possible reasons are suggested in the literature for this result: The first is that Generation Z largely still lives with their parents and therefore does not play a decisive role in purchasing decisions.

The second is that this age group has fewer health problems compared to older individuals and therefore do not show interest in dietary patterns (114,115).

The fact that Generations X and Y scored significantly higher for Seasonal and Local Food Consumption than Generation Z in our study is similar to the study by Neslihan Öner and her colleagues. That study, which found that Generation X had higher seasonal and local food consumption compared to Generations Y and Z, related with the possible reason for this indication with the fact that Generation X was more concerned about climate change compared to later generations (113).

Generation X, which scored higher for Food Waste Reduction than Generations Y and Z, may have a higher sense of responsibility in terms of food waste reduction behavior. Similarly, a different study found that Generation X was found to be more educated in terms of recycling behavior compared to Generations Y and Z. Generation X is also more active in ecological consumption and plastic waste recycling compared to other generations (116). With different consumption habits and different attitudes towards food waste, it has been observed in studies that young individuals cause food waste more frequently and in higher amounts than older individuals. As a result of a study conducted in Hungary, the finding that Generation Y wastes food and leftovers more than Generation X supports the results of our study. There may be two possible explanations for this outcome. First, younger individuals may have a lower level of awareness regarding the value of foods and its connection to healthy and sustainable eating. Second, they may tend to shop without prior planning, such as not using a shopping list during grocery shopping (117).

In line with the current literature, in our study, women, who have a more positive attitude towards sustainable nutrition, show a higher tendency towards sustainable nutrition compared to men. A review study examining cross-sectional studies based on the sex variable shows that women tend to have a higher tendency towards behavioral patterns associated with sustainable diets such as more fruit & vegetable consumption and minor amounts in red meat consumption compared to men. The level of adherence to the Mediterranean Diet, that is considered one of the most sustainable dietary patterns, was also found to be higher for women (118).

In a Turkish study, it was observed that women define the concept of sustainable nutrition significantly more accurately than men (119). The sex variable also plays an

important role for Food Preference (91). Women prefer plant-based foods, that were considered as more sustainable foods, more than men (99,118). Sex differences are associated with social norms, sex roles and cultural beliefs (91,118). In society of Türkiye and in other variable societies, red meat and its derivatives are considered specific to men, while more sustainable and healthy foods such as vegetables and fruits are considered specific to women's diet patterns, in other words these types foods are labeled as feminine (91,99).

Education is an important factor for raising environmental awareness and to develop sustainable nutrition (120). The existing literature on education and environmentally friendly consumption and sustainable nutrition shows the positive influence of education on environmental attitudes (118,120). A study conducted by Bruna Barone and his colleagues showed that for individuals with higher levels of education, the tendencies to portect of natural resources, reuse and practice food and sustainability were higher (121). In our study, in contrast to the literature, no difference was found in behaviors towards sustainable nutrition according to level of education.

One of the demographic factors that showed a significant difference in our study was employment status. According to our findings, the group showing the highest tendency towards sustainable nutrition is the retired group, while the group showing the lowest tendency is the student group. This result indicates that there may be a relationship between retired individuals being more concerned in sustainable nutrition and rising health awareness as age increases (114). In our study, it was demonstared that the employment group tended to have more behaviours towards sustainable nutrition than the student group. In an Iranian study, better occupational status was associated with lower diet sustainability (46). In contrast, another study reported that shopping frequency, a measure of sustainable consumption, did not vary by occupational status.

Another indication in our study obtained based on the employment status is that the student group demonstrates the lowest tendency for Food Waste Reduction behavior. On the other hand, another study on sustainable nutrition conducted in Türkiye showed that students were more careful than dietitians and other health professionals in avoiding excessive food intake and utilizing food waste (122).

In contrary to the literature, another demographic factor that was not found to be significantly different for behaviors towards sustainable nutrition in this study was

household income level. However, statistically significant difference was found between Food Preference that is the sub-dimensions of sustainable nutrition and household income level. This finding imply that individuals with higher household income levels tend to consider environmental influences more in food preference. The Food Preference sub-dimension is associated with a preference for animal products with potential negative impacts on the environment, processed foods and products with higher greenhouse gas emissions, and plant-based foods with lower environmental influences. While the consumption of red meat and processed products is generally more prevalent in high-income countries, a study in France found that the diet of low-income individuals has lower environmental influences than that of higher-income individuals (123). The findings of a study conducted with Iranian households contradict the results of our study. In that study, it was reported that the dietary habits of individuals with higher income levels were associated with more above carbon footprint and water footprint (46).

In this study, individuals with higher income than their expenditure tens to be more inclined to reduce food waste than individuals with income is lower than their expenditure. This indication can be explained by the fact that individuals with lower income levels are less likely to plan their shopping in advance and have a more dominant tendency to 'live in the moment' in terms of consumption behavior (124). Conversely, a study conducted in Italy found that individuals with higher monthly incomes waste fruit more often than individuals with less highly incomes (125).

Food choices vary across generations based on numerous motivations (87,90,126). In our study, motivations that differ significantly in food choices between generations were determined as health, natural, weight, familiar, environment, animal and social justice. For health motivation, a significant difference was found between Generation X and Generation Y and between Generation Y and Generation Z. In other words, Generation Z received lowermost scores in comparison with Generations X and Y. This finding is in line with the finding of making healthy food choices with increasing health awareness as age increases, which is frequently emphasized in the literature (115,127,128). Generation Z scored the lowest for natural motivation compared to Generations BB, X and Y. This finding is in line with the Polish study, that stressed that Generation Z was less likely to consume natural foods and more likely to consume fast-food and packaged foods (129).

Motivation of weight appears to be a more important motivation when choosing food for the older Generation X compared to Generation Z. This finding can be attributed to the fact that with rising age, weight is identified as a factor that is more vital for health reasons (91). This result is in line with the results of a study in which 6 factors were evaluated for food choices and it was concluded that weight motivation was the least important factor for Generation Y (130). In contrast, a study carried out in Azerbaijan revealed that weight control was found to be more favorable for Generations Z and Y compared to Generation X (131).

In like manner, Generation X scored higher for familiar motivation compared to Generation Z. In other words, Generation X pays more attention to familiar motivation than Generation Z when making food choices. Interestingly, in a study conducted with Generation Y in Malaysia, the most important factor influencing food choice after knowledge is familiarity (114). Studies show that individuals have higher acceptability towards more familiar products (132).

Among the four generations, the Baby Boomers Generation scored the highest for environment motivation while Generation Z scored the lowest. This finding suggests that individuals tend to give more importance to environmental sustainability concept in their food choices as they age. According to a survey conducted by the Food Standards Agency in the UK, Generation Z leads the vegetarian and vegan movements that emphasize being environmentally friendly, but cannot reflect this in their consumption behavior due to financial reasons (133). A Polish study stated that Generation Z gives less importance to environmental reasons when choosing food compared to personal reasons (129).

Motivations of animal and social justice, Generation X scored significantly higher than Generation Z. According to the Food Standards Agency survey, it has been shown that Generation Z considers itself to be more concerned about animal welfare than other age groups, but is less likely to purchase food produced with this in mind. This situation is thought to be related to economic constraints and cost pressures that make it difficult for individuals to make ethical choices (133). No statistically significant relationship was found for mood, sensory, convenience and price motivations for food choice between generations.

Differences of sex have impact on the food choices (99). According to the findings of our study, natural, price, environment, animal and social justice motivations influence food choices according to sex. For the price motivation, men score greater than women, while women get advanced scores for all other motivations. This result shows that men give more importance to price and women give more importance to natural, environment, animal and social justice motivations. In line with these results, a study conducted at a university found that men gave more importance to cost in food choices (134). On the other hand, according to the food choice questionnaire study conducted in 1995, which is important for food choice, price motivation was found to be more important for women. This finding was explained by the fact that the individuals responsible for shopping are mostly women in the United Kingdom (26).

Consistent with the results of this study, the literature shows that environmental and animal friendly issues such as natural, animal and environment motivations are more significant when women make food choices (99,111). A study of 2198 participants, 1314 of whom were women, found that women tended to eat more plant-based foods such as vegetables, tofu and whole grains, that are considered more environmentally friendly, whereas men tended to avoid these types of foods and eat greater amounts in meat and processed foods (99). This finding is explained in two ways. First, studies show that men avoid environmentally friendly behaviors because they are judged as feminine (129). Second, there is a positive correlation between red meat consumption and perceived masculinity that evolves from infancy to late adulthood, suggesting that red meat consumption is associated with masculinity (99). No statistically significant relationships were found for health, mood, sensory, convenience, weight and familiar by sex.

In the current literature, various studies have suggested that with higher levels of education, individuals are more inclined to follow the Mediterranean Diet, that is attributed to be a sustainable diet, to emphasize plant-based foods in the diet and to pay more attention to environmental problems (135). A study conducted in the United Arab Emirates found that young women with higher levels of education have a more favorable orientation towards healthy eating compared to others (86). Another study suggested that educational level did not influence the amount of fruit consumption attributed to environmentally friendly nutrition (136). In our study, no statistically significant association was found for any food choice motivation by education level.

In this study, the retired group scored highest in health, nature, environment and animal motivations; the unemployed group scored highest in social justice motivation; and the student group scored lowest in each motivation. In a study carried out in Türkiye, it was revealed that the retired group gave more importance to the health motivation during food choice than the student and employed groups. In the same study, in line with our study, it was also observed that retired individuals gave more importance to the natural motivation than other individuals. It is thought that the importance given to naturalness raises with increasing age, just like health consciousness; the fact that retired people attach more importance to health and natural motivations can be explained in this way (91). Environment motivation is associated with seasonal and organic consumption and pesticide-free and environmentally friendly production (110). According to a study conducted in Croatia, no statistically significant difference was found between environmental determinants and food choice (135). No statistically significant relationship was found for mood, sensory, convenience, price, wegiht and familiar motivations according to employment status.

Income level is a factor influencing consumer behavior (114). In our study, for mood motivation, individuals whose income level is lower than expenditure level and whose income level is equal to expenditure level are more influenced by mood motivation than individuals whose income level is higher than expenditure level. This indication contradicts the study by M. Sosa and his colleagues who found that mood has little importance in food choice for low-income consumers (137).

Individuals with income level equal to expenditure level are more influenced by environmental motivation and individuals with income level lower than expenditure level are more influenced by animal motivation than individuals with higher income level. This situation can be related to the fact that individuals with higher income levels are less sensitive to environmental issues due to their high purchasing power (138). According to a Greek study, contrary to our findings, the purchase of organic food, that is a part of the environment dimension, was positively associated with higher income level (115). No statistically significant associations were found for health, sensory, convenience, natural, price, weight, familiar and social justice motivations by household income level.

In compliance with the study findings, a weak, positive and statistically significant relationship was found between behaviors towards sustainable nutrition and

age. The existence of this relationship indicates that as age increases, the tendency towards sustainable nutrition rises, although not clearly. In the study conducted by Melisa Türk and her colleague, it was observed that as the age of the participants increased, their sustainable and healthy eating behavior scores also raised (138). This relationship is associated in the literature with the fact that health awareness tends to ascend as individuals get older (114,128). On the other hand, numerous studies in the literature reveal that the younger generation exhibits more sustainable nutrition-related behaviors than the older generation (92,115,118).

The finding of a weak, positive and statistically significant relationship between age and health, nature, environment, animal and social justice motivations during food choice indicates that these motivations show a linear trend with rising age. The relationship between rising age and health motivation is explained in the literature as health problems and health awareness increase with rising age; accordingly, individuals make healthier food choices (129,138). In the current literature, there are studies showing a relationship between increasing age and rising importance given to natural, environment and animal motivations for food choice (118). However, recent studies also show that the younger generation growing up with the climate crisis is making dietary choices that take into account impacts on the environment. Mubariz Mammadli's study indicated that the younger generation pays more attention to ecological and environmental issues than older individuals (131).

In this study, there was a very weak, positive and statistically significant relationship was found between motivations of weight, familiar and age during food choice. Svetlana Panasenko's study demonstrated that the familiar factor have impact on the intention to purchase organic food. The increment in risk and prevalence of diseases related to abdominal obesity with aging makes weight management even more critical for older individuals (139).

In this study, a positive and statistically significant relationship was found between behaviors towards sustainable nutrition and age among generations. This relationship is getting stronger from Generation Z to Baby Boomers Generation. These indications show that the importance of health motivation rises with age in terms of inclination to sustainable nutrition. In a study conducted in Azerbaijan, it was determined that Generations X and Y exhibited a more positive relationship with health motivation than Generation Z in terms of sustainable consumption. In a study conducted

in Türkiye, health motivation was determined to be the most notable motivation after mood for Generation Y, while in another study conducted in Türkiye, it was observed that Generation X gave more importance to health motivation than Generations Y and Z (126,130,131). The positive relationship between health motivation and increasing age can be explained by the fact that the risk of disease rises with age and pushes individuals to make healthier food choices (114). Another potential explanation is that Generation Z sees themselves as invincible because they are young, and they put health to the background, and because they are not financially stable, they tend to choose unhealthy diets, which are cheaper, instead of healthy diets, which are more expensive according to them (133).

Nutritional behaviors are influenced by motivation of mood (92,118). In our study, a positive and statistically significant relationship between sustainable nutrition and mood motivation was found for Baby Boomers Generation and Generation Z. Baby Boomers Generation show a stronger relationship to mood than Generation X. In particular, the mood motivation of "eating makes me feel good" rises with age, and older individuals are more likely to report positive emotions when consuming their desaire foods, defined as comfort food. Furthermore, it is known that individuals tend to focus on positive emotions as they get older. This information supports our study results (100). In contrast to our findings, Halime Zülal Zeren et al. found that mood motivation was influential for food choice in each generation (126). In the study conducted by Zehra Dilistan Shipman, mood motivation was found to be the most important motivation for the Generation Y (130).

Convenience motivation is mentioned as an important factor for food choice in the literature (126). In our study, positive and statistically significant relationships were found between three generations, as Baby Boomers Generation, Generation X and Generation Y, and behaviors towards sustainable nutrition and convenience motivation. The strength of these relationships rises from Generation Y to Baby Boomers Generation. In the study conducted by Anna M. Platta her colleagues, it was found that convenience motivation was more important for Generaitons Baby Boomers and X, while in the Z.D.S study, it was determined that the third most important factor for Generation Y was convenience (130,140). In contrast to our findings, in Ching-Hui Su study, it was stated that individuals in Generation Z, who have lower environmental awareness, attach more importance to convenience (141).

In contrast to the literature, sensory motivation showed a positive, strong and statistically significant relationship only for Baby Boomers Generation in this study. In a study conducted with 75 participants from four different generations, ranging in age from 21 to 65, sensory appeal was found to be a strong motivation for all participants from different generations (142).

In our study, all generations showed a positive and statistically significant relationship for natural motivation, which is closely related to sustainable nutrition. While the strength of this relationship is very strong for Baby Boomers Generation, it is moderate for Generations Y and Z. This finding demonstrates that with rising age, individuals give more importance to the natural content and natural ingredients of foods while turning towards sustainable nutrition. According to a study, some members of Generation Y behave like Baby Boomers Generation and Generation X and prioritize their health and prefer natural and organic labeled products with clean ingredients for food choice (130).

Price is a influential factor influencing food choices (92,118,130). Our finding of a non-significant relationship for Generation Z is inconsistent with the literature suggesting that Generation Z is more price conscious than older generations with financial stability (129,133). In this study, the strength of price motivation across generations increases with rising age. A study conducted in Portugal found a negative relationship between age and price motivation (112).

Weight management, like motivation of health, is known to be an influential factor in food choices for older generations. This trend is line with findings of our study. There was a positive and statistically significant relationship was found between behavior towards sustainable nutrition behavior and weight motivation for all generations. Motivation of weight has been indicated to become more significant for Baby Boomers Generation with rising age. This indication can be attributed to the fact that health is important for Baby Boomers Generation and the perception of weight gain as an unhealthy situation (143,144). Consistent with our findings, Generation Y were found to pay more attention to weight motivation than Generation Z. This is explained by the fact that Generation Y does not want to gain weight, so they consume less fat and are more active (113).

There are also studies in the literature that state the opposite for weight motivation, for which we have determined a positive relationship according to age. A study conducted in Türkiye indicated that Generation Z gives more importance to weight control with health-based thoughts than Generation Y. A study conducted in Azerbaijan found that Generations Z and Y attach more importance to sustainable consumption for weight control compared to Generation X (131).

Familiarity is one of the various factors that have impact on the food choice (143). There was a positive, strong and statistically significant relationship was found between behaviour towards sustainable nutrition and familiar motivation only for Baby Boomers Generation. This relationship demonstrates that familiar foods have a strong impact on food choices for Baby Boomers Generation.

In our study, the influence of environment motivation on sustainable nutrition behavior according to generations was determined as Baby Boomers Generation, Generation Y, Generation Z and Generation X, from high to low, respectively. In agreement with our findings, in the study conducted by Neslihan Öner and her collague, the environmental consciousness factor of Generation Y was significantly higher than Generation X (113). The existence of a strong and significant relationship for Generation Y can be explained by the fact that Generation Y has started to establish their own families and since they have children, it is vital for them to have a nutrition pattern that is free of pesticides and other chemicals (114).

Older people have been found to have more environmentally friendly attitudes and tend to adopt sustainable nutrition habits more frequently, despite the fact that younger people exhibit stronger tendencies toward environmental and sustainability subjects (112). In our study, Generation Z demonstrates that a lower correlation compared to Baby Boomers Generation. This demonstration is in line with the Polish study, that suggests that Baby Boomers, the oldest generation, are more likely to adopt sustainable behaviors than Generation Z. This result indicates that the post-war upbringing and prolonged famines in Poland are reflected in their food choices. In addition, Baby Boomers tend to make do with what they have and cook more at home, while younger generations are more likely to eat out (90).

In our study, animal motivation demonstarted a positive and statistically significant relationship during food choice for all generations. The strength of this

relationship was found to be higher for Baby Boomers Generation and Generation Z compared to other generations. In line with this, Generation X demonstrated the strongest relationship between Generations X, Y and Z in the study by Neslihan Öner and her colleague (113). In a study conducted in the United Kingdom with participants aged 18 to 91 years, it was found that individuals aged 60 years and older had more positive attitudes towards animal welfare (145).

Certain studies suggest that the fair trade label may influence food choices. Social justice is a motivation associated with the fair trade label. This motivation states that responsible companies support their employees and support the sustainability (146). There was a positive, strong and statistically significant relationship between behavior sustainable nutrition and social justice motivation for Baby Boomers; a positive, moderate and statistically significant relationship for Generations Y, Z and X from high to low.

The most prominent strength of this study is the comparative analysis of behaviors towards sustainable nutrition and motivations for food choices across four different generations. Considering the limited number of generation-based sustainable nutrition studies both nationally and internationally in the literature, this study makes a valuable contribution to the field by providing a unique perspective. Assessing the impact of demographic characteristics on the motivations influencing food choices is of great importance for community-based and realistic modeling of sustainable nutrition behaviors. Behaviors towards sustainable nutrition were evaluated with a multidimensional approach by taking into account numerous demographic characteristics and examining the motivations that shape these behaviors. In these aspects, this study can contribute to a better understanding of behaviors towards sustainable nutrition and the motivations that shape these behaviors. It may also guide dietitians and health professionals in the process of developing influential intervention strategies tailored to the needs of the population.

The major limitation of this study is that the number of participants belonging to different generations was not evenly distributed. This uneven distribution may have affected the generalizability and evaluation of the findings obtained in intergenerational scale scoring comparisons. Another limitation of the study is the disproportionate number of man and woman participants. This may have influenced the interpretation of behavioral tendencies towards sustainable nutrition and food choice motivations in sex-

based assessments. The last limitation is connected to the distribution of participants according to their level of education. In this study, adult individuals were divided into two groups as basic and higher, but the number of individuals with basic education level remained quite low. This imbalance may have contributed to the lack of a significant difference for both scales.

6. CONCLUSIONS

In this era where all relationships are based on the concept of consumption; developments such as the industrial revolution and technological advances lead to consumption frenzy. This situation leads to excessive use of natural resources, increment in greenhouse gas emissions, soil inefficiency, water and air pollution, global temperature rise and malnutrition problems worldwide. These problems have brought the concepts of sustainability and sustainable development to the agenda. In order to achieve a sustainable development that aims to meet the needs of the present without jeopardizing the ability of future generations to meet their own needs, it is necessary to review the nutritional habits of individuals and address sustainable nutrition. In this context, dietitians have significant responsibilities in improving the nutritional habits of individuals and rising awareness at the social level. This study aims to examine the impacts of demographic factors on the sustainable nutrition behaviors and food choices of adults in society and to compare them across four generations. The data were collected between November 2024 – March 2025 and 591 adults, 435 of whom were woman, were reached. The main findings of the study show that there is an intergenerational difference in behaviors towards sustainable nutrition. In terms of demographic characteristics, it was observed that women adopted behaviors towards sustainable nutrition more than men, and the retired individuals adopted sustainable nutrition behaviors more than employed, unemployed and student individuals. In this study, the motivations influencing intergenerational food choices were analyzed under the headings of “health”, “natural”, “weight”, “familiarity”, “environment”, “animal” and “social justice”. In all these motivation areas, the youngest generation, Generation Z, was found to have the lowest scores.

In the current literature on sustainable nutrition, the number of studies conducted is limited. In this context, the findings obtained as a result of examining the behaviors and food choices of adults aged between 18 and 65 years living in our country towards sustainable nutrition, taking into account demographic factors, will be pioneering for other studies and training programs to be conducted in this field. In this context, more studies covering larger populations and approaching sustainable nutrition from different perspectives are needed.

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8.APPENDICES

8.1. Appendix 1 Informed Consent Form

BİLGİLENDİRİLMİŞ GÖNÜLLÜ ONAM FORMU

Sayın Katılımcı,

Katılacağınız bu çalışma, bilimsel nitelikli bir araştırma olup "**Yetişkinlerin Sürdürülebilir Beslenmeye Yönelik Davranışları ve Besin Seçimleri Üzerinde Demografik Özelliklerin Etkisi: Dört Farklı Jenerasyonun Karşılaştırılması**" adlı yüksek lisans tez araştırmasıdır. Bu yüksek lisans tez araştırması, Doç. Dr. İrem KAYA CEBİOĞLU danışmanlığında Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Beslenme ve Diyetetik Anabilim Dalı yüksek lisans öğrencisi Diyetisyen Ceren PEKDAŞ tarafından yürütülmektedir. Bu araştırma kapsamında toplumumuzdaki 18 – 65 yaş arası yetişkin bireylerin sürdürülebilir beslenmeye yönelik davranışları ve besin seçimleri üzerine demografik faktörlerin (doğum yılı, yaş, cinsiyet, eğitim düzeyi, çalışma durumu, hane halkı gelir düzeyi) incelenerek bu etkilerin dört farklı jenerasyon bakımından karşılaştırılması amaçlanmaktadır.

Veri toplama kapsamında araştırmacılar tarafından hazırlanmış veri toplama formunu doldurmanız beklenecektir. Bu formda doğum yılı, yaş, cinsiyet, çalışma durumu, eğitim düzeyi ve gelir düzeyi sorularının bulunduğu birinci bölüm, "Sürdürülebilir Beslenmeye Yönelik Davranış Ölçeği"nin bulunduğu ikinci bölüm "Tek Madde Besin Seçimi Testi" ölçüm aracının bulunduğu üçüncü bölüm ile üç bölümden oluşmaktadır. Bu çalışmanın hiçbir aşaması herhangi bir risk teşkil etmemektedir ve size ve yakınlarınıza herhangi bir şekilde zararı olmayacaktır. Veri toplama işlemi yaklaşık 15 dakika sürecektir. Bu araştırmada hedeflenen katılımcı sayısı 384 kişidir. Araştırma boyunca hiçbir konuda sizin özeliniz sorgulanmayacaktır. Bu araştırmada paylaştığınız tüm bilgiler sadece araştırmanın amacı için kullanılacak, araştırma kapsamı dışında herhangi bir kişi ile kesinlikle paylaşılmayacaktır. Elde edilecek olan verilere Etik kurul, kurum ve diğer sağlık otoritelerinin orijinal tıbbi kayıtlarına doğrudan erişimi olacaktır. Fakat bu bilgilendirilmiş gönüllü onam formunun imzalanmasıyla birlikte bu bilgiler gizli tutulacaktır.

Araştırmaya katılımınız tamamıyla gönüllülük esasına dayalı olmaktadır, hiçbir hak kaybetmeksizin çalışmaya katılmayı reddedilirsiniz. Bu çalışmaya katılımınız tamamen sizin isteğinize bağlıdır, çalışmanın herhangi bir aşamasında herhangi bir ceza veya yaptırıma maruz kalmaksızın vazgeçebilirsiniz. Araştırmaya katılımınız için sizden herhangi bir ücret istenmeyecek ve katılımınız karşılığında size herhangi bir ücret ödenmeyecektir. Araştırmanın tüm aşamalarında kimlik bilgileriniz gizli tutulacaktır. Araştırma kapsamında elde edilecek olan bilgiler bilimsel bilimsel amaçlarla gizlilik esaslarına uymak koşulu ile kullanılabilir, sunulabilir ve yayınlanabilir. Bu araştırma için sizden beklenen bilgilendirilmiş gönüllü onam formunu imzalayıp bu araştırmaya katkı sağlamayı kabul ettikten sonra, veri toplama formunu doldurmanızdır.

Araştırma hakkında daha fazla bilgi almak için araştırmacı Ceren PEKDAŞ'a başvurabilir, araştırmacıya günün 24 saati boyunca numaralı cep telefonundan ulaşabilirsiniz.

Sorumlu Araştırmacı: Doç. Dr. İrem KAYA CEBİOĞLU
Yeditepe Üniversitesi Beslenme ve Diyetetik bölümü öğretim üyesi

Araştırmacı: Ceren PEKDAŞ
Yeditepe Üniversitesi Beslenme ve Diyetetik yüksek lisans öğrencisi

Araştırmanın bilgilendirilmiş gönüllü olur formundaki tüm açıklamaları okudum / sözlü olarak dinledim. Bana yukarıda konusu ve amacı belirtilmiş olan araştırma ile ilgili yazılı ve sözlü açıklama aşağıda belirtilen araştırmacı tarafından yapıldı. Araştırmaya gönüllü

olarak katıldığımı ve istediğim zaman gerekçeli veya gerekçesiz olarak bu araştırmadan ayrılabileceğimi biliyorum. Bu araştırmada elde edilen verilerin bilimsel yayın, rapor ve benzeri dokümanlarda kullanılmasını kabul ediyorum. Söz konusu araştırmaya hiçbir baskı ve zorlama olmadan, kendi rızamla katılmayı kabul ediyorum.

Gönüllü	**Araştırmacı**	**Tanık**
Ad-Soyad:	**Ad-Soyad:**	**Ad-Soyad:**
İmza:	**İmza:**	**İmza:**
Tarih:	**Tarih:**	**Tarih:**
GSM:	**GSM:**	**GSM:**

8.2. Appendix 2 Ethical Committee Approval

T.C.
YEDİTEPE ÜNİVERSİTESİ REKTÖRLÜĞÜ
Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu

Sayı : E.83321821-805.02.03-471
Konu : Etik Kurul Karar Yazısı

Sayın Doç. Dr. İrem KAYA CEBİOĞLU

Yeditepe Üniversitesi Girişimsel Olmayan Klinik Araştırmalar Etik Kuruluna etik onay için başvuru yapılmış olan araştırma önerisinin başlığı, araştırmacılar, başvuru numarası, sunulan belgeler ve toplantı bilgileri aşağıda yer almaktadır. İlgili araştırma önerisi, etik kurulumuz üyeleri tarafından değerlendirilmiş olup, etik ve bilimsel açıdan **UYGUN** olduğuna karar verilmiştir.

Araştırma Başlığı:	Yetişkinlerin Sürdürülebilir Beslenmeye Yönelik Davranışları ve Besin Seçimleri Üzerinde Demografik Özelliklerin Etkisi: Dört Farklı Jenerasyon Karşılaştırması
Araştırmacılar:	Ceren Pekdaş, Doç.Dr.İrem Kaya Cebioğlu
Başvuru Numarası:	202310Y0660

TOPLANTI BİLGİLERİ			
Toplantı Tarihi:	11.10.2024	**Toplantı Yeri:**	Çevirim içi (Google Meet)

SUNULAN BELGELER
Islak imzalı başvuru dosyası, CD veya USB belleğe kaydedilmiş başvuru dosyası ve elektronik başvuru
Araştırma başlığı ve araştırmacıların isimleri
Başvuru dilekçesi
Başvuru formu
Araştırmanın;
• Niteliği
• Önemi ve özgün değeri
• Amaç ve hedefleri
• Yöntemi
• Yönetimi
• Yaygın etkisi
• Araştırma bütçesi (Mevcutsa)
• Süresi ve uygunluğu (Zaman cetveli)
• Kaynakları

Yeditepe Üniversitesi 26 Ağustos Yerleşimi, İnönü Mahallesi Kayışdağı Caddesi 34755
Ataşehir / ISTANBUL
Telefon No: (0216) 578 00 00 Faks No : (0216) 578 02 99
İnternet Adresi www.yeditepe.edu.tr
Kep Adresi : yeditepeuniversitesi@hs03.kep.tr

Bilgi İçin: Sevgi BAYRAKTAR
Unvan: Uzman Yardımcısı
Telefon No: (0216) 578 00 00 / 6347

Bilgilendirilmiş Gönüllü Olur Formu (yapılan araştırmaya özel olarak hazırlanmış)
Taahhütname-1 Araştırmanın yapılacağı kurumdan izin alma sorumluluğunun araştırmacılara ait olduğuna dair taahhüt
Taahhütname-2 Dünya Tıp Birliği Helsinki Bildirgesinin son versiyonunun ve Sağlık Bakanlığı'nın ilgili tüm kılavuzlarının okunmasına dair taahhüt
Taahhütname-3 Daha önce yapılmış etik kurul başvuruları mevcut olup olmadığına dair taahhüt
Taahhütname-4 Araştırma sırasında araştırma bütçesinde yer almayan ve gönüllünün kendisine veya Sosyal Güvenlik Kurumuna ek yük getirecek hiçbir işlem uygulanmayacağına dair taahhüt
Taahhütname-5 COVID-19 hastalarında tedavi yaklaşımları ve bilimsel araştırmalar genelgesi okunmasına dair taahhüt
Taahhütname-6 Millî Eğitim Bakanlığı Araştırma Uygulama İzinleri konulu yazının okunmasına dair taahhüt
Araştırmacıların her birisine ait özgeçmiş formu
Ek belgeler (Varsa kullanılan ölçek)

Doç. Dr. Binnur OKAN BAKIR
Başkan

Doç. Dr. Gökhan ERTAŞ
Başkan Yardımcısı

Prof. Dr. Feryal SUBAŞI
Üye

Doç. Dr. Işıl IŞIK KÜPCÜ
Üye

Doç. Dr. Ebru TÜRKÖZ ACAR
Üye

Dr. Öğr. Üyesi Elif Çiğdem KELEŞ
Üye

Dr. Öğr. Üyesi Emine Nur ÖZDAMAR
Üye

Yeditepe Üniversitesi 26 Ağustos Yerleşimi, İnönü Mahallesi Kayışdağı Caddesi 34755
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Bilgi İçin: Sevgi BAYRAKTAR
Unvanı: Uzman Yardımcısı
Telefon No: (0216) 578 00 00 / 6347

8.3. Apprendix 3 Demographic Characteristics Form

Doğum yılınız nedir?

( ) 1946 – 1964 ( ) 1980 – 1994

( ) 1965 – 1979 ( ) 1995 – 2012

Yaşınız nedir?

____

Cinsiyetiniz nedir?

( ) Kadın ( ) Erkek

Eğitim düzeyiniz nedir?

( ) Okuryazar ( ) Lise

( ) İlkokul ( ) Lisans

( ) Ortaokul ( ) Yüksek Öğretim

Çalışma durumunuz nasıl?

( ) Çalışmıyor ( ) Öğrenci

( ) Emekli ( ) Çalışıyor

Hane halkı gelir düzeyiniz nasıl?

( ) Gelir > Gider

( ) Gelir = Gider

( ) Gelir < Gider

8.4. Apprendix 4 Behavior Towards Sustainable Nutrition Scale

	Hiçbir Zaman	Nadiren	Bazen	Sıklıkla	Her Zaman
Besin Tercihi					
1 - Üretimi sırasında daha az sera gazı oluşturan besinleri tercih ederim.	1	2	3	4	5
2 - Çevresel etkileri nedeniyle daha az hayvansal daha çok bitkisel kaynaklı besinlerle beslenirim.	1	2	3	4	5
3 - Çevreye duyarlı olarak üretilen besinleri tercih ederim.	1	2	3	4	5
4 – İşlenmiş besinlerin çevreye zararının yüksek olduğunu düşündüğüm için daha az tüketirim.	1	2	3	4	5
5 – Çevresel etkisi daha düşük oluğu için evde yemek yapmayı tercih ederim.	1	2	3	4	5
6 – Çevreye etkileri düşük olduğu için protein kaynağı olarak kabuklu yemiş ve / veya kurubaklagil tüketmeyi tercih ederim.	1	2	3	4	5
Gıda İsrafının Azaltılması					
7 – Besinlerin artan kısımlarını yemeklerde yeniden kullanırım.	1	2	3	4	5
8 – Bayatlayan ekmekleri çöpe atmayarak değerlendiririm.	1	2	3	4	5
9 – Çevreyi korumak için besin israfımı azaltırım.	1	2	3	4	5
10 – Gıda kaybının dünyada açlığa neden olduğunu bilerek gıda israfımı azaltırım.	1	2	3	4	5
11 – Besinlerin daha pahalı olmasına israfın da neden olduğunu bilerek israf etmemeye çalışırım.	1	2	3	4	5
12 – Ekolojik ayak izimi azaltmak için besin ve ambalaj atıklarımı ayrıştırırım.	1	2	3	4	5
13 – Gelecek nesilleri düşünerek ihtiyacım kadar tüketmeye çalışırım.	1	2	3	4	5
14 – Yumuşayan sebze ve meyveleri atmayarak değerlendiririm.	1	2	3	4	5
15 – Tüketmediğim ve / veya mevsiminde fazla aldığım besinleri daha sonra kullanmak için dondurucuda saklarım.	1	2	3	4	5
Mevsimsel ve Yerel Beslenme					
16 – Sera gazını azaltmak için mevsiminde yetişen besinleri tüketmeye çalışırım.	1	2	3	4	5
17 – Ekolojik çeşitliliği korumak için mevsiminde avlanan balıkları tercih ederim.	1	2	3	4	5

18 – Geleneksel / yöresel besinleri tüketmeyi tercih ederim.	1	2	3	4	5
19 – Çevreyi korumak için organik besinleri (tarım ilacı / kimyasal madde içermeyen) tüketmeye çalışırım.	1	2	3	4	5
20 – Küresel ısınmayı önlemek için başka ülkelerden taşınan besinleri tüketmemeyi tercih ederim.	1	2	3	4	5
21 – Besin alışverişimi küçük ölçekli yerel esnaftan ve / veya pazardan yapmaya çalışırım.	1	2	3	4	5
22 – İthal besinler yerine yerli besinleri almayı tercih ederim.	1	2	3	4	5
23 – Kültürel alışkanlıklarıma uygun besinleri almayı tercih ederim.	1	2	3	4	5
Besin Satın Alımı					
24 – Besin satın alırken etiketlerdeki yerel ve / veya ekolojik işaretleri kontrol ederim.	1	2	3	4	5
25 – İhtiyacımdan fazlasını satın almamak için alışverişe liste yaparak giderim.	1	2	3	4	5
26 – İsrafı azaltmak için ürünlerin son kullanma tarihine dikkat ederim.	1	2	3	4	5
27 – Besin tercihlerimin küresel iklimi etkilediğini bilerek alışverişimi yaparım.	1	2	3	4	5
28 – Plastik atığını azaltmak için kendi su kabımı taşırım.	1	2	3	4	5
29 – Plastik atığını azaltmak için kendi alışveriş çantamı kullanırım.	1	2	3	4	5

8.5. Apprendix 5 Single-item Food Choice Questionnarie

Besin seçimlerinize yönelik verilen ifadeleri birden yediye kadar değerlendiriniz. 1 seçeneği "Hiç önemli değil", 7 seçeneği "Çok önemli" bildirimine denk gelmektedir.		1 Hiç Önemli Değil → 7 Çok Önemli						
Normal bir günde tüketeceğim besinde benim için önemli olan….		1	2	3	4	5	6	7
1.	Sağlıklı olmasıdır							
2	Duygu durumuma yönelik olmasıdır (örneğin iyi hissederken veya stresle başa çıkarken)							
3	Elverişli olmasıdır (bulması kolay ve hazırlaması pratik)							
4	Hoşuma giden duyusal özelliklere (dokusu, görünüşü, kokusu, tadı vb.) sahip olmasıdır							
5	Doğal olmasıdır							
6	Fiyat olarak uygun olmasıdır							
7	Vücut ağırlığımı kontrol etmemde bana yardımcı olmasıdır							
8	Alıştığım bir besin olmasıdır							
9	Çevre dostu olmasıdır							
10.	Hayvan dostu yöntemlerle üretilmiş olmasıdır							
11.	Adil ticaretle üretilmiş olmasıdır (Adil ticaret, ürünün üretim ve tedariğinde çalışanların hakları, güvenliği ve gelirlerinin daha adil olmasını gözetleyen sosyal bir hareket ve sertifakalandırmadır.)							

9.CURRICULUM VITAE

Personal Informations

Name	Ceren	**Surname**	Pekdaş

Education

Degree	Department	The name of the Institution Graduated From	Graduation year
Doctorate			
Master	Nutrition and Dietetics	**Yeditepe University**	2025
University	Nutrition and Dietetics	**Yeditepe University**	2022
High school	-	**Un College**	2017

Languages	Grades (#))
English	87.5

All the grades must be listed if there is more than one (KPDS, ÜDS, TOEFL; EELTS vs),

Work Experience (Sort from present to past)

Position	Institute	Duration (Year - Year)

Computer Skills

Program	Level
Microsoft Office Programs	Good
SPSS	Basic

***Excellent , good, average or basic**

Scientific works

The articles published in the journals indexed by SCI, SSCI, AHCI

Articles published in other journals

Proceedings presented in international scientific meetings and published in proceedings book.

Journals in the proceedings book of the refereed conference / symposium

Others (Projects / Certificates / Rewards)
