T.C.
YEDİTEPE UNIVERSITY
INSTITUTE OF HEALTH SCIENCES
DEPARTMENT OF NUTRITION AND DIETETICS

TURKISH VERSION OF GREEN EATING SURVEY: VALIDITY AND RELIABILITY

MASTER OF SCIENCE THESIS

MERVE CAMBAZ

Istanbul-2021

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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 and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree except where due acknowledgment has been made in the text.

04/08/2021

Merve Cambaz

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LIST of SYMBOLS and ABBREVIATIONS

%	symbol of percentage
%CI	percentage of confidence interval
g	unit of mass in gram
kg	unit of mass in kilograms
kg/m2	unit of body mass index
m	unit of length in meters
ml	unit of volume in milliliter
n	frequency
CF	Carbon Footprint
CH_4	Methane
CO_2	Carbon dioxide
DB	Decisional Balance
FAO	Food and Agriculture Organization
GE	Green Eating
GHGE	Greenhouse Gas Emissions
ICC	Intraclass Correlation
IPCC	International Panel on Climate Change
MD	Mediterranean Diet
N_2O	Nitric Oxide
OFC	Organic Food Consumption
SD	Standard Deviation
SE	Self Efficacy
SOC	Stage of Change

UN	United Nations
US	United States
USDA	United States Department of Agriculture
WF	Water Footprint
WHO	World Health Organization

ABSTRACT

Cambaz, M. (2021). Turkish Version of Green Eating Survey: Validity and Reliability. Yeditepe University, Institute of Health Science, Department of Nutrition and Dietetics, MSc Thesis, İstanbul.

Human activities, including diet patterns, have significant impact on climate change. There are limited scales that include environmental impact of nutrition. In this study, the Green Eating Survey was adapted to Turkish language and culture. Language validation of the Turkish version of the scale was ensured by the translation-back translation method. Professionals were consulted for content validity. Turkish translation of the scale and intercultural adaptation had been completed, the scale was applied to 468 volunteer undergraduate students. In order to evaluate the reliability of the Turkish version of the scale; internal consistency coefficient, test-retest, parallel form methods were applied. As a result of the statistical analyses, it has been proven that Green Eating Survey is a valid and reliable measurement tool for Turkish university students as one of the first scales in Turkey for sustainable nutrition. It was observed that women and the Nutrition and Dietetics students have more knowledge about environmentally conscious eating and prefer sustainable foods ($p<0.05$). Income level has been evaluated as a determining factor of preference of foods with low environmental impact ($p<0.05$). It was determined that questions the barriers related to the consumption of sustainable foods, did not differ according to sex, department, or income level ($p>0.05$). It is recommended to plan interventions aiming at teaching university students about the environmental impact of nutrition and develop policies aiming at increase accessibility in order to ensure the consumption of sustainable foods. In future research, the Green Eating Survey is suitable measurement for Turkish university students.

Keywords: Environment, Healthy nutrition, Turkish adaptation, Reproducibility of results, Sustainable nutrition.

ÖZET

Cambaz, M. (2021). Çevreye Duyarlı Beslenme Ölçeği'nin Türkçe Geçerlilik ve Güvenilirliği. Yeditepe Üniversitesi, Sağlık Bilimleri Enstitüsü, Beslenme ve Diyetetik ABD, Master Tezi, İstanbul.

Beslenme düzeni de dahil olmak üzere insan aktivitelerinin, iklim değişikliği üzerine önemli etkileri bulunmaktadır. Beslenmenin çevresel etkilerini içeren az sayıda ölçek bulunmaktadır. Bu çalışmada Green Eating Survey Türk dili ve kültürüne uyarlanmıştır. Ölçeğin Türkçe versiyonunun dil geçerliliği çeviri-geri çeviri yöntemiyle sağlanmıştır. Kapsam geçerliliği için uzman görüşü alınmıştır. Ölçek, Türkçeye çevrildikten ve kültürlerarası adaptasyon tamamlandıktan sonra 468 gönüllü lisans öğrencisine uygulanmıştır. Ölçeğin Türkçe versiyonunun güvenirliğinin değerlendirilmesi amacıyla; iç tutarlık katsayısı, test-tekrar test, paralel form yöntemleri kullanılmıştır. Gerçekleştirilen istatistiksel analizler sonucu ölçeğin Türk üniversite öğrencileri için geçerli ve güvenilir olduğu belirlenmiş ve böylece Türkiye'de sürdürülebilir beslenme alanında ilk ölçeklerden biri olarak uyarlanmıştır. Kadınların ve Beslenme ve Diyetetik Bölümü öğrencilerinin çevreye duyarlı beslenme konusunda daha çok bilgi sahibi olduğu ve sürdürülebilir besinleri daha çok tercih ettiği görülmüştür ($p<0,05$). Gelir düzeyi, çevresel etkileri düşük besinlerin tercih edilmesinde belirleyici bir faktör olarak değerlendirilmiştir ($p<0,05$). Sürdürülebilir besinlerin tüketimi ile ilgili bariyerleri sorgulayan ölçek puanının, cinsiyet, bölüm veya gelir düzeyine göre fark göstermediği belirlenmiştir ($p>0,05$). Üniversite öğrencilerine beslenmenin çevresel etkilerinin öğretilmesini hedefleyen müdahalelerin planlanması ve sürdürülebilir besinlerin tüketiminin sağlanması için erişilebilirliğin arttırılmasını hedefleyen politikaların geliştirilmesi önerilir. Gelecek araştırmalarda, Çevreye Duyarlı Beslenme ölçeği, Türk üniversite öğrencileri için uygun bir ölçüm aracıdır.

Anahtar kelimeler: Çevre, Sağlıklı beslenme, Türkçe uyarlama, Güvenilirlik ve geçerlilik, Sürdürülebilir beslenme.

1. INTRODUCTION and PURPOSE

In this era called as Anthropocene, human activities and their consequences on the climate and environment, cause loss in biodiversity and endanger animal and plant life on Earth (1). Dietary patterns have huge ecological cost associated with crop growing, production processes, packaging, refrigeration, food transport, and waste management (2). Changes in the eating habits of populations include expanding consumption of ultra-processed foods and beverage products and beef and dairy products, whose production is related with high greenhouse gas emissions (GHGE) (3). With an increasing understanding of the environmental impact of nutrition, research on food policy, nutritional recommendations and consumer behavior has moved beyond the usual focus on healthy eating to include environmental, social and economic sustainability issues (4–6).

An international guideline defining the principles of sustainable healthy diets has been developed for global climate concerns by Food and Agriculture Organization (FAO) and World Health Organization (WHO) in 2019. “Sustainable Healthy Diets are dietary patterns that promote all dimensions of individuals’ health and wellbeing; have low environmental pressure and impact; are accessible, affordable, safe, and equitable; and are culturally acceptable. The aims of sustainable healthy diets are to achieve optimal growth and development of all individuals and support functioning and physical, mental, and social wellbeing at all life stages for present and future generations; contribute to preventing all forms of malnutrition; reduce the risk of diet related non-communicable diseases; and support the preservation of biodiversity and planetary health” (5).

Germany, France, Sweden, and Brazil have published national dietary guidelines that include health and environmental approaches. On the other hand considering environmental concerns, 3D Food Pyramid has been developed by German Nutrition Society, and Double Food and Environmental Pyramid has been developed by Barilla Center for Food and Nutrition (4). In the light of this information, importance of regulation the diet pattern in a sustainable way is increasing day by day.

It is necessary to increase awareness, develop projects and take action within the scope of sustainability in regional and global scale. Several of projects in Turkey are “Sustainable Land Management and Climate Friendly Agriculture”, “Zero Waste, Zero Hunger: Support to Awareness Raising on Food Loss and Waste” as a FAO Sustainable

Development Goals (7). Sustainable nutrition is an important component of sustainable life, and food preferences need to be readjusted to help with struggle against global warming and climate crisis (8). In this respect, determining and evaluating the social perspective is a major step to configure the production and consumption stages of nutrition.

Various measurement tools have been developed to determine society's beliefs and behaviors for sustainable nutrition however, there are limited number of instruments which validity and reliability studies were conducted for (9). In recent years, scientific studies are conducted on sustainable nutrition in Turkey, nevertheless there is only one instruments focusing on nutrition and ecology relationship in Turkish (10–12). In this thesis, it is aimed to adaptation, validation, and reliability to Turkish from the Green Eating (GE) Survey, which evaluates sustainable nutrition attitude, developed by Kathryn E. Weller et al. in 2014 (13). Originality of this thesis, "Çevreye Duyarlı Beslenme Ölçeği" which will be the one of the first instruments that can be used in scientific research in Turkey in this field, will be contribute to the literature.

In this thesis, scientific research on awareness, sensitivity, and barriers in the context of climate change and nutrition relationship will be provided by adaptation of the scale, which includes questions about how often foods that are locally, in season, organically produced are consumed -if consumption is preferred or not and depending on what conditions- what motivations this dietary pattern, which is considered an environmentally conscious diet, depends on.

Measuring awareness, behavior, and barriers to sustainable diet in Turkey, will be provided to obtain important data for researchers. As a result of the obtained data, it will be possible to plan public education; necessity of developing food, agriculture and education policies will be determined, and attitude changes of the participants will be able to analyze and measured after the interventions.

The GE Survey will be adapted to collecting local data for the nutritional dimension of sustainability whose importance is increasing day by day. This thesis study will pave the way for future research in this field.

2. LITERATURE REVIEW

2.1. Climate Change and Human Pressure on the Planet

Climate change defined as the changes in climate patterns that occur over time as a result of human activities or due to natural changes by the International Panel on Climate Change. Greenhouse gases such as carbon dioxide (CO_2), methane (CH_4), and nitric oxide (N_2O) in the atmosphere have increased significantly due to human activities. In recent years, studies on climate change aim to prevent human-induced climate change, in other words, anthropogenic climate change (14).

Human activities have forced the limits of the planet while food system and food choices became a significant contributor to environmental debasement and poor health outcomes. (15). WHO, reported that several people were affected by heatwaves, severe floods, forest fires, and tropical storms even in 2017 and 2018. It is stated in the report that climate change has direct and indirect effects on human health. Exposure to high temperatures has physiological effects on the respiratory and cardiovascular system, leading to an increased incidence of non-communicable disease. In addition, climate change causes food and water insecurity and the spread of climate-sensitive infectious diseases. Indirect effects of climate change on health are migration for reach to secure food and decreasing access to healthcare services (16).

Per capita food supply has increased by more than 30% since 1961, accompanied by greater use of nitrogen fertilizers (increase of about 800%) and water resources for irrigation (increase of more than 100%). As a result of climate change, increasing temperatures already affected food security through changing raining patterns, and more frequent occurrences of natural disasters. Estimated that 183 million additional people at risk of hunger according to the 2050 scenarios. Due to increasing CO_2 levels, it is projected to lower nutritional quality (e.g., wheat grown at 546–586 ppm CO_2 has 5.9–12.7% less protein, 3.7–6.5% less zinc, and 5.2 7.5% less iron). Production will be adversely affected in many regions due to the increase in the number of pests and plant diseases (17).

Organizations that have adopted the principles of European Sustainable Development Strategy to understand the driving forces behind all these effects and trying to find a solution to reduce them while maintaining social and economic well-being have identified empirical measurements. (18).

Both carbon footprint (CF) and water footprint (WF) were introduced about two decades ago, simultaneously but independently. The CF that measures GHGE was suggested as a result of the debate on climate change and the WF as a tool to measure water use was introduced. Both measurement tools were inspired by the term of ecological footprint which introduced in the 1990s (19). Also life cycle assessments, which CF is an indicator, are widely used and standardized tool for systematically evaluating the environmental perspectives of a product or production system throughout all processes of its life cycle and are considered an optimal tool for assessing the environmental dimension of sustainability (2).

2.2. Ecological Footprint

Ecological footprint indicates the combined effect of anthropogenic pressures that are evaluated independently by tracking various human activities and used for expressing the environmental consequences of human pressure on the ecosystem (18). This instrument can be applied globally and at the regionally. It gives insight into the biologically productive land and naval area that a population requires producing the renewable resources, and ecological services it uses. On the other hand, biocapacity follows the ecological assets available in countries, regions or at the global level. Ecological footprint includes six components (which including "1. Carbon: clarifications for the amount of forest land required to accommodate for the CF. 2. Forest: represents the area of forests required to support the annual harvest of fuelwood, paper pulp, and wood products. 3. Cropland: consists of the area required to grow all crop products required for human consumption, as well as to grow livestock feeds, fish meals, oil crops, and rubber. 4. Grazing land: represents the area of grassland used, in addition to crop feeds, to raise livestock for meat, dairy, hide, and wool products. It comprises all grasslands used to provide feed for animals, including cultivated pastures as well as wild grasslands and prairies. 5. Fishing grounds: represent the area of marine and inland waters necessary to generate the annual primary production required to support catches of aquatic species. 6. Built-up land: represents the area of land covered by human infrastructures such as transportation, housing, industrial structures, and reservoirs for hydroelectric power generation.") (20).

It takes about 18 times more land, 10 times more water, 9 times more fossil fuels, 12 times more fertilizer and 10 times more pesticides to produce 1 kg of protein from beef

than to produce 1 kg of protein from beans (21). Direct ecological footprint requirements (in global hectare per 1000 kcal produced) of a selected sample of foods are yellowfin tuna, beef meat, cow cheese, cow milk (skimmed), yogurt chicken meat, eggs, fruits, vegetables, pork, wheat, and rice respectively (22).

2.3. Carbon Footprint

CF is a measurement tool that evaluates the total amount of GHGE release caused by activities directly or indirectly of every stage of products' life stages. The total amount of GHGEs is measured in mass units as kg, t, etc. CF could be calculated nationwide by relating to consumption of services by households, governments, and capital investments. The consumption-based perspective of CF is considered by the Kyoto Protocol. Six CF components were identified by the Kyoto Protocol: CO^2, CH_4, N_2O, hydrofluorocarbon, perfluorocarbon, and sulfur hexafluoride (18). Production processes of foods cause GHGE in diversely. Food groups are categorized as low, medium, and high impact according to the rate of GHGE (23) (Table 2.3.1.). Choosing to consume plant-based products rather than products of animal origin is an appropriate way to reduce GHGE. However, some plant-based foods such as rice have higher CF due to flooded rice fields are major source of CH_4 emissions (2,24).

2.4. Water Footprint

WF is an indicator that shows the direct or indirect use of fresh water by a producer or consumer, and fundamentally revealing the hidden relationship between human, global trade and consumption of water resources and measured by the capacity of water per unit time (19). Three key components are tracked of WF's calculation: Grey WF indicates contamination which refers to the volume of fresh water consumed to assimilate water pollutants, green WF indicates the consumption of rainwater required to production, and blue WF indicates the consumption of surface and ground water (18,19). Global demand of water for production of food, feed, fiber, and energy crops is increasing rapidly (25). Animal-based foods have a larger WF impact than plant-based products just like the impact of the CF (26). Considering WF of the beef, production of 200 kg boneless beef takes three years.

Table 2.3.1. Impacts of foods by CF (23)[1].

Food category			CF (mean of kg CO^2 eq./kg)
Low impact	Field grown vegetables and fruits		0.48
	Legumes/pulses/cereals (except rice)		0.58
	Passive greenhouse fruit and vegetables		1.02
Medium impact	Milk		1.39
	Tree nuts		1.42
	Rice		2.66
	Heated greenhouse fruit and vegetables		2.81
	Fish (all species)		3.49
	Poultry (chicken, turkey, duck, emu)		3.71
High impact	Nonruminant animals (pork, rabbit, kangaroo)		5.72
	Cheese		8.55
	Ruminant animals (lamb/beef/buffalo)		26.61

[1]CO^2eq = CO^2 equivalents, and includes contributions from all GHGE, expressed relative to the global warming potential of CO^2.

The animal consumes nearly 1300 kg of grains, 7200 kg of roughages, 24 cubic meters of water for drinking and 7 cubic meters of water for servicing. Thus, to produce 1 kg of boneless beef, it takes approximately 6.5 kg of grain, 36 kg of roughages, and 155 liters of water. Producing the volume of feed requires about 15300 liters of water on average. The water footprint of 1 kg of beef thus adds up to 15500 liters of water. The volume of contaminated water may cause fertilizer is not included in this calculation (25). The WF of the various foods is shown in Table 2.4.1.

Table 2.4.1. WF of various foods (25,27).

Food item	Unit	Global average WF (liters)
Chocolate	100 g	2400
Beef	100 g	1550
Pork	100 g	480
Chicken	100 g	390
Rice	100 g	340
Coffee	250 ml	280
Milk	250 ml	250
Mango	150 g	240
Peach or nectarine	150 g	180
Cheese	30 g	150
Dates	50 g	150
Maize	150 g	135
Banana	150 g	130
Wine	125 ml	120
Eggs	30 g	100
Olives	20 g	88
Beer	250 ml	75
Apple or pear	100 g	70
Bread (from wheat)	50 g	65
Groundnuts (in shell)	20 g	62
Potatoes	200 g	50
Orange	100 g	46
Tea	250 ml	30
Cucumber or pumpkin	100 g	24
Lettuce	100 g	20
Tomatoes	100 g	18
Sugar (from sugar cane)	10 g	15

2.5. Sustainability Steps: Goals, Agreements and Protocols

In 1988, the International Panel on Climate Change (IPCC) was established in partnership with the World Meteorological Organization and the United Nations (UN) Environment Programme with the support of the UN General Assembly. The aim of the IPCC is to provide governments and humanity with complete and accurate information on climate change by analyzing data produced by climate science (28).

In 1992, the UN Conference on Environment and Development, also known as the "Rio Summit", was held. At the end of this summit, the Rio Declaration was signed, and three international agreements were submitted for signature: Convention on Biological Diversity, Framework Convention on Climate Change, and UN Convention to Combat Desertification. Precautionary Principle and Polluter Pays Principle contained in the Rio Declaration were important for climate negotiations. With the Framework Convention on Climate Change, it was decided that the parties would discuss climate change every year and the first meeting was held in 1995 (29).

In 1997, the Kyoto Protocol which is the first deal with enforcement power was signed, and in 2005 it came into force with the approval of Canada and Russia. 38 countries with mitigation obligations have fulfilled their obligations. However, developing countries had no responsibility for mitigation, they only had conditions for preparing reports. In addition, although the countries fulfilled their commitments, the targets set were unrealistic and it was possible to achieve the targets without taking any action (30).

The UN set 17 goals in 2015, aiming to achieve by 2030, to prevent global problems that are predicted to be caused by climate change and they defined the sustainable development goals as “The blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice” (31). For more than 700 million people worldwide, it is not possible to meet basic needs. One out of every five children struggle with poverty. In this context, the goal 1 “end poverty in all its forms everywhere” providing social protection for all children and other vulnerable groups is critical (32). As a result of the current situation continues, it is expected that the number of people affected by hunger will exceed 840 million by 2030. A permanent change in the global food and agriculture system is needed to challenge hunger. Sustainable food production is crucial

to help ease the dangers of hunger. Goal 2 is zero hunger, under the sustainable development goals aims to end hunger and ensure people have access to safe, nutritious, and adequate food all year round (33). “Including good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace, justice and strong institutions and partnerships for the goals”, these define existing problems in all dimensions to achieve global welfare in 2030 and propose solutions (31).

The Paris Agreement was signed in 2015 with the approval of 55 countries and entered into force in 2016. This agreement having unique goals for climate change and includes 12 of the 17 sustainable development goals. The agreement provides a way forward to limit the temperature rise to well below 2 degrees, maybe even 1.5 degrees. The agreement, which signals markets to invest in a low-emission economy, is expected to serve as an important tool for mobilizing financial technological support and capacity building for developing countries (34).

In 2019, the European Commission released a communication outlining a blueprint for a “European Green Deal” which is an integral part of the sustainable development goals. This policy brief offers a critical examination of the main concepts. An element of Green Deal is “Carbon neutrality” concept, which was introduced in Paris Agreement by IPCC and, aims to reduce anthropogenic GHGE by 2050. Another goal of the Green Deal project is increasing the European Union’s gross domestic product while reducing GHGE (35,36). Other aims of Green Deal project are “supplying clean, affordable, and secure energy, mobilizing industry or a clean and circular economy, building and renovating in an energy and resource efficient way, a zero-pollution ambition for a toxic free environment, preserving and restoring ecosystems and biodiversity, from farm to fork: a fair, healthy, and environmentally friendly food system, accelerating the shift to sustainable and smart mobility” (36).

2.6. Ecological Effects of Food Systems

The way in which food is produced, distributed, and consumed forms an important link between human health and social and environmental systems (37). In rural areas where the economy depends on agriculture, mechanization was less, and chemical fertilizers were not widely used. Agricultural products were sold on farms and local markets, unprocessed traditional food system has been replaced by modern large-scale food systems due to several reasons such as technological developments, and population growth (38). Current food system is focused on the production of adequate quantities of food. However, quality of produced food is insufficient. Therefore, consumers cannot access foods that are healthy, affordable, and consistent with optimal nutrition outcomes. The rate of increase of food intake that undermine diet quality have been increasing. In order to overcome the problem of poor-quality diets requires accessing nutritious and affordable foods, and this should be ensured by policy makers (39). Current food systems also contribute to the degeneration of the environmental systems on which they depend, through for example, their impacts on climate change, land use, deforestation, and water use (37). FAO and the UN High Level Task Force on Global Food and Nutrition Security define "a sustainable food system as a food system that delivers food and nutrition security for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised" (40).

2.6.1. Crop Growing and Food Production

Agricultural activities are responsible alone for about 14% of the global GHGE (41). The agriculture sector increases the global GHGE through the production and use of farm machines, crop protection chemicals such as herbicides, insecticides and fungicides, and fertilizer. The use of fertilizer causes 75% of the CF resulting from agriculture (42).

Food supply has increased with population growth, but land use has not changed much in recent years. Therefore, nutrient load per unit area increased. Accordingly, food production should be more efficient, and this is provided by fertilizers. Especially plants produced with chemical fertilizers have negative effects on both human and environmental health. When these plants are consumed, toxic substances accumulate in the human body. The insalubrious effect of the chemical fertilizers starts from the manufacturing process. It causes air pollution by release of gases such as NH_4, CO_2 and CH_4. In addition, wastes from industries are distributed into surrounding water sources

without treatment, which causes water pollution. Also waste accumulation causes the water eutrophication. Leak of this water into the soil, damages soil health and quality, and causes soil pollution (43). Considering the damage caused by chemical fertilizers, the use of organic fertilizers and microbial fertilizers should be considered (44). Due to anaerobic environment, and the use of high nitrogen containing fertilizers, the rice emitting high GHGE while growing. If it produced with organic farming, the CF will be 8 times lower (45). The WF and nitrogen footprint of organic farming is also lower than traditional farming (46).

The amount of water used for production of food is an important factor considered in terms of sustainability. Pesticides are used to increase productivity, however, cause environmental issues such as groundwater pollution and eutrophication of lakes and reservoirs just as chemical fertilizers (47).

2.6.2. Food Packaging

Food packaging ensures food safety and food quality throughout the supply chain. Packages protect the foods by negative environmental effects such as physical damage, light, or water vapor. Packaging material and form differ greatly, which differentiates the environmental impact. Four primary materials are used in food packaging which are cardboard, metal, glass, and plastic. The absence of packaging usually increases the food waste because the protective function of packaging is missing (48). One of the causes of environmental pollution is plastic waste. Plastic packaging leaking from systems can end up in the soil or sea, causing long-term results. These packagings can slowly accumulate in marine organisms and reach the food chain, where they turn into micro and nano plastics (49). However, the environmental impact of packaging materials is also related to the depletion of fossil resources. Traditional plastic packages are made from fossil petroleum-derived materials, which implies the consumption of resources with a very long renewal life, thus results in overall resource imbalance (50).

Canning which contains the use of tinplate for packaging is also a process with a high environmental impact. The use of recycled aluminum as material could reduce this impact (51,52).

2.6.3. Refrigeration

Cold chains are environmentally controlled logistic chains that aim to preserve perishable foods and link to processing, storage, and distribution stages of food from farm to fork. The type of food and the target market affect the total duration of cold chain. Certain foods can be refrigerated for several hours (e.g., daily milk) and frozen food products such as meat can be refrigerated for several months or years (53).

Food waste due to lack of refrigeration is another cause of GHGE (54). On the other hand, cold chains which aim to prevent food decay, have a significant environmental impact due to fluid leakage (hydrofluorocarbon, hydrochlorofluorocarbons, chlorofluorocarbons), from coolers released into the environment, and from indirect emissions from electricity generation (55–57). Appropriate energy efficiency measures should be implemented to reduce food waste and associated GHGE. (53).

2.6.4. Distribution of Food

Transportation of food causes release of GHGE in addition to financial effects (38). One of the factors involved in calculating the CF of foods is transportation (18). Reason of this environmental impact of food transportation is fossil fuel usage due to cooling and heating systems or vehicles (58). Studies have shown that beyond the food miles, carbon emissions per product outweigh during transportation in terms of environment (59,60).

2.6.5. Food Wastage

Throughout the food supply chain, one-third of food produced in the world is wasted each year because of both food loss and food waste. The terms “food loss” and “food waste” are often used in the literature to define any food produced that was intended for human consumption but was discarded or lost (26). Food wastage represents a redundant use of farmland, high GHGE emit, and excessive use of water. Redundant use of farmland endangers the habitats of mammals, birds, fish, and amphibians living nearby, resulting in loss of biodiversity (61).

The stages of food loss differ in low-income and middle/high-income countries. In low-income countries, household food waste constitutes 4-16% of the total. Most of the food waste occur during the harvest, storage, and transportation stages due to the sultry climate. Early harvesting is another problem due to economic difficulties which cost nutritional value and financial losses. Diseases can occur in animals due to poor hygienic conditions (e.g., decreased milk production due to mastitis). Insufficient and unhygienic

storage conditions, cold chain facility problems, and poor infrastructure of the roads in transportation are the other reasons for wastage in low-income countries. In middle/high-income countries, consumption-related food wastage is 31-39%. Fruits and vegetables with high appeal and quality emphasis are purchased in large quantities and are wasted by consumers. Two-for-one deal campaigns, unlimited meals at buffet stations are serious situations that end up food waste (62). To reduce food waste, bio-composting method could be beneficial, waste volume can be significantly reduced, and soil quality can be improved by replacing chemical fertilizers (63).

2.7. Green Eating

The definition of GE includes sustainable food choices and sustainable nutrition behaviors, which is a type of nutrition that aims to protect human health and health of the planet. Adopting a plant-based diet by limiting red meat consumption, selecting meats, poultry and dairy (if consuming) that do not contain hormones or antibiotics, reducing consumption of processed foods that contain ingredients such as high-fructose corn syrup, choosing to consume organic or fair trade certified foods, buying products in their season, and locally produced food reduces the environmental impact of diet (13).

2.7.1. Environmentally Friendly Proteins

Proteins are vital to life, found in all living organisms, and are an essential nutrient required for critical functions in cells, tissues, organs, and systems (64). It is known that the environmental impact of animal-based foods is incredibly high (23,25,27). Animal agriculture requires more of the Earth's limited resources than crop agriculture. On a gram basis, plant-based protein requires fewer sources. For example, 1 kg of protein from kidney beans requires at least 10 times less water, soil, fertilizers and pesticides and 9 times less fuel than producing 1 kg of protein from beef. (65). Also, the same land can produce 10 times the amount of beans and legumes or 13 times the amount of rice. In other words, consumption of a plant-based diet can feed 10-20 times more humans than if crops were cultivated for animal feed (64). In addition to protein, kidney beans contain carbohydrates, fiber, and less fat compared to beef, which contains neither carbohydrates nor fiber (65). Scientific evidence confirms that consuming plant-based sources provides significant health benefits, such as reducing cardiovascular disease and improving blood lipid profiles, preventing type 2 diabetes, protection of bone health and diversifying gut microbiota. Plant-based protein sources do not contain cholesterol and contain

unsaturated fatty acids, which provide cardiovascular health. Plant-based protein sources contain dietary fiber, phenolic compounds, and digestible carbohydrates which provide low glycemic index associated with reduced type 2 diabetes risk. Among the macronutrients, protein and fiber are filling and it provide controlling appetite and nutrient intake balance. On the contrary, animal-based proteins are associated with the lipids with limited variety of fatty acids, which are predominantly composed of saturated fatty acids, and also contain cholesterol (64).

Grains such as rice, corn, barley, and oats are important sources of plant-based protein in diet and are staple foods in various cultures. Protein-rich legumes and pulses (e.g., soy, lentils, chickpeas, beans, peanuts), and tree nuts (e.g., almonds, cashews, hazelnuts, walnuts) are comprised of major protein sources of vegan diets while supplementing dietary protein intakes. Considered as a nutrient, amino acid profile of animal-based proteins is preceded to plant-based proteins in terms of absorption and utilization. Plant-based proteins should be diversified and consumed in order to become equivalent to animal-based protein due to limitation of essential amino acids. For example, most legumes contain low amounts of methionine and are rich in lysine. When combined with lysine-limited grains such as corn, rice or wheat, the amino acid profile is complete (64). Various factors have been identified that may affect the bioavailability of amino acids from plant-based proteins, impair their digestion, and increase endogenous nitrogen excretion. These factors are related to low sulfur-containing amino acid content, compact proteolysis-resistant nature of natural seed proteins, structure and conformations of proteins, presence of non-protein compounds (dietary fiber, tannins, phytates). or anti-physiological proteins (protease inhibitors, lectins), suggesting that plant proteins may have a lower overall nutritional quality than animal proteins. Heat treatment, i.e. cooking, can neutralize antinutritional components from vegetable protein sources (protease inhibitors, lectins) (66). Another criticism of the plant-based protein sources is the lack of important minerals such as iron and zinc, or the low bioavailability due to phytic acid and other anti-nutrients. Anemia which caused by iron deficiency is an important public health problem and a precursor to the occurrence of various cardiovascular diseases. For this reason, it is important to maintain a balance in consumption of protein sources. Some of the edible insects contain iron and zinc, but their bioavailability are not known yet (67).

2.7.2. Antibiotics and Hormones in Animal-Based Foods

In Turkey, antibiotics can be used for about 80% of animals for food production to treat animal diseases, as a growth promoter or to increase food efficiency (68). Antibiotics can accumulate in the organs of the animals such as muscle, liver, and kidney and can also be transferred to animal products such as milk and eggs. Practice errors such as unconscious use of antibiotics in animals, uncontrolled use by adding it to the water and feed, butcher the animal without complying with the legal waiting period after treatment cause antibiotic residues in animal-based foods and accordingly public health is endangered (68,69). Low-dose antibiotic residues which are taken with consumed foods cause resistance in bacteria, and consequently, decreased the effect of antibiotics in people, and cause serious problems in the treatment of infectious diseases. 700.000 people die each year because of antibiotic resistant infections (68). According to World Health Organization, antibiotic resistance is one of the biggest threats to global health and food security. Antibiotic residues in foods also have negative effects on the microbiota and may cause carcinogenic, mutagenic, and teratogenic effect by interacting with DNA and RNA or cause allergic diseases (68,69).

Antibiotic residues spreading to the environment disturb the ecological balance by damaging the organisms in the ecosystem and biological treatment systems (68).

The use of hormones and hormone-like substances frequently comes to the fore in order to meet the increasing demand for animal food, to increase animal productivity. Hormones used in the food industry can increase the muscle mass by 10-25% and feed utilization by 5-10% due to keeping nitrogen in the body and reducing the breakdown of proteins and amino acids. Nowadays, steroid hormones such as progesterone, testosterone, estradiol-17ß, zeranol, trenbolone, and acetate is used as a growth promoter in cattle in US (United States), Australia, and Canada. Studies show that some of these hormones are reported to be carcinogenic and genotoxic (70).

These substances also have negative effects on the environment. Hormones and hormone-like substances contaminate wastewater treatment plants and various groundwater, disrupting fish physiology, and adversely affecting the reproductive system of both domestic and wild animals. Exposure of plants to hormones affects root and growth development, flowering, and germination (71).

In Turkey, usage of hormone and hormone-like substances in animals for purposes other than treatment has been prohibited since 1992, and regulated in 2003 by

“Communiqué on Hormone and Similar Substances That are Banned and Subject to Certain Conditions” (70).

2.7.3. Processed Foods

Food processing plays an important role in providing the population with edible, secure, and nutritious food, and food preservation. However, processed food consumption has health effects and environmental impacts (72,73).

There are several options in processed food classification determined according to various criteria as extent of change (from natural state), nature of change (properties, adding ingredients), place of processing (where/by whom), and purpose of processing (why, essential/cosmetic). For instance, according to the US Department of Agriculture's (USDA) definition, processed food “is any raw agricultural commodity that has been subject to … procedures that alter the food from its natural state”. Conversely, according to the NOVA classification system (a food classification system developed by researchers at the University of Sao Paulo, Brazil), adding sugar, salt, oil or additives to food increases the level of processing (72,74).

Foods are classified in four groups according to NOVA classification (unprocessed or minimally processed foods, processed culinary ingredients, processed foods and ultra-processed foods). Processed and ultra-processed foods are shown in Table 2.7.3.1.

Processes such as heating and refining the ingredients can lead to the loss of essential substances that provide the health benefits of nutrients. High amounts of fat, sugar, salt, nitrates and nitrites, and advanced glycation end products additives contained in processed foods may be harmful to health (75,76). However, some processing methods such as seed fermentation or germination increase the desired contents. Environmentally, food processing involves high energy expenditure and emits pollutant emissions (75).

Table 2.7.3.1. Processed and ultra-processed foods from the NOVA food classification (74).

Processed foods
Products manufactured by industry with the use of salt, sugar, oil, or other substances added to natural or minimally processed foods to preserve or to make them more palatable. Derived directly from foods and are recognized as versions of the original foods. Usually consumed as a part of or as a side dish in culinary preparations made using natural or minimally processed foods. Most processed foods have two or three ingredients.
Examples: Salted, dried, smoked or cured meat or fish, salted or sugared nuts and seeds, fermented alcoholic beverages such as beer, and wine, coconut oil.

Ultra-processed foods
Industrial formulations made entirely or mostly from substances extracted from foods (oils, fats, sugar, starch, and proteins), derived from food constituents (hydrogenated fats and modified starch), or synthesized in laboratories from food substrates or other organic sources (flavor enhancers, colors, and several food additives used to make the product hyper-palatable). Manufacturing techniques include extrusion, molding and preprocessing by frying. Beverages may be ultra-processed.
Examples: Biscuits (cookies), fatty, sweet, savory, or salty packaged, snacks, ice creams and frozen desserts, sausages, pre-prepared burgers, hot dogs, candies, chocolates, and confectionery in general.

2.7.4. Local Foods

According to USDA, there is no accepted universal identification that explains the term of local food. The term of local food is related to the geographical distance between the food producer and consumer. There are several opinions about the distance. According to The New Oxford American Dictionary, local food expressed as consumption of products reared 100 miles (77). Also on the GE Survey, local food has been identified as a 100 miles limit (13). The farmer and consumer in local food systems are connected to each other. Consumers, universities, hospitals, and other institutions buy from farms, or shop from centers that protect the identity of the farm (77).

The opinion that as the increase of the food miles, induces the higher GHGE is contradictory according to the studies conducted in recent years. Redirecting consumption to local food reduces global emissions only when it is carried out in regions with relatively low emission intensity. (78). However, concept of sustainability contains more than GHGE. In addition to issues such as water pollution, biodiversity loss and land degradation, social and economic issues such as the organization of supply chains and farmer-consumer relations should also be considered (79,80). Eating local foods includes also issues of taste, preference, identity, and spirituality, all of which come to define food sufficiency, nutrient adequacy, cultural acceptability, safety, certainty, and stability (81).

In US there are farmer markets where farmers, ranchers and other growers sell what they grow, raise, or produce on their farm. In farmer markets only allowed directly to producers, the sale of products provided by someone else is prohibited. For non-farmers, minimum 75% of the components of the product sold must be sourced directly from the farmers. In the farmer markets, bakers are allowed to sell freshly baked goods from scratch; dairy product makers are allowed to sell cheese and other dairy products which made with dairy purchased from dairy farms which contains locally sourced flavors; beverage makers are allowed to sell non-water beverages prepared under certain rules; meat processors are allowed to sell meat produced in a food processing facility that is bred by local farmers. The sale of fresh meat or poultry products is prohibited. Value-added food producers are allowed to sell jellies and jams, preserves, syrups, salsas, flavored oils, vinegars, pickles, fermented products, and dried products using produce grown by the farmer. All sellers of Farmers Markets must obtain USDA approved permits and licenses and must sell in accordance with The USDA Farmers Market 2020 Rules and Procedures and Operating Guidelines (82).

In the UN countries, sale of local foods is increasing day by day. France, Spain, and United Kingdom consumers prefer and consume local foods at 71% and 47%, respectively. Also in Turkey, there are community supported agricultural groups who aim to support local food production. Bogazici University Members Cooperative is one of the pioneers of community supported agricultural groups. Slow Food / Foca Earth Market and “Seferi Market” formed by the Hidirlik Agricultural Development Cooperative founded by women from Seferihisar are in food communities organized as a local market. Guneskoy; A Hope Association Food Working Group; Imece Home; Earth Association Consumption Union; Natural Food, Conscious Nutrition Network; West Izmir Community Supported Agriculture Group; Gediz Ecology Society; Life Friendly Product, Solidarity Production and Sharing Group; Bayramic Stone Mill by Bayramic Yenikoy Kazdaglari Ecological Life and Seed Association; Izmir Nature and Human Friendly Food Group; Local Seed Association; and Our Orchard Group are other community supported agricultural groups in Turkey (83). These groups sell eco-friendly products aimed at protecting biodiversity and human health. The foods produced are the result of agriculture with local seeds; however, there is no certification procedure unlike US (82,83). According to the results of the research conducted in Turkey, the number of consumers buying products from these groups is between 20 and 450 (83).

Climatic characteristics of Turkey allow the cultivation of several agricultural products. But due to various reasons as the lack of awareness of agricultural practices regarding weeds, diseases, and pest control, land fragmentation, not widely planted new varieties, insufficient use of agricultural inputs, and producers not supported in free market economy limit the production. In order for agriculture to be carried out in a sustainable way, and to support local producers, new viewpoints are necessary to solve production barriers (84). Although there is not enough regulation for local food production in Turkey, with the regulation that entered into force in Turkey in 2019, rules for the registration, propagation, marketing, maintenance, and sustainable use of local seeds have been determined (85).

2.7.5. Organic Foods

In regard to Codex Alimentarius Guidelines for the Production, Processing, Marketing and Labelling of Organically Produced Foods, organic agriculture is defined as "A holistic production management system which promotes and enhances agroecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems." Organic agriculture principles have been determined by International Federation of Organic Agriculture Movements and are prescribed in The Codex Alimentarius Guidelines.

These principles are as follows:

1. "Principle of health: Organic agriculture should sustain and enhance the health of soil, plant, animal, human, and planet as one and indivisible."
2. "Principle of ecology: Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them, and help sustain them."
3. "Principle of fairness: Organic agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities."
4. "Principle of care: Organic agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment" (86).

In Turkey, organic agriculture defined by Republic of Turkey Ministry of Agriculture and Forestry as an agricultural production that does not harm human health and the environment, aims to protect natural life and vital resources such as air and water by

preserving the natural balance and is a controlled and certified at every stage from production to consumption (87).

The principles to be followed by the According to Regulation on the Principles and Application of Organic Agriculture are shown in the Table 2.7.5.1.

Organic agriculture in Turkey started with the production of raisins and dried figs in 1991. Data of 2019 shows that 1.374.535 tons of 214 different plant species were produced on area of 348.460 hectares. Also, according to organic livestock farming data, 819 tons of organic meat, 5.394 tons of dairy and more than 179 million eggs were produced in 2019 (87). It is important to be conscious of that product labeled as “100% Natural”, “Hormone Free”, “Pure” does not mean these are organic. However, the terms organic, ecological, and biological are used synonymously. When buying organic products, it is absolutely necessary to be aware of the label and logo of the products (87,88).

Organic food systems are considered more sustainable than conventional agriculture (83). Environmental impact of conventional agriculture is high due to usage of chemical fertilizers, herbicides, and pesticides. Because these are not used in organic agriculture, nitrogen leakage into the soil is 35-65% lower than conventional farming. Biodiversity, including microorganisms, worms, weeds, wildflowers, insects, mammals, and birds is 30% higher in organic agriculture lands compared to conventional ones. Bee diversity and abundance is also higher; thus, pollination is more in these areas. The reason for all this is that pesticides, herbicides, and chemical fertilizers are not used. In organic agriculture lands, the enzyme activities of microorganisms, organic matter content, water holding capacity of the soil are higher and thus soil is resistant to erosion (84).

Comparison of organic agriculture lands with conventional ones in GHGE is contradictory (89,90). The use of animal manure, legumes and compost as fertilizer in organic agriculture increases the carbon retention rate of the soil and reduces the GHGE released into the air. (90). However, some studies predict that organic and conventional agriculture systems emit similar GHGE due to organic farming requires more land per unit of food produced due to poor yield (89).

On the other hand, the health benefits of organic food consumption are more than the consumption of conventionally grown foods (89,91). GE encourages plant-based nutrition. It is known that increasing plant-based food consumption increase pesticide exposure. Organic food consumption prevents the intake of harmful chemicals into the body (89). Various studies which research the health benefits of organic food

consumption show that organically grown foods contain more health beneficial nutrients as phenolic compounds, phosphorous, fibers, flavonoids, vitamin C, carotenoids, conjugated linoleic acid, omega-3 fatty acids (91).

From a consumer perspective, it is observed that organic food consumption prevalence is low (92). Consumers in Turkey consider it beneficial to consume organic food. However, they stated that access to organic foods is difficult. Due to the fact that organic foods are perishable, there are few middlemen that sell. In ecological markets where the farmer sells directly to consumer, organic foods are sold. For all these reasons, consumers have to spend extra effort and time to access organic foods (93). In addition, organic foods are more expensive because organic food production has high costs due to reasons such as low yield, which causes a negative effect on consumers' purchases (92).

Table 2.7.5.1. Principles of organic agriculture in Turkey (88).

Sowing and Planting	Seeds must have biological properties that have not been genetically modified, the DNA sequence in the fertilized cell nucleus has not been tampered with, and has not been treated with synthetic pesticides, radiation, or microwave. Seedlings and saplings must have been obtained from organic plants.
Plant Protection	Disease and pest resistant species and varieties must be selected. Appropriate crop rotation must be prepared. Appropriate soil cultivation methods must be applied. Cultural, biological, and biotechnical control methods must be applied. The use of products used in traps and spreaders must be in a way that prevents their release to the nature and contact with the grown product. Traps must be collected and destroyed after use.
Fertilization	Composting of animal manure or organic materials from organic production is allowed. In order to prevent agricultural nitrogen from causing water pollution, the total amount of animal manure to be used in organic crop production cannot exceed 170 kg / N / ha / year. Nitrogenous fertilizers obtained by chemical methods cannot be used. For compost activation, suitable non-genetically modified plant-based preparations or microorganism preparations are used.
Irrigation	The drainage water obtained from the industrial and city wastewater and the drainage system cannot be used in organic agriculture. Irrigation water should not cause environmental pollution or soil deterioration and erosion.

Harvest	Technical tools and equipment used in the harvesting of organic products should not cause ecological damage and pollution. Hand-picking materials should be in a structure that does not spoil the organicity of the product. Collection materials must be hygienic. Harvest area must not have had a fire in the last two years and preservation of the natural life balance and species in the collection area is ensured.

2.7.6. Fair-Trade Certification

Fair trade encompasses environmental, economic, social, cultural and health remedial and ethical practices. Fair trade includes environmental requirements such as reducing chemicals in agricultural production, reforestation, or conserving drinking water. It provides equal opportunities to local farmers through practices such as the decrease of intermediaries, long term guaranteed purchases and prepayments. Child labor as well as forced labor are excluded. Furthermore, Fair trade provides social insurances for workers and facilitates the founding of labor unions. Products that comply with fair trade standards also reduce the risk of exposure to harmful pesticides (75).

In Turkey, there are insufficient institutions providing fair-trade certificates in the food category. The only organization that provides certification services for products produced within the scope of Fair Trade in Turkey is the İzmir branch of Institute For Marketecology (94)

2.7.7. Seasonal Foods

Two definitions for seasonal food have been proposed by the Department for Environment, Food and Rural Affairs:

"1. Produced in season (global seasonality): Food that is outdoor grown or produced during the natural growing/production period for the country or region where it is produced. It need not necessarily be consumed locally to where it is produced.

2. Produced and consumed in season (local seasonality): Food that is produced and consumed in the same climatic zone without high-energy use for climate modification or storage."

The most important aspect of seasonal foods is that they are grown or produced in the outdoors, naturally, without using additional energy, so they do not create additional environmental effects (95). Seasonal cultivation in the open causes less GHGE, since it does not require heating oil for greenhouses or plastic tunnels. Seasonal products

generally contain fewer harmful residues such as nitrates and pesticides. And also, seasonal products can taste better because usually they have a prolonged ripening period. The adaptation to seasonal variations leads to a more diverse food choice (75).

2.7.8. Sustainable Healthy Diets

According to FAO: "Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources" (96).

Several principals of sustainable healthy diets are:

"1. Based on a great variety of unprocessed or minimally processed foods, balanced across food groups, while restricting highly processed food and drink products.

2. Contain minimal levels, or none if possible, of pathogens, toxins and other agents that can cause foodborne disease.

3. Consistent with WHO guidelines to reduce the risk of diet-related non communicable diseases and ensure health and wellbeing for the general population.

4. Maintain GHGE, water and land use, nitrogen and phosphorus application and chemical pollution within the set targets.

5. Preserve biodiversity, including that of crops, livestock, forest-derived foods and aquatic genetic resources, and avoid overfishing and overhunting; include wholegrains, legumes, nuts and an abundance and variety of fruits and vegetables.

6. Include moderate amounts of eggs, dairy, poultry and fish; and small amounts of red meat; are adequate (i.e. reaching but not exceeding needs) in energy and nutrients for growth and development, and to meet the needs for an active and healthy life across the lifecycle.

7. Built on and respect local culture, culinary practices, knowledge and consumption patterns, and values on the way food is sourced, produced and consumed" (5).

When health effects and environmental impacts are considered together in a ranking, comes fruits, vegetables, legumes, whole grains, followed by roots and tubers, nuts, and vegetable oils - which are nutrients in certain vegan diets. Foods with medium ranking are white meat, dairy, added sugar, refined grains, and seafood which foods that are present, to various degrees, in pescatarian diets, lacto-vegetarian diets, the traditional

Mediterranean Diet (MD). Foods that rank low are processed meats, followed by red meat and ultra-processed foods which are present in many Western diets (76).

Among the various dietary patterns, MD is the healthiest and most balanced diet because of its benefits to the environment and human health: healthy foods that need to be consumed frequently, such as fruits, vegetables, grains, legumes, and fish, also have low environmental impact. According to FAO's final definition, MD is a sustainable diet that has a low environmental impact, contributes to food and nutrition security, and promotes healthy lifestyles for present and future generations. (97). Numerous, and increasingly epidemiologic studies have proven the health benefits associated with adherence to the MD, particularly metabolic syndrome, type 2 diabetes, cardiovascular disease, neurodegenerative diseases, and cancer. (96).

On the other hand, it is widely believed that plant-based diets have more positive environmental and health effects than animal-based diets. Deficiencies can be prevented by diversifying plant-based proteins and consuming them adequately. Dairy, dairy products and eggs are major protein sources in lacto-vegetarian diets. 40% of the GHGE emitted by lacto-vegetarian diets are caused by dairy products. Omnivorous diets emit 4 times more GHGE than lacto-vegetarian diets. Meat substitutes can be used in vegan and vegetarian diets. However, these have different environmental impacts, and depending on the substance used, the positive environmental impact of a meatless diet may be lost, or even more severe environmental impacts may occur. Therefore, the thought that vegetarian diets have the lowest environmental impact cannot be considered as fact (98).

There are studies showing that vegan diets are the most environmentally friendly, but there is no consensus, because vegans need to consume more food to balance energy intake than vegetarians. However, due to meat substitutes such as seitan burgers and soy yogurt, processed food consumption may be higher. In vegan diets, consuming legumes instead of meat as a source of protein has a positive effect on the environment. The production stages of consumed fruits and vegetables, whether they are produced in heated greenhouses or not, affect the CF (98).

2.8. Dietary Guidelines and Sustainability

Due to the increasing environmental concerns, national dietary guidelines have been examined in terms of sustainability in recent years. According to the results of the study in which 85 countries were included and the national dietary guidelines were evaluated in terms of health and environmental dimensions, it has been found that the nutrition

guidelines of most countries were not sustainable due to the large amount of animal-based foods, especially meat and dairy products in despite of restricted sugar and energy intake recommendations and suggestions for increased intake of legumes, vegetables and fruits (99).

Nevertheless, according to the study published by Gonzalez et al., several countries around the world have published nutritional guidelines in accordance with the principles of sustainable healthy nutrition. Germany, Brazil, Sweden, and Qatar have officially included various sustainable nutrition principles in their nutrition guidelines. Reported that US and Australia are in advanced stage in attempts to include sustainability in their guidelines. And also in the United Kingdom, France, Netherlands, and Estonia the semi-official national dietary guidelines were published (4).

Summary of Germany, Brazil, Sweden, and Qatar Guideline Recommendations based on sustainability are; prefer plant-based foods, avoiding consumption of meat and processed meat, consumption of low-fat, unsweetened, uncolored, or flavored dairy and yoghurts, consumption of enriched soy and almond drinks if dairy products are not consumed, moderate consumption of vegetable oils instead of saturated and trans oils, avoiding processed foods, consumption of locally grown and seasonal foods (in Brazil), choice of seafood with eco label (in Sweden), foods cooked in a short time using a small amount of water and oil, reducing. unnecessary packaging by consuming fresh products (in Germany), sharing foods with other people on meals (in Brazil and Qatar) (4).

The German Nutrition Society has also presented the Three-Dimensional Pyramid that includes the environmental effects of nutrition as complementary to the national dietary guideline. In addition, the German government has prepared a brochure and application called sustainable product basket, containing practical information for the consumer to sustainable food exchange. Also, Barilla Center for Food and Nutrition in Italy has highlighted the model of the Double Pyramid on Food and Environment emphasizing the CF and WF with foods' ecological footprint approach (4).

Recently, a study has been conducted to measure the WF of diets in Mediterranean countries, including Istanbul and Ankara. The water footprint in Mediterranean countries has been found between 3277-5789 L per person per day. It has been reported as 4323 L for Istanbul and 4323 L for Ankara. As a result of the study, it has been found that people in the selected cities consume a lot of animal-based foods and sugar and do not consume enough fruits, vegetables, fish, and seafood compared to the Mediterranean diet. In this study, also the Turkey Dietary Guideline and MD were compared, and it has been found

that the MD requires less water source than the Turkey Dietary Guideline Recommendations (100).

According to the results of the study conducted on the basis of Turkey Dietary Guideline and epidemiologic studies, the environmental impact of food consumption in Turkey were found lower than in European countries. In addition, it has been found that the projected diet-related GHGE and WF for 2050 do not exceed the current average diet-related environmental impacts in Europe or other developed countries. Turkey Dietary Guideline gives the best results in terms of health score, but it has been the diet scenario with the highest environmental impact. On the other hand, the diet scenario, based on the recommendations of the MD, ranked second in terms of health score, and showed the best performance in terms of GHGE and WF (101).

2.9. Measuring Sustainable Nutrition

According to a systematic review published by Jones et al., 113 studies were analyzed that included measures on sustainable diets. 83 of them analyzed the environmental impact of nutritional patterns. 22 studies focused on assessing the determinants of consumer choice regarding the purchase or consumption of sustainable diets. These researches examined the value systems, attitudes, purchasing behavior and sociodemographic characteristics of consumers whose diets are considered sustainable. Three studies focused on the economic impact of sustainable diets, and four of them focused on sustainable food options at school meals. It has been observed that two-thirds of these studies are conducted in developed countries (6).

There are few validated scales that evaluate sustainable food-related behaviors (9). Index of sustainability of food practices, developed by Tobler et al. in 2011, in Switzerland, is one of them. It includes items that buying local, seasonal, and organic food, avoiding products with excessive packaging, eating meat at most twice a week or a little at a time, avoiding food products that were imported by airplane, and it measures whether people apply these principles according to their knowledge (102). In 2014, Questionnaire measuring motives for choosing foods including sustainable concerns by Sautron et al. in France has been developed and this instrument includes labeled ethics and environment, local and traditional production, taste, price, environmental limitations, health, convenience, innovation and absence of contaminants items (103). Another scale is the sustainable food behavior scale developed by Verain et al. in 2015, in Netherlands, which includes items that buying organic meat, dairy, fruit and vegetables, buying free

range meat, products with a sustainability label, eating smaller portions of meat and less dairy. In Sustainable food behavior scale, items are measured by answering yes or no (104). The “Sustainable and Healthy Eating Behaviors” scale was developed by Żakowska-Biemans et al. (2018) for the concept of sustainable diet in Polish society according to the definition of FAO, the LiveWell approach and the principles of sustainable and healthy eating habits. There are eight factors in the scale: Healthy and Balanced Nutrition, Quality Labels (Local and Organic), Meat Reduction, Local Food, Low Fat, Avoiding Food Waste, Animal Welfare and Seasonal Food. This scale was adapted into Turkish by Erdoğan et al. (2019) with the name of " Sürdürülebilir ve Sağlıklı Yeme Davranışları Ölçeği" (9,105). The GE Survey (described in detail in section 2.3.2.), which was developed by Weller et al. in 2014, in the US, and is the topic of this thesis, measures behaviors, opinions and barriers concerning sustainable nutrition (13).

3. MATERIALS and METHODS

3.1. Time and Research Location

At Yeditepe University and Istanbul Kent University, the research was started after obtaining the permission of the institutions. The aforementioned questionnaire was administered between January 2021 and April 2021.

For the research, approval was obtained from the Ethics Committee of Istanbul Kent University, dated 16.11.2020 and numbered 2020-08.

3.2. Procedures and Participants

A methodological research based on questionnaire application was carried out. In the validity and reliability studies, it is accepted that 10 people should be included per item in the questionnaire for the data to be analyzed (106). Since the GE Survey applied contains 25-items, it has been calculated that at least two hundred and fifty participants were required.

An online questionnaire was administered to 642 undergraduate volunteers. All participants consented to the study online. In accordance with the original research, individuals between the ages of 18-24 were included in the study. 34 out of range participants were excluded. A participant with anorexia nervosa was excluded because it would affect nutritional status. 121 participants who were missing data for the survey were also excluded. After these exclusions, the final sample size was n=486.

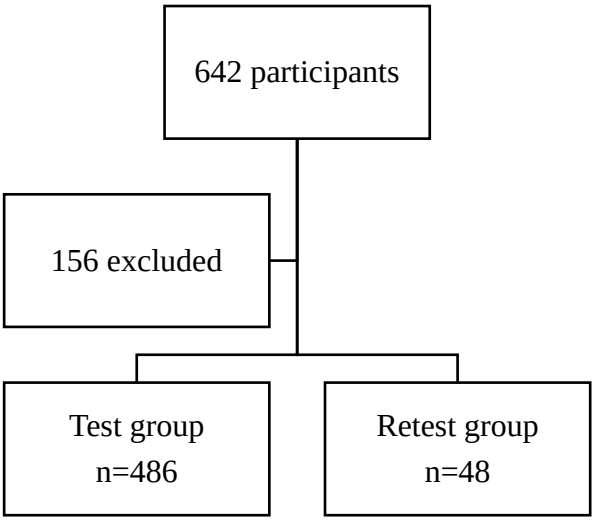

Figure 2.2.1. Diagram of the number of individuals participating in the study stages

3.3. Measures

The questionnaire applied to the participants consists of three main parts. In the first part, the demographic characteristics of the individuals were questioned. The second part was the Turkish version of the 25-item GE Survey. This section consists of statements that are expected to be evaluated in a five-point Likert format. The third part was the Organic Food Consumption (OFC) Scale, which includes 18 items. Also in this section, there were statements in the form of a five-point Likert. The questionnaire was conducted online, and all participants consented to the study online.

3.3.1. Demographic Characteristics

In the demographic data survey, thirteen questions were asked to the participants. Sex, age, marital status, monthly income level are followed by the name of the university, department, grade level, weight and height. In addition, in this section, participants were questioned about where they lived during the university (pandemic conditions were excluded), whether they had a health problem diagnosed by a medical doctor, the diet type, and whether they had heard of the concept of sustainable nutrition before.

3.3.2. GE Survey

GE Survey is an instrument to assess environmentally conscious eating Behavior (BEH) and GE Transtheoretical Model constructs including Stage of Change (SOC), Decisional Balance (DB), and Self-efficacy (SE), developed by Kathryn E. Weller et al. (2014). During the development phase, 954 students from University of Rhode Island, US between the ages of 18-24 participated online in the research. The survey was designed as 106 items, was reduced to 25 items as a result of the analysis. The central organizing construct of the transthoracic model is the Stages of Change that reflect motivational readiness to change a behavior in the survey. The GE Survey consists of a BEH Scale (Cronbach's $\alpha = 0.81$) consisting of 6 items, DB Scale consisting of 10 items (it has two subscales, Pros [Cronbach's $\alpha = 0.84$] and Cons [Cronbach's $\alpha = 0.72$]), and SE Scale consisting of 8 items (contains two subscales of SE at Home [Cronbach's $\alpha = 0.83$) and at SE at School [Cronbach's $\alpha = 0.85$]). 5-point Likert scaled instrument that addresses these components. Responses range from 1 to 5 and no points for unanswered items. Score is calculated by sum of the scores for each scale and dividing it by the number of items.

3.3.3. OFC Scale

To analyze convergent validity of the translated scale, OFC Scale which developed by Eti İçli et al. (2019) conducted and correlation analysis performed (107). OFC Scale is an instrument measure for organic food consumption tendency. The questionnaire was administered to consumers of organic food bazaars located in Istanbul; Turkey where organic food bazaars were established. A total of 1000 questionnaire forms were given to consumers in these bazaars. 620 usable questionnaire forms were collected. The OFC Scale contains 18 items under 6 factor structures: Health Consciousness, Benefits of Consuming Organic, Information-seeking, Norms, Positive Moral Attitude, and Self-Identity. The minimum score from the whole scale is 18 and the maximum score is 90. Low scores from the scale indicate the decreasing tendency for organic food consumption, while high scores show the increasing tendency for organic food consumption.

3.4. Methods

Permission to use the GE Survey (in July 2020) and the OFC Scale (in September 2020) was obtained from the developers. The Turkish version of the GE Survey has been developed.

3.4.1. Turkish Adaptation Protocol

In this section, the translation techniques followed a standardized procedure suggested by Brislin (1986) in which the inventory items and scale were translated from English to the target language by a bilingual researcher to confirming the Turkish language validity of the GE Survey (108). Thereafter, the translated inventory was back translated by proficient bilingual professional employee in the translation department of the institute of the researcher. The back translated version was then compared with the original English version and examined for inconsistencies, errors, biases, and incongruences. No inconsistency was detected. The versions were the same as suggested by Bracken et al. (1991) (109).

3.4.2. Cultural Adaptation

GE Survey was pilot tested on 18 participants. Participants found the survey easy to understand and applicable. The Turkish equivalent of the “Green Eating” statement was considered causing semantic confusion, and as the scale aims to measure

environmentally conscious eating, the name of the scale was determined as “Çevreye Duyarlı Beslenme Ölçeği”. The survey name was found understandable and was found descriptive of the survey items by the participants. However, in order to facilitate the understanding, some items were recommended to be exemplified by the pilot group. Due to the unknown meaning of the Fair-Trade Certificate, it has recommended to be described. It has recommended that giving an example for the distance of locally grown foods would make it easier to imagine. It has been considered by the participants that "farmer's markets" did not have an exact equivalent in Turkey. There are ecological markets similar to farmers' markets in Turkey (83). Therefore, in order for this expression to make sense, it has been changed to "markets where home-made and organic products are sold, such as ecological markets, farmers' markets". It has been recommended to explain the “processed foods” and “sustainably produced foods” expression for better understanding. In SE for GE scale, it has been recommended that the question be explained in more detail. And finally, it has been recommended to explain what the expression "inconvenient" means. Changes were made with finer adjustments, considering all recommendations and survey was finalized by the researchers. The final GE Survey consensus version was brought into use for the validity and reliability study.

3.4.3. Test-Retest

The test-retest was conducted 2-4 weeks after the initial survey to establish reliability. The randomly selected 48 participants completed the GE Survey at baseline and after 2-4 weeks to provide evidence of test-retest reliability.

3.5. Data Analyses

IBM SPSS 22.0 was used for statistical analysis. The distribution of the variables was determined according to skewness and kurtosis. Mean, standard deviation, and frequency from descriptive statistical methods were analyzed for qualitative data. Independent Two Samples T-test was used for the comparison of the normally distributed variables between two groups in the evaluation of quantitative data. One-way analysis of variance (ANOVA) was used for comparisons between more than two groups of normally distributed data, Tukey and Bonferroni post hoc tests were used to determine which group caused the difference. Chi-square test was used to compare qualitative data. Pearson Correlation Analysis was used to evaluate the relationship between normally distributed data. Significance level was evaluated at the $p<0.05$.

The reliability was tested using Cronbach's alpha. The Cronbach's alpha coefficient takes values between 0 and 1. Cronbach alpha coefficient value close to 1 indicates high reliability, and close to 0 means low reliability. If the Cronbach's alpha coefficient is <0.40, the scale is not reliable, if it is between 0.40-0.60, reliability is low, if it is between 0.60-0.70 reliability is moderate, and if it is >0.70, reliability is high (110).

Test-retest reliability was examined by Pearson's Product Moment Correlation coefficient and Intraclass Correlation (ICC). These correlations quantify the direction (+/-) and the strength of the relationship between test–retest scores by estimating their linear relationship and lies between +1 and -1. The correlation coefficient reflects how closely test–retest data follow a straight line, regardless of the slope of the line. (111).

The scales in the Green Eating Survey and the subscales of the Organic Food Consumption Scale were logically mapped and analyzed.

Confirmatory factor analysis was performed using the SPSS AMOS.

Confidence interval of 95% was applied in all tests, and statistical significance level was accepted as $p < 0.05$ for comparisons.

4. RESULTS

4.1. Validity and Reliability Analyses

Table 4.1.1. Reliability analyses of GE Survey

	Cronbach's alpha
BEH	0.77
DB Pros	0.84
DB Cons	0.72
SE at School	0.84
SE at Home	0.81

Table 4.1.2. GE Survey item statistics

	Corrected Item - Total Correlation	Cronbach's Alpha if Item Deleted
	BEH	
I2	0.46	0.75
I3	0.62	0.71
I4	0.38	0.77
I5	0.62	0.70
I6	0.47	0.75
I7	0.55	0.72
	DB Pros	
I8	0.66	0.81
I9	0.46	0.86
I10	0.77	0.78
I11	0.68	0.80
I12	0.72	0.79
	DB Cons	
I13	0.40	0.70
I14	0.49	0.66
I15	0.45	0.68
I16	0.53	0.64
I17	0.51	0.66
	SE at School	
I18	0.63	0.81
I19	0.70	0.79
I20	0.63	0.81
I21	0.63	0.81
I22	0.61	0.81
	SE at Home	
I23	0.72	0.69
I24	0.73	0.67
I25	0.55	0.86

The alpha coefficient was carried out to test the internal consistency reliability for each scale in the GE survey. GE SOC was not included because it is not a Likert type. The Cronbach alpha values are shown in the Table 4.1.1. According to Cronbach alpha values, the reliability is high for all scales (>0.70).

Items for each scale were analyzed individually, each item were positively correlated with others. For the BEH scale, I4 has the lowest correlation with 0.38."Alpha if Item Deleted" value was calculated to determine effects of the items (Table 4.1.2.).

Table 4.1.3 shows Test-Retest Pearson's correlation and ICC of GE Survey. According to both analysis methods, a significant positive correlation was found between the pre-test and post-test for all scales ($p<0.05$).

Table 4.1.3. GE Survey test-retest reliability

	Pearson's r	**ICC (%CI)**
BEH (6 items)	0.85*	0.92* (0.86-0.96)
DB Pros (5 items)	0.75*	0.84* (0.71-0.91)
DB Cons (5 items)	0.52*	0.68* (0.43-0.82)
SE at School (3 items)	0.69*	0.81* (0.67-0.90)
SE at Home (6 items)	0.57*	0.71* (0.48-0.84)

***p<0.05**

Table 4.1.4. shows the pairing results of the OFC scale subscales, which are expected to be correlated with GE SOC, BEH, DB Pros, DB Cons, SE at home and SE at school scales. Since the GE SOC is categorical, the mean difference was analyzed with the ANOVA test. Pearson's correlation was used for other scales. There was no significance for GE SOC and DB Cons.

Figure 4.1.1. includes confirmatory factor analysis results of the scales of the GE Survey.

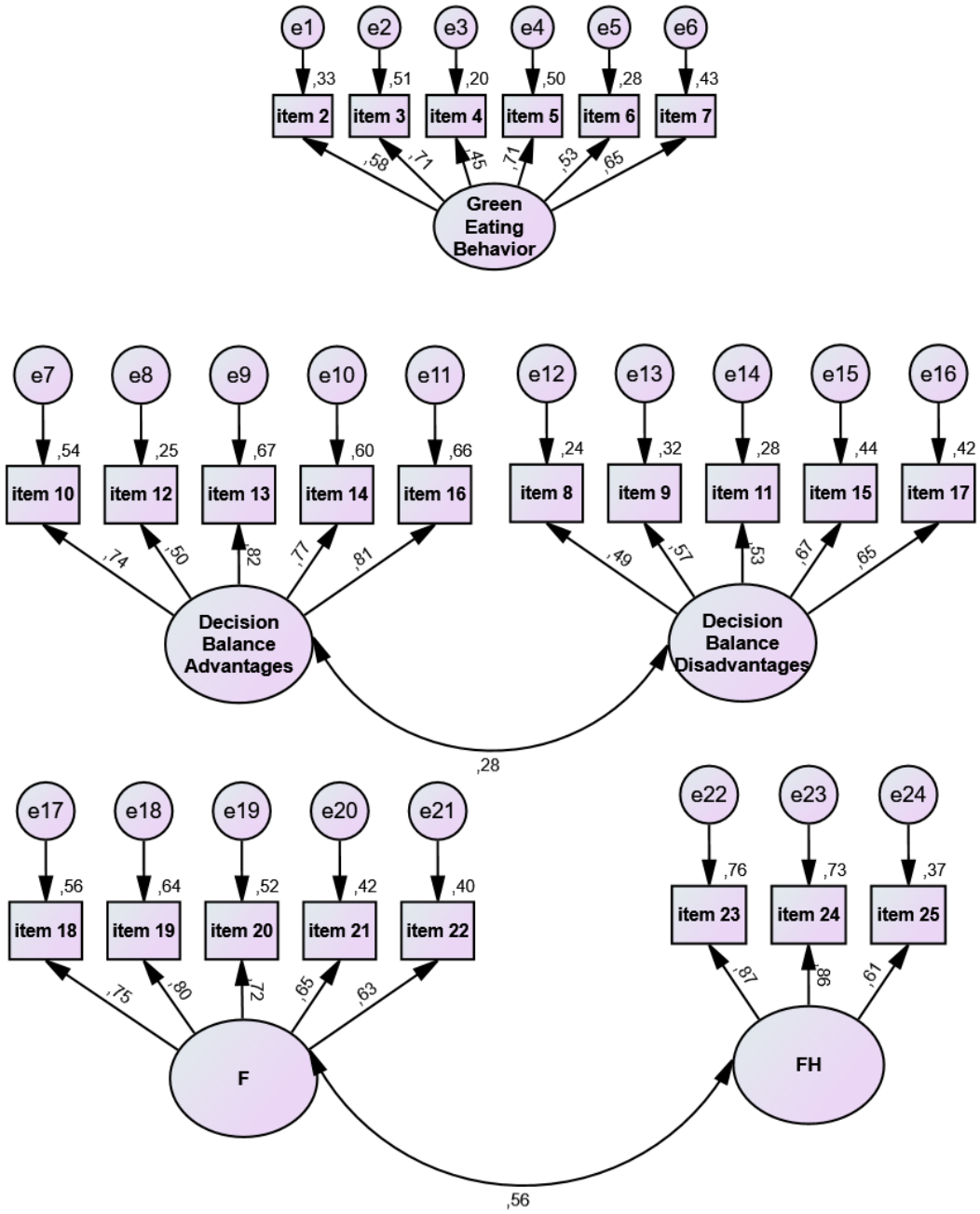

Figure 4.1.1. Path diagram of confirmatory factor analysis of GE

Table 4.1.4. Fit indices of confirmatory factor analysis

Fit Measures	Good Fit	Results of the model
CMIN (χ2)	p<0.05	p=0.00
CMIN/df	χ2/df<5	3.598
GFI	>0.90	0.866
CFI	>0.90	0.848
NFI – TLI	>0.80	0.802 – 0.832
RMSEA	<0.07	0.073

Table 4.1.5. Standardized regression weights for the correlation between factors and items of GE Survey

Item	Scale	Standardized Regression Weights
I2	GE BEH	0.575
I3	GE BEH	0.714
I4	GE BEH	0.451
I5	GE BEH	0.708
I6	GE BEH	0.530
I7	GE BEH	0.654
I8	DB Pros	0.735
I9	DB Pros	0.504
I10	DB Pros	0.819
I11	DB Pros	0.773
I12	DB Pros	0.811
I13	DB Cons	0.486
I14	DB Cons	0.568
I15	DB Cons	0.531
I16	DB Cons	0.666
I17	DB Cons	0.648
I18	SE at School	0.752
I19	SE at School	0.801
I20	SE at School	0.721
I21	SE at School	0.648
I22	SE at School	0.630
I23	SE at Home	0.869
I24	SE at Home	0.857
I25	SE at Home	0.611

In order to determine the accuracy of the resultant factorial structure and the level of fit, “Fit indices” should be checked. Table 4.1.4. shows the criteria and results of fit indices. When the fit statistics calculated through confirmatory factor analysis, it was determined that the structure of the inventory fit well with the collected data.

Table 4.1.5. shows that no item has a standardized regression weight less than 0.4.

Table 4.1.6. GE Survey and OFC Scale pairing results

	Norms	Health Consciousness	Self-Identity	Benefits of Consuming Organic	Positive Moral Attitudes	Information Seeking
GE SOC	-	-	0.68	-	0.72	0.12
BEH	-	-	0.20*	0.30*	-	-
DB Pros	-	0.27*	0.40*	0.40*	-	-
DB Cons				-0.02		
SE at School	-	0.20*	0.23*	0.30*	-	-
SE at Home	0.32*	-	-	-	0.33*	0.40*

***p<0.05**

4.2. Descriptive Information

The validity and reliability of the Turkish version of the GE Survey were applied for 468 university student volunteers. 87.7% of the participants were women, 12.3% were men. The demographic characteristics (Table 4.2.1), and anthropometric assessment of the participants (Table 4.2.2.) are shown in below.

55.8% of the participants were nutrition and dietetics (ND) department students. 54.2% were from different departments of universities. Out of these 215 participants, 33% were students of the Faculty of Health Sciences (physiotherapy and rehabilitation, nursing, midwifery, child development); 32% were Faculty of Arts and Sciences or Faculty of Humanities and Social Sciences (psychology, teaching, public relations, political science and public administration); 21% were Faculties of Medicine, Dentistry or Pharmacy; 10% were Faculty of Art and Design or Fine Arts (gastronomy and culinary arts, graphic design), and 4% were Faculty of Engineering. Most of the students stated that they live with their families (59.5%). Most of the participants stated that their income and expenses are equal (48.1%), and their income status is classified in Table 4.2.1. Only 2 of the participants stated that they are married and the rest of them were single. A great majority of the participants stated that they are omnivores (94.0%) (Table 4.2.1.).

The average age of the participants was 21.0 years, and Body Mass Index (BMI) average was normal (21.4 kg/m2) according to BMI classification (Table 4.2.2.).

Table 4.2.1. Demographic characteristics of participants

Category	Frequency (n)	Percent (%)
Sex		
Women	426	87.7
Men	60	12.3
University		
Yeditepe University	288	59.3
Istanbul Kent University	198	40.7
Department		
ND	271	55.8
Other	215	44.2
Grade Level		
1st year	153	31.5
2nd year	106	21.8
3rd year	100	20.6
4th year	127	26.1
Accommodation		
Dormitory	76	15.6
Family House	289	59.5
Student House with Friends	59	12.1
Student House Alone	62	12.8
Marital Status		
Single	484	99.6
Married	2	0.4
Income Status		
Income > Expenses	137	28.2
Income = Expenses	234	48.1
Income < Expenses	115	23.7
Diet Type		
Omnivore	457	94.0
Semi-vegetarian	14	2.9
Pescatarian	3	0.6
Vegetarian	8	1.6
Vegan	4	0.8

Table 4.2.2. Qualitive characteristics of participants

	Women (n=426)	Men (n=60)	Overall (n=486)
	Mean ± SD	**Mean ± SD**	**Mean ± SD**
Age, y	21.0 ± 1.4	21.3 ± 1.7	21.0 ± 1.4
BMI, kg/m^2	21.1 ± 3.4	23.7 ± 3.2	21.4 ± 3.5

BMI of the majority of the participants was normal (72.4%). 17% of the participants were underweight and almost all of them were women. 22.5% of the participants was overweight or obese (Table 4.2.3.).

Table 4.2.3. BMI classification of participants

BMI Classification n (%)	Women (n=426)	Men (n=60)	Overall (n=486)
Underweight	74 (17.4)	1 (1.7)	75 (15.4)
Normal	311 (73.0)	41 (68.3)	352 (72.4)
Overweight	31 (7.3)	15 (25.0)	46 (9.5)
Obese	10 (2.3)	3 (5.0)	13 (2.7)

The demographic and anthropometric characteristics of the participants were compared according to the GE SOC. 76 people who marked "choose not to answer" for the GE SOC were not included in this evaluation, and the results of 410 people were analyzed. ANOVA was performed to compare the means of age and BMI according to GE SOC, and Pearson Chi-Square performed to compare of sex, department, accommodation, and income status. Marital status and diet type could not be analyzed due to inconvenient distribution of participants. A significant difference between the GE SOC categories of the participants age ($p<0.05$). To understand between which categories the difference was, Bonferroni performed from the Post Hoc tests. As a result of the analysis, there was a significant difference between preparation and maintenance by age ($p<0.05$) (Table 4.2.4).

Table 4.2.4. Comparison of demographic and anthropometric characteristics by GE SOC

GE SOC (n=410) (mean ± SD)	**Precontemplation (n=74)**	**Contemplation (n=117)**	**Preparation (n=68)**	**Action (n=41)**	**Maintenance (n=110)**	**P value**
Age, y	21.1 ± 1.0	20.8 ± 1.5	20.6 ± 1.5	21.2 ± 1.3	21.2 ± 1.5	0.03*
BMI, kg/m^2	21.2 ± 3.2	21.7 ± 3.9	21.3 ± 3.3	21.4 ± 3.0	21.8 ± 3.7	0.73
Categorical characteristics, n (%)						
Sex						
Women	59 (79.7)	107 (91.5)	62 (91.2)	38 (92.7)	92 (83.6)	0.06
Men	15 (20.3)	10 (8.5)	6 (8.8)	3 (7.3)	18 (16.4)	
Department						
ND	28 (37.8)	73 (62.4)	42 (61.8)	27 (65.9)	63 (57.3)	0.00**
Other	46 (62.2)	44 (37.6)	26 (38.2)	14 (34.1)	47 (42.7)	
Accommodation						
Dormitory	14 (18.9)	15 (12.8)	7 (10.3)	7 (17.1)	21 (19.1)	0.63
Family House	43 (58.1)	65 (55.6)	45 (66.2)	23 (56.1)	66 (60.0)	
Student House with Friends	11 (14.9)	16 (13.7)	7 (10.3)	5 (12.2)	9 (8.2)	
Student House Alone	6 (8.1)	21 (17.9)	9 (13.2)	6 (14.6)	14 (12.7)	
Income Status						
Income > Expenses	16 (21.6)	35 (29.9)	20 (29.4)	13 (31.7)	29 (26.4)	0.37
Income = Expenses	34 (45.9)	58 (49.6)	32 (47.1)	23 (56.1)	49 (44.5)	
Income < Expenses	24 (32.4)	24 (20.5)	16 (23.5)	5 (12.2)	32 (29.1)	

There was no significant difference between the BMI means of the participants according to the GE SOC categories ($p>0.05$). ND students were more inclined to practice GE. It was observed that the students from other departments were categorized higher in the precontemplation stage, while the students in the ND department were in higher percentages in the other stages. Difference was significant according to the GE SOC of the ND students and students from other departments ($p<0.05$). There was no significant

difference SOC stages depending on sex, income level, and accommodation ($p>0.05$) (Table 4.2.4).

In addition, degree level of the participants was compared with the ANOVA test according to the GE SOC, and the p value was found to be 0.02. According to the Bonferroni test, the significance lies between preparation and maintenance stages.

Calculated mean ± standard deviation (SD) values according to the answers by the participants to the GE Survey and the OFC Scale are given in the Table 4.2.5.

Table 4.2.5. GE Survey and OFC Scale scores of participants

	Mean ± SD	Minimum-Maximum
BEH	3.0 ± 1.0	0-5
DB Pros	4.0 ± 0.9	0-5
DB Cons	3.1 ± 0.9	0-5
SE at School	2.5 ± 0.9	0-5
SE at Home	3.6 ± 1.0	0-5
Organic Food Consumption	66.1 ± 8.7	32-89
Norms	11.7 ± 3.0	4-20
Health Consciousness	11.8 ± 2.0	4-15
Self-Identity	11.0 ± 2.0	3-15
Benefits of Consuming Organic	16.4 ± 2.4	8-20
Positive Moral Attitudes	8.1 ± 1.5	2-10
Information Seeking	7.1 ± 1.8	2-10

Table 4.2.6. Comparison of GE scales by GE SOC

GE SOC n=410 (mean ± SD)	**Precontemplation (n=74)**	**Contemplation (n=117)**	**Preparation (n=68)**	**Action (n=41)**	**Maintenance (n=110)**	**P value**
BEH	2.9 ± 1.0	3.0 ± 0.9	2.9 ± 0.9	3.0 ± 1.0	3.0 ± 0.9	0.70
DB Pros	3.9 ± 0.9	4.0 ± 1.0	4.0 ± 0.9	3.9 ± 1.0	4.1 ± 1.0	0.60
DB Cons	3.2 ± 0.8	3.0 ± 0.9	3.1 ± 0.7	3.3 ± 0.9	3.1 ± 0.9	0.14
SE at School	2.4 ± 0.9	2.4 ± 0.8	2.7 ± 0.8	2.5 ± 0.9	2.6 ± 0.9	0.42
SE at Home	3.5 ± 1.0	3.5 ± 1.0	3.7 ± 0.7	3.6 ± 0.9	3.7 ± 1.0	0.60

According to the GE SOC categorization, the scores from the BEH, DB Pros, DB Cons, SE at School and SE at Home scales were evaluated. For GE SOC, this evaluation was conducted for 410 people, excluding 76 people who select "Choose not to answer". 28.5% of the participants stated that they are in the Contemplation stage, 26.8% of them were in the Maintenance, 18.0% of them was in Precontemplation, 16.6% of them was in Preparation and 10% of them was in Action stage. The mean for any GE scale did not appear to increase in parallel with the increase in the GE SOC. The difference between the mean scores of the GE scales according to the SOC categories analyzed with the ANOVA. There was no significant difference with the GE SOC for each of the BEH, DB Pros, DB Cons, SE at School and SE at Home scales ($p>0.05$) (Table 4.2.6).

Comparison of the mean of the GE scale scores according to the demographic characteristics is given in Table 4.2.7., Table 4.2.8., Table 4.2.9., Table 4.2.10. and Table 4.2.11. Independent Sample T Test was performed to compare the means.

Women's BEH scores, DB Pros scores and SE at Home scores were higher than men, and the difference was significant ($p<0.05$) (Table 4.2.7.) (Table 4.2.8.) (Table 4.2.11).

BEH, DB Pros, and SE at Home mean scores of the ND students were significantly higher than the others ($p<0.05$) (Table 4.2.7.) (Table 4.2.8.) (Table 4.2.11).

Table 4.2.7. Comparison of demographic characteristics by BEH

BEH		n	Mean ± SD	P value	Difference
Sex	Women	426	3.0 ± 0.9	0.00*	-
n=486	Men	60	2.6 ± 1.1		
Department	ND	271	3.2 ± 0.9	0.00*	-
n=486	Others	215	2.8 ± 1.0		
Accommodation n=486	Dormitory	76	3.2 ± 1.0	0.23	-
	Family House	289	2.9 ± 1.0		
	Student House with Friends	59	2.9 ± 0.9		
	Student House Alone	62	3.0 ± 0.8		
Income Level n=486	Income>Expenses	137	3.2 ± 0.9	0.00*	1-3
	Income=Expenses	234	3.0 ± 0.9		2-3
	Income<Expenses	115	2.7 ± 1.0		

It was found that there was a significant difference of BEH scores of the participants that were compared according to their income level. According to the Bonferroni post hoc test results, the mean score of the participants whose expenses are higher than their income was significantly lower than those whose income is equal to their expenses and whose income is higher than their expenses ($p<0.05$) (Table 4.2.7).

There was also a significant difference in the DB Pros scores of the participants according to their income level ($p<0.05$). Bonferroni post hoc test results showed that the scores of the participants whose income is more than their expenses are significantly higher than those whose income is equal to their expenses and those whose expenses are more than their income ($p<0.05$). The mean score of the group whose income was equal to their expenses was higher than those whose expenses was higher than their income, but the difference was not significant ($p>0.05$) (Table 4.2.8).

Table 4.2.8. Comparison of demographic characteristics by DB Pros

DB Pros		n	Mean ± SD	P value	Difference
Sex n=486	Women	426	4.1 ± 0.8	0.00*	-
	Men	60	3.5 ± 1.2		
Department n=486	ND	271	4.3 ± 0.8	0.00*	-
	Others	215	3.8 ± 1.0		
Accommodation n=486	Dormitory	76	4.2 ± 1.0	0.73	-
	Family House	289	4.0 ± 0.9		
	Student House with Friends	59	4.1 ± 0.9		
	Student House Alone	62	4.1 ± 0.9		
Income Level n=486	Income>Expenses	137	4.3 ± 0.7	0.00*	1-2 1-3
	Income=Expenses	234	4.0 ± 0.9		
	Income<Expenses	115	3.8 ± 1.0		

In Table 4.2.9. DB Cons score means were compared according to income level, those whose expenses were higher than their income had a higher score than the others, but the difference was not significant ($p>0.05$).

Table 4.2.9. Comparison of demographic characteristics by DB Cons

DB Cons		n	Mean ± SD	P value
Sex n=486	Women	426	3.1 ± 0.8	0.20
	Men	60	3.3 ± 1.0	
Department n=486	ND	271	3.1 ± 0.8	0.19
	Others	215	3.2 ± 1.0	
Accommodation n=486	Dormitory	76	3.2 ± 0.9	0.73
	Family House	289	3.1 ± 0.9	
	Student House with Friends	59	3.1 ± 0.9	
	Student House Alone	62	3.1 ± 0.8	
Income Level n=486	Income>Expenses	137	3.1 ± 0.8	0.49
	Income=Expenses	234	3.1 ± 0.9	
	Income<Expenses	115	3.2 ± 0.9	

Table 4.2.10. Comparison of demographic characteristics by SE at School

SE at School		n	Mean ± SD	P value
Sex n=486	Women	426	2.5 ± 0.8	0.13
	Men	60	2.3 ± 1.0	
Department n=486	ND	271	2.6 ± 0.8	0.11
	Others	215	2.4 ± 0.9	
Accommodation n=486	Dormitory	76	2.6 ± 0.8	0.67
	Family House	289	2.5 ± 0.9	
	Student House with Friends	59	2.5 ± 0.9	
	Student House Alone	62	2.5 ± 0.8	
Income Level n=486	Income>Expenses	137	2.6 ± 0.9	0.09
	Income=Expenses	234	2.5 ± 0.8	
	Income<Expenses	115	2.4 ± 0.9	

For the SE at School, the increase in material well-being and score means were in parallel, but the difference was not significant ($p>0.05$) (Table 4.2.10). On the other hand, there was a parallelism with the mean scores for SE at Home, and there was a significant difference ($p<0.05$). According to the Bonferroni test results, the SE at Home score means were higher for those whose income is higher than their expenses were higher than those whose income and expenses were equal and whose expenses were higher than their income ($p<0.05$) (Table 4.2.11.).

There was no significant difference between the mean of BEH, DB Pros, DB Cons, SE at School or SE at Home scores of the participants according to the accommodation status (p>0.05) (Table 4.2.7.) (Table 4.2.8) (Table 4.2.9.) (Table 4.2.10.) (Table 4.2.11.).

Table 4.2.11. Comparison of demographic characteristics by SE at Home

SE at Home		n	Mean ± SD	P value	Difference
Sex n=486	Women	426	3.6 ± 1.0	0.00*	-
	Men	60	3.2 ± 1.0		
Department n=486	ND	271	3.7 ± 0.9	0.00*	-
	Others	215	3.4 ±1.0		
Accommodation n=486	Dormitory	76	3.8 ± 0.9	0.15	-
	Family House	289	3.5 ± 1.0		
	Student House with Friends	59	3.6 ± 0.9		
	Student House Alone	62	3.6 ± 0.8		
Income Level n=486	Income>Expenses	137	3.8 ± 0.8	0.00*	1-2 1-3
	Income=Expenses	234	3.5 ± 1.0		
	Income<Expenses	115	3.4 ± 1.0		

According to the GE SOC, norms, health consciousness, self-identity, benefits of consuming organic, positive moral attitudes information seeking from the sub-dimensions and total score of OFC Scale were evaluated with ANOVA. There was no significant difference between the SOC means for any of the scores.

5. DISCUSSION and CONCLUSION

The results of the questionnaire were obtained by reaching 486 volunteer participants in Turkey are discussed in this section.

This study claims that 25-item GE Survey is a valid and reliable to assessment with regards to environmentally conscious eating for university students for Turkish population.

GE Survey which includes single 6-item BEH scale, 2 correlated 5-item DB subscales (Pros and Cons), and 2 correlated SE subscales (school [5 items] and home [3 items]) was found reliable (Cronbach's Alpha Scores are between 0.72-0.84). Weller et al. (2014) in the original study about validity and reliability of GE Survey, Cronbach's Alpha Scores were between 0.72 and 0.85 and the result of their study confirms that GE Survey Turkish version is reliable (13).

Test-retest correlation results were found to be parallel with the original study. The researchers who developed the GE Survey repeated the survey on 58 participants 6 weeks later. There was a significant positive correlation between the first test and the retest (BEH: r=0.88, DB Pros: r=0.88, DB Cons: 0.34, SE: 0.65, $p<0.05$) (13). In this study, test-retest results were analyzed with Pearson correlation and ICC. According to Liu et al. (2016) like the Pearson correlation, the ICC requires a linear relationship between the variables. However, it differs from the Pearson correlation in one key respect; the ICC also takes account the differences in the means of the measures being considered (112). In this study, ICC results were higher than Pearson's correlation. Similar to the original study, the DB Cons scale had the lowest test-retest correlation between the scales, while the BEH scale had the highest correlation (13). The reason of the lower correlation in the DB Cons scale than the other scales may be due to the increased awareness of the participants after the first test and the fact that they become more tolerant of negative situations that are effective in deciding on environmentally conscious eating.

At the beginning of the study to the researchers' knowledge, the only scale that is valid and reliable for Turkish population, which is similar to GE Survey, is the OFC Scale. The sub-dimensions in the OFC Scale were matched with the scales in the GE Survey (107).

GE Survey, adapted to Turkey with this study, is one of the first Turkish scales on the sustainable nutrition.

The GE Survey was also compared with the demographic characteristics of the participants.

In this study, the study sample was between the ages of 18-24, same as the original study. The mean age of participants in the original study was 19.14 ± 1.2 years. The reason for the higher mean age in this study (21.0 ± 1.4 years) is a more balanced distribution of the participants to the 1st, 2nd, 3rd, and 4th grades. Whereas, in the original study, about ¾ of the participants were 1st or 2nd grade students. In this study, as in the original study (67.6%), most of the participants were women (87.7%). (13).

According to the results of Turkey Nutrition and Health Research published in 2019, 0.7% of individuals in the 19-50 age group in Turkey are vegetarian (113). In parallel with these results, 0.6% of the individuals participating in this study reported that they are vegetarian. In the original study in which the scale was developed, also 0.6% of the participants were vegetarian, which is a resemblance with study (13).

In both studies, the average BMI of the participants was in the normal category. (22.3 kg/m^2 in the original study, 21.4 kg/m^2 in this study). According to the results of Turkey Nutrition and Health Research, the mean BMI of women aged 19-50 years is 24.2 kg/m^2, while it is 25.1 kg/m^2 for men in Turkish population. 6.7% of women and 2.6% of men are underweight; 58.4% of women and 51.2% of men are normal; 21.7% of women and 33.0% of men are in the overweight category (113). According to these data, the participants of this study are in the lower BMI categories than the Turkey average. This may be because the research participants were restricted to university students between the ages of 18-24. As a result of the growing desire to lose weight, coupled with a stronger belief that one must be thin in order to be attractive and socially acceptable, many individuals are dissatisfied with their body image and are concerned about the body fat. The results of the research conducted by Yılmaz et al. (2013) show that according to the BMI classification, one-fourth of the female university students in the normal category and three-fourths of those in the overweight category consider themselves obese (114).

The largest subgroups of participants in this study were in Contemplation (28.5%) and Maintenance (26.8%), followed by Precontemplation (18.0%). According to the results of the study conducted in the US, where the scale was developed, students' GE SOC stages are listed as: Precontemplation (37%), Contemplation (30%), followed by Maintenance (15%), Preparation (11%), Action (8%) (13).

While there was no parallelisms in terms of age in the GE SOC categorization of the participants, it was observed that those in the maintenance stage were significantly

older than those in the preparation stage. Since the age groups of the participants were close to each other, the significance was evaluated according to the grade level and the same result was reached. When analyzed separately for ND and other students, it was seen that grade level did not have a significant effect on GE SOC ($p<0.05$). According to this result, it can be thought that the increase in nutrition education does not cause an increase in environmentally conscious eating. However, when ND students were compared with other students who did not receive nutrition education, it was seen that ND students were more likely others to be in the later stages for GE. Therefore, while the increase in the grade levels of ND students cannot be associated with GE SOC, ND education shows an increasing trend in GE SOC stages regardless of grade level. BEH, DB Pros, SE at School and SE at home scores of ND students and other students were evaluated. In the light of the results, it can be interpreted that ND students are more adapted to make environmentally conscious food choices. In addition, they are more aware of the positive effects of an eco-friendly nutrition than others. In the study conducted by Yolcuoğlu et al., ND students and students who did not receive nutrition education in Turkey were compared in terms of the Sustainable and Healthy Nutrition Behavior Scale scores, which aim to measure similar to GE Survey. The results of the study showed that the choosing seasonal food score (which is also an indicator of GE) was found to be significantly higher in ND students than the others, similar to this study (115). It is expected that nutritional literacy is higher in ND students, the difference between the two groups can be explained in this respect. Also, an educational intervention motivating environmentally conscious eating behaviors was carried out on university students (intervention group: 716 students, control group: 575 students) by Monroe et al. (2015). While there was a significant increase in the BEH, DB Pros, SE at School scores of the students after the educational intervention, the students stated that they progressed to more advanced stages in GE SOC. DB Cons and SE at Home scores remained unchanged. The researchers stated that they reached this conclusion because there were no modules to change the DB Cons and SE at Home in the educational intervention. This research shows that providing sustainable nutrition education to university students can increase the number of green eaters (116). In this direction, the inclusion of sustainable nutrition in the education program should be considered for university students, in order to understand and implement the relationship between environmental awareness and nutrition.

BMI of participants according to GE SOC are very close to each other and there is no significant difference between BMI levels according to SOC categories. This is an expected result, as GE is an independent with regards to the amount of energy consumption and physical activity. On the other hand, since green eating has parallel aspects to the Mediterranean diet and is related to taking care of health, it may also affect BMI (76,96,97). However, since most of the participants in this study had normal BMI, it is insufficient to evaluate the effect of GE on BMI. In order to examine this relationship, there is a need for more comprehensive studies in which the BMI groups are evenly distributed, and the food consumption record and energy intake are also evaluated.

In this study, no significant sex difference was observed for GE SOC. However, women's scores on the BEH, DB Pros, and SE at Home scales were significantly higher than men. Research by Tobler et al. (2011) shows that women's food preferences are more eco-friendly than men. They prefer organic, local, and seasonal foods more and they are more conscious about the effects of these foods on the environment. Also, they found that both sex find sustainable food expensive (102). In this study, the DB Cons scale scores, which measure barriers in environmentally conscious eating, were similar for the two groups. The difficulties of eating green may have played a role in the GE SOC categories. Explaining the sex differences in eco-friendly food preferences is complex and imprecise. According to the study by Xiao et al. (2015) there is a difference independent of social roles and status. They hypothesize that different factors such as risk perception, health and safety concerns in men and women may be effective in this regard (117). On the other hand, the results of the research conducted by Milfont et al., explain the sex difference between environmental awareness and concerns as women's empathy aspect is stronger than men (118).

In the research based on the environmentally conscious eating education intervention conducted by Monroe et al. (2015), they interviewed the participants before the intervention. It has been found out that the students felt social pressure especially when eating with their family or friends (116). In this study, GE scales were examined according to the students' accommodation and no significant difference was observed for any of the scales. These results show that the people the university students live with do not affect the green eater status of the students, their preference for purchasing environmentally friendly foods, awareness level about the nutrition-environment relationship, and their access to sustainable foods.

In this study, it has seen that income level had a high effect on BEH, DB Pros, and SE at home scores. Sustainable nutrition, in terms of plant-based nutrition, is cheaper than diets consisting of animal-based foods (119). However, this GE survey does not question animal or plant food consumption. As the income level increased, the behavior of preferring sustainable foods increased. This was an expected result, because due to the high prices of organic food in Turkey, consumers prefer lower priced foods instead of organic food (120). High income is a decisive factor when it comes to purchasing high-cost organic foods. In the study conducted by Monroe et al., it was also seen that cost is an important factor in the sustainable food preference of university students (116). In this study, DB Pros scores consisting of items related to the benefits of GE increase with income level can be explained by the fact that high-income consumers are more inclined to prefer expensive organic foods and are exposed to more information about the environmental impacts and health effects of these products. Unexpectedly, there was no relationship between income status and GE SOC. This shows that although consumers prefer eco-friendly foods, they are not too committed to environmentally conscious eating on a regular basis. DB Cons scores were also not associated with income status. Regardless of income status, all consumers have a similar view on sustainable nutrition financial barriers.

In the study conducted by Burke et al., the SOC categories of the participants were divided into two as pre-action and post-action, and a significant difference was found between the mean of all GE scale scores between the two groups. While BEH, DB Pros, SE at home and SE at school scores were higher in the GE post-action group, DB Cons scores were lower. In the same study it is stated that increased awareness of GE may raise consciousness about the environmental impact of food choices and one's own health behavior among college students (121). In this study participants with a high tendency to self-identify as green eater according to their GE SOC are expected to have higher BEH, DB Pros, and SE scores because these scales are effective in their tendency to be green eater. For example, those who are in advanced categories in GE SOC are expected to eat more seasonally, consume organic food, believe that they protect the environment by eating green, and continue to eat green even under different conditions. However, the results of the research show that those with a lower GE SOC category got similar scores from these scales. Likewise, DB Cons points are similar. This situation can be explained that even the students who define themselves as green eater have difficulty in reaching sustainable foods and find these foods expensive. Even the students who are aware of the

positive effects of GE on the environment may be insufficient in practice GE. BEH scores are inconsistent with students' self-identification as green eaters. Even if the participants stated that they were in the advanced stages of GE at the beginning, the frequency of GE behaviors may have changed in the answers given when they were questioned with more detailed explanations on the BEH scale (e.g., the distance of local food was stated).

This study has some limitations. As in the original, the GE survey can only be applied to university students. Validity and reliability studies should be conducted in order to be applied in different groups. The BMI categorization of the participants is not fair for both women and men participants. In future studies, it is recommended that participants representing different BMI groups be evenly distributed for both sex. In addition, since this research was carried out during the Covid-19 pandemic and the university education was online, not face-to-face, the responses of the participants to the SE at school scale may be retrospective or may be an estimate and may not reflect the truth. In addition, the participants in the research are foundation university students in sample from an urban area of Turkey with a relatively high educational status and mid-upper social class, thus the results cannot be generalized for Turkish population.

In conclusion, the Turkish version of the GE Survey is statistically acceptable, valid, and a reliable tool. Reliability analysis showed that it had sufficient internal consistency for BEH, DB Pros, DB Cons, SE at school and SE at home in GE Survey. It should be noted that the Turkish version of the GE Survey showed almost the same reliable ecoefficiency compared to the original English version. GE Survey consists of 4 independent scales. Therefore, the GE SOC, BEH, DB, and SE scales are suitable for use separately. This study is one of the limited number of studies on sustainable nutrition in Turkey and reveals the behaviors, opinions, and self-efficacy of university students about environmentally conscious eating. It is a necessity to provide education in order to inform and raise awareness of university students about nutrition and environment relationship. The GE Survey is a proper measurement tool to determine the difference between before and after education about the environmental impacts of nutrition, and studies have been carried out in the US previously. Policies should be developed to increase accessibility to sustainable foods. Last but not least, comprehensive studies are needed to overcome the barriers in this field.

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7. APPENDICES

APPENDIX-1 Ethics Committee Approval

İSTANBUL KENT ÜNİVERSİTESİ

T.C.
İSTANBUL KENT ÜNİVERSİTESİ
SAĞLIK BİLİMLERİ ARAŞTIRMA VE YAYIN ETİK KURULU

Sayı :58797649-050-
Konu :Etik Kurul Başvuru Dosyanız hk.

Sayın Arş. Gör. Merve CAMBAZ
Sağlık Bilimleri Fakültesi Öğretim Elemanı

Yürütücülüğünü yapacağınız **"Çevreye Duyarlı Beslenme Ölçeğinin Türkçe Geçirlilik ve Güvenirliliği/Turkish Version Of Green Eating Survey:Validity And Reliability"** konulu çalışmanız ile ilgili başvurunuz Üniversitemiz Sağlık Bilimleri Araştırma ve Yayın Etik Kurulu'nun 17.11.2020 tarihli, 2020-08 sayılı toplantısında görüşülerek aşağıdaki şekilde uygun olduğuna karar verildi.

Bilgilerinizi rica ederim.

Prof. Dr. A. Tuğrul BİREN
Etik Kurul Başkanı

17.11.2020 tarihli, 2020-08 Sayılı Sağlık Bilimleri Araştırma ve Yayın Etik Kurulu Kararı

Karar No 1. Sağlık Bilimleri Fakültesi Öğretim Elemanlarından Arş. Gör. Merve CAMBAZ'ın "Çevreye Duyarlı Beslenme Ölçeğinin Türkçe Geçirlilik ve Güvenirliliği/Turkish Version Of Green Eating Survey:Validity And Reliability" adlı başvurusunun kabul edilmesine ve başvuru dosyanın değerlendirilmek üzere Sağlık Bilimleri Fakültesi Öğretim Üyesi Prof. Dr. Dilara Fatoş ÖZER'in değerlendirme raporu görüşülmüş ve ekteki şekliyle kabul edilmesine katılanların oy birliği ile karar verildi.

Ek: Araştırma Raportörü Değerlendirme Formu

APPENDIX-1 Ethics Committee Approval (continued)

İSTANBUL KENT ÜNİVERSİTESİ

İSTANBUL KENT ÜNİVERSİTESİ
ETİK KURUL BAŞKANLIĞI
ARAŞTIRMA RAPORTÖRÜ DEĞERLENDİRME FORMU

Protokol No: YIL 2020/No08 (Araştırmacı: Merve Cemiloğlu)

Araştırmanın Adı: Çevreye Duyarlı Beslenme Ölçeği'nin Türkçe Geçerlilik ve Güvenirliliği / Turkish Version of Green Eating Survey: Validity and Reliability

Karar:

A) Etik Kurul onayını alır.

B) Eksikleri var, tamamlandığı takdirde kabul edilir.

C) Eksikleri var, tamamlandığı takdirde tekrar incelenir.

D) Ret

Gerekçesi: Araştırma gerekçesi, amaç-önem ve yöntem yeterli şekilde açıklanmış. Etik ilkelere uygun şekilde hazırlanmış bir araştırma raporu

Öneriler: —

Araştırma Raportörünün Adı, Soyadı: Prof. Dr. Dilara ÖZER

Tarih 16/11/2020:

İmzası:

Cihangir Mahallesi, Sıraselviler Caddesi, No:71, 34433 Beyoğlu İSTANBUL

APPENDIX-1 Ethics Committee Approval (continued)

İSTANBUL KENT ÜNİVERSİTESİ

İSTANBUL KENT ÜNİVERSİTESİ
ETİK KURUL BAŞKANLIĞI
ARAŞTIRMA RAPORTÖRÜ DEĞERLENDİRME FORMU

ARAŞTIRMA RAPORTÖRÜ KONTROL LİSTESİ

PROTOKOL NO: 2024/08

GİRİŞ	EVET	HAYIR	AÇIKLAMA
Araştırma proje konusu ile ilgili alanda ulusal ve uluslararası literatür taranarak, bir literatür analizi ile birlikte verilmiş midir?	X		
AMAÇ			
Çalışmanın Amaçları (birincil amaçlar, varsa ikincil, üçüncül, vs. amaçlar) belirlenmiş midir?	X		
GEREÇ ve YÖNTEM			
Araştırma bölgesi ve toplumu tanımlanmış mıdır?	X		
Varsa araştırma ile ilgili hipotezler tanımlanmış mıdır?	X		
Varsa özel terimler ayrıntılı olarak tanımlanmış mıdır?	X		
Karşılaştırılacak hasta/kontrol grup sayıları belirlenmiş midir?		—	
Varsa Kontrol grup/grupları tanımlanmış mıdır?		—	
Araştırmaya dâhil etme kriterleri belirlenmiş midir?	X		
Araştırmadan dışlanma kriterleri belirlenmiş midir?	X		
Araştırmadan çıkarılma kriterleri belirlenmiş midir?	X		
Araştırma için toplanması gerekli veriler (değişkenler) tanımlanmış mıdır?	X		
Veri Toplama Yöntemi kararlaştırılmış mıdır? (Anket/Kayıt taraması/Fiziksel ve/veya Laboratuvar Muayene)	X		
Verilerin ölçüm biçimleri (kullanılacak ölçüm yöntemi/niceliksel ya da niteliksel karakterde olup olmaması/niceliksel ölçüm sonuçlarının beklenen minimum-maksimum değerleri / niteliksel ölçüm sonuçlarının kategorileri) belirlenmiş midir?	X		
Veri toplamak için kullanılacak cihazların marka ve modeli tanımlanmış mıdır?		—	
Veri derlemek için kullanılacak ölçeklerin geçerlik ve güvenirlik özellikleri literatüre dayanılarak tanımlanmış mıdır?	X		
Veri toplama aşamasında hizmet alımı kullanılacak mıdır?		—	
Varsa Hizmet alımının nasıl yapılacağı tanımlanmış mıdır?		—	
Uygulamayı kimin yapacağı, nasıl seçileceği ve eğitim verileceği tanımlanmış mıdır?			
Varsa Körleme yöntemi tanımlanmış mıdır?		—	
Varsa Rassallık (Randomizasyon) yöntemi tanımlanmış mıdır?		—	
Varsa Eşleştirme (Matching) yöntemi tanımlanmış mıdır?		—	
Varsa araştırmada görev alacak yardımcı personelin seçimi ve eğitimi belirlenmiş midir?		—	
Veri derleme öncesinde Ön Uygulamanın yapılıp yapılmayacağı belirtilmiş midir?		—	
Araştırma tasarımı zaman çizelgesine uygun olarak tanımlanmış mıdır?	X		
Örneklem büyüklüğü ve örnekleme yöntemi tanımlanmış mıdır?	X		
Kullanılacak olan istatistiksel yöntemler açık bir şekilde tanımlanmış mıdır?	X		
GÖNÜLLÜ BİLGİLENDİRİLMİŞ OLUR FORMU EKLENMİŞ Mİ?	X		
DESTEKLEYİCİ BİLGİLERİ BELİRTİLMİŞ Mİ?		—	
GEREKLİ İSE SİGORTA TEMİNATI YAPILMIŞ MI?		—	

Araştırma Raporlörünün Adı, Soyadı:
Tarih 16/11/2023 **İmzası:**
Prof. Dr. Dilara ÖZER

Cihangir Mahallesi, Sıraselviler Caddesi, No:71, 34433 Beyoğlu İSTANBUL

APPENDIX-2 Permission to use Green Eating Survey

Re: Request for Green Eating Behaviors, Stage of Change, Decisional

CA Colleen A Redding

Kime

Bu ileti yanıtlandı veya iletildi.

Weller+ Dev+Validation GE Behav Stage DB + SE College Students JNEB 2014.pdf
815 KB

Hello,

Thank you for your inquiry and interest. You can use this scale for research purposes by citing the paper below (Weller et al., 2014).

Good luck with your research!

Best,

C. Redding

APPENDIX-3 Permission to use Organic Food Consumption Scale

YNT: Organik Gıda Tüketim Ölçeği İzni

BK BÜLENT KILIÇ
Kime
Bilgi

OFC_organik_gida_tuketim_olcegi.docx
21 KB

From:
Sent: Thursday, September 3, 2020 10:17 AM
To:
Subject: YNT: Organik Gıda Tüketim Ölçeği İzni

Merve Hanım,

Merhaba. Tezinizde OFC yi kullanmanızdan memnuniyet duyarız.
Kısa bir süre sonra OFC ve hesaplama ayrıntılarını da içeren OFC yönergesini size ileteceğim.
Tezinizde başarılar dileriz.

APPENDIX-4 Informed Consent Form

Katılımınız talep edilen bu araştırmada, Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Beslenme ve Diyetetik Anabilim Dalı'nda Dr. Öğr. Üyesi Binnur Okan Bakır danışmanlığında Merve Cambaz'ın yüksek lisans tezi kapsamında Çevreye Duyarlı Beslenme Ölçeği'nin Türk diline ve kültürüne uyarlanması, geçerlilik ve güvenilirlik çalışmasının yapılması amaçlanmaktadır.

Araştırmaya katılım, tamamen gönüllülük esasına dayanmaktadır. Araştırmaya katılmayı kabul etmeyebilirsiniz ya da katılmayı kabul ettikten sonra, araştırma sorumlusunu bilgilendirmek suretiyle, istediğiniz zaman araştırmadan ayrılabilirsiniz.

Araştırmaya katılmayı kabul ettiğiniz takdirde yaklaşık 10-15 dakika sürecek olan, besin tercihlerinize yönelik sorular içeren anket formunu doldurmanız beklenmektedir. Araştırmaya katılmanın sizin için olumsuz bir yönü veya riski bulunmamaktadır. Araştırma ile ilgili sizden herhangi bir ücret talep edilmeyeceği gibi, size herhangi bir ödeme de yapılmayacaktır. Araştırmaya katılacak siz değerli katılımcılara ilişkin veriler araştırma merkezlerinde elektronik ortamda saklanacak, kimlik bilgileriniz ve kişisel verileriniz alınmayacaktır. Araştırma sonucu elde edilen veriler yüksek lisans tezi ve bilimsel yayın amaçlı kullanılacaktır. Bireysel olarak herhangi bir değerlendirme yapılmayacaktır ve katılımcıların kişisel bilgileri yalnızca araştırmacı tarafından bilinecek olup yayınlanmayacaktır.

Sorularınız için veya ayrıntılı bilgi almak için mail adresinden Merve Cambaz ile iletişime geçebilirsiniz.

Araştırmamıza katıldığınız için teşekkür ederiz.

Yukarıda yer alan açıklamaları okuduğunuzu ve anladığınızı kabul ediyorsanız ve araştırmaya katılmak istiyorsanız "ileri" tuşuna basınız.

APPENDIX-5 Demographic Data Form

1. Cinsiyetinizi seçiniz.

- Kadın
- Erkek

2. Yaşınız?

…

3. Öğrenim görmekte olduğunuz üniversiteyi seçiniz.

- Yeditepe Üniversitesi
- İstanbul Kent Üniversitesi

4. Üniversitede kaçıncı sınıftasınız?

- 1. Sınıf
- 2. Sınıf
- 3. Sınıf
- 4. Sınıf

5. Ağırlığınızı yazınız (kg)

….

6. Boyunuzu yazınız (cm)

…

7. Üniversite eğitiminiz süresince nerede kalıyorsunuz? (Bu soruyu pandemi koşullarını hariç tutarak normal bir döneme göre cevaplayınız)

- Yurtta kalıyorum
- Evde ailemle yaşıyorum
- Evde arkadaşlarımla yaşıyorum
- Evde yalnız yaşıyorum

8. Medeni durumunuzu seçiniz.

- Evli
- Bekar

9. Aylık geliriniz?

- Gelirim giderimden daha yüksek
- Gelirim ve giderim birbirine eşit
- Giderim gelirimden daha yüksek

10. Doktor tarafından tanısı konulmuş beslenmenizi kısıtlayan sağlık sorununuz var mı?

- Evet (….)
- Hayır

11. Benimsediğiniz beslenme tarzı aşağıdakilerden hangisidir?

- Hem et ürünlerini hem de bitkisel besinleri tüketirim (Omnivor).
- Hayvansal ürünlerden kırmızı eti tüketmem (Semi vejetaryen).
- Balık ve deniz ürünleri dışında hayvansal ürün tüketmem (Pesketaryen).
- Vejetaryen beslenirim.
- Vegan beslenirim.

12. Daha önce sürdürülebilir beslenme kavramını duydunuz mu?

- Evet
- Hayır

13. Üniversite yemekhanenizde günlük olarak yemek çıkıyor mu? (Bu soruyu pandemi koşullarını hariç tutarak normal bir döneme göre cevaplayınız)

- Evet
- Hayır

APPENDIX-6 Green Eating Survey (English Version)

1. **Green Eating Stage of Change**

- Eating locally grown foods, produce that is in season and limited intake of processed foods
- Consuming foods and beverages that are labeled fair trade certified or certified organic
- Consuming meatless meals weekly and (if consuming animal products) selecting meats, poultry, and dairy that do not contain hormones or antibiotics.

Based on the definition of green eating, which of the following best describes you now:

a) I do not regularly practice green eating and do not intend to start within the next 6 months (1)

b) I am thinking about practicing green eating within the next 6 months (2)

c) I am planning on practicing green eating within the next 30 days (3)

d) I regularly practice green eating and have been doing so far less than 6 months (4)

e) I regularly practice green eating and have been doing so for 6 months or more (5)

f) Choose not to answer (6)

Green Eating Stage of Change Score: 1=Precontemplation, 2=Contemplation, 3=Preparation, 4=Action, 5=Maintenance, (6=missing-do not score)

APPENDIX-6 Green Eating Survey (English Version) (contuined)

2. Green Eating Behavior

Please select the answer that best describes your usual behavior.

		Hardly ever (1)	Rarely (%25) (2)	Sometimes (%50) (3)	Often (%75) (4)	Almost always (5)	Choose not to answer (6)
a)	How often do you buy meat or poultry products labeled “free range” or cage free?	O	O	O	O	O	O
b)	How often do you choose foods that are labeled Certified Organic?	O	O	O	O	O	O
c)	How often do you select food or beverages that are labeled Fair Trade Certified?	O	O	O	O	O	O
d)	How often do you select meats, poultry and dairy products that are raised without antibiotics or hormones?	O	O	O	O	O	O
e)	Locally grown foods are grown within 100 miles (anywhere in RI and nearby MA or CT) of your location. Based on this, how often do you eat locally grown foods?	O	O	O	O	O	O
f)	When in season, how often do you shop at farmer’s markets?	O	O	O	O	O	O

Green Eating Behavior Score: 1. Delete any item scored 6 or missing, 2. (Sum of 1 through 6)/6

APPENDIX-6 Green Eating Survey (English Version) (contuined)

3. Decisional Balance

Here are some advantages and disadvantages of green eating. Please indicate how important each one is on your deciding to eat green.

		Not at all important (1)	Somewhat important (2)	Neutral (3)	Very important (4)	Extremely important (5)	Choose not the answer (6)
a)	Eating green is not practical in my life right now.	O	O	O	O	O	O
b)	Eating green can be too expensive.	O	O	O	O	O	O
c)	By eating green, I can help protect the planet.	O	O	O	O	O	O
d)	Eating green would be too difficult.	O	O	O	O	O	O
e)	Eating minimally processed foods is better for my health.	O	O	O	O	O	O
f)	By eating green, I can improve the quality of my diet.	O	O	O	O	O	O
g)	By eating green, I can support the local economy.	O	O	O	O	O	O
h)	Sustainably produced foods aren't available to me.	O	O	O	O	O	O
i)	I am proud that I can help the environment by eating green.	O	O	O	O	O	O
j)	I can't find green foods where I shop.	O	O	O	O	O	O

Green Eating Decisional Balance Score: 1. Delete any item scored 6 or missing; 2. Decisional Balance Pro Score= (sum of items 3, 5, 6, 7, 9) / 5; Decisional Balance Con Score= (sum of items 1, 2, 4, 8, 10)/5.

APPENDIX-6 Green Eating Survey (English Version) (contuined)

4. Self-efficacy for Green Eating

REMINDER: Green eating includes participating in most of the following behaviors:

- Eating locally grown foods, produce that is in season and limited intake of processed foods
- Consuming foods and beverages that are labeled fair trade certified or certified organic
- Consuming meatless meals weekly and (if consuming animal products) selecting meats, poultry, and dairy that do not contain hormones or antibiotics.

Please rate how confident you feel that you could eat green under each of the following circumstances?

	Not at all confident (1)	Not very confident (2)	Somewhat confident (3)	Very confident (4)	Extremely confident (5)	Choose not the answer (6)
a) When I am busy	O	O	O	O	O	O
b) When I am at school during the semester	O	O	O	O	O	O
c) When it is inconvenient	O	O	O	O	O	O
d) When I go out to eat	O	O	O	O	O	O
e) When I eat in the dining halls or cafeterias	O	O	O	O	O	O
f) When I am at home	O	O	O	O	O	O
g) When I am with my family	O	O	O	O	O	O
h) Over the summer	O	O	O	O	O	O

Green Eating Self Efficacy Score: 1. Delete any item scored 6 or missing; 2. Confidence at School Score = (sum of items 1, 2, 3, 4, 5)/5; Confidence at Home Score= (sum of items 6, 7, 8)/3

APPENDIX-7 Green Eating Survey (Turkish Version)

ÇEVREYE DUYARLI BESLENME ÖLÇEĞİ

Çevreye Duyarlı Beslenme Değişim Aşaması

- Mevsiminde üretilmiş ve yerel olarak yetiştirilmiş besinleri tüketmek ve işlenmiş besin alımını en aza indirmek
- Organik Sertifika veya Adil Ticaret Sertifikası (çevreye zarar verilmeden, çocuk işçi çalıştırılmadan üretim yapılmasını, adil ve stabil ücret politikası uygulanmasını kapsayan küçük üreticilere verilen sertifika) ile etiketlenmiş yiyecek ve içecekleri tüketmek
- Haftalık olarak et içermeyen öğünler tüketmek ve (hayvansal ürünler tüketiliyorsa) hormon ve antibiyotik içermeyen et, kümes hayvanları, süt ürünlerini seçmek

1. Yukarıda yer alan çevreye duyarlı beslenme tanımı baz alındığında, aşağıdakilerden hangisi şu anda sizi en iyi şekilde tanımlamaktadır?

a) Düzenli olarak çevreye duyarlı beslenmeyi uygulamıyorum ve önümüzdeki 6 ay içinde başlamaya niyetim yok.

b) Önümüzdeki 6 ay içerisinde çevreye duyarlı beslenmeyi uygulamayı düşünüyorum.

c) Önümüzdeki 30 gün içinde çevreye duyarlı beslenmeyi uygulamayı planlıyorum.

d) 6 aydan az bir süredir düzenli olarak çevreye duyarlı beslenmeyi uyguluyorum.

e) 6 ay veya daha uzun bir süredir düzenli olarak çevreye duyarlı beslenmeyi uyguluyorum.

f) Bu soruya cevap vermemeyi seçiyorum.

APPENDIX-7 Green Eating Survey (Turkish Version) (continued)

Çevreye Duyarlı Beslenme Davranışı

Lütfen genel davranışınızı en iyi tanımlayan seçeneği işaretleyiniz.

		Neredeyse hiç	Nadiren (%25)	Bazen (%50)	Sıklıkla (%75)	Neredeyse her zaman	Cevap vermemeyi seçiyorum
2.	Ne sıklıkla "serbest gezen" etiketli et ve kümes hayvanlarını satın alırsınız?	O	O	O	O	O	O
3.	Ne sıklıkla organik sertifikalı olarak etiketlenmiş besinleri seçersiniz?	O	O	O	O	O	O
4.	Ne sıklıkla Adil Ticaret Sertifikalı olarak etiketlenmiş besin ve içecekleri seçersiniz?	O	O	O	O	O	O
5.	Ne sıklıkla antibiyotik ve hormonsuz olarak yetiştirilmiş et, kümes hayvanları ve süt ürünlerini seçersiniz?	O	O	O	O	O	O
6.	Yerel olarak üretilmiş besinler, konumunuza 160 km mesafede (örneğin İstanbul ile Bursa arasındaki mesafe) yetiştirilen besinlerdir. Buna dayanarak ne sıklıkla yerel olarak üretilmiş besinleri tüketirsiniz?	O	O	O	O	O	O
7.	Mevsimi olduğunda ne sıklıkla ekolojik pazar, çiftçi pazarı gibi ev yapımı, organik ürünler satılan pazarlardan alışveriş yaparsınız?	O	O	O	O	O	O

APPENDIX-7 Green Eating Survey (Turkish Version) (continued)

Çevreye Duyarlı Beslenme için Karar Verme

Çevreye duyarlı beslenmenin bazı avantaj ve dezavantajları aşağıda yer almaktadır. Lütfen bu maddelerin çevreye duyarlı beslenmeye karar vermenizde ne kadar önemli olduğunu belirtiniz.

		Önemli değil	Biraz önemli	Orta derecede önemli	Çok önemli	Son derece önemli	Cevap vermemeyi seçiyorum
8.	Çevreye duyarlı beslenmek şu an için hayatımda uygulanabilir değil.	O	O	O	O	O	O
9.	Çevreye duyarlı beslenmek çok pahalı olabilir.	O	O	O	O	O	O
10.	Çevreye duyarlı beslenerek gezegenin korunmasına yardımcı olabilirim.	O	O	O	O	O	O
11.	Çevreye duyarlı beslenmek çok zor olabilir.	O	O	O	O	O	O
12.	İşlenmiş besinleri (tütsüleme, konserve, paketleme gibi işlemlerden geçirilen ve gıda katkı maddesi eklenen besinler) en düşük düzeyde tüketmek sağlığım için daha iyidir.	O	O	O	O	O	O
13.	Çevreye duyarlı beslenerek diyet kalitemi iyileştirebilirim.	O	O	O	O	O	O
14.	Çevreye duyarlı beslenerek yerel ekonomiyi destekleyebilirim.	O	O	O	O	O	O
15.	Sürdürülebilir olarak üretilmiş (organik, hormonsuz üretim gibi doğal varlıkları ve insan sağlığını koruyan) besinler benim için ulaşılabilir değil.	O	O	O	O	O	O
16.	Çevreye duyarlı beslenerek dünyayı korumaya yardımcı olabildiğim için gurur duyarım.	O	O	O	O	O	O
17.	Alışveriş yaptığım yerlerde çevreye duyarlı beslenmemi sağlayacak besinleri bulamıyorum.	O	O	O	O	O	O

APPENDIX-7 Green Eating Survey (Turkish Version) (continued)

Çevreye Duyarlı Beslenme için Öz Yeterlilik

Hatırlatma: Çevreye duyarlı beslenme aşağıdaki davranışların çoğunu uygulamayı içerir:

- Mevsiminde üretilmiş ve yerel olarak yetiştirilmiş besinleri tüketmek ve işlenmiş besin alımını en aza indirmek
- Organik Sertifika veya Adil Ticaret Sertifikası (çevreye zarar verilmeden, çocuk işçi çalıştırılmadan üretim yapılmasını, adil ve stabil ücret politikası uygulanmasını kapsayan küçük üreticilere verilen sertifika) ile etiketlenmiş yiyecek ve içecekleri tüketmek
- Haftalık olarak et içermeyen öğünler tüketmek ve (hayvansal ürünler tüketiliyorsa) hormon ve antibiyotik içermeyen et, kümes hayvanları, süt ürünlerini seçmek

Çevreye duyarlı beslenme konusunda farklı tutumlar sergilenebilmektedir. Aşağıda çevreye duyarlı beslenirken karşılaşabileceğiniz çeşitli koşullar yer almaktadır. Bu koşullar altında çevreye duyarlı beslenebileceğinizden ne kadar emin hissettiğinizi işaretleyiniz.

	Hiç emin değilim	Çok emin değilim	Biraz eminim	Çok eminim	Son derece eminim	Cevap vermemeyi seçiyorum
18. Yoğun olduğumda	O	O	O	O	O	O
19. Ders döneminde okulda olduğumda	O	O	O	O	O	O
20. Elverişsiz durumlarda (vaktin kısıtlı olduğu, şartların uygun olmadığı veya zahmetli durumlar)	O	O	O	O	O	O
21. Yemek için dışarı çıktığımda	O	O	O	O	O	O
22. Yemek salonu veya kafeteryada yemek yerken	O	O	O	O	O	O
23. Evde olduğumda	O	O	O	O	O	O
24. Ailemle birlikte olduğumda	O	O	O	O	O	O
25. Yaz boyunca	O	O	O	O	O	O

APPENDIX-7 Green Eating Survey (Turkish Version) (continued)

ÇEVREYE DUYARLI BESLENME ÖLÇEĞİ (GREEN EATING SURVEY) PUANLAMA YÖNERGESİ

Ölçek 4 boyuttan ve toplam 25 maddeden oluşmaktadır. Bu boyutlar ve içerdikleri madde numaraları aşağıdaki gibidir:

1. Çevreye Duyarlı Beslenme Aşaması: 1 numaralı madde
2. Çevreye Duyarlı Beslenme Davranışı: 2, 3, 4, 5, 6, 7 numaralı maddeler
3. Çevreye Duyarlı Beslenme için Karar Verme

- Karar Verme Avantajlar: 10, 12, 13, 14, 16 numaralı maddeler
- Karar Verme Dezavantajlar: 8, 9, 11, 15, 17 numaralı maddeler

4. Çevreye Duyarlı Beslenme için Öz Yeterlilik

- Okulda Öz Yeterlilik: 18, 19, 20, 21, 22 numaralı maddeler
- Evde Öz Yeterlilik: 23, 24, 25 numaralı maddeler

1. Çevreye Duyarlı Beslenme Aşaması Puanı

- a: 1 puan – Karar öncesi aşama
- b: 2 puan – Niyet aşaması
- c: 3 puan – Hazırlık aşaması
- d: 4 puan – Uygulama aşaması
- e: 5 puan – Devamlılık aşaması
- f: 0 puan/Puanlamaya katılmaz

2. Çevreye Duyarlı Beslenme Davranışı Puanı

- Neredeyse hiç – 1 puan
- Nadiren (%25) – 2 puan
- Bazen (%50) – 3 puan
- Sıklıkla (%75) – 4 puan
- Neredeyse her zaman – 5 puan
- Cevap vermemeyi seçiyorum – 0 puan/Puanlamaya katılmaz

2'den 7'ye kadar işaretlenen maddelerin puanları toplanarak 6'ya bölünür.

APPENDIX-7 Green Eating Survey (Turkish Version) (continued)

3. Çevreye Duyarlı Beslenme için Karar Verme Puanı

- Önemli değil – 1 puan
- Biraz önemli – 2 puan
- Orta derecede önemli – 3 puan
- Çok önemli – 4 puan
- Son derece önemli – 5 puan
- Cevap vermemeyi seçiyorum – 0 puan/Puanlamaya katılmaz

Karar Verme Avantajlar Puanı

10, 12, 13, 14, 16 numaralı maddelerin puanları toplanarak 5'e bölünür.

Karar Verme Dezavantajlar Puanı

8, 9, 11, 15, 17 numaralı maddelerin puanları toplanarak 5'e bölünür.

4. Çevreye Duyarlı Beslenme için Öz Yeterlilik Puanı

- Hiç emin değilim – 1 puan
- Çok emin değilim – 2 puan
- Biraz eminim – 3 puan
- Çok eminim – 4 puan
- Son derece eminim – 5 puan
- Cevap vermemeyi seçiyorum – 0 puan/ Puanlamaya katılmaz

Okulda Öz Yeterlilik Puanı

18, 19, 20, 21, 22 numaralı maddelerin puanları toplanarak 5'e bölünür.

Evde Öz Yeterlilik Puanı

23, 24, 25 numaralı maddelerinin puanları toplanarak 3'e bölünür.

APPENDIX-8 Organic Food Consumption Scale

No		1=Hiç Katılmıyorum	2=Katılmıyorum	3=Ne Katılıyorum Ne Katılmıyorum	4=Katılıyorum	5=Tamamen Katılıyorum
1	Tanıdığım insanların çoğu organik gıda ürünleri satın alır.	**1**	**2**	**3**	**4**	**5**
2	Arkadaşlarım organik gıda ürünleri alırlar.	**1**	**2**	**3**	**4**	**5**
3	Tanıdığım kişiler organik gıda ürünleri satın alırlar.	**1**	**2**	**3**	**4**	**5**
4	Fikirlerine değer verdiğim kişiler, benim organik gıda ürünü almam gerektiğini düşünür.	**1**	**2**	**3**	**4**	**5**
5	Genelde sağlık durumumdaki gelişmeleri kolayca fark ederim.	**1**	**2**	**3**	**4**	**5**
6	Sağlığımda meydana gelen değişiklikleri dikkatle takip ederim.	**1**	**2**	**3**	**4**	**5**
7	Sağlığıma çok özen gösteririm.	**1**	**2**	**3**	**4**	**5**
8	Yediklerimin çevre dostu ürünler olup olmadıkları hakkında endişe duyarım.	**1**	**2**	**3**	**4**	**5**
9	Yediklerimin sağlıkla ilgili sonuçlarından endişe duyarım.	**1**	**2**	**3**	**4**	**5**
10	Yediklerimin güvenilirliğinden endişe duyarım.	**1**	**2**	**3**	**4**	**5**
11	Benim için organik gıda ürünleri tüketmek yararlıdır.	**1**	**2**	**3**	**4**	**5**
12	Benim için organik gıda ürünleri tüketmek lezzetlidir.	**1**	**2**	**3**	**4**	**5**
13	Benim için organik gıda ürünleri tüketmek iyidir.	**1**	**2**	**3**	**4**	**5**
14	Benim için organik gıda ürünleri tüketmek anlamlıdır/değerlidir.	**1**	**2**	**3**	**4**	**5**
15	Alışılagelmiş gıda ürünleri yerine organik gıda ürünleri almak, bana daha iyi bir şey yapılmasına katkıda bulunduğum hissini verir.	**1**	**2**	**3**	**4**	**5**
16	Alışılagelmiş gıda ürünleri yerine organik gıda ürünleri almak, bana aileme daha iyi baktığım hissini verir.	**1**	**2**	**3**	**4**	**5**
17	Evde, organik gıda ürünlerinin nasıl pişirilmesi / tüketilmesi gerektiğini bilirim.	**1**	**2**	**3**	**4**	**5**
18	Evde organik ürünleri nasıl saklayacağımı bilirim.	**1**	**2**	**3**	**4**	**5**

APPENDIX-9 Curriculum Vitae

Personal Information

Name	Merve	**Surname**	Cambaz

Education

Degree	**Department**	**Institution**	**Graduation Year**
Master	Nutrition and Dietetics (English)	Yeditepe University	2021
Minor	Psychology	Istanbul Medipol University	2021
Bachelor	Nutrition and Dietetics	Istanbul Medipol University	2019
High School		Yüksel Ilhan Alanyalı Fen Lisesi	2015

Languages	**Grades**
English	93,75 (YÖKDİL)

Work Experience

Position	**Institute**	**Duration**
Research Assistant	Istanbul Kent University	2019 – ongoing

Scientific Works

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

Cambaz, M., and Okan Bakır, B. (2021) Evaluation of Organic Food Consumption Tendency of Nutrition and Dietetics Students. E. Aksoydan ve Meltem S. (Ed). 2nd International Congress on Sustainable Life Proceeding Book (154-155. p.).
Geçgil Demir, E., Köse, G., Cambaz, M., and Pehlivanoglu, E. (2021) Impact of Breastfeeding Duration on Chronic Diseases in Early Adulthood. 8th International Maternal and Fetal Nutrition in the First 1000 Days from Fetal Life to Childhood Congress Proceeding Book (15-16. p.).
Cambaz, M. (2020) An Ecological Perspective on Gluten-free Diet. A. Şatana (Ed). 2nd World Conference on Sustainable Life Sciences Proceeding Book (4. p.).

Proceedings in the proceedings book of the refereed conference / symposium

Cambaz, M., Geçgil Demir, E., Köse, G., and Pehlivanoğlu, E. (2020) Prenatal ve Postnatal Beslenme Faktörlerinin Sağlık Durumu ve Akademik Başarıya Etkisi. 9. Ulusal Sağlıklı Yaşam Kongresi Bildiri Kitabı (99. p.).

APPENDIX-9 Curriculum Vitae (continued)

Prizes

Oral Presentation Second Prize, 9. Ulusal Sağlıklı Yaşam Kongresi, Acıbadem Mehmet Ali Aydınlar University, 2020.
Scholarship of Academic Success, Istanbul Medipol University, 2017-2018 / 2018-2019

Certifications

Psikodiyet Uygulayıcı Sertifikası – Psikodiyet Akademi, 2021.
İklim 2030: İklim Değişikliği Eğitimi Sertifikası – Boğaziçi University Center for Climate Change and Policy Studies, 2021.
High Honor Certificate, Istanbul Medipol University, 2019.

Computer Skills

Program	**Level**
Microsoft Office	Good
IBM SPSS 25.0	Good
BeBiS	Good