

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

**TURKISH VALIDITY AND RELIABILITY OF THE
REVISED GENERAL NUTRITION KNOWLEDGE
SCALE: A FOUNDATION UNIVERSITY STUDENT
SAMPLE**

MASTER'S THESIS

NAGİHAN ŞEN

Istanbul-2024

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Istanbul-2024

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APPROVAL

This thesis has been deemed by the jury in accordance with the relevant articles of Yeditepe University Graduate Education and Examinations Regulation and has been approved by Administrative Board of Institute with decision dated 03/07/2024 and numbered

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DECLARATION

This thesis is entirely my own work, and I declare that I have not acted contrary to ethical rules at any stage of the planning and writing processes, that I have obtained all the information contained in the thesis in accordance with academic and ethical norms, that I have provided correct references for all information and comments used outside of the thesis work and that I have indicated these sources in the bibliography list, and that I have not violated patents or copyrights at any stage of the thesis work and writing.

28/06/2024

Nagihan Şen

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
BMI	Body Mass Index
BP	Blood Pressure
CFA	Confirmatory Factor Analysis
DBP	Diastolic Blood Pressure
EFA	Explanatory Factor Analysis
GNKQ	General Nutrition Knowledge Questionnaire
GNKQ-r	Revised Version of General Nutrition Knowledge Questionnaire
IBM	International Business Machines
ICC	Intraclass Correlation Coefficient
IDF	International Diabetes Federation
KR	Kuder Richardson
NCD	Noncommunicable Disease
PEM	Protein-Energy Malnutrition
SPSS	Statistical Package for the Social Sciences
TUIK	Turkish Statistical Institute
TURDEP-II	'Turkey Diabetes, Hypertension, Obesity, and Endocrinological Diseases Prevalence Study-II
UK	United Kingdom
VAS	Visual Analog Scale
WHO	World Health Organization
YETBID	Nutrition Knowledge Level Scale for Adults

ABSTRACT

Şen, N. (2024) Turkish Validity and Reliability of the Revised General Nutrition Knowledge Scale: a Foundation University Student Sample. Yeditepe University, Institute of Health Science, Department of Nutrition and Dietetics, Master's Thesis, Istanbul.

Aim of this study was to translate and validate the revised version of the General Nutrition Knowledge Questionnaire (GNKQ-r) in Turkish. Research was conducted with 429 undergraduate students at Yeditepe University Kayışdağı Campus between January 2023 and April 2024, with 79 participating in the test-retest study. Reliability was assessed using the internal consistency KR-20 coefficient, item-total correlation tests, and the test-retest method. Validity was measured through construct validity and concurrent validity. Construct validity was assessed using expert opinions, known group comparisons, and discriminant validity. Women, those with a low BMI, and those with a high health status were expected to have higher GNKQ-r scores. Concurrent validity was assessed using the Turkish version of GNKQ and YETBID. The KR-20 reliability coefficients for the subsections ranged from 0.42 to 0.72, while the whole scale was 0.84. Item-total correlation values were between -0.14 and 0.49. The test-retest scores for subsections ranged from 0.76 to 0.88, and 0.92 for the overall scale. Construct validity indicated that women, those with a low BMI, and those with a high health status had higher GNKQ-r scores. Concurrent validity showed a moderate correlation with the YETBID and a strong correlation with the GNKQ Turkish version. Consequently, the study determined that the GNKQ-r was reliable and valid for use in the Turkish community after considering internal consistency, construct validity, and concurrent validity.

Keywords: General Nutrition Knowledge Questionnaire, Validity, Reliability, Nutrition Knowledge, Scale

ÖZET

Şen, N. (2024) Revize Edilmiş Genel Beslenme Bilgisi Ölçeğinin Geçerlilik ve Güvenilirliği: Bir vakıf üniversitesi öğrenci örneklemi. Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü, Beslenme ve Diyetetik Anabilim Dalı, Yüksek Lisans Tezi, İstanbul.

Bu çalışmanın amacı revize edilen Genel Beslenme Bilgi Anketi'ni (GNKQ-r) Türkçe'ye çevirmek ve geçerliliğini sağlamaktır. Araştırma Yeditepe Üniversitesi Kayışdağı Kampüsü'nde öğrenim gören 429 lisans öğrencisi ile Ocak 2023 ve Nisan 2024 tarihleri arasında yürütülmüş olup, 79 öğrenci test-tekrar test çalışmasına katılmıştır. Güvenirlilik, iç tutarlılık KR-20 katsayısı, madde-toplam korelasyon testleri ve test-tekrar test yöntemi kullanılarak değerlendirilmiştir. Geçerlilik, yapı ve eş zamanlı geçerlik ile ölçülmüştür. Yapı geçerliliği uzman görüşleri, bilinen grup karşılaştırmaları ve ayırt edici geçerlik kullanılarak değerlendirilmiştir. Kadınların, beden kitle indeksi düşük olanların ve sağlık algısı yüksek olanların daha yüksek GNKQ-r puanına sahip olması beklenmektedir. Eş zamanlı geçerlilik, GNKQ'nun Türkçe versiyonu ve YETBİD kullanılarak değerlendirilmiştir. Bulgular: Alt bölümler için KR-20 güvenirlilik katsayıları 0,42 ile 0,72 arasında değişirken, tüm ölçek için 0,84 olarak bulundu. Madde-toplam korelasyon değerleri ise -0,14 ile 0,49 arasında bulundu. Alt bölümler için test-tekrar test puanları 0,76 ile 0,88 arasında değişirken, ölçeğin tamamı için 0,92 olarak bulundu. Yapı geçerliliği, kadınların, beden kitle indeksi düşük olanların ve sağlık algısı yüksek olanların daha yüksek GNKQ-r puanlarına sahip olduğunu gösterdi. Eş zamanlı geçerlilik, YETBİD ile orta düzeyde, GNKQ Türkçe versiyonu ile ise güçlü düzeyde korelasyon gösterdi. Sonuç olarak, çalışma, iç tutarlılık, yapı geçerliliği ve eş zamanlı geçerlilik dikkate alındığında GNKQ-r'nin Türk toplumunda kullanım için güvenilir ve geçerli olduğunu belirledi.

Anahtar Kelimeler: Genel Beslenme Bilgisi Anketi, Geçerlilik, Güvenirlilik, Beslenme Bilgisi, Ölçek

1. INTRODUCTION

Nutrition is a component that has many effects on health. Malnutrition, encompassing both obesity and undernutrition, as well as dietary imbalances, is widely recognized as a global threat, on par with the challenges posed by climate change (1). Dietary behaviors are highly effective on chronic diseases. In addition, eating habits have many lifelong positive and negative effects on health (2). Healthy nutrition is defined as the consumption of food with enjoyment by maintaining a diverse and balanced diet, eating all the necessary nutrients in personalized quantities, and sustaining an ideal body weight (3). The objective of healthy nutrition is to ensure sufficient and balanced nourishment (3).

Nutritional knowledge defines foods that combine basic nutrients, the diet-health relationship, the diet-disease relationship, nutritional recommendations, and the level of knowledge about these processes related to nutrition(4). Nutritional knowledge can play an important role in developing healthier eating habits, but it is not enough on its own (5). Studies have not proven that the level of nutrition knowledge has an effect on changing nutritional behavior (6). However, the importance of nutrition education should not be underestimated.

There is more than one study in Turkey to measure nutritional knowledge and to develop a questionnaire in this context (5,7,8). These studies have generally been studied in certain subgroups such as adolescent children, people receiving sports education, and university students, and the nutritional knowledge level of these groups has been tried to be measured with specific scales. The fact that these questionnaires are quite different from each other also prevents them from being compared (5). In addition, the questionnaires contain very limited topics for measuring nutritional knowledge. However, it is a department that contains nutritional information quite comprehensively and under different categories. For this reason, when measuring nutritional information, there is a need for a tool that can make a more comprehensive and accurate measurement.

The questionnaire, which was developed by Parmenter and Wardle in 1994 to provide a comprehensive measurement of the nutritional information of adults in the United Kingdom (UK) and published in 1999, has been proven to be valid and reliable in many societies, including Turkey (5,9–11). The introduction of new food types in the

world of nutrition and the change in processing methods have also led to changes in nutrition recommendations until today. For this reason, updating the tools that measure nutritional information is very important for accurate measurement. For this reason, Kliemann et al. modified the questionnaire developed by Parmenter and Wardle and proved its validity and reliability in the UK (12).

The goal of this study is to verify the validity and reliability of Kliemann et al.'s modified questionnaire measuring nutritional knowledge in adults in a Turkish student sample. The modified scale will be used to measure the nutritional knowledge level of the Turkish population, provided that it is valid and reliable.



2. LITERATURE REVIEW

2.1. Health and Nutrition

Nutrition, genetics, gender, environmental circumstances, financial situation, culture, and traditions are just a few of the many influences on growth and development. The most important determinant among these is unquestionably nutrition (13). Health is defined by the World Health Organization (WHO) as not only the absence of disease and infirmity in the body but also a state of complete mental, physical, and social well-being (14). The importance of nutrition in promoting optimal growth and development and raising the general quality of life cannot be overstated (15). A healthy diet involves consuming the right amount of calories and essential macronutrients and micronutrients while also controlling and maintaining an ideal body weight. Age, gender, level of physical activity, and physiological state are all taken into account when determining a person's nutritional demands, which change depending on these variables. A healthy diet includes not only physiological adequacy but also the enjoyment of the food consumed, a varied and balanced diet, and taking all the nutrients in the amounts that the person needs.

A well-balanced eating regimen serves as a defense against all indications of malnutrition and also gives protection against noncommunicable diseases (NCDs), such as diabetes, cardiovascular diseases, cerebrovascular accidents, and certain types of cancer. Healthy nutrition starts with breastfeeding in the early stages of life in infancy, and by giving benefits in terms of development and physical growth in this period, it is protective against being overweight and obese in later life as well as developing NCDs.

Malnutrition and insufficient physical activity occur as health-threatening variables (16). Malnutrition occurs with a lower nutrient intake than the body needs and can lead to health concerns such as growth retardation, mental retardation, and decreased body resistance (17).

It has been established that NCDs, which are effective in both developed and developing countries, develop due to dietary and lifestyle changes, and numerous controlled clinical trials have been started to explore these factors. As a consequence of this, the mechanisms of the chronic illness process have become clearer, and it has been proven that essential interventions minimize the risk of the disease (2).

Several variables, such as taste preferences, practicality, cost, food security, and cultural or religious convictions, have an impact on dietary intake (18). These factors play a crucial role in shaping individuals' food preferences and may indirectly affect the achievement of a healthy diet.

As a result, social influences from the surroundings, a lack of ambition, low self-esteem, and society's ideas and traditions all work together to stymie lifestyle changes, particularly those involving dietary habits (19). Promoting and sustaining sustainable, pleasant, and culturally relevant approaches to healthy eating requires an understanding of the impact of these elements. Since it can be influenced by a variety of societal circumstances, nutrition is significant in the evaluation of good nutrition. For this reason, all factors affecting nutrition in the fight against chronic diseases should be considered holistically.

2.2. Nutrition Knowledge

Knowledge can be described as factual and interpretive information that promotes comprehension or is helpful in making decisions or taking informed actions (19). Declarative knowledge concentrates on "what is" and includes factual comprehension. This involves having an awareness of specific facts, such as realizing that sunlight is necessary for the production of vitamin D or the connection between regular exercise and heart health. Processual knowledge, on the other hand, deals with the 'how' of acts. For instance, it entails understanding how to evaluate the nutritional content of food items to choose better meals or how to read food labels to choose healthier foods (20,21). According to the Social Cognitive Theory, knowledge is one of the components required to change behavior, and the significance of information in terms of its impact on dietary behavior has to be examined (22).

One of the primary purposes of health-care systems is to promote righteous behavior that positively affects a person's health. This goal can only be attained if individuals obtain reliable information (23). Knowledge of the components of nutrition is referred to as nutritional information. The energy amounts of nutrients, fats, carbohydrates, proteins, vitamins, and mineral sources, phytochemical sources can be assessed within the context of nutritional information (24).

Accurate knowledge is critical to establishing a nutritious diet. Individuals who are well-informed about appropriate and balanced nutrition play a protective role in the prevention of certain diseases in old age. Aside from that, nutrition-related information inaccuracies are directly linked to the development of many chronic diseases (23).

Nutritional knowledge is necessary but not sufficient to influence consumer dietary behavior (21). The process through which nutrition knowledge influences food choices is complicated and ambiguous. Individuals' behaviors are influenced not just by their knowledge of food but also by their perception of the relevance of food to their health (25,26). Understanding what defines a healthy diet and appreciating its significance are the first steps toward changing one's eating habits. Nonetheless, the relationship between individual's knowledge and their behaviors is sometimes described as "limited." Knowledge of nutrition data, or declarative knowledge, may not translate to skill or process knowledge, which is essentially the ability to choose better foods, comprehend food labels, or select healthier options from a variety of foods available (18). Knowledge alone is not a catalyst for change; rather, it is a powerful resource when individuals are motivated to make changes because behavioral transformations are rarely driven by knowledge alone (19).

2.2.1. Factors Influencing Nutrition Knowledge Level

Taste preferences, convenience, food affordability, and security, as well as cultural and religious beliefs, all play important roles in defining dietary choices (27–30). Age, gender, educational level, and socioeconomic situation, on the other hand, influence nutrition knowledge (29). Likewise public health media campaigns have the potential to have an impact on community knowledge and habits (28). As a vital element of communal life, the media plays an important role in shaping nutrition information. Through commercials, this influence primarily targets young people. However, research shows that this effect affects people of all ages, not just young ones. This effect is more pronounced, particularly in young people, where 41% are affected (31,32).

Women often have more nutrition knowledge than men, which is commonly attributed to their higher involvement in food acquisition and preparation. Alternatively, it's possible that men are less interested in nutrition (22,29,30). In addition to the level of education, the department studied also affects the level of nutrition knowledge. When the

nutrition knowledge level of men and women is examined according to departments, it is seen that people studying at the Faculty of Health Sciences have a higher nutrition knowledge score than those studying at the Faculty of Social Sciences (33).

According to a study conducted, nutrition knowledge exhibited notable variations across diverse socio-demographic groups. Women, in particular, demonstrated a better level of nutrition knowledge than men, with the exception of calorie-related information (34). In other ways, the economy influences nutrition knowledge as well. Products that cost significantly more than their budget begin to decrease people's inability to get that food and their tendency to research. In other words, people shop for food based on their financial situation. This scenario has an impact on the level of knowledge as well (35).

Cultural differences, the history of nutrition and public health policies, as well as retailing initiatives aimed at positioning products based on their nutritional properties have all been proposed as factors influencing how people acquire knowledge about food and health (36,37).

2.3. Factors Influencing Nutritional Behavior

Nutrition is a physical and behavioral science that begins at birth and impacts life until death. It is one of the most important issues that should be emphasized throughout life. Because it is the most important factor that influences growth and development, provides health and vitality, and ensures mental development. Understanding the complex interaction of factors that influence nutrition behavior is critical for both public health and individual well-being (13).

Nutrition is described as a person's ability to absorb and use the components required for growth, development, and a long-term healthy and productive life. To reach the expected quality of life as a result of globalization, all individuals and society must enhance their nutritional awareness, and healthy nutrition must be transformed into a lifestyle. This requires not just wise dietary choices but also frequent physical activity, which are the focus points of a healthy habit. Furthermore, supporting a healthy lifestyle entails preventing harmful habits such as the use of alcohol and tobacco. The overarching goal includes the mitigation or eradication of prevalent nutritional challenges within society, thereby improving the standard of living and mitigating ailments associated with insufficient nutrition, such as growth retardation, iron and iodine deficiencies, insufficient

levels of folic acid and vitamin D, dental decay, obesity, and various chronic conditions, including cardiovascular diseases. This comprehensive effort includes lifestyle changes intended to lower the risk of vascular diseases, hypertension, specific types of cancer, diabetes, osteoporosis, and other disorders (38). Malnutrition arises from insufficient intake of needed energy and nutrients relative to the body's requirements, hindering the body's ability to adequately execute its physiological activities. Certain nutrients may remain unabsorbed by the body in circumstances where sound dietary preferences, dietary variety, or suitable culinary practices are not adopted, resulting in an instance of imbalanced nutrition. Malnutrition harms an individual's health by impairing their ability to function efficiently, plan strategically, and engage in cognitive exploration. It can also cause the disorders described above (24).

Understanding the importance of a healthy and balanced diet in preventing malnutrition needs a nutrition-informed society. A variety of characteristics influence nutrition behavior, which includes an individual's dietary choices, eating patterns, and overall approach to food intake. Personal preferences and cultural conventions are among the many determinants, as are social status, education, marketing pressures, and the larger environmental background. Investigating these key elements provides valuable insights into how people perceive, choose, and interact with food, setting the framework for informed interventions and initiatives to promote healthier dietary patterns and better public health outcomes.

The psychological condition of the individual is one of the elements influencing nutritional behavior. Nutrition is influenced by both physiologic and psychological factors. Eating behavior is influenced by a person's emotional condition. According to research, when people are anxious, they are more inclined to eat. During these times, people tend to select foods that are unhealthy, high in simple carbohydrates, processed, and induce rapid rises in blood sugar. The rationale for this condition is that foods with a high carbohydrate content raise people's serotonin levels during stressful and anxious times, causing them to feel happy (39).

Studies have investigated the effect of nutritional knowledge on food selection and consumption habits. The extent of food consumption behavior is significantly impacted by consumers' perspectives on food and nutrition (40,41). An individual's understanding of the products available is a critical determinant influencing consumer

purchase decisions. This comprehension is divided into two parts: objective knowledge, which represents precise, long-lasting product-related information stored in the consumer's memory, and subjective knowledge, which represents a consumer's personal perception of the nature and depth of their own product-related knowledge (40). Subjective understanding of information has been shown to have a greater impact on consumer actions than objective information. Additionally, increased exposure to internet information and biased subjective perceptions about nutritional information contribute to the increase in false beliefs (42). The intricate nature of how nutritional knowledge impacts dietary behaviors entails a multifaceted understanding. Individuals' dietary preferences and consumption are influenced by their awareness of food as well as their self-perceived significance of maintaining a balanced diet. The level of nutritional awareness directly influences the quality of one's diet and is interconnected with socio-economic variables, specifically educational attainment, and income, which exert an impact on the relationship between nutritional awareness and diet quality (25).

Nutrition policies can have an impact on nutrition knowledge, and nutrition knowledge can have an impact on nutrition behavior. Nutrition policies are designed with the assumption that educated consumers are more likely to make better dietary choices. Through education and dietary guidelines, these policies promote the spread of accurate and beneficial information to the public. Individuals are expected to be empowered to make healthier and more educated decisions about their food consumption and dietary habits as public knowledge about nutrition grows (43). Understanding knowledge and the influences of knowledge within the community is crucial in establishing dietary behavior modification methods (28).

2.4. Nutrition-Related Health Disorders

Nutrition is a behavior that improves the quality of life by taking the nutrients and energy that the body needs at the right time and in sufficient quantities to maintain a healthy state (44). Nutrition is emerging as a significant modifiable factor of chronic illness, with scientific data increasingly supporting the concept that dietary changes have profound implications on health throughout life, both good and negative. When we look at the obstacles in nutrition, we can see two major issues. First, insufficient and unbalanced nutrition is caused by food supply issues. The second major issue is the rise in overweight and obesity as a result of overnutrition. Shifting dietary patterns reflect

changes in the global food industry, such as increased consumption of energy-dense meals high in fat, particularly saturated fat, and low in unprocessed carbs. These trends are accompanied by a decrease in energy expenditure, which is associated with a sedentary lifestyle (2). Although this scenario may appear to be only a weight issue, it has actually become a major public health issue that promotes the development of many chronic diseases (45).

Nutrition-related health problems are among the leading problems in the world. Nutrition involves consuming the essential nutrients and energy at the right time and in adequate amounts to maintain a healthy state, enhancing the quality of life. It is a behavior crucial for preserving one's well-being. Healthy nutrition is instrumental in preventing numerous NCDs such as diabetes, hypertension, cardiovascular diseases, various types of cancer, and liver and kidney diseases, among others. However, contemporary challenges like urbanization, lack of knowledge, and economic constraints contribute to unhealthy dietary habits, consequently leading to an increase in the incidence of chronic diseases (44).

NCDs are a major worldwide health concern, accounting for around 41 million deaths per year and approximately 74% of total global mortality. Alarming, 17 million people die prematurely from NCDs, with low- and middle-income countries accounting for 86% of these premature fatalities. The majority of NCD-related mortality, roughly 77%, occurs in these economically disadvantaged countries. Cardiovascular disorders account for 17.9 million annual deaths, followed by malignancies (9.3 million), chronic respiratory diseases (4.1 million), and diabetes (2.0 million, including deaths from diabetes-induced renal disease). These four disease categories account for more than 80% of all untimely NCD deaths (46).

2.4.1. Obesity

WHO defines obesity as having a body mass index (BMI) of 30 kg/m² or higher. Obesity is one of the major risk factors for the occurrence of NCDs. Obesity and being overweight are risk factors for cardiovascular disease, diabetes, and hypertension. The shift in lifestyle is one of the major factors in the rise in the incidence of obesity. Other factors contributing to the rise in obesity include rapid urbanization, increased consumption of processed prepared foods, increased consumption of high-energy foods,

higher fat, free sugar, and salt-sodium content of consumed foods, and insufficient consumption of fibrous foods like vegetables, fruits, and whole grains (47).

According to Turkish Statistical Institute's (TUIK) 2022 data, the rate of obese individuals aged 15 and over is 20.2%. When examined by gender, it was shown that 23.6% of women were obese and 30.9% were pre-obese, while 16.8% of men were obese and 40.4% were pre-obese (48).

According to the World Obesity Federation's World Obesity Atlas, which provides estimates of the prevalence of obesity in men, women, and children for the year 2035, global levels of overweight and obesity ($\text{BMI} \geq 25 \text{ kg/m}^2$), also known as high BMI, may affect over 4 billion people by 2035, up from over 2.6 billion in 2020. This is an increase from 38% of the world's population in 2020 to more than 50% by 2035 (excluding children under the age of five). Obesity prevalence ($\text{BMI} \geq 30 \text{ kg/m}^2$) is estimated to climb from 14% to 24% of the population within the same time period, affecting nearly 2 billion adults, children, and adolescents by 2035. The obesity increase rate in Turkey has been at high levels since 2020: 2.3% in adults and 5% in children. The predicted obesity rate in Turkey in 2035 is calculated at 55% (49).

2.4.2. Hypertension

Hypertension is a common chronic disease defined as systolic blood pressure (SBP) of 140 mmHg or diastolic blood pressure (DBP) of 90 mmHg, and it increases with age (50,51). Elevated blood pressure (BP) is the most important avoidable risk factor for heart disease (heart attack and heart failure), stroke, and kidney failure, as well as a major contributor to premature mortality, dementia, disability, and increased healthcare expenses (52). Although there are other causes of hypertension, excessive salt consumption is the most important. High dietary salt is responsible for around 30% of hypertension prevalence, which might result in hypertension in 400 to 500 million individuals worldwide (53). Public awareness of high-sodium foods should be increased, and salt intake needs to be encouraged to decrease. The hypertension prevalence, awareness, treatment, and control research in Turkey (PatentT) found that 30.3% of adults over the age of 18 had hypertension, with men having a rate of 28.4% and women having a rate of 32.3%. According to the PatentT research, hypertension is a fairly frequent health concern that cannot be completely treated (54).

2.4.3. Cardiovascular Diseases

Cardiovascular diseases, which include ischemic heart disease, stroke, heart failure, peripheral arterial disease, and a variety of other cardiac and vascular illnesses, are the leading cause of worldwide death and a significant contributor to poor quality of life (55). Cardiovascular disease risk factors include a sedentary lifestyle, high blood lipids, overweight and obesity, excessive salt consumption, excessive saturated fatty acid consumption, inadequate fiber intake, insufficient fruit and vegetable consumption, excessive energy consumption, smoking, and alcohol use (56). According to the WHO, an estimated 17.9 million people died from cardiovascular diseases in 2019; this accounts for 32% of all global deaths, demonstrating the severity of the problem worldwide, and it is expected that cardiovascular diseases will continue to be the top cause of mortality globally for a long time (57). According to the TUIK, circulatory system diseases were the leading cause of mortality in 2019, accounting for 36.8% of all deaths. When it comes to circulatory system disorders, 39.1% of fatalities are caused by ischemic heart disease, 22.2% by cerebrovascular diseases, and 25.7% by other heart diseases (58).

2.4.4. Diabetes

It is a chronic condition that is characterized by increased blood glucose levels caused by either insufficient pancreatic production of the insulin hormone or the body's resistance to the released insulin hormone (59). Diabetes affects roughly 537 million persons globally, according to the International Diabetes Federation (IDF) figures for 2021. Projections show a significant increase, with the total population expected to reach 643 million (representing one in every nine adults) by 2030 and 784 million (representing one in every eight adults) by 2045 (60). Diabetes is a prevalent and critical public health issue that has a substantial impact on quality of life, and its rising prevalence highlights the crucial need for better management and preventative methods to address serious consequences. Diabetes was determined to be 13.7% prevalent in Turkey, according to data from the 'Turkey Diabetes, Hypertension, Obesity, and Endocrinological Diseases Prevalence Study-II (TURDEP-II)' released in 2010 (61).

2.4.5. Cancer

Cancer is regarded as one of the most serious social health issues in recent years, and research predicts that cancer, which currently ranks second among causes of death

worldwide, will rise to first with a rapid increase until 2030. Cells constantly regenerate to maintain important activities, undergoing apoptosis after completing their terminal phase to make way for new cells. Genes painstakingly manage this process, particularly those governing cell proliferation, limiting excessive growth, and preventing abnormal forms. However, cells can commence uncontrolled division as a result of genomic and genetic changes caused by a variety of circumstances, leading to the creation of atypical structures that are not typical under normal physiological conditions. This state is known as cancer (62). Cancer is a major cause of mortality globally, accounting for about 10 million deaths in 2020, and the most prevalent cancer causes of death in 2020 were lung, colon and rectum, liver, stomach, and breast. When we look at the risk factors for cancer, we see tobacco use, alcohol consumption, unhealthy food choices and malnutrition, physical inactivity, and air pollution. At the same time, genetics, hormones, radiation and toxic chemicals can also be listed among the causes (63). According to the Ministry of Health's Turkey Cancer Statistics, the age-standardized cancer rate in Turkey in 2018 was 262.4 per hundred thousand for men and 188.0 per hundred thousand for women. The overall cancer incidence rate is 225.2 per hundred thousand (64).

2.4.6. Malnutrition

Malnutrition is a nutritional condition in which insufficient, unbalanced, or excessive intake of energy or other nutrients can cause measurable side effects on body functions and clinical outcomes. Malnutrition can be caused by inadequate nutrition or as a result of diseases. Additionally, people may develop malnutrition due to aging and malnutrition. Significant reductions in body mass and fat tissue occur when there is insufficient protein and energy intake or when the body is unable to use these nutrients. Protein-energy malnutrition (PEM) is the medical term for this disorder. Poverty, disease, insufficient and unbalanced food consumption, and malabsorption are all causes of malnutrition. PEM is a global problem that affects everyone, healthy or sick, in every age group and comes in five forms. These are nutritional dwarfism, marasmus, kwashiorkor, marasmic kwashiorkor, and being underweight (65). Changes in eating habits can be effective in preventing malnutrition.

2.5. Nutritional Information Sources

Nutrition science is the study of the effects of dietary consumption on an individual's health, development, and overall well-being. This discipline includes subjects such as the impact of nutrients on metabolic processes, nutrient digestion and absorption, and nutrient activities in the body. Nutritional knowledge is the accumulation of this field's information and gives advice on how individuals should choose and eat foods in order to live a healthy life. Individual qualities and relationships among information consumers determine how information consumers access nutrition information. Although people can obtain nutrition information from a number of sources, they may prefer a particular source, such as a primary care practitioner or a friend. The Internet is also useful for obtaining nutritional information. As more customers turn to the Internet for expert assistance, the proliferation of unfounded, untrustworthy websites is particularly aggravating. 75% to 80% of Internet users look for health information online. A study looked at how people of different ages prefer to get nutrition information depending on their technology literacy, social interactions, and familiarity with resources. Young individuals (18-25) preferred internet sources but had difficulty determining the reliability of nutrition websites. They tended to rely on relatives and friends for information, whereas just a small percentage favored nutritionists. In contrast, elderly persons in poor health requested dietary advice mostly from nutritionists, while some preferred alternative health providers (66).

Individuals in society often acquire knowledge from dietitians, health professionals, or doctors. However, mass communication methods such as television, the internet, magazines, and newspapers also instruct people on nutrition science themes, which have grown popular. Because they are the most conveniently accessible instruments, television and the internet are the most often used sources of information. Mass communication is particularly successful in giving nutrition information since it may reach a larger audience than other information sources. However, the effect of these technologies, particularly among teens and occasionally adults, is not totally beneficial and can be overly effective (23). According to studies, mass communication has a good impact on informing people, although this does not have completely positive results (67). For instance, promotion of newly introduced items can take several forms, depending on business aims. These commercials have the potential to alter consumer choices, impacting

not just children but also adults. In certain circumstances, for example, customers may see a product as meeting a need, but other items may promote overconsumption over healthy choices.

People who are not authorized to make statements about healthy nutrition make statements that mislead the public and increase information pollution. This situation is also reflected in internet search engines. A growing number of nutrition-related websites and news stories offer information without citing the source. The easy accessibility of these resources creates a social platform that paves the way for the spread of misleading information (67).

In terms of nutrition, families have a critical role in shaping individuals' nutritional knowledge and behavior. This means that the majority of eating habits and nutritional experiences are created within the family (68). Individuals in society are inspired to develop good habits by their families. This helps each new generation develop healthier eating habits and improves society's overall health. Therefore, information and behaviors about healthy eating spread across society through families. We may assume that children in families with higher knowledge and assets for healthy eating are healthier. According to studies, as families' nutritional awareness scores improve, children's healthy eating habits improve as well (69).

Schools are where children spend the majority of their time after leaving their homes and contribute to their development. School is more than simply a place to study; it promotes a more effective learning process by ensuring that information is put into practice. This process has an impact on future adults, helps to shape their eating patterns, and creates the framework for raising the understanding of healthy nutrition among future generations (24).

It is critical to first identify the sources of nutritional information in order to verify its veracity. The source of this information should also be investigated. This source, whether it be personal speech, media news, advertising, or the findings of scientific study, should be investigated. Government guidelines, on the other hand, offer the public healthy nutrition recommendations based on current scientific evidence and can be a reliable source of nutritional information. These guides were created by bringing together scientific studies. If a scientific study provides nutritional information, it is important that

the study be validated, replicated, and applicable. Data from a single study are often not sufficient. Therefore, it is critical to use trustworthy nutritional information to make proper dietary choices and nutritional decisions.

2.6. The Importance of Nutrition Education

After economic factors, the absence of nutritional information is the most major cause of insufficient and imbalanced nutrition. Nutritional knowledge level is one of the elements influencing individuals', families', and societies' nutritional habits, dietary choices, and nutritional status. Nutrition education aims to improve the nutritional status of the general public by educating them on the development of adequate and balanced food consumption habits, the elimination of incorrect and negative nutritional practices, the prevention of foods becoming harmful to health, and the more effective and economical use of food resources (70). Nutritionists' education of society and people about nutrition has a good impact on the quality of life and health status of society. Nutrition education has a significant role and value in protecting and improving health (71). Issues that arise as a result of a shortage or excess of nutrients in the diet raise the chance of developing chronic diseases later in life. As a result, it is critical to provide the required recommendations for nutrient consumption that is both balanced and sufficient in order to promote healthy growth (72).

The United Nations and other nutrition-related organizations throughout the world have established healthy nutrition standards to raise public nutrition awareness by addressing insufficient information and reducing chronic illnesses. However, there are several issues with society's adoption of these standards. Inadequate nutrition education programs are responsible for these problems' inability to be solved and society's failure to follow the standards. Continuous and effective nutrition education can raise the general public's nutrition knowledge. It is critical that these trainings are appropriate for society's social, cultural, and economic situations (24). In order to modify societal dietary habits, planned and scheduled research must be carried out. The media, which has a large influence on people's nutritional understanding, could promote this problem by working with various groups (23). Furthermore, effort should be made to ensure that the information provided is accurate and understandable.

It is critical to promote good eating habits, especially among adolescents. According to studies, this susceptible population has an irregular diet and skips meals (73,74). Establishing good eating habits in children creates the groundwork for a healthy society, highlighting the need for nutritional education in the early stages. Obesity and eating disorders, two common health issues in infancy and adolescence, highlight the necessity of preventative actions. Modern difficulties, such as increased consumption of unhealthy foods and irregular eating habits, demand an emphasis on nutritional education to successfully address these concerns.

Schools are important for nutrition education, either. School-based nutrition programs are critical in promoting healthy growth, learning, and the prevention of chronic illnesses in adults (75). These activities, which target food choices and physical exercise, significantly lower the risk of illnesses such as obesity and coronary heart disease. With children spending so much time at school, it is critical to provide nutrition instruction, supervised meals, and physical activity promotion. These measures not only have an immediate impact on health, but they also develop lasting habits that contribute to general well-being (76). Nutrition education programs are critical in developing healthy behaviors among school-aged children. Integrating these programs into multiple courses, including nutrition professionals, and broadening the reach to include instructors all have a significant influence on both student health and overall educational quality.

The main purpose of nutrition education should be to deliver correct information to the individuals that comprise society and to help them develop better dietary habits. Nutritional consequences on health should be appropriately communicated to society, and societal understanding of nutritional behavior should be increased.

Nutrition education should be tailored to the lifestyle and features of the culture or group in question. Otherwise, training would fail, and behavior modification would be impossible to accomplish. Education is the process of changing attitudes and actions, beginning with teaching. It is critical in nutrition education not just to educate information but also to teach how to use that information in practice (13).

2.7. Validity and Reliability

Typically, researchers develop a conceptual framework that incorporates particular factors relevant to their study or field of interest. Following that, they collect

and thoroughly evaluate data obtained through surveys or questionnaires in order to experimentally test and assess the efficacy of their generated conceptual model. It is commonly accepted in scholarly discourse that the intrinsic features of reliability and validity in a measuring instrument are the most important criteria influencing its credibility. The use of a measuring tool that lacks one or both of these characteristics in research may drastically impair the reliability and accuracy of the results. As a result, it is critical that any measuring equipment used in a study have both reliability and validity in order to maintain the integrity and precision of the research results. The absence of these important characteristics may jeopardize the instrument's ability to produce reliable and meaningful results (77).

While closely related, the notions of validity and reliability distinguish various characteristics of a measuring instrument. Although a measure can show dependability without being valid, an instrument that is valid is also likely to show reliability. However, while dependability is important, it does not ensure correctness. A trustworthy test may not accurately capture the desired behavior or feature. This inherent link between the two ideas emphasizes the importance of researchers systematically assessing both validity and reliability in any given measuring instrument. Failure to achieve these requirements may jeopardize the researchers' capacity to interpret the findings effectively, demanding evaluation of both elements for a quality study output (77).

2.7.1. Validity

The extent to which a measuring tool can measure the characteristic it is attempting to measure entirely and precisely without combining it with another feature is referred to as its validity (78).

2.7.1.1. Content Validity

Content validity is the process of consulting experts to determine whether the test items are sufficient in quantity and quality to determine the information to be measured (79). Content validity is defined as the extent to which a test covers the behaviors it is meant to measure. The method of getting each expert's opinion on whether each test item evaluates the appropriate behavior is known as validity based on expert opinion (80).

2.7.1.2. Face Validity

Face validity is a subjective method that includes feelings, thoughts, and intuitions regarding the functioning of the measurement tool used in the research. The evaluation of face validity is carried out by expert personnel or academic staff on the structure that the measurement tool is trying to determine (77).

2.7.1.3. Criterion Validity

This method is a comparison of the results obtained from a measurement tool developed with a standard scale that has previously been analyzed for reliability and validity, and it also evaluates how successfully a measurement tool predicts the feature it aims to measure (81).

2.7.1.3.1. Concurrent Validity

The scale to be developed and another scale that is used in the same field and whose validity has been previously proven are applied to the participants at the same time. Validity is evaluated by looking at the correlation between test results obtained from measurements (82).

2.7.1.3.2. Predictive Validity

The relationship between the measurement results obtained using the measurement tool and a behavior that will occur in the future is examined. In order to obtain the behavior that will occur after the measurement, a certain time must pass after the measurement (82).

2.7.1.4. Construct Validity

Construct validity refers to how well a measurement instrument captures a theoretical concept, behavior, or quality. This validity suggests that the measuring tool accurately reflects the target construct. Construct validity, which is widely used in research, is based on the logical relationships between variables. However, a structural fit alone is insufficient; after verifying concept validity, convergent and discriminant validity must also be examined (77). In construct validity examinations, different researchers recommend different methods such as factor analysis, structural equation model,

convergent validity, divergent validity discriminant validity, and known group comparison (81,83,84).

2.7.1.4.1. Factor Analysis

It is used to determine if the participants' responses to the measuring tool's items are in a specific order. It is used to assess the link between items in the assessment tool and to group items with strong correlations into the same factor (83).

Factor analysis is applied in two ways: Confirmatory Factor Analysis (CFA) and Explanatory Factor Analysis (EFA). If a determined relationship between the scale items is unknown, EFA is recommended. If a tested relationship, determined factors and items grouped under them are detected, CFA is recommended (85–87).

2.7.1.4.2. Structural Equation Modeling

Structural equation models are a statistical technique used to test models that include causal relationships and correlation relationships between observed variables and latent variables. It is also a multivariate method that combines analyses such as variance, covariance analyses, factor analysis, and multiple regression to estimate dependency relationships (88).

2.7.1.4.3. Convergent Validity

Convergent validity requires that the assertions of a measuring instrument be related to the factor used to assess the same concept. This represents the degree of association between observed variables when the measuring instrument assesses a latent variable (77). It is the application of a different scale that measures the characteristic that is intended to be measured with the developed measurement tool, or that shows a high correlation with this characteristic but measures another characteristic for the same group at the same time or with a small time difference. In the study, the correlation coefficient between two scales measuring the same feature was high ($r > 0.70$); the correlation coefficient between two scales measuring similar structures should be between 0.50 and 0.70 (84).

2.7.1.4.4. Divergent Validity

In this validity method, a low correlation is expected between a scale designed to measure a specific construct and another scale measuring a different construct (84).

2.7.1.4.5. Discriminant Validity

As a method to evaluate the discriminant validity of the measurement tool, two contrasting groups are studied that are expected to receive different results from the measurement tool. This method involves researchers identifying groups, administering the test to both groups, and examining the differences between the groups by comparing the resulting scores. With this approach, it helps to evaluate whether the measurement tool is compatible with the feature it aims to measure, and discriminant validity is determined (81,84,89).

2.7.2. Reliability

Reliability relates to a measuring tool's stability and consistency throughout time, including its capacity to produce similar results when used at different periods of time (77). The reliability coefficient ranges from 0 to 1; the closer the number is to 1, the more reliable it is considered (90). Various approaches may be used to determine the scale's validity and reliability, the most frequent of which are test-retest reliability, alternative forms, and internal consistency tests (77).

2.7.2.1. Test-Retest Reliability

Test-retest reliability assesses the consistency of results obtained by applying a measuring instrument to the same sample group throughout time periods. In this method, a survey is initially administered to a certain sample group, followed by another administration to the same group after a certain period of time. The high correlation between survey data obtained at different times indicates that the measurement tool has test-retest reliability (77).

To assess reliability, both the correlation between repeated measurements and the agreement between measurements are important. In the past, many methodologies have been used to assess invariance over time. Pearson correlation coefficient, paired t-test, and Bland-Altman plot were among the methods used. However, the Pearson correlation

coefficient just assesses correlation, whereas the paired t-test and Bland-Altman plot examine compatibility. As a result, a more thorough reliability study is now performed using the intraclass correlation coefficient (ICC), which includes assessing measurement agreement (90).

The ICC value obtained in repeated measurements was considered poor if it was less than 0.5, moderate if it was 0.5-0.75, good if it was 0.75-0.9, and perfectly reliable if it was greater than 0.90 (91).

2.7.2.2. Internal Consistency

Internal consistency, which is related to the reliability of the items in the instrument, assesses how well the instrument measures a specific behavior or characteristic by assessing the consistency of its components (77). Internal consistency can be assessed by the split-half method.

The split-half method divides the measuring tool's items randomly into two halves and examines the correlation between the two halves of the scale. This method cannot be used if the assumption that all items on the scale measure the same characteristic is invalid (82).

The alpha coefficient is one of the most often used measures for testing internal consistency in research. It is the (α) alpha coefficient method developed by Cronbach to estimate the reliability of measurements. If the alpha coefficient is between 0.00 and 0.40, the scale is unreliable; between 0.40 and 0.60, it has low reliability; between 0.60 and 0.80, it is reliable; and between 0.80 and 1.00, it is highly reliable (77,92).

Kuder and Richardson (1937) created a method for evaluating internal consistency and item homogeneity in assessment tools. This method is based on the ratio of correct and incorrect answers based on the replies to each question in the assessment instrument, with Kuder-Richardson 20 (KR-20) being the most commonly used homogeneity index. KR-20 is valid for tests with two items (true or false), and internal consistency may be assessed with the KR 20 and 21 formulas, which calculate the percentage of correct answers given to each item in the test. The obtained coefficient indicates the measuring tool's internal consistency (77,93). When the difficulty levels of the items comprising the measuring tool are unknown or not close to each other (heterogeneous), the KR-20

formula is used, while when they are close to each other (homogeneous), the KR-21 formula is used (94). It has been reported that the acceptable reliability coefficient should be between 0.70 and 0.80, and this value may be lower on scales containing a small number of statements or items (95).

Item-total items correlation is the relationship between the score of each item and the total score on the scale. Each item's high correlation coefficient implies that it accurately assesses what it is intended to measure (81). The minimum acceptable limit value for item-total correlation has been stated as 0.30 (96).

Two parallel (equivalent) forms are generated, each including different items that indicate the same behavioral pattern. Reliability is assessed by evaluating the correlation between measurements using equivalent forms in the same group (83).

3. MATERIALS AND METHODS

3.1. Time and Place of the Research

The research was conducted at Kayışdağı Campus of Yeditepe University between January 2023 and April 2024.

3.2. Type of Research

The study used a methodological approach to convert the Revised General Nutrition Knowledge Questionnaire (GNKQ-r) into Turkish and study its reliability and validity.

3.3. Ethical Principals of the Research

Scientific and ethical norms were followed throughout the research process. Participants in the study were informed verbally and in writing about the purpose of the research, that it was voluntary, that the information gathered would only be used in the research and kept confidential, and that they provided signed informed consent (Appendix-1). The scales were used with permission; the permissions were obtained via email.

Before the research, an application was made to the Marmara University Ethical Council, and Ethical Council Approval was received (Appendix-2). Written permission was received from the Yeditepe University rectorate to continue the research.

3.4. The Population of the Research

The purpose of this thesis study is to validate the GNKQ-r scale revised by Kliemann et al. in Turkish among university students studying at a foundation university (12). The research study included 15253 students from Yeditepe University's Kayışdağı campus in Istanbul. According to the sample calculation with a known population (assuming a Type 1 error of 5% and a confidence interval of 95%), the minimum sample size has been established at 375 persons. To reflect the number of university faculty students in the sample, weighting was done by faculties with the aim of reaching the minimal numbers using the convenience sampling approach. As a result, the minimal sample numbers to be included on the basis of faculties are the following: Faculty of

Dentistry n=12, Faculty of Pharmacy n=12, Faculty of Education n=14, Faculty of Arts and Sciences n=39, Faculty of Fine Arts n=24, Faculty of Law n=16, Faculty of Economics and Administrative Sciences n=38, Faculty of Communication n=31, Faculty of Architecture n=32, Faculty of Engineering n=72, Faculty of Health Sciences n=24, Faculty of Medicine n=17, Faculty of Computer and Information Science n=38, and School of Applied Sciences n=6.

The study involved 439 participants from Yeditepe University's Kayışdağı campus. The number of persons involved according to faculties is as follows: Faculty of Dentistry: 13, Faculty of Pharmacy: 12, Faculty of Education: 18, Faculty of Arts and Sciences: 53, Faculty of Fine Arts: 24, Faculty of Law: 16, and Faculty of Economics and Administrative Sciences: 43, Faculty of Communication: 33, Faculty of Architecture: 32, Faculty of Engineering: 78, Faculty of Health Sciences: 56, Faculty of Medicine: 17, Faculty of Computer and Information Science: 38, and School of Applied Sciences: 6.

A voluntary group of participants was given a test-retest after two weeks, which was considered long enough for them to forget the answers but enough for a significant change in their nutritional knowledge (97). For the test-retest study, 79 participants volunteered to complete the scale two weeks after their participation. Participants received no nutritional information between the first and second applications.

3.5. Data Collection Method

The researcher collected data through face-to-face interviews at Yeditepe University's Kayışdağı campus from undergraduate students, with permission secured.

3.6. Data Collection Tools of Research

The research collected data using the GNKQ-r, the General Nutrition Knowledge Questionnaire (GNKQ) translated into Turkish, and the Nutrition Knowledge Level Scale for Adults (YETBID).

3.6.1. Revised Version of General Nutrition Knowledge Questionnaire (GNKQ-r)

GNKQ was developed by K. Parmenter and J. Wardle in 1994 and published in 1999 (Cronbach's alpha = 0.97) (11). This scale was translated into Turkish by A. Aylin

Assaffar in 2011 and found to be valid (Cronbach's alpha = 0.89)(5) . However, Kliemann et al. (2016) revised the GNKQ scale and released GNKQ-r (Cronbach's alpha = 0.93) scale (12).

Due to advances in the field of nutrition, Kliemann et al. revised the scale in 2016 by adding additional questions; It has been harmonized with current nutritional recommendations based on the relationship between diet and diseases that develop due to changing living conditions and nutritional habits, and thus, the revised form (GNKQ-r) has been recommended to be used in the evaluation of nutritional status in adults (12).

The revised scale (GNKQ-r) was produced by removing 74 items from the original scale (GNKQ) and replacing them with a 36-item structure. An additional 61 items were added, resulting in a 97-item scale. Based on expert feedback, a new scale of 88 items was developed by deleting 9 items (12).

The revised scale (GNKQ-r) has 48 questions, 88 items, and four subscales. The subscales are as follows: (1) Dietary Recommendations, (2) Food Groups, (3) Healthy Food Choices, (4) Diet, Disease and Weight Management.

GNKQ-r consists of 5 sections. Dietary Recommendations consisting of 9 questions and 18 items in the 1st section; Food Groups consisting of 10 questions and 36 items in the 2nd section; Healthy Food Choices consisting of 13 questions and 13 items in the 3rd section; Diet, Disease, and Weight Management consisting of 16 questions and 21 items in the 4th section. There are questions with a single answer. In the 5th section, demographic information, height, weight, marital status, health status, number of children, ethnicity, educational status, and whether they have nutrition related qualifications, is questioned according to the statements of the people. The health status of the individuals was questioned with a 4-choice question in the 5th section of the GNKQ-r. Individuals evaluated their own health status as "Poor", "Fair", "Good", "Very Good", and "Excellent".

In the scale's scoring system, questions with a single answer are valued at one point each. A "1" point is given for a correct answer, and a "0" point is given for an incorrect answer. There are also questions where more than one item of information is questioned under one question. In these questions, the items are also scored at 1 point. The maximum possible scores are 18 for the first section, 36 for the second, 13 for the

third, and 21 for the fourth section. The fifth section was not scored. The points collected define the level of knowledge in each category. An increase in score in any category shows an increased level of knowledge in that field. In addition, the overall knowledge level score is calculated by adding the scores from each category. As a result, as the scores increase, so do the category and overall knowledge levels.

3.6.2. Turkish Version of General Nutrition Knowledge Questionnaire (GNKQ Turkish version)

GNKQ was translated into Turkish by A. Aylin Assaffar in 2011 and found to be valid (Cronbach's alpha = 0.89) (5).

Turkish version of GNKQ has 39 questions, 127 items, and four subscales. The subscales are as follows: (1) Dietary Recommendations, (2) Sources of Nutrients, (3) Choosing Everyday Foods, (4) Diet-Disease Relationships.

GNKQ Turkish version consists of 5 sections. Dietary Recommendations consisting of 4 questions and 11 items in the 1st section; Sources of Nutrients consisting of 17 questions and 70 items in the 2nd section; Choosing everyday foods consisting of 11 questions and 11 items in the 3rd section; Diet-Disease, Relationship consisting of 7 questions and 35 items in the 4th section. There are questions with a single answer. In the 5th section, demographic information, height, weight, marital status, number of children, educational status, whether somebody is on a diet, and if so, the reason, profession, work status, and where they get their health and nutrition advice and whether they have nutrition related qualifications, is questioned according to the statements of the people.

In the scale's scoring system, questions with a single answer are valued at one point each. A "1" point is given for a correct answer, and a "0" point is given for an incorrect answer. There are also questions where more than one item of information is questioned under one question. In these questions, the items are also scored at 1 point. The maximum possible scores are 11 for the first section, 70 for the second, 11 for the third, and 35 for the fourth section. The fifth section was not scored. The points collected define the level of knowledge in each category. An increase in score in any category shows an increased level of knowledge in that field. In addition, the overall knowledge level score is calculated by adding the scores from each category. As a result, as the scores increase, so do the category and overall knowledge levels.

3.6.3. Nutrition Knowledge Level Scale for Adults (YETBID)

Hilal Batmaz developed the YETBID in 2018, which has been validated and reliable (Cronbach's alpha = 0.72, 0.70) (24).

YETBID scale has 5 subsections. The first section of the scale is a survey that questions participants about their socio-demographic features, health-related behaviors, and dietary habits, and the second section is a "Basic Nutrition Knowledge" scale that assesses fundamental nutrition knowledge levels. In the third section, the visual analog scale (VAS) scale was used, in which the participants evaluated themselves about the food-health relationship; in the fourth section, the "Food Preference" scale, which questioned the study participants' food preference knowledge; and in the fifth section, the VAS scale was used, in which the study participants evaluated themselves on food preference. The "Basic nutrition and food-health relationship" scale consists of up of 20 elements, and the "Food preference" scale has 12.

The answers given on these measures were assessed using a five-point Likert scale. Participants in the research responded to 20 propositions titled "Basic nutrition and food-health relationship" and 12 propositions titled "Food preference" with one of the following answers: strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree. Those who answered "I strongly agree" to true propositions received 4 points, those who answered "I agree" received 3 points, those who answered "neither agree nor disagree" received 2 points, those who answered "I disagree" received 1 point, and those who answered "I strongly disagree" received 0 points. Those who answered "I strongly agree" to false propositions received 0 points; those who answered "I agree" received 1; those who answered neither agree nor disagree received 2; those who answered "I disagree" received 3; and those who answered "I strongly disagree" received 4 points. The maximum score for "Basic nutrition and food-health relationship" section is 80, whereas the highest score for "Food preference" section is 48. Participants in the study used a different VAS scale to assess the association between nutrition and health and the accuracy of their food choices in everyday life. The VAS scale ranges from 0 to 10 (24).

The nutrition knowledge level scale for adults' evaluation criteria resulted in scores ranging from bad to very good. Participants with a basic nutrition score of less than 45 were classified as poor, those with a score between 45 and 55 as medium, those with

a score between 56 and 65 as good, and those with a score greater than 65 as very good. Participants with a food preference score of less than 30 were classified as having low knowledge, those with a score of 30-36 points as having medium knowledge, those with a score of 37-42 points as having strong knowledge, and those with a score of 42 or more as having very good knowledge (24).

3.7. Adaptation of the General Nutrition Knowledge Questionnaire into Turkish, Validity and Reliability Study

The scale was translated from its original language, English, to Turkish by bilingual subject matter experts using the standard translation-back-translation procedure (98,99). An independent and multilingual scholar from the nutrition and dietetics department translated it back into the original language. The procedure of translating from the original language to Turkish and back again was repeated until the scale was free of inconsistencies, errors, bias, and incompatibilities (98,99). Expert opinion evaluation criteria were created for the new scale for content validity. (Appendix-3). Then, the Turkish version of GNKQ-r was administered as a pilot study to a group of experts.

The intention during translation was to stay faithful to the original scale. However, local foods that are difficult to understand have been translated into Turkish to be easier to understand. For example, “Yorkshire pudding” in the 3rd question in the 3rd section has been translated into Turkish as “fried pastry”. “Berry sorbet” in the 5th question of the 3rd section was translated as “Red fruit sorbet” and the explanation “a dull dessert made only with fruit” was added in parentheses. After the pilot study, the Turkish version of the GNKQ-r took its final form.

The scale's reliability was assessed based on internal consistency and invariance across time. Internal consistency was assessed using the KR-20 reliability coefficient and item-total correlation. Because the Turkish GNKQ-r contains dichotomous data and the difficulty level of each item varies, the KR-20 formula was used. It has been reported that the acceptable reliability coefficient should be between 0.70 and 0.80, and this value may be lower on scales containing a small number of statements/items (95). In the studies conducted, the acceptable limit value for reliability is generally taken as 0.70. In the current study, the KR-20 reliability coefficient was considered ideal if it was 0.90 and above, very good if it was 0.80 and above, and good if it was 0.70 and above.

The Pearson Correlation Coefficient was used to measure item-total correlation, with a cutoff value of ≥ 0.30 considered acceptable (100).

Researchers using the test-retest approach often estimate reliability using the Pearson correlation coefficient or compare the data using the t-test (101). While the paired t test analyzes agreement, the Pearson correlation coefficient only measures correlation. As a result, a more thorough reliability study is now performed using the ICC, which assesses both the degree of correlation and the agreement between measurements (90).

The scale's invariance across time was determined by calculating the test-retest reliability coefficient. For this reason, the scale was administered twice to 79 participants over a two-week period, and the ICC was calculated to compare the scores obtained from both applications in both student groups. According to the literature, the ICC value acquired from repeated measurements is regarded as bad if it is less than 0.50, average if it is 0.50–0.75, good if it is 0.75–0.90, and perfectly reliable if it is higher than 0.90 (90,102). The results of the research were evaluated using these criteria.

Validity was also examined through concurrent validity. The concurrent validity of GNKQ-r was evaluated by comparing it with GNKQ Turkish version and YETBID, whose validity and reliability have been proven in Turkey. The discriminant validity method was used to examine the construct validity of the Turkish version of GNKQ-r. It was examined whether the mean scores of the GNKQ-r differ according to gender, education, BMI, and health status.

Participants' height and body weight were obtained from their own statements. BMI was obtained by dividing the body weight in kilograms by the square of the height in meters. The values obtained were classified as underweight and normal weight ($BMI < 25$), overweight and obese ($BMI \geq 25$) according to the WHO classification.

Interdimensional correlations Pearson correlation analysis, independent t test in independent groups to determine whether the average scores of the Turkish version of GNKQ-r differ according to gender, BMI, and department of education; Whether it differed according to health perception was examined with a one-way ANOVA test.

The data were statistically analyzed using the International Business Machines (IBM) Social Package for Social Science Statistics for Windows (SPSS, IBM Corp.,

Version 25.0) package application. Descriptive analyses use mean (mean) and standard deviation (SD) for continuous data, and frequencies and percentages for nominal variables. Keiser-Mayer-Olkin and Bartlett's Sphericity tests were used to assess sample size adequacy and data factorability. The Skewness-Kurtosis test was used to determine if the variables fit a normal distribution. The difference between two groups complying with normal distribution was compared with Independent t test, and the difference between three or more groups was compared with One-way Anova. The direction and strength of the relationship between two variables were analyzed with Pearson's correlation test. The direction and strength of the relationship between two variables that did not comply with the normal distribution were analyzed with the Spearman correlation test. All analyses used a 95% confidence interval and a statistical significance level of $p < 0.05$.

4. RESULTS

There are results regarding the validity and reliability Turkish version of the GNKQ-r and findings regarding the evaluation of individuals in terms of various variables.

Demographic Information

Table 4.1 shows the general characteristics of the research's participants. Women represent 64.9% of the research's participants, while men represent 35.1%. The participants' average age was 21.13 ± 1.82 . 17.8% of the participants are in the Faculty of Engineering, 12.8% in the Faculty of Health Sciences, 12.1% in the Faculty of Arts and Sciences, 9.8% in the Faculty of Economics and Administrative Sciences, 8.7% in the Faculty of Computer and Information Sciences, 7.5% in the Faculty of Communication, 7.3% in the Faculty of Architecture, 5.5% in the Faculty of Fine Arts, 4.1% in the Faculty of Education, 3.9% in the Faculty of Medicine, 3.6% in the Faculty of Law, 3.0% in the Faculty of Dentistry, 2.7% in the Faculty of Pharmacy, 1.4% are studying at the School of Applied Sciences.

29.2% of participants in first grade, 29.4% in second grade, 16.2% in third grade, 25.1% in fourth grade, and 0.2% in fifth grade. While 98.4% of the participants are single, 1.6% of them are married. 26% of the participants described their general health as poor-fair, 45.8% as good, and 28.2% as very good-excellent (Table 4.1).

Table 4.1. General Characteristics of Participants

	n	%
Sex		
Women	285	64.9
Men	154	35.1
Faculty		
Faculty of Engineering	78	17.8
Faculty of Health Sciences	56	12.8
Faculty of Arts and Sciences	53	12.1
Faculty of Economics and Administrative Sciences	43	9.8
Faculty of Communication	33	7.5
Faculty of Architecture	32	7.3
Faculty of Fine Arts	24	5.5
Faculty of Education	18	4.1
Faculty of Medicine	12	2.7
Faculty of Law	16	3.6
Faculty of Dentistry	13	3.0
Faculty of Pharmacy	12	2.7
School of Applied Sciences	6	1.4
Grade		
1st	128	29.2
2nd	129	29.4
3rd	71	16.2
4th	110	25.1
5th	1	0.2
Marital Status		
Single	432	98.4
Married	7	1.6
Health Status		
Poor-Fair	114	26.0
Good	201	45.8
Very good-Excellent	124	28.2
Age (mean $\pm$ sd)	21.13 $\pm$ 1.82	

The average weight of the participants was questioned in kilograms and was found to be 66.2 ± 14.4 . The average height of the participants was questioned in meters and was found to be 1.71 ± 0.09 . When individuals are examined according to BMI, the mean BMI was found to be 22.4 ± 3.6 . 79% of the participants have a BMI less than 25, and 21% have a BMI greater than 25. That is, 79% of the participants are underweight or of normal weight, and 21% are overweight or obese. (Table 4.2).

Table 4.2. Anthropometric Measurements of Participants

	Mean $\pm$ sd	
Weight (kg)	66.2 $\pm$ 14.4	
Height (m)	1.71 $\pm$ 0.09	
BMI	22.4 $\pm$ 3.6	
BMI	n	%
< 25	347	79.0
$\geq$ 25	92	21.0

It is stated that 14.1% of the participants have competence related to nutrition science. 85.9% of them declared that they did not have any competence related to nutrition science. When asked if they were presently on a diet for any reason, 24.1% answered yes. The sources from which the participants in our research obtained their nutritional information were questioned: 46.7% from the internet, 30.3% from a dietician, 7.5% from a doctor or nurse, 7.3% from a teacher at school, 3.2% from books, 2.5% from television and/or radio, 1.6% from other sources, and 0.9% from newspapers and magazines (Table 4.3).

Table 4.3. Information Regarding Nutritional Competence, Status of Being on a Diet, and Sources of Nutritional Information

	n	%
Nutritional Competency Status		
Yes	62	14.1
No	377	85.9
Currently on a Diet		
Yes	106	24.1
No	333	75.9
Where would you get the information about food and health from?		
Books	14	3.2
Newspapers and magazines	4	0.9
Internet	205	46.7
Television and/or radio	11	2.5
Doctor or nurse	33	7.5
Dietitian	133	30.3
Teacher at school	32	7.3
Other	7	1.6

"What is the degree of relationship between nutrition and health?" The average of the answers given to the question, which can be scored from 1 to 10, is 8.50 ± 1.77 . Again, the average of the answers given to the question "How correct do you find the food choices you make in your daily life?" which can be scored from 1 to 10, is 5.91 ± 2.06 (Table 4.4).

Table 4.4. Information Regarding Food-Health Relationship and Food Choice Accuracy Scores

	Mean	Min	Max
What is the degree of relationship between nutrition and health?	8.50 ± 1.77	1	10
How correct do you find the food choices you make in your daily life?	5.91 ± 2.06	1	10

Distribution of answers to the Turkish GNKQ-r

When the answers given by the participants to the questions in the “Dietary Recommendations” section were examined,

To the "Fruit" item of the 1st question, “Do health experts recommend that people should be eating more, the same amount, or less of the following foods?” 58.5% of the participants answered “more,” 34.4% answered “same,” 6.2% answered “less,” and 0.9% answered “not sure.” Those who answered "more" to this question received 1 point. 58.5% of the participants answered this question correctly.

To the “Food and drinks with added sugar” item of the 1st question, 2.3% of the participants answered “more,” 4.1% answered “same,” 91.6% answered “less,” and 2.1% answered “not sure.” Those who answered "less" to this question received 1 point. 91.6% of the participants answered this question correctly.

To the “Vegetables” item of the 1st question, 85.0% of the participants answered “more,” 9.8% answered “same,” 3.6% answered “less,” and 1.6% answered “not sure.” Those who answered "more" to this question received 1 point. 85.0% of the participants responded to this question correctly.

To the “Fatty foods” item of the 1st question 2.5% of the participants answered “more,” 8.7% answered “same,” 86.6% answered “less,” and 2.3% answered “not sure.” Those who answered "less" to this question received 1 point. 86.6% of the participants responded to this question correctly.

To the “Processed red meat” item of the 1st question 8.0% of the participants answered “more,” 35.8% answered “same,” 49.4% answered “less,” and 6.8% answered “not sure.” Those who answered "less" to this question received 1 point. 49.4% of the participants answered this question correctly.

To the “Wholegrains” item of the 1st question, 49.9% of the participants answered “more,” 41.9% answered “same,” 4.8% answered “less,” and 3.4% answered, “not sure.” Those who answered "more" to this question received 1 point. 49.9% of the participants answered this question correctly.

To the “Salty foods” item of the 1st question, 3.0% of the participants answered “more,” 26.4% answered “same,” 67.4% answered “less,” and 3.2% answered “not sure.” Those who answered "less" to this question received 1 point. 67.4% of the participants answered this question correctly.

To the “Water” item of the 1st question, 88.4% of the participants answered “more,” 8.9% answered “same,” 1.6% answered “less,” and 1.1% answered “not sure.” Those who answered "more" to this question received 1 point. 88.4% of the participants answered this question correctly.

To the 2nd question “How many servings of fruit and vegetables per day do experts advise people to eat as a minimum?” 41.2% of the participants answered “2”, 34.4% answered “3”, 8.9% answered “4”, 10.3% answered “5 or more” and 5.2% answered “not sure”. Those who answered "5 or more" to this question received 1 point. 10.3% of the participants answered this question correctly.

To the "Unsaturated fats" item of the 3rd question “Which of these types of fats do experts recommend that people should eat less of?” 28.5% of the participants answered “eat less,” 43.7% answered “not eat less,” and 27.8% answered “not sure.” Those who answered "not eat less" to this question received 1 point. 43.7% of the participants answered this question correctly.

To the "Trans fats" item of the 3rd question, 83.6% of the participants answered “eat less,” 10.3% answered “not eat less,” and 6.2% answered “not sure.” Those who answered "eat less" to this question received 1 point. 83.6% of the participants answered this question correctly.

Regarding the "Saturated fats" item of the 3rd question, 58.1% of the participants answered “eat less,” 18.7% answered “not eat less,” and 23.2% answered “not sure.” Those who answered "eat less" to this question received 1 point. 58.1% of the participants answered this question correctly.

To the 4th question “Which type of dairy foods do experts say people should drink?” 24.8% of the participants answered “full fat (e.g. full fat milk),” 36.4% answered “reduced fat (e.g. skimmed and semi-skimmed milk),” 13.4% answered “mixture of full fat and reduced fat,” 6.2% answered “neither, dairy foods should be avoided” 19.1%

answered, “not sure.” Those who answered "reduced fat (e.g. skimmed and semi-skimmed milk)" to this question received 1 point. 36.4% of the participants answered this question correctly.

To the 5th question “How many times per week do experts recommend that people eat oily fish (e.g. salmon and mackerel)?” 79.7% of the participants answered “1-2 times per week”, 15.7% answered “3-4 times per week,” 0.7% answered “every day,” and 3.9% answered “not sure.” Those who answered "1-2 times per week" to this question received 1 point. 79.7% of the participants answered this question correctly.

To the 6th question “Approximately how many alcoholic drinks is the maximum recommended per day (The exact number depends on the size and strength of the drink)?” 39.2% of the participants answered “1 drink each for men and women,” 10.7% answered “2 drinks each for men and women,” 21.0% answered “2 drinks for men and 1 drink for women,” 6.8% answered “3 drinks for men and 2 drinks for women,” and 22.3% answered “not sure.” Those who answered "1 drink each for men and women" to this question received 1 point. 39.2% of the participants answered this question correctly.

To the 7th question, “How many times per week do experts recommend that people eat breakfast?” 3.9% of the participants answered “3 times per week”, 5.7% answered “4 times per week” 82.9% answered “every day,” and 7.5% answered “not sure.” Those who answered "every day" to this question received 1 point. 82.9% of the participants answered this question correctly.

To the 8th question “If a person has two glasses of fruit juice in a day, how many of their daily fruit and vegetable servings would this count as?” 31.0% of the participants answered “none,” 23.9% answered “one serving,” 13.9% answered “two serving,” 12.3% answered “three serving,” and 18.9% answered “not sure.” Those who answered "one serving" to this question received 1 point. 23.9% of the participants answered this question correctly.

To the 9th question “According to the guidelines, how much of a person's diet should consist of starchy foods?” 56.5% of the participants answered “quarter,” 7.7% answered “third,” 6.2% answered “half,” and 29.6% answered “not sure.” Those who answered "third" to this question received 1 point. 7.7% of the participants answered this question correctly (Table 4.5).

Table 4.5. Information Regarding Answers to the Dietary Recommendations Section

Dietary Recommendations	Correct Answer		Uncorrect Answer	
	n	%	n	%
Do health experts recommend that people should be eating more, the same amount, or less of the following foods?				
Fruit	257	58.5	182	47.5
Food and drinks with added sugar	402	91.6	37	8.4
Vegetables	373	85.0	66	15.0
Fatty foods	380	86.6	59	13.4
Processed red meat	217	49.4	222	50.6
Wholegrains	219	49.9	220	50.1
Salty foods	296	67.4	143	32.6
Waters	388	88.4	51	11.6
How many servings of fruit and vegetables per day do experts advise people to eat as a minimum?	45	10.3	394	89.7
Which of these types of fats do experts recommend that people should eat less of?				
Unsaturated fats	192	43.7	247	56.3
Trans fats	367	83.6	72	16.4
Saturated fats	255	58.1	184	41.9
Which type of dairy foods do experts say people should drink?	160	36.4	279	63.6
How many times per week do experts recommend that people eat oily fish (e.g. salmon and mackerel)?	350	79.7	89	20.3
Approximately how many alcoholic drinks is the maximum recommended per day (The exact number depends on the size and strength of the drink)?”	172	39.2	267	60.8
How many times per week do experts recommend that people eat breakfast?	364	82.9	75	17.1
If a person has two glasses of fruit juice in a day, how many of their daily fruit and vegetable servings would this count as?	105	23.9	334	76.1
According to the guidelines, how much of a person's diet should consist of starchy foods?	34	7.7	405	92.3

When the answers given by the participants to the questions in the “Food Groups” section are examined;

To the “Diet cola” item of the 1th question “Do you think these foods and drinks are typically high or low in added sugar?” 56.7% of the participants answered “high in added sugar,” 36.2% answered “low in added sugar,” and 7.1% answered “not sure.” Those who answered "low in added sugar" to this question received 1 point. 36.2% of the participants answered this question correctly.

To the “Natural yogurt” item of the 1st question, 4.6% of the participants answered “high in added sugar,” 87.7% answered “low in added sugar,” and 7.7% answered “not sure.” Those who answered "low in added sugar" to this question received 1 point. 87.7% of the participants answered this question correctly.

To the “Ice cream” item of the 1st question, 86.8% of the participants answered “high in added sugar,” 9.6% answered “low in added sugar,” and 3.6% answered “not sure.” Those who answered "high in added sugar" to this question received 1 point. 86.8% of the participants answered this question correctly.

To the “Ketchup” item of the 1st question, 84.5% of the participants answered “high in added sugar,” 9.6% answered “low in added sugar,” and 5.9% answered “not sure.” Those who answered "high in added sugar" to this question received 1 point. 84.5% of the participants answered this question correctly.

To the “Melon” item of the 1st question, 22.1% of the participants answered “high in added sugar,” 66.3% answered “low in added sugar,” and 11.6% answered “not sure.” Those who answered "low in added sugar" to this question received 1 point. 66.3% of the participants answered this question correctly.

To the “Breakfast cereals” item of the 2nd question “Do you think these foods are typically high or low in salt?” 46.7% of the participants answered “high in salt,” 38.3% answered “low in salt,” and 15.0% answered “not sure.” Those who answered "high in salt" to this question received 1 point. 46.7% of the participants answered this question correctly.

To the “Frozen vegetables” item of the 2nd question, 23.0% of the participants answered “high in salt,” 64.2% answered “low in salt,” and 12.8% answered “not sure.” Those who answered "low in salt" to this question received 1 point. 64.2% of the participants answered this question correctly.

To the “Bread” item of the 2nd question, 49.2% of the participants answered “high in salt,” 40.5% answered “low in salt,” and 10.3% answered, “not sure.” Those who answered "high in salt" to this question received 1 point. 49.2% of the participants answered this question correctly.

To the “Baked beans” item of the 2nd question, 28.5% of the participants answered “high in salt,” 56.3% answered “low in salt,” and 15.3% answered “not sure.” Those who answered "high in salt" to this question received 1 point. 28.5% of the participants answered this question correctly.

To the “Red meat” item of the 2nd question 31.9% of the participants answered “high in salt”, 53.8% answered “low in salt”, and 14.4% answered “not sure”. Those who answered "low in salt" to this question received 1 point. 53.8% of the participants answered this question correctly.

To the “Canned soup” item of the 2nd question, 85.4% of the participants answered “high in salt,” 6.8% answered “low in salt,” and 7.7% answered “not sure.” Those who answered "high in salt" to this question received 1 point. 85.4% of the participants answered this question correctly.

To the “Oats” item of the 3rd question “Do you think these foods are typically high or low in fibre?” 96.6% of the participants answered “high in fiber,” 2.1% answered “low in fiber,” and 1.4% answered “not sure.” Those who answered "high in fiber" to this question received 1 point. 96.6% of the participants answered this question correctly.

To the “Bananas” item of the 3rd question, 83.4% of the participants answered “high in fiber,” 10.3% answered “low in fiber,” and 6.4% answered “not sure.” Those who answered "high in fiber" to this question received 1 point. 83.4% of the participants answered this question correctly.

To the “White rice” item of the 3rd question, 24.1% of the participants answered “high in fiber,” 61.7% answered “low in fiber,” and 14.1% answered “not sure.” Those who answered "low in fiber" to this question received 1 point. 61.7% of the participants answered this question correctly.

To the “Eggs” item of the 3rd question, 35.1% of the participants answered “high in fiber,” 45.3% answered “low in fiber,” and 19.6% answered “not sure.” Those who answered "low in fiber" to this question received 1 point. 45.3% of the participants answered this question correctly.

To the “Potatoes with skin” item of the 3rd question, 53.8% of the participants answered “high in fiber,” 27.8% answered “low in fiber,” and 18.5% answered “not sure.”

Those who answered "high in fiber" to this question received 1 point. 53.8% of the participants answered this question correctly.

To the "Pasta" item of the 3rd question, 25.3% of the participants answered "high in fiber," 60.6% answered "low in fiber," and 14.1% answered "not sure." Those who answered "low in fiber" to this question received 1 point. 60.6% of the participants answered this question correctly.

To the "Poultry" item of the 4th question "Do you think these foods are a good source of protein?" 91.1% of the participants answered "good source of protein," 5.7% answered "not a good source of protein," and 3.2% answered "not sure." Those who answered "good source of protein" to this question received 1 point. 91.1% of the participants answered this question correctly.

To the "Cheese" item of the 4th question, 84.5% of the participants answered "good source of protein," 10.0% answered "not a good source of protein," and 5.5% answered, "not sure." Those who answered "good source of protein" to this question received 1 point. 84.5% of the participants answered this question correctly.

To the "Fruit" item of the 4th question, 20.0% of the participants answered "good source of protein," 72.9% answered "not a good source of protein," and 7.1% answered, "not sure." Those who answered "not a good source of protein" to this question received 1 point. 72.9% of the participants answered this question correctly.

To the "Baked beans" item of the 4th question, 62.0% of the participants answered "good source of protein," 25.1% answered "not a good source of protein," and 13.0% answered, "not sure." Those who answered "good source of protein" to this question received 1 point. 62.0% of the participants answered this question correctly.

To the "Butter" item of the 4th question, 21.4% of the participants answered "good source of protein," 67.0% answered "not a good source of protein," and 11.6% answered, "not sure." Those who answered "not a good source of protein" to this question received 1 point. 67.0% of the participants answered this question correctly.

To the "Nuts" item of the 4th question, 48.1% of the participants answered "good source of protein," 34.4% answered "not a good source of protein," and 17.5% answered,

“not sure.” Those who answered "good source of protein" to this question received 1 point. 48.1% of the participants answered this question correctly.

To the “Cheese” item of the 5th question “Which of the following foods do experts count as starchy foods?” 7.1% of the participants answered “starchy foods,” 79.5% answered “not a starchy food,” and 13.4% answered “not sure.” Those who answered "not a starchy foods" to this question received 1 point. 79.5% of the participants answered this question correctly.

To the “Pasta” item of the 5th question, 89.1% of the participants answered “starchy foods,” 6.4% answered “not a starchy food,” and 4.6% answered “not sure.” Those who answered "starchy foods" to this question received 1 point. 89.1% of the participants answered this question correctly.

To the “Potatoes” item of the 5th question, 94.3% of the participants answered “starchy foods,” 2.3% answered “not a starchy food,” and 3.4% answered, “not sure.” Those who answered "starchy foods" to this question received 1 point. 94.3% of the participants answered this question correctly.

To the “Nuts” item of the 5th question, 22.1% of the participants answered “starchy foods,” 49.0% answered “not a starchy food,” and 28.9% answered “not sure.” Those who answered "not a starchy foods" to this question received 1 point. 49.0% of the participants answered this question correctly.

To the “Banana (plantain banana)” item of the 5th question, 20.3% of the participants answered “starchy foods,” 48.3% answered “not a starchy food,” and 31.4% answered “not sure.” Those who answered "starchy foods" to this question received 1 point. 20.3% of the participants answered this question correctly.

To the “Olive oil” item of the 6th question “Which is the main type of fat present in each of these foods?” 23.9% of the participants answered “polyunsaturated fats,” 25.5% answered “monounsaturated fats,” 10.0% answered “saturated fats,” 0.9% answered “cholesterol,” and 39.6% answered “not sure.” Those who answered "monounsaturated fats" to this question received 1 point. 25.5% of the participants answered this question correctly.

To the “Butter” item of the 6th question, 7.7% of the participants answered “polyunsaturated fats,” 8.4% answered “monounsaturated fats,” 32.8% answered “saturated fats,” 20.7% answered “cholesterol,” and 30.3% answered “not sure.” Those who answered “saturated fats” to this question received 1 point. 32.8% of the participants answered this question correctly.

To the “Sunflower oil” item of the 6th question, 17.5% of the participants answered “polyunsaturated fats”, 17.1% answered “monounsaturated fats”, 15.0% answered “saturated fats”, 9.1% answered “cholesterol”, and 41.2% answered “not sure” Those who answered “polyunsaturated fats” to this question received 1 point. 17.5% of the participants answered this question correctly.

To the “Eggs” item of the 6th question, 4.6% of the participants answered “polyunsaturated fats,” 5.0% answered “monounsaturated fats,” 6.6% answered “saturated fats,” 29.6% answered “cholesterol,” and 54.2% answered “not sure.” Those who answered “cholesterol” to this question received 1 point. 29.6% of the participants answered this question correctly.

To the 7th question “Which of these foods has the most trans-fat?” 75.4% of the participants answered “biscuits, cakes, and pastries,” 1.6% answered “fish,” 14.8% answered “rapeseed oil (a type of vegetable oil),” 0.5% answered “eggs,” 7.7% answered “not sure.” Those who answered “biscuits, cakes and pastries” to this question received 1 point. 75.4% of the participants answered this question correctly.

To the 8th question, “The amount of calcium in a glass of whole milk compared to a glass of skimmed milk is:” 35.1% of the participants answered “about the same,” 20.7% answered “much higher,” 18.5% answered “much lower,” and 25.7% “not sure.” Those who answered “about the same” to this question received 1 point. 35.1% of the participants answered this question correctly.

To the 9th question “Which one of the following nutrients has the most calories for the same weight of food?” 30.5% of the participants answered “sugar,” 11.4% answered “starchy,” 3.2% answered “fiber/roughage,” 46.2% answered “fat,” and 8.7% “not sure.” Those who answered “fat” to this question received 1 point. 46.2% of the participants answered this question correctly.

To the 10th question, “Compared to minimally processed foods, processed foods are:” 66.1% of the participants answered “higher in calories,” 9.6% answered “higher in fiber” 6.2% answered “lower in salt,” and 18.2% “not sure.” Those who answered “higher in calories” to this question received 1 point. 66.1% of the participants answered this question correctly (Table 4.6).



Table 4.6. Information Regarding Answers to the Food Groups Section

Food Groups	Correct Answer		Uncorrect Answer	
	n	%	n	%
Do you think these foods and drinks are typically high or low in added sugar?				
Diet cola	159	36.2	280	63.8
Natural yogurt	385	87.7	54	12.3
Ice cream	381	86.8	58	13.2
Ketchup	371	84.5	68	15.5
Melon	291	66.3	148	33.7
Do you think these foods are typically high or low in salt?				
Breakfast cereals	205	46.7	234	53.3
Frozen vegetables	282	64.2	157	35.8
Bread	216	49.2	223	50.8
Baked beans	125	28.5	314	71.5
Red meat	236	53.8	203	46.2
Canned soup	375	85.4	64	14.6
Do you think these foods are typically high or low in fibre?				
Oats	424	96.6	15	3.4
Bananas	366	83.4	73	16.6
White rice	271	61.7	168	38.3
Eggs	199	45.3	240	54.7
Potatoes with skin	236	53.8	203	46.2
Pasta	266	60.6	173	39.4
Do you think these foods are a good source of protein?				
Poultry	400	91.1	39	8.9
Cheese	371	84.5	68	15.5
Fruit	320	72.9	119	27.1
Baked beans	272	62.0	167	38.0
Butter	294	67.0	145	33.0
Nuts	211	48.1	228	51.9
Which of the following foods do experts count as starchy foods?				
Cheese	349	79.5	90	20.5
Pasta	391	89.1	48	10.9
Potatoes	414	94.3	25	5.7
Nuts	215	49.0	224	51.0
Banana (plantain banana)	89	20.3	350	79.7
Which is the main type of fat present in each of these foods?				
Olive oil	112	25.5	327	74.5
Butter	144	32.8	295	67.2
Sunflower oil	77	17.5	362	82.5
Eggs	130	29.6	309	70.4
Which of these foods has the most trans-fat?				
	331	75.4	108	24.6
The amount of calcium in a glass of whole milk compared to a glass of skimmed milk is:				
	154	35.1	285	64.9
Which one of the following nutrients has the most calories for the same weight of food?				
	203	46.2	236	53.8
Compared to minimally processed foods, processed foods are:				
	290	66.1	149	33.9

When the answers given by the participants to the questions in the “Healthy Food Choices” section are examined;

To the 1th question “If a person wanted to buy a yogurt at the supermarket, which would have the least sugar/sweetener?” 4.6% of the participants answered “0% fat cherry yogurt,” 85.2% answered “natural yogurt,” 5.0% answered “creamy fruit yogurt,” and 5.2% “not sure.” Those who answered “natural yogurt” to this question received 1 point. 85.2% of the participants answered this question correctly.

To the 2nd question “If a person wanted soup in a restaurant or cafe, which one would be the lowest fat option?” 6.8% of the participants answered “mushroom rice soup (field mushrooms, porcini mushrooms, rice, butter, cream, parsley and cracked black pepper),” 80.4% answered “carrot butternut and spice soup (carrot, butternut squash, sweet potato, cumin, red chillies, coriander seeds and lemon),” 5.0% answered “cream of chicken soup (British chicken, onions, carrots, celery, potatoes, garlic, sage, wheat flour, double cream),” and 7.7% “not sure.” Those who answered “carrot butternut and spice soup (carrot, butternut squash, sweet potato, cumin, red chillies, coriander seeds, and lemon)” to this question received 1 point. 80.4% of the participants answered this question correctly.

To the 3rd question “Which would be the healthiest and most balanced choice for a main meal in a restaurant?” 69.2% of the participants answered “roast turkey, mashed potatoes and vegetables,” 7.1% answered “beef, fried pastry, and roast potatoes,” 19.1% answered “fish and chips served with peas and tartar sauce,” and 4.6% “not sure.” Those who answered “roast turkey, mashed potatoes and vegetables” to this question received 1 point. 69.2% of the participants answered this question correctly.

To the 4th question “Which would be the healthiest and most balanced choice for lunch?” 6.6% of the participants answered “ham sandwich + fruit + blueberry muffin + fruit juice,” 84.3% answered “tuna salad sandwich + fruit + low fat yogurt + water,” and 4.8% answered “egg salad sandwich + crisps + low fat yogurt + water,” and 4.3% “not sure.” Those who answered “tuna salad sandwich + fruit + low fat yogurt + water” to this question received 1 point. 84.3% of the participants answered this question correctly.

To the 5th question “Which of these foods would be the healthiest choice for dessert?” 80.4% of the participants answered “red fruit sorbet (a dull dessert made with

only fruit)", 5.9% answered "apple and blackberry pie", 3.4% answered "lemon cheesecake", 3.4% answered "carrot cake with cream cheese topping", and 6.8% "not sure". Those who answered "red fruit sorbet (a dull dessert made with only fruit)" to this question received 1 point. 80.4% of the participants answered this question correctly.

To the 6th question "Which of these combinations of vegetables in a salad would give the greatest variety of vitamins and antioxidants?" 20.7% of the participants answered "lettuce, green peppers, and cabbage," 49.9% answered "broccoli, carrot, and tomatoes," 12.8% answered "red peppers, tomatoes and lettuce," and 16.6% "not sure." Those who answered "broccoli, carrot and tomatoes" to this question received 1 point. 49.9% of the participants answered this question correctly.

To the 7th question "If a person wanted to reduce the amount of fat in their diet, but didn't want to give up chips, which of the following foods would be the best choice?" 38.7% of the participants answered "thick cut chips," 23.5% answered "thin cut chips," 15.9% answered "crinkle cut chips," and 21.9% "not sure." Those who answered "thick cut chips" to this question received 1 point. 38.7% of the participants answered this question correctly.

To the 8th question, "One healthy way to add flavor to food without adding extra fat or salt is to add:" 16.6% of the participants answered "coconut milk," 63.6% answered "herbs" 9.8% answered "soya sauce," and 10.0% "not sure." Those who answered "herbs" to this question received 1 point. 63.6% of the participants answered this question correctly.

To the 9th question "Which of the following cooking methods requires fat to be added?" 17.1% of the participants answered "grilling," 6.8% answered "steaming," 7.5% answered "baking," 59.9% answered "sautéing," and 8.7% "not sure." Those who answered "sautéing" to this question received 1 point. 59.9% of the participants answered this question correctly.

To the 10th question "Traffic lights are often used on nutrition labelling, what would amber mean for the fat content of a food?" 6.2% of the participants answered "low fat," 77.7% answered "medium fat," 4.6% answered "high in fat," and 11.6% "not sure." Those who answered "medium fat" to this question received 1 point. 77.7% of the participants answered this question correctly.

To the 11th question “Light or diet foods are always good options because they are low in calories.” 13.7% of the participants answered “agree,” 77.7% answered “not agree,” and 8.7% “not sure.” Those who answered “not agree” to this question received 1 point. 77.7% of the participants answered this question correctly.

To the 12th question “Looking at products 1 and 2, which one has the most calories (kcal) per 100 gram?” 58.1% of the participants answered “product 1,” 28.2% answered “product 2,” 3.0% answered “both have the same quantity,” and 10.7% “not sure.” Those who answered “product 1” to this question received 1 point. 58.1% of the participants answered this question correctly.

To the 13th question “Looking at product 1, what are the sources of sugar in the ingredient list?” 7.3% of the participants answered “sugar and malt syrup,” 11.8% answered “sugar, fructose and lecithin,” 63.1% answered “sugar, fructose and malt syrup,” and 17.8% “not sure”. Those who answered “sugar, fructose and malt syrup” to this question received 1 point. 63.1% of the participants answered this question correctly (Table 4.7).

Table 4.7. Information Regarding Answers to the Healthy Food Choices Section

Healthy Food Choices	Correct Answer		Incorrect Answer	
	n	%	n	%
If a person wanted to buy a yogurt at the supermarket, which would have the least sugar/sweetener?	374	85.2	65	14.8
If a person wanted soup in a restaurant or cafe, which one would be the lowest fat option?	353	80.4	86	19.6
Which would be the healthiest and most balanced choice for a main meal in a restaurant?	304	69.2	135	30.8
Which would be the healthiest and most balanced choice for lunch?	370	84.3	69	15.7
Which of these foods would be the healthiest choice for dessert?	353	80.4	86	19.6
Which of these combinations of vegetables in a salad would give the greatest variety of vitamins and antioxidants?	219	49.9	220	50.1
If a person wanted to reduce the amount of fat in their diet, but didn't want to give up chips, which of the following foods would be the best choice?	170	38.7	269	61.3
One healthy way to add flavor to food without adding extra fat or salt is to add:	279	63.6	160	36.4
Which of the following cooking methods requires fat to be added?	263	59.9	176	40.1
Traffic lights are often used on nutrition labelling, what would amber mean for the fat content of a food?	341	77.7	98	22.3
Light or diet foods are always good options because they are low in calories.	341	77.7	98	22.3
Looking at products 1 and 2, which one has the most calories (kcal) per 100 gram?	255	58.1	184	41.9
Looking at product 1, what are the sources of sugar in the ingredient list?	277	63.1	162	36.9

When the answers given by the participants to the questions in the “Diet, Disease and Weight Management” section are examined;

To the 1th question “Which of these diseases is related to a low intake of fibre?” 74.7% of the participants answered “bowel disorder,” 6.8% answered “anemia,” 5.2% answered “tooth decay,” and 13.2% “not sure.” Those who answered “bowel disorder” to this question received 1 point. 74.7% of the participants answered this question correctly.

To the 2nd question “Which of these diseases is related to how much sugar people eat?” 19.4% of the participants answered “high blood pressure,” 67.2% answered “tooth decay,” 4.3% answered “anemia,” and 9.1% “not sure.” Those who answered “tooth

decay” to this question received 1 point. 67.2% of the participants answered this question correctly.

To the 3rd question “Which of these diseases is related to how much salt (or sodium) people eat?” 24.4% of the participants answered “hypothyroidism,” 8.0% answered “diabetes,” 52.4% answered “high blood pressure,” and 15.3% “not sure.” Those who answered “high blood pressure” to this question received 1 point. 52.4% of the participants answered this question correctly.

To the 4th question “Which of these options do experts recommend to reduce the chances of getting cancer?” 4.8% of the participants answered “drinking alcohol regularly,” 10.9% answered “eating less red meat,” 79.3% answered “avoiding additives in food,” and 5.0% “not sure.” Those who answered “eating less red meat” to this question received 1 point. 10.9% of the participants answered this question correctly.

To the 5th question “Which of these options do experts recommend to prevent heart disease?” 7.1% of the participants answered “taking nutritional supplements,” 6.6% answered “eating less oily fish,” 80.6% answered “eating fewer trans-fats,” and 5.7% “not sure.” Those who answered “eating less trans-fats” to this question received 1 point. 80.6% of the participants answered this question correctly.

To the 6th question “Which of these options do experts recommend to prevent diabetes?” 82.7% of the participants answered “eating less refined foods,” 5.5% answered “drinking more fruit juice,” 2.3% answered “eating more processed meat,” and 9.6% “not sure.” Those who answered “eating less refined foods” to this question received 1 point. 82.7% of the participants answered this question correctly.

To the 7th question “Which one of these foods is more likely to raise people’s blood cholesterol?” 14.1% of the participants answered “eggs,” 7.7% answered “vegetable oil,” 64.0% answered “animal fat,” and 14.1% “not sure.” Those who answered “animal fat” to this question received 1 point. 64.0% of the participants answered this question correctly.

To the 8th question “Which one of these foods is classified as having a high Glycaemic Index?” 7.1% of the participants answered “wholegrains” 62.0% answered “white bread”, 8.4% answered “fruit and vegetables”, and 22.6% “not sure.” Those who

answered “white bread” to this question received 1 point. 62.0% of the participants answered this question correctly.

To the 9th question “To maintain a healthy weight people should cut fat out completely.” 6.2% of the participants answered “agree,” 89.0% answered “disagree,” and 4.8% “not sure.” Those who answered “disagree” to this question received 1 point. 89.0% of the participants answered this question correctly.

To the 10th question “To maintain a healthy weight people should eat a high protein diet.” 51.7% of the participants answered “agree,” 37.1% answered “disagree,” and 11.2% “not sure.” Those who answered “disagree” to this question received 1 point. 37.1% of the participants answered this question correctly.

To the 11th question “Eating bread always causes weight gain.” 13.2% of the participants answered “agree,” 81.1% answered “disagree,” and 5.7% “not sure.” Those who answered “disagree” to this question received 1 point. 81.1% of the participants answered this question correctly.

To the 12th question “Fibre can decrease the chances of gaining weight.” 58.3% of the participants answered “agree,” 21.2% answered “disagree,” and 20.5% “not sure.” Those who answered “agree” to this question received 1 point. 58.3% of the participants answered this question correctly.

To the “not eating while watching TV” item of the 13th question “Which of these options can help people to maintain a healthy weight?” 60.8% of the participants answered “yes,” 33.3% answered “no,” and 5.9% answered “not sure.” Those who answered “yes” to this question received 1 point. 60.8% of the participants answered this question correctly.

To the “reading food labels” item of the 13th question, 90.0% of the participants answered “yes,” 7.7% answered “no,” and 2.3% answered “not sure.” Those who answered “yes” to this question received 1 point. 90.0% of the participants answered this question correctly.

To the “taking nutritional supplements” item of the 13th question 59.2% of the participants answered “yes”, 25.5% answered “no”, and 15.3% answered “not sure”.

Those who answered “no” to this question received 1 point. 25.5% of the participants answered this question correctly.

To the “monitoring their eating” item of the 13th question 90.7% of the participants answered “yes”, 4.3% answered “no”, and 5.0% answered “not sure”. Those who answered “yes” to this question received 1 point. 90.7% of the participants answered this question correctly.

To the “monitoring their weight” item of the 13th question, 83.6% of the participants answered “yes,” 10.3% answered “no,” and 6.2% answered “not sure.” Those who answered “yes” to this question received 1 point. 83.6% of the participants answered this question correctly.

To the “grazing throughout the day” item of the 13th question, 8.0% of the participants answered “yes,” 85.0% answered “no,” and 7.1% answered “not sure.” Those who answered “no” to this question received 1 point. 85.0% of the participants answered this question correctly.

To the 14th question “If someone has a Body Mass Index (BMI) of 23kg/m², what would their weight status be?” 6.4% of the participants answered “underweight,” 46.9% answered “normal weight,” 11.4% answered “overweight,” 1.1% answered “obese,” and 34.2% “not sure.” Those who answered “normal weight” to this question received 1 point. 46.9% of the participants answered this question correctly.

To the 15th question “If someone has a Body Mass Index (BMI) of 31kg/m², what would their weight status be?” 2.5% of the participants answered “underweight,” 6.2% answered “normal weight,” 29.6% answered “overweight,” 30.1% answered “obese,” and 31.7% “not sure.” Those who answered “obese” to this question received 1 point. 30.1% of the participants answered this question correctly.

To the 16th question “Which of these body shapes increases the risk of cardiovascular disease?” 72.7% of the participants answered “apple shape,” 13.0% answered “pear shape,” and 14.4% “not sure” Those who answered “apple shape” to this question received 1 point. 72.7% of the participants answered this question correctly (Table 4.8).

Table 4.8. Information Regarding Answers to the Diet, Disease and Weight Management Section

Diet, Disease and Weight Management	Correct Answer		Uncorrect Answer	
	n	%	n	%
Which of these diseases is related to a low intake of fibre?	328	74.7	111	25.3
Which of these diseases is related to how much sugar people eat?	295	67.2	144	32.8
Which of these diseases is related to how much salt (or sodium) people eat?	230	52.4	209	47.6
Which of these options do experts recommend to reduce the chances of getting cancer?	48	10.9	391	89.1
Which of these options do experts recommend to prevent heart disease?	354	80.6	85	19.4
Which of these options do experts recommend to prevent diabetes?	363	82.7	76	17.3
Which one of these foods is more likely to raise people's blood cholesterol?	281	64.0	158	36.0
Which one of these foods is classified as having a high Glycaemic Index?	272	62.0	167	38.0
To maintain a healthy weight people should cut fat out completely.	391	89.1	48	10.9
To maintain a healthy weight people should eat a high protein diet.	163	37.1	276	62.9
Eating bread always causes weight gain.	356	81.1	83	18.9
Fibre can decrease the chances of gaining weight.	256	58.3	183	41.7
Which of these options can help people to maintain a healthy weight?				
Not eating while watching TV	267	60.8	172	39.2
Reading food labels	395	90.0	44	10.0
Taking nutritional supplements	112	25.5	327	74.5
Monitoring their eating	398	90.7	41	9.3
Monitoring their weight	367	83.6	72	16.4
Grazing throughout the day	373	85.0	66	15.0
If someone has a Body Mass Index (BMI) of 23kg/m ² , what would their weight status be?	206	46.9	233	53.1
If someone has a Body Mass Index (BMI) of 31kg/m ² , what would their weight status be?	132	30.1	307	69.9
Which of these body shapes increases the risk of cardiovascular disease?	319	72.7	120	27.3

Results Regarding the Reliability of Turkish GNKQ-r

The distribution of the scores that the participants received from the scales and their subscales is given in Table 4.9. The average score obtained from the "Dietary

Recommendation" section of GNKQ-r is 10.42 ± 2.29 . The minimum score received was 3, and the maximum score was 16. The average score obtained from the "Food Groups" section of GNKQ-r is 21.77 ± 4.23 . The minimum score received was 7, and the maximum score was 34. The average score obtained from the "Healthy Food Choices" section of GNKQ-r is 8.88 ± 2.73 . The minimum score received was 0, and the maximum score was 13. The average score obtained from the "Diet, Disease and Weight Management" section of GNKQ-r is 13.45 ± 3.44 . The minimum score received was 1, and the maximum score was 21. The average score obtained from the total GNKQ-r is 54.52 ± 9.89 . The minimum score received was 21, and the maximum score was 84.

When the scores from the subsections and total of GNKQ-r are transformed to a 100 percent system, the average score obtained from the "Dietary Recommendation" section is 57.88; the average score from the "Food Groups" section is 60.47; the average score from the "Healthy Food Choices" section is 68.30; and the average score obtained from the "Diet, Disease, and Weight Management" section is 64.04. The overall score obtained from GNKQ-r is 61.95. The highest score from GNKQ-r was obtained from the "Healthy Food Choices" section, and the lowest score was obtained from the "Dietary Recommendation" section.

The average score from Section A of the GNKQ Turkish version is 5.77 ± 1.82 . The minimum score received was 0, and the maximum score was 11. The average score from Section B of the GNKQ Turkish version is 39.28 ± 9.95 . The minimum score received was 0, and the maximum score was 63. The average score obtained from Section C of the GNKQ Turkish version is 6.69 ± 2.29 . The minimum score received was 0, and the maximum score was 10. The average score obtained from Section D of the GNKQ Turkish version is 20.68 ± 6.04 . The minimum score received was 0, and the maximum score was 33. The average score obtained from the total GNKQ Turkish version is 72.41 ± 16.92 . The minimum score received was 9, and the maximum score was 116.

The average score obtained from the "Basic Nutrition Knowledge" section of YETBID is 55.20 ± 8.88 . The minimum score received was 31, and the maximum score was 78. The average score obtained from the "Food Preference" section of YETBID is 36.61 ± 6.66 . The minimum score received was 17, and the maximum score was 48. The average score obtained from the total of YETBID is 91.81 ± 14.28 . The minimum score received was 51, and the maximum score was 125.

Table 4.9. Information Regarding Scores from GNKQ-r, GNKQ Turkish Version, YETBİD

Subsections	Mean	Min	Max
Dietary Recommendation	10.42 ± 2.29	3	16
Food Groups	21.77 ± 4.23	7	34
Healthy Food Choices	8.88 ± 2.73	0	13
Diet, Disease and Weight Management	13.45 ± 3.44	1	21
GNKQ-r Total	54.52 ± 9.89	21	84
GNKQ Turkish Version A	5.77 ± 1.82	0	11
GNKQ Turkish Version B	39.28 ± 9.95	0	63
GNKQ Turkish Version C	6.69 ± 2.29	0	10
GNKQ Turkish Version D	20.68 ± 6.04	0	33
GNKQ Turkish Version Total	72.41 ± 16.92	9	116
Basic Nutrition Knowledge	55.20 ± 8.88	31	78
Food Preference	36.61 ± 6.66	17	48
YETBİD Total	91.81 ± 14.28	51	125

The test-retest reliability coefficients of the subsections of the scale and the total of the scale are given in Table 4.10. The table also shows that the ICC correlation coefficients between the scores obtained from the first and second tests ranged from 0.76 to 0.88 for each of the sections. The scale's overall score was estimated at 0.92.

Table 4.10. Test-retest Reliability Findings of the Turkish Version of GNKQ-r

Subsections (n:79)	ICC	p
Dietary Recommendation	0.76	0.000*
Food Groups	0.88	0.000*
Healthy Food Choices	0.82	0.000*
Diet, Disease, and Weight Management	0.85	0.000*
GNKQ-r Total	0.92	0.000*

*p < 0.05

The KR-20 reliability coefficients for the subsections in the Turkish version of GNKQ-r range from 0.42 to 0.71 and the overall scale is estimated to be 0.84. When we look at the four subscales in the scale, the lowest and highest item-total correlation values were calculated as -0.14 and 0.49 (Table 4.11).

Table 4.11. Internal Consistency Test Results of the Turkish Version of GNKQ-r

Subsections	Number of Items	KR-20 Reliability Coefficient	Item-Total Correlation Coefficient
Dietary Recommendation	18	0.42	-0.10 – 0.23
Food Groups	36	0.64	-0.05 – 0.38
Healthy Food Choices	13	0.71	0.13 – 0.46
Diet, Disease, and Weight Management	21	0.71	-0.14 – 0.49
GNKQ-r Total	88	0.84	

Results Regarding the Validity of Turkish GNKQ-r

The construct validity of the Turkish version of GNKQ-r was examined with discriminant validity. For this purpose, first the correlations between sections were examined. The correlation coefficients of the subsections in the Turkish version of GNKQ-r are between 0.27 and 0.65; the correlation of subsections with the total score of the scale varies between 0.58 and 0.84 (Table 4.12). When the correlation values are examined, it is seen that there are significant relationships between the subsections with each other and with the whole scale.

Table 4.12. Correlation Values of Subscales of the Turkish Version of GNKQ-r

Subsections	Dietary Recom.	Food Groups	Healthy Food Choices	Diet, Disease, and Weight Management	GNKQ-r Total
Dietary Recommendation		$r = 0.36^*$	$r = 0.27^*$	$r = 0.35^*$	$r = 0.58^*$
Food Groups			$r = 0.49^*$	$r = 0.54^*$	$r = 0.84^*$
Healthy Food Choices				$r = 0.65^*$	$r = 0.78^*$
Diet, Disease, and Weight Management					$r = 0.84^*$

* $p < 0.01$

A moderately positive and significant relationship was found between "Dietary Recommendation" and "Food Groups" ($r=0.36$, $p<0.01$). In other words, the score

obtained from the "Dietary Recommendation" section and the score obtained from the "Food Groups" section increase significantly and have a moderate relationship.

A weakly positive and significant relationship was found between "Dietary Recommendations" and "Healthy Food Choices" ($r=0.27$, $p<0.01$). In other words, the score obtained from the "Dietary Recommendation" section and the score obtained from the "Healthy Food Choices" section increase significantly and have a weak relationship.

A moderately positive and significant relationship was found between "Dietary Recommendation" and "Diet, Disease and Weight Management" ($r=0.35$, $p<0.01$). In other words, the score obtained from the "Dietary Recommendation" section and the score obtained from the "Diet, Disease and Weight Management" section increase significantly and have a moderate relationship.

A moderately positive and significant relationship was found between "Dietary Recommendation" and GNKQ-r total score ($r=0.58$, $p<0.01$). In other words, the score obtained from the "Dietary Recommendation" section and the score obtained from GNKQ-r increase significantly and have a moderate relationship.

A moderately positive and significant relationship was found between "Food Groups" and "Healthy Food Choices" ($r=0.49$, $p<0.01$). In other words, the score obtained from the "Food Groups" section and the score obtained from the "Healthy Food Choices" section increase significantly and have a moderate relationship.

A moderately positive and significant relationship was found between "Food Groups" and "Diet, Disease and Weight Management" ($r=0.54$, $p<0.01$). In other words, the score obtained from the "Food Groups" section and the score obtained from the "Diet, Disease and Weight Management" section increase significantly and have a moderate relationship.

A strongly positive and significant relationship was found between "Food Groups" and GNKQ-r total score ($r=0.84$, $p<0.01$). In other words, the score obtained from the "Food Groups" section and the score obtained from the GNKQ-r increase significantly and have a strong relationship.

A moderately positive and significant relationship was found between "Healthy Food Choices" and "Diet, Disease and Weight Management" ($r=0.65$, $p<0.01$). In other

words, the score obtained from the "Healthy Food Choices" section and the score obtained from the "Diet, Disease and Weight Management" section increase significantly and have a moderate relationship.

A strongly positive and significant relationship was found between "Healthy Food Choices" and GNKQ-r total score ($r=0.78$, $p<0.01$). In other words, the score obtained from the "Healthy Food Choices" section and the score obtained from the GNKQ-r increase significantly and have a strong relationship.

A strongly positive and significant relationship was found between "Diet, Disease and Weight Management" and GNKQ-r total score ($r=0.84$, $p<0.01$). In other words, the score obtained from the "Diet, Disease and Weight Management" section and the score obtained from the GNKQ-r increase significantly and have a strong relationship.

In our research, validity was also examined through concurrent validity. The concurrent validity of GNKQ-r was evaluated by comparing it with the GNKQ Turkish version and YETBID.

The correlation between GNKQ-r total score and YETBID total scores was examined. A moderately positive and significant relationship was found between GNKQ-r total score and YETBID total score ($r=0.60$, $p<0.01$) (Table 4.13). In other words, the score obtained from GNKQ-r and the score obtained from the YETBID increase significantly and have a moderate relationship.

The correlation between the GNKQ-r total score and the GNKQ Turkish version total scores was examined. A strongly positive and significant relationship was found between GNKQ-r total score and GNKQ Turkish version total score ($r=0.78$, $p<0.01$) (Table 4.13). In other words, the score obtained from GNKQ-r and the score obtained from GNKQ Turkish version increase significantly and have a strong relationship.

Table 4.13. Correlation Values Between GNKQ-r Total Score, GNKQ Turkish Version, and YETBID Total Scores

	GNKQ-r Total	YETBID Total	GNKQ Turkish Version Total
GNKQ-r Total		$r = 0.60^*$	$r = 0.78^*$

* $p<0.01$

Data regarding the comparison of the average of GNKQ-r subsection scores and GNKQ-r total scores of individuals according to their gender are given in Table 4.14.

Table 4.14. Differentiation of GNKQ-r Scores and Subsection Scores by Gender

	Dietary Recommendation	Food Groups	Healthy Food Choices	Diet, Disease and Weight Management	GNKQ-r Total
Gender					
Women	10.79±2.22	22.01±4.19	9.48±2.46	14.16±3.15	56.45±9.38
Men	9.74±2.26	21.31±4.28	7.77±2.88	12.14±3.57	50.95±9.83
	t: 4.71 p: 0.000*	t: 1.68 p: 0.094	t: 6.23 p:0.000*	t: 5.92 p:0.000*	t: 5.76 p:0.000*

*p < 0.01

"Dietary Recommendation" section scores of women (10.79 ± 2.22) participating in the study were found to be higher than men (9.74 ± 2.26). This difference is statistically significant (p<0.05).

"Food Groups" section scores of women (22.01 ± 4.19) participating in the study were found to be higher than men (21.31 ± 4.28). However, this difference is not statistically significant. (p>0.05).

"Healthy Food Choices" section scores of women (9.48 ± 2.46) participating in the study were found to be higher than men (7.77 ± 2.88). This difference is statistically significant (p<0.05).

"Diet, Disease and Weight Management" section scores of women (14.16 ± 3.15) participating in the study were found to be higher than men (12.14 ± 3.57). This difference is statistically significant (p<0.05).

GNKQ-r total scores of women (56.45 ± 9.38) participating in the study were found to be higher than men (50.95 ± 9.83). This difference is statistically significant (p<0.05).

Data regarding the comparison of the average GNKQ-r subsection scores and GNKQ-r total scores of individuals according to their BMI status are given in Table 4.15.

Table 4.15. Differentiation of GNKQ-r Scores and Subsection Scores by BMI Status

	Dietary Recom.	Food Groups	Healthy Food Choices	Diet, Disease and Weight Management	GNKQ-r Total
BMI					
< 25	10.57 ± 2.27	21.87 ± 4.15	9.06 ± 2.60	13.64 ± 3.37	55.14 ± 9.64
> 25	9.87 ± 2.30	21.37 ± 4.54	8.21 ± 3.11	12.74 ± 3.59	52.18 ± 10.51
	t: 2.63 p: 0.009*	t: 1.01 p: 0.314	t: 2.42 p: 0.017*	t: 2.25 p: 0.025*	t: 2.57 p: 0.016*

*p < 0.05

"Dietary Recommendation" section scores of individuals with a BMI less than 25 (10.57 ± 2.27) were found to be significantly higher than individuals with a BMI of 25 and higher (9.87 ± 2.30) (p<0.05).

"Food Groups" section scores of individuals with a BMI less than 25 (21.87 ± 4.15) were found higher than individuals with a BMI of 25 and higher (21.37 ± 4.54). However, the difference is not significant (p>0.05).

"Healthy Food Choices" section scores of individuals with a BMI less than 25 (9.06 ± 2.60) were found to be significantly higher than individuals with a BMI of 25 and higher (8.21 ± 3.11) (p<0.05).

"Diet, Disease and Weight Management" section scores of individuals with a BMI less than 25 (13.64 ± 3.37) were found to be significantly higher than individuals with a BMI of 25 and higher (12.74 ± 3.59) (p<0.05).

GNKQ-r total scores of individuals with a BMI less than 25 (55.14 ± 9.64) were found to be significantly higher than individuals with a BMI of 25 and higher (52.18 ± 10.51) (p<0.05).

Data regarding the comparison of the average of GNKQ-r subsection scores and GNKQ-r total scores of individuals according to their health status are given in Table 4.16.

Table 4.16. Differentiation of GNKQ-r Scores and Subsection Scores by Health Status

	Dietary Recommendation	Food Groups	Healthy Food Choices	Diet, Disease and Weight Management	GNKQ-r Total
Health Status					
Poor-Fair	10.19±2.39	20.87±4.26	8.68±3.03	12.86±3.40	52.61±10.10
Good	10.38±2.15	21.79±4.12	8.91±2.77	13.44±3.60	54.52±9.87
Very good- Excellent	10.71±2.40	22.55±4.27	9.02±2.38	14.02±3.11	56.30±9.46
	F: 1.59 p: 0.205	F: 4.77 p: 0.009*	F: 0.47 p: 0.624	F: 3.40 p: 0.034*	F: 4.20 p: 0.016*

*p < 0.05

The "Food Groups" section scores of people who stated their health status as "very good/excellent" (22.55 ± 4.27) were found to be significantly higher than the scores of people who stated their health status as "poor/fair" (20.87 ± 4.26) ($p < 0.05$).

The "Diet, Disease and Weight Management" section scores of people who stated their health status as "very good/excellent" (14.02 ± 3.11) were found to be significantly higher than the scores of people who stated their health status as "poor/fair" (12.86 ± 3.40) ($p < 0.05$).

GNKQ-r total scores of people who stated their health status as "very good/excellent" (56.30 ± 9.46) were found to be significantly higher than the scores of people who stated their health status as "poor/fair" (52.61 ± 10.10) ($p < 0.05$).

Data regarding the comparison of the average GNKQ-r subsection scores and GNKQ-r total scores according to whether individuals study nutrition and dietetics are given in Table 4.17.

Table 4.17. Differentiation of GNKQ-r Scores and Subsection Scores by Whether They Study Nutrition and Dietetics

	Dietary Recommendation	Food Groups	Healthy Food Choices	Diet, Disease and Weight Management	GNKQ-r Total
Education					
Nutrition and Dietetics (n: 35)	12.54±2.20	26.14±4.39	10.83±2.15	16.89±3.04	66.40±9.71
Other departments (n: 404)	10.24±2.20	21.39±4.00	8.71±2.72	13.16±3.31	53.50±9.22
	t: 5.93 p: 0.000*	t: 6.69 p: 0.000*	t: 5.46 p: 0.000*	t: 6.44 p: 0.000*	t: 7.91 p: 0.000*

*p < 0.01

The score of the students studying Nutrition and Dietetics (12.54 ± 2.20) in the "Dietary Recommendation" section was found to be significantly higher than that of the students in other departments (10.24 ± 2.20) ($p < 0.05$).

The score of the students studying Nutrition and Dietetics (26.14 ± 4.39) in the "Food Groups" section was found to be significantly higher than that of the students in other departments (21.39 ± 4.00) ($p < 0.05$).

The score of the students studying Nutrition and Dietetics (10.83 ± 2.15) in the "Healthy Food Choices" section was found to be significantly higher than that of the students in other departments (8.71 ± 2.72) ($p < 0.05$).

The score of the students studying Nutrition and Dietetics (16.89 ± 3.04) in the "Diet, Disease and Weight Management" section was found to be significantly higher than that of the students in other departments (13.16 ± 3.31) ($p < 0.05$).

The total score of the students studying Nutrition and Dietetics (66.40 ± 9.71) was found to be significantly higher than that of the students in other departments (53.50 ± 9.22) ($p < 0.05$).

All subsection scores and GNKQ-r total scores of students studying Nutrition and Dietetics are significantly higher than students of other departments ($p < 0.05$) ($p < 0.05$).

Data regarding the comparison of the average of GNKQ-r subsection scores and GNKQ-r total scores of individuals according to whether they are currently on a diet or not is given in Table 4.18.

Table 4.18. Differentiation of GNKQ-r Scores and Subsection Scores by Whether They Are Currently on a Diet

	Currently on a Diet	Mean	t	p
Dietary Recommendation	Yes	10.32 ± 2.20	-0.53	0.596
	No	10.46 ± 2.32		
Food Groups	Yes	22.03 ± 4.51	0.73	0.463
	No	21.68 ± 4.14		
Healthy Food Choices	Yes	8.97 ± 3.05	0.39	0.697
	No	8.85 ± 2.63		
Diet, Disease and Weight Management	Yes	13.72 ± 3.27	0.91	0.365
	No	13.37 ± 3.49		
GNKQ-r Total	Yes	55.04 ± 9.62	0.61	0.540
	No	54.36 ± 9.98		

"Dietary Recommendation" section scores of those who are not currently on a diet (10.46 ± 2.32) are higher than those who are currently on a diet (10.32 ± 2.20). However, the difference is not significant ($p > 0.05$).

"Food Groups" section scores of those who are currently on a diet (22.03 ± 4.51) are higher than those who are not currently on a diet (21.68 ± 4.14). However, the difference is not significant ($p > 0.05$).

"Healthy Food Choices" section scores of those who are currently on a diet (8.97 ± 3.05) are higher than those who are not currently on a diet (8.85 ± 2.63). However, the difference is not significant ($p > 0.05$).

"Diet, Disease and Weight Management" section scores of those who are currently on a diet (13.72 ± 3.27) are higher than those who are not currently on a diet (13.37 ± 3.49). However, the difference is not significant ($p > 0.05$).

GNKQ-r total scores of those who are currently on a diet (55.04 ± 9.62) are higher than those who are not currently on a diet (54.36 ± 9.98). However, the difference is not significant ($p > 0.05$).

Participants were asked to rate the question, "What was the degree of relationship between nutrition and health?" from 1 to 10. The correlation between GNKQ-r total score and food-health relationship was examined. A poor positive and significant relationship was found between GNKQ-r total score and food-health relationship ($r = 0.26$, $p < 0.01$) (Table 4.19). In other words, the score obtained from GNKQ-r and food-health relationship increase significantly and have a poor relationship.

Participants were asked to rate the question, "How accurate do you think the food choices you make in your daily life are?" from 1 to 10. The correlation between GNKQ-r total score and food choice accuracy was examined. A poor positive and significant relationship was found between GNKQ-r total score and food choice accuracy ($r = 0.25$, $p < 0.01$) (Table 4.19). In other words, the score obtained from GNKQ-r and food choice accuracy relationship increase significantly and have a poor relationship.

Table 4.19. Correlation Values Between GNKQ-r Total Score, Food-Health Relationship, and Food Choice Accuracy

GNKQ-r Total	Food-Health Relationship	Food Choice Accuracy
GNKQ-r Total	$r = 0.26^*$	$r = 0.25^*$

* $p < 0.01$

5. DISCUSSION

Parmenter and Wardle developed the GNKQ scale to assess nutritional knowledge in 1999 (11). Kliemann et al. revised the scale according to advancements in the science of nutrition. Taking into consideration changing living situations and eating habits, it has been harmonized with current nutritional recommendations based on the link between food and disease development. As a consequence, the updated version (GNKQ-r) has been developed (12). The adaptation of GNKQ to Turkish was made by Alsaffar in 2012, and considering that it is very important to conduct a validity and reliability study of the scales measuring the nutritional knowledge level of adults, it was thought that it was important to conduct a validity and reliability study of GNKQ-r (5). The findings obtained from this research, in which the validity and reliability of GNKQ-r in Turkey were measured, were discussed.

Reliability measures the stability of a measurement tool over time, including whether the scale gives similar results when used at different times. A reliable measurement tool is expected to have stable and consistent measurements (77). The reliability coefficient ranges from 0 to 1; the closer the number is to 1, the more reliable it is considered (90).

To assess the internal consistency of Likert-type scales, the Cronbach alpha reliability coefficient is used, whereas the KR-20 reliability coefficient is used for dichotomously scored scales. When the difficulty levels of the items on the scale are unknown or not near each other (heterogeneous), the KR-20 formula is used; however, when they are the same or close to each other (homogeneous), the KR-21 formula is used (94).

In our analysis, the KR-20 coefficient is above the optimal limit of 0.84 for the overall scale. Additionally, 0.71 for "Healthy Food Choices" and 0.71 for "Diet, Disease, and Weight Management" are above the established optimal limit. However, 0.42 for "Dietary Recommendation" and 0.64 for "Food Groups" stayed under the established limit.

The reliability coefficients of the GNKQ-r scale, developed by Kliemann et al. and tested on 266 people, were found to be 0.93 for the total of the scale. The reliability coefficient was found to be 0.70 for "Dietary Recommendation," 0.86 for "Food Groups,"

and, in parallel with our research, 0.72 for "Healthy Food Choices" and 0.77 for "Diet, Diseases and Weight Management" in the last 2 sections (12).

In a study investigating the validity and reliability of GNKQ-r on 450 people in Turkey, the reliability coefficient was found to be 0.92 for the total of the scale. The reliability coefficient was found to be 0.70 for "Dietary Recommendation," 0.80 for "Food Groups," 0.71 for "Healthy Food Choices," and 0.82 for "Diet, Diseases and Weight Management" (103).

In a study that adapted the GNKQ-r to Arabic, measured its validity and reliability, and tested it on 805 undergraduate students, the reliability coefficient was found to be 0.91 for the total of the scale. The reliability coefficient was found to be 0.72 for "Dietary Recommendation," 0.83 for "Food Groups," 0.70 for "Healthy Food Choices," and 0.83 for "Diet, Diseases and Weight Management" (104).

A validity and reliability study of an Australian-adapted version of the GNKQ-r was tested on 93 individuals. The reliability coefficient was found to be 0.92 for the total of the scale. The reliability coefficient was found to be 0.67 for "Dietary Recommendation," 0.86 for "Food Groups," 0.36 for "Healthy Food Choices," and 0.83 for "Diet, Diseases and Weight Management" (105).

These values are generally parallel to the values in our research, but there are also some differences. One of the reasons for these differences may be the demographic and socio-economic differences between the sample used in other studies and the sample in our study. In addition, some meaning shifts or different interpretations may occur during the translation of the GNKQ-r scale into Turkish and the cultural adaptation process. Apart from this, participants' answers to survey questions may vary depending on the application environment and conditions.

Another method used in reliability analysis is item-total correlation. The minimum acceptable limit value for item-total correlation should be 0.30 (96). However, in our research, there are values below 0.30. The lowest was determined to be -0.14, and the highest was 0.49.

The entire item-total item correlation of the GNKQ-r developed by Kliemann et al. was found to be ≥ 0.2 (12).

In a study investigating the validity and reliability of GNKQ-r in Turkey, item-total item correlation coefficients were found to be lowest at 0.30 and highest at 0.62 (103).

In this research, it was concluded that the internal consistency findings evaluated with the KR-20 formula were compatible with the internal reliability results of the original scale and that the internal consistency was sufficient.

In our research, test-retest reliability was evaluated with ICC. According to the results of our research, test-retest reliability coefficients were found to be excellent for the total scale and good reliability for all subsections (0.92 for the total scale, 0.76 for "Dietary Recommendation," 0.88 for "Food Groups," 0.82 for "Healthy Food Choices," 0.85 for "Diet, Disease and Weight Management").

In Kliemann et al.'s study, the ICC values of GNKQ-r were 0.89 for the total scale, 0.75 for "Dietary Recommendation," 0.83 for "Food Groups," 0.72 for "Healthy Food Choices," 0.82 for "Diet, Disease and Weight Management" (12). The ICC values of the scale were found to be moderate and good, consistent with our findings. This shows that our scale does not change over time and is stable.

In the study investigating the validity and reliability of GNKQ-r in Turkey, the ICC value was measured separately in 30 nutrition and dietetics students and 30 engineering students. The total ICC value of the scale for Nutrition and Dietetics students was found to be 0.85. Subsections ICC values were found to be 0.70 for "Dietary Recommendation," 0.82 for "Food Groups," 0.78 for "Healthy Food Choices," and 0.78 for "Diet, Disease and Weight Management." The total ICC value of the scale for Engineering students was found to be 0.91. Subsections ICC values were found to be 0.69 for "Dietary Recommendation," 0.88 for "Food Groups," 0.92 for "Healthy Food Choices," and 0.74 for "Diet, Disease and Weight Management" (103). The ICC values of the scale were found to be reliable for Nutrition and Dietetics students. The ICC values of the scale were found to be moderate, good, and perfectly reliable for engineering students.

In a study that adapted the GNKQ-r to Arabic, the ICC values of the GNKQ-r were 0.84 for the total scale, 0.72 for "Dietary Recommendation," 0.72 for "Food

Groups," 0.74 for "Healthy Food Choices," 0.73 for "Diet, Disease and Weight Management" (104). The ICC values of the scale were found to be moderate and good.

In the version of GNKQ-r adapted to Australia, 19 people were included in the test-retest study. In the study, ICC values were 0.99 for the total of the scale, 0.98 for "Dietary Recommendation," 0.97 for "Food Groups," 0.83 for "Healthy Food Choices," and 0.96 for "Diet, Disease and Weight Management" (105). The ICC values of the scale were found to be good and perfectly reliable.

The test-retest results of our research were satisfactory in parallel with other studies. The reliability results of the research show that the reliability coefficient calculated from KR-20 is at a high value for the total of the scale, and the test-retest coefficients calculated with the ICC value are at high values, proving that the Turkish version of GNKQ-r is reliable.

The discriminant validity method was used to examine the construct validity of the Turkish version of GNKQ-r. First, the correlation of GNKQ-r between sections was examined. Secondly, it was examined whether the mean scores of the GNKQ-r differ according to gender, education, BMI, and health status.

It has been reported that the correlation between factors on a scale should be between 0.10 and 0.85 (106). The fact that the correlation values between the factors are very high indicates that the scale does not have discriminant validity (107). When the correlation values between the subsections that make up the GNKQ-r in our research were examined, the correlation coefficients of the subsections were 0.27 to 0.65. The correlation of subsections with the total score of the scale varies between 0.58 and 0.84. It is seen that they are below the critical value of 0.85 and above 0.10 and are positive. This reveals that the subsections in the scale are related to each other, but they have different structures.

In the study of the Turkish version of GNKQ-r, the correlation coefficients of the subsections with each other were 0.60 to 0.72. The correlation of subsections with the total score of the scale varies between 0.80 and 0.90 (103).

In a study conducted in the UK, the relationship between "Diet, Disease and Weight Management" and GNKQ-r was examined. The correlation between sections was

found to be positive and significant at 0.498, 0.617, 0.681, and with GNKQ-r, it was found to be positive and significant at 0.642 (108).

In our research, it was seen that women's nutrition knowledge scores are significantly higher than men's in the "Dietary Recommendation," "Healthy Food Choices," "Diet, Disease and Weight Management" sections, and the total scale.

In Kliemann et al.'s study, nutritional knowledge scores of women were found to be significantly higher than men in all subsections and in the total scale (12).

Again in the study that adapted the GNKQ-r to Arabic, nutritional knowledge scores of women were found to be significantly higher than men in all subsections and in the total scale (104).

In the study of the Turkish version of GNKQ-r, except for the "Dietary Recommendations" section, women's nutrition knowledge scores were found to be significantly higher than men's in the other 3 subsections and the total scale (103).

Contrary to our research, in a study conducted in the UK involving 190 university students investigating nutrition knowledge and potential factors affecting nutrition knowledge, no significant relationship was found between nutrition knowledge score and gender (108).

It can be thought that the fact that women are more interested in healthy cooking, nutrition, and weight control has an impact on the results. In our society, women have great responsibilities in kitchen work, as well as in other household chores (13). It is thought that this factor may have been effective because women's nutritional knowledge levels are higher than men.

When the BMIs and nutritional knowledge levels of the people in our research were examined, except for the "Food Groups" section, the 3 subsection scores and total GNKQ-r scores of people with a BMI less than 25 were found to be significantly higher.

In the study in which GNKQ-r was adapted to Arabic, the "Food Groups" section scores of underweight people were found to be significantly higher than those of normal-weight people. However, no significant relationship was found between BMI, the other 3 section scores, or the total score (104).

In the study of the Turkish version of GNKQ-r, being overweight negatively affected the nutritional knowledge score in all subsections and the total scale. In all subsections and the total scale, underweight people received significantly higher scores than normal weight people, and normal weight people received significantly higher scores than overweight people. However, in the regression analysis, it was seen that the BMI did not have a significant effect on the survey total score (103).

In the study conducted in the UK, no significant relationship was found between nutrition knowledge score and BMI (108).

In a study, the average scores of underweight and normal weight individuals were found to be slightly higher than overweight and obese groups, but no significant difference was achieved (23).

In a study conducted among university students, the nutritional knowledge scores of 222 students were compared according to their BMI groups. The study found that there was no significant difference between the groups. However, when the average nutritional knowledge scores of the groups were compared, it was seen that the score of the underweight group was higher than the scores of the overweight and obese groups (109).

A study found a weak negative correlation between BMI and nutrition knowledge score. In other words, as BMI increases, nutritional knowledge level decreases (110).

In our research, overweight and obese individuals had low nutritional knowledge. This may be attributed to the unhealthy eating habits of obese individuals and their preference for high-calorie and fatty foods. This can be explained by their low level of nutritional knowledge and their low nutritional knowledge scores (8). In addition, students who are underweight or normal weight in terms of BMI may be more interested in nutrition, in parallel with the fact that they may pay more attention to their body image. This situation can be explained by their higher level of knowledge about nutrition (111).

In our research, the "Food Groups" and "Diet, Disease and Weight Management" section scores and GNKQ-r total score of people who stated their health status as "very good/excellent" were found to be significantly higher than those who stated their health status as "poor/fair."

In Kliemann et al.'s study, it was found that nutritional knowledge scores increased significantly as health status increased (12).

In the study conducted in the UK, the nutritional knowledge score of those with "very good/excellent" health status was found to be significantly higher than that of those with "good" and "poor/fair" health status (108).

Contrary to our research, in the study in which GNKQ-r was adapted to Arabic, there is no significant relationship between nutritional knowledge score and health status (104).

In the study of the Turkish version of GNKQ-r, having a poor health status in all subsections and on the total scale had a significantly negative impact on the nutrition knowledge score. However, in the regression analysis, it was seen that the health status variable did not have a significant effect on the survey total score (103).

These different results suggest that the impact of health status on nutritional knowledge may vary depending on cultural and methodological factors. The findings of our research highlight that improving health status can increase nutritional knowledge and, therefore, the importance of healthy lifestyle interventions.

In our research, all subsection scores and total scores of students studying Nutrition and Dietetics were found to be significantly higher than those of students in other departments. In parallel with our results, many studies have shown that students studying nutrition and dietetics have higher nutrition knowledge scores than students in other departments (5,9,11,12,103–105). However, it is unclear whether the increased level of nutritional knowledge has a sufficient impact on people's nutritional behavior. Some studies have concluded that previous nutrition education or attending a health-related course does not significantly affect nutrition knowledge. This highlights the importance of implementing nutrition education interventions for students in all academic majors (112,113).

When the dieting status of the participants in our research is compared, it is seen that individuals who are not on a diet constitute the majority (75.9%). In our research, when the scores obtained from the subsections and the total score were compared according to whether people were on a diet or not, it was seen that being on a diet or not

being on a diet did not have a significant effect on nutritional knowledge. In parallel with our research, a study that developed a scale to measure the nutritional knowledge of adults showed that individuals who do not diet constitute the majority (76%). Study found no significant difference between dieting status and nutritional knowledge (24). In a study conducted on 380 women, those who dieted constituted 16% of the study, and those who did not diet constituted 84%. The nutritional knowledge score of those who were on a diet was found to be significantly higher than the nutritional knowledge score of those who were not on a diet (23). Unlike our research, in another study, they reported that the level of nutritional knowledge is a determinant of nutritional behavior and that dietary changes made 2-3 times increase nutritional knowledge (114). These contradictory results suggest that nutritional knowledge may be related not only to dieting status but also to individuals' general eating habits and behavioral changes. Therefore, future studies should more comprehensively evaluate the impact of nutrition education and awareness programs and investigate the long-term effects of these programs on individuals' nutritional knowledge and behavior.

In our research, validity was also examined through concurrent validity. Concurrent validity refers to how consistent the results of a particular test or measure are with a measure previously created to measure the same construct (82). In this context, in our research, the concurrent validity of the GNKQ-r was evaluated by comparing it with the GNKQ Turkish version and YETBİD, two scales measuring nutritional knowledge whose validity and reliability have been proven in Turkey. As a result, a strong and positive correlation of GNKQ-r with the Turkish version of GNKQ and a moderate and positive correlation of GNKQ-r with the YETBİD were found, which are two scales measuring nutritional knowledge with proven validity and reliability in Turkey, which strengthens the validity of our scale. The high correlation between the GNKQ-r and the GNKQ Turkish version indicates that the revised version of the questionnaire is consistent with the original validated Turkish version and that both instruments measure nutritional knowledge similarly. Such a strong correlation implies that the two scales have a similar ability to measure the same construct (115). Although the mid-level correlation between GNKQ-r and YETBİD is lower than the correlation with Turkish GNKQ, it is statistically significant and positive. This result can be interpreted as GNKQ-r and YETBİD being related but not measuring the same thing. This moderate correlation may be due to differences in focus or scope in the questions on both scales. YETBİD may cover slightly

different aspects of nutritional information or use different methodologies, so it may be thought to reveal a less strong but still significant relationship.

In our research, a significant but weak positive correlation was found between the nutrition knowledge score and the food-health relationship. In a study conducted parallel to ours, a significant but weak relationship was found between basic nutrition knowledge and the food-health relationship (24). These findings can be interpreted as indicating that as nutritional knowledge increases, the relationship between food and health becomes better understood, but the strength of this relationship is limited. This suggests that nutrition education is important in understanding the food-health relationship, but more comprehensive education programs are needed to strengthen this relationship.

In our research, a significant but weak positive correlation was found in the comparison of nutrition knowledge score and food choice accuracy. Contrary to our research, it did not find a significant relationship between food preference score and food choice accuracy (24). These findings can be interpreted as nutritional knowledge is effective in choosing the right food, but this effect is limited. Therefore, it is thought that making nutrition education programs more effective and comprehensive in order to increase individuals' correct food choices may be effective.

The sources from which the participants in our research obtained their nutritional information were questioned: 46.7% from the internet, 30.3% from a dietician, 7.5% from a doctor or nurse, 7.3% from a teacher at school, 3.2% from books, 2.5% from television and/or radio, 1.6% from other sources, and 0.9% from newspapers and magazines. In a study, 26% of the participants got nutrition information from television and radio, 17.3% from newspapers and magazines, 16.3% from a dietician, 11.5% from health personnel, 10.6% from teachers, schoolchildren, etc. and from lessons, and 1.9% reported that they received it from their mother, father or family (24). In a study conducted to determine the nutritional knowledge level and nutritional status of 380 women living in Edirne, when the information sources of those who received information about nutrition were examined, 18.4% received information from television and radio, 17.9% received information from a dietician, and 17.9% received information from a health officer. 15.8%, those who get information from lessons and teachers are 15%, those who get information from newspapers and magazines are 11.1%, and those who get information from their parents are 6.3% (23).

In our research, the average score obtained from the "Dietary Recommendation" section of GNKQ-r is 10.42 ± 2.29 . In the study conducted in the UK, the median score was found to be 13.5 (108). In the study that adapted GNKQ-r to Turkish, it was found to be 11.99 ± 2.74 (103). In Kliemann et al.'s study, the mean score of Nutrition students was found to be 16.3 ± 0.14 , and the mean score of English students was 13.9 ± 0.25 (12). In the study that adapted GNKQ-r to Arabic, it was found to be 12.5 ± 2.8 in Nutrition students and 6.9 ± 3.2 in Arabic students (104).

The average score obtained from the "Food Groups" section of GNKQ-r is 21.77 ± 4.23 . In the study conducted in the UK, the median score was found to be 25.0 (108). In the study that adapted GNKQ-r to Turkish, it was found to be 23.75 ± 5.51 (103). In Kliemann et al.'s study, the mean score of Nutrition students was found to be 31.9 ± 0.27 , and the mean score of English students was 27.2 ± 0.49 (12). In the study that adapted GNKQ-r to Arabic, it was found to be 27.6 ± 5.2 in Nutrition students and 16.2 ± 5.4 in Arabic students (104).

The average score obtained from the "Healthy Food Choices" section of GNKQ-r is 8.88 ± 2.73 . In the study conducted in the UK, the median score was found to be 10.0 (108). In the study that adapted GNKQ-r to Turkish, it was found to be 9.01 ± 2.43 (103). In Kliemann et al.'s study, the mean score of Nutrition students was found to be 11.7 ± 0.14 , and the mean score of English students was 10.7 ± 0.20 (12). In the study that adapted GNKQ-r to Arabic, it was found to be 8.3 ± 2.4 in Nutrition students and 4.8 ± 2.3 in Arabic students (104).

The average score obtained from the "Diet, Disease and Weight Management" section of GNKQ-r is 13.45 ± 3.44 . In the study conducted in the UK, the median score was found to be 15.0 (108). In the study that adapted GNKQ-r to Turkish, it was found to be 15.52 ± 4.01 (103). In Kliemann et al.'s study, the mean score of Nutrition students was found to be 19.3 ± 0.15 , and the mean score of English students was 15.9 ± 0.28 (12). In the study that adapted GNKQ-r to Arabic, it was found to be 17.6 ± 2.9 in Nutrition students and 10.1 ± 4.2 in Arabic students (104).

The average score obtained from the total GNKQ-r is 54.52 ± 9.89 . In the study conducted in the UK, the median score was found to be 64.0 (108). In the study that adapted GNKQ-r to Turkish, it was found to be 60.27 ± 12.72 (103). In Kliemann et al.'s

study, the mean score of Nutrition students was found to be 79.3 ± 0.51 , and the mean score of English students was 67.7 ± 0.97 (12). In the study that adapted GNKQ-r to Arabic, it was found to be 66.0 ± 10.6 in Nutrition students and 38.0 ± 10.7 in Arabic students (104).

In our research, when the average scores obtained from GNKQ-r were converted into a 100-point system, the scores obtained from the "Dietary Recommendation", "Food Groups", "Healthy Food Choices" and "Diet, Disease and Weight Management" sections were found to be 57.88, 60.47, 68.30, and 64.04, respectively. In a study conducted on 100 students to evaluate the nutritional knowledge of nursing students, the average scores obtained from the sections were found to be 51.89 ± 13.86 , 57.53 ± 13.65 , 51.08 ± 22.61 , and 53.86 ± 19.44 , respectively, on a 100-point system (116). In the study adapting GNKQ-r to Turkish, the average scores obtained from the sections converted to a 100-point system were found to be 66.61, 65.97, 69.30, and 73.90, respectively (103).

In our research, the highest score from GNKQ-r was in the "Healthy Food Choices" section, and the lowest score was obtained from the "Dietary Recommendations" section. In the study conducted on nursing students, the highest score was from the GNKQ-r "Food Groups" section, and the lowest score was obtained from the "Healthy Food Choices" section (116). In the study adapting GNKQ-r to Turkish, the highest score from GNKQ-r the "Diet, Disease and Weight Management" section, and the lowest score was obtained from the "Food Groups" section (103).

In our research, the total score obtained from GNKQ-r was found to be 61.95 when converted into a 100-point system. In the study conducted on nursing students, the total score obtained from GNKQ-r was found to be 53.86 ± 19.44 (116). In the study adapting GNKQ-r to Turkish, the total score obtained from GNKQ-r was found to be 68.48 (103).

In our research, the average score from Section A of the GNKQ Turkish version is 5.77 ± 1.82 . In the study adapting GNKQ to Turkish, the average score of Nutrition students was 8.2 ± 1.4 , and the average score of Engineering students was 6.4 ± 2.2 (5). In the study adapting GNKQ to Japan, the median score of Nutrition students was found to be 7.0, and the median score of other students was 5.0 (117). In the study adapting GNKQ to Australia, the average score of people who received nutrition education was

found to be 10.12 ± 1.95 , and the average score of community members was 8.89 ± 1.56 (9).

The average score from Section B of the GNKQ Turkish version is 39.28 ± 9.95 . In the study adapting GNKQ to Turkish, the average score of Nutrition students was found to be 54.0 ± 6.0 , and the average score of Engineering students was 42.3 ± 9.9 (5). In the study adapting GNKQ to Japan, the median score of Nutrition students was found to be 63.0, and the median score of other students was 43.0 (117). In the study adapting GNKQ to Australia, the average score of people who received nutrition education was 54.27 ± 9.32 , and the average score of community members was 47.45 ± 9.22 (9).

The average score obtained from Section C of the GNKQ Turkish version is 6.69 ± 2.29 . In the study adapting GNKQ to Turkish, the average score of Nutrition students was found to be 4.7 ± 1.0 , and the average score of Engineering students was 3.3 ± 1.4 (5). In the study adapting GNKQ to Japan, the median score of Nutrition students was found to be 4.0, and the median score of other students was 2.0 (117). In the study adapting GNKQ to Australia, the average score of people who received nutrition education was 7.62 ± 1.55 , and the average score of community members was 6.66 ± 1.97 (9).

The average score obtained from Section D of the GNKQ Turkish version is 20.68 ± 6.04 . In the study adapting GNKQ to Turkish, the average score of Nutrition students was found to be 26.1 ± 3.9 , and the average score of Engineering students was 19.4 ± 4.7 (5). In the study adapting GNKQ to Japan, the median score of Nutrition students was found to be 15.0, and the median score of other students was 9.0 (117). In the study adapting GNKQ to Australia, the average score of people who received nutrition education was found to be 12.70 ± 2.66 , and the average score of community members was 9.42 ± 2.95 (9).

The average score obtained from the total GNKQ Turkish version is 72.41 ± 16.92 . In the study adapting GNKQ to Turkish, the average score of Nutrition students was found to be 103.6 ± 9.2 , and the average score of Engineering students was 81.8 ± 14.5 (5). In the study adapting GNKQ to Japan, the median score of Nutrition students was found to be 104.0, and the median score of other students was 68.0 (117). In the study adapting

GNKQ to Australia, the average score of people who received nutrition education was 84.72 ± 13.11 , and the average score of community members was 72.42 ± 13.51 (9).

In our research, the average score obtained from the "Basic Nutrition Knowledge" section of YETBID is 55.20 ± 8.88 . In the study conducted on women, the average score obtained from the "Basic Nutrition Knowledge" section of YETBID was 53.30 ± 8.230 (23). In the study where YETBID was developed and validated, the average score obtained from the "Basic Nutrition Knowledge" section of YETBID was 53.0 ± 8.1 (24).

The average score obtained from the "Food Preference" section of YETBID is 36.61 ± 6.66 . In the study conducted on women, the average score obtained from the "Food Preference" section of YETBID is 37.95 ± 7.042 (23). In the study where YETBID was developed and validated, the average score obtained from the "Basic Nutrition Knowledge" section of YETBID was 38.2 ± 5.6 (24).

The reasons for the differences in scores may be based on various factors. Cultural differences, demographic characteristics of the participants, age, gender, socioeconomic status, education levels and methodological factors are thought to contribute to the differences in scores.

This research is limited to 429 students from Yeditepe University's Kayışdağı campus. Only 79 participants could be contacted for the test-retest study. The study focused on university students at Yeditepe University's Kayışdağı campus for convenience and consistency, and this limits the generalizability of the findings to the entire Turkish population. In general, university students are more conscious members of society than the overall youth population. According to research, those with a greater degree of education have better levels of nutritional knowledge, as do women (5,12). This indicates that the current study's findings are limited to the context in which they were conducted. The Turkish version of the GNKQ-r requires further validation before being administered to more varied samples of both genders, including children, elderly individuals, and mixed socioeconomic groups within the Turkish community, dependent on cross-sectional screening. One of our study's limitations is that participants reported their weight and height based on their own statements. This information was used to determine BMI, and it should be noted that self-reported data may have limitations in terms of accuracy and reliability.

6. CONCLUSION

The fact that the reliability coefficients calculated using the KR-20 formula and the test-retest correlation coefficients calculated with ICC are at high values proves that the Turkish version of GNKQ-r is a reliable scale.

High correlation coefficients measured with GNKQ Turkish version and YETBID, which were examined for concurrent validity, support the validity. In addition, the differentiation of nutrition knowledge scores according to gender, BMI, health status, and department of education proves its construct validity.

This research concluded that the Turkish version of GNKQ-r is a reliable and valid scale that can be used to evaluate nutritional knowledge in Turkish society.

As a result of this research, it is thought that a scale that can comprehensively measure the level of nutrition knowledge in Turkey will contribute to the literature. When determining nutritional information, questioning the contents of foods, nutritional recommendations, correct food preferences and frequencies, the ability to read food labels, and nutritional recommendations for various diseases ensure that the research is more comprehensive. Therefore, this research aims to add to the literature a scale that can measure nutrition knowledge more comprehensively, and that can be applied quickly and easily when measuring the level of knowledge.

It is thought that it can be used as a preliminary tool in determining future health policies. As a comprehensive, easy-to-use, short-term survey in Turkey, it will provide unity in studies and make it possible to make comparisons between studies. This scale has the capacity to measure nutrition knowledge comprehensively and is a valuable tool that can be used to determine the level of nutrition knowledge in Turkey and formulate nutrition policies. In addition, the use of such scales will increase the comparability of data obtained from different studies by providing unity in public health studies. In particular, it can be used by health professionals and educators to assess the impact of nutrition education programs and provide feedback to improve the effectiveness of these programs. In addition, the use of the GNKQ-r may contribute to the spread of healthy eating habits by increasing nutrition awareness in the community. It is thought that the scale will also play an important role in creating nutritional awareness among the participants and promoting healthy eating habits.

This research is an essential step toward the creation of more comprehensive and reliable scales for measuring nutrition knowledge in Turkey, and it will serve as a foundation for future research. Furthermore, the development and execution of such scales will contribute to the design of strategic interventions to enhance the general nutritional state of the population and avoid nutrition-related disorders. In future research, it is recommended that the validity and reliability of this scale for various demographic groups be examined more thoroughly.



7. REFERENCES

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8. APPENDIX

8.1. Informed Voluntary Consent Form

BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU

Sayın Katılımcı;

Katıldığınız bu çalışma bilimsel nitelikte bir araştırma olup konusu “Revize Edilmiş Genel Beslenme Bilgisi Ölçeğinin Türkçe Geçerlilik ve Güvenilirliği: Bir vakıf üniversitesi öğrenci örnekleme” dir.

Bu araştırma, Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Beslenme ve Diyetetik Anabilim Dalı’nda öğrenci olan Nagihan Şen’in yüksek lisans tezi kapsamında yapılmaktadır.

Araştırmanın amacı; “Revised General Nutrition Knowledge Questionnaire(GNKQ-r) ” isimli beslenme değerlendirme ölçeğinin Türkçe’ye uyarlanması ve ülkemizde kullanılabilirliğini saptamak için geçerlilik ve güvenilirlik değerlendirmesinin yapılmasıdır.

Bu çalışmaya katılmak gönüllülük esasına dayanmaktadır. Çalışmaya katılmama ve çalışmanın herhangi bir aşamasında, hiçbir cezaya/yaptırıma maruz kalmaksızın, çalışmadan ayrılma hakkına sahipsiniz. Araştırmada yer almanız nedeniyle size hiçbir ödeme yapılmayacak ve sizden de hiçbir ücret talep edilmeyecektir. Anketi yanıtlamanız, araştırmaya katılım için onam verdiğiniz anlamına gelmektedir. Araştırma hakkında daha fazla bilgi almak için araştırmacı Nagihan Şen’e başvurabilir, araştırmacıya mail adresinden ulaşabilirsiniz.

Araştırmanın bilgilendirilmiş gönüllü olur formundaki tüm açıklamaları okudum/sözlü olarak dinledim. Bana yukarıda konusu ve amacı belirtilen araştırma ile ilgili yazılı ve sözlü açıklama aşağıda belirtilen araştırmacı tarafından yapıldı. Araştırmaya gönüllü olarak katıldığımı istediğim zaman gerekçeli veya gerekçesiz olarak araştırmadan ayrılabilceğimi biliyorum. Söz konusu araştırmaya, hiçbir baskı ve zorlama olmaksızın kendi rızamla katılmayı kabul ediyorum.

Gönüllünün Adı-Soyadı:

İmza:

Tarih:

Tanık Adı-Soyadı:

İmza:

Tarih:

Araştırma hakkındaki yukarıdaki ve istenen diğer bilgiler katılımcıya tarafımdan açıklanmış ve yazılı onamını alınmıştır.

Araştırmacının Adı-Soyadı:
Nagihan ŞEN

İmza:

Tarih:

8.2. Ethical Council Approval


T.C.
MARMARA ÜNİVERSİTESİ
Sağlık Bilimleri Fakültesi
Girişimsel Olmayan Klinik Çalışmalar Etik Kurulu

PROJENİN ADI : "Revize Edilmiş Genel Beslenme Bilgisi Ölçeğinin Türkçe Geçerlilik ve Güvenilirliği: Bir Vakıf Üniversitesi Öğrenci Örneklemi"

PROJENİN YÜRÜTÜCÜSÜ : Dr. Öğr. Üyesi İrem KAYA CEBİOĞLU

PROJEDEKİ ARAŞTIRICILAR : Nacihan ŞEN

ONAY TARİHİ VE SAYISI : 29.12.2022/153

Sayın: Dr. Öğr. Üyesi İrem KAYA CEBİOĞLU

"153" protokol numaralı "Revize Edilmiş Genel Beslenme Bilgisi Ölçeğinin Türkçe Geçerlilik ve Güvenilirliği: Bir Vakıf Üniversitesi Öğrenci Örneklemi" isimli projeniz Fakültemiz Etik Kurulu tarafından incelenmiş oy birliği ile etik yönden uygun olduğuna karar verilmiştir.

8.3. Expert Opinions Form

GENEL BESLENME BİLGİSİ ANKETİ

Genel Beslenme Bilgisi Anketi 4 bölümden oluşmaktadır. Bölüm konuları sırayla; 1.Uzman tavsiyeleri 2.Gıda grupları, 3. Yiyecek Seçimi 4. Beslenme ve hastalık arasındaki ilişkidir.

Aşağıdaki bazı sorularda doğru cevap “**kalin**” olarak belirtilmiştir. Bazı sorularda ise her madde için doğru cevap karşısına “√” sembolü konulmuştur.

Buna göre her madde için görüşünüzü belirtiniz. “ * ” seçeneklerden birini işaretlediğinizde lütfen açıklama sütununa uygun önerilerinizi yazınız.

Bölüm 1: İlk birkaç madde uzmanların bize ne tavsiye ettiğini düşündüğünüz ile ilgilidir.									
1. Sağlık alanındaki uzmanlar, aşağıdaki besinlerden daha fazla, aynı miktarda veya daha az tüketilmesini tavsiye ediyor mudur? (Her besin için bir kutucuğu işaretleyiniz.)					Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
	Daha fazla	Aynı miktarda	Daha az	Emin değilim					
Meyve	√								
Eklenti şeker içeren yiyecek ve içecekler			√						
Sebze	√								
Yağlı yiyecekler			√						
İşlenmiş kırmızı et			√						
Tam tahıllar	√								
Tuzlu yiyecekler			√						
Su	√								

				Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
2. Uzmanlar günde en az kaç porsiyon meyve ve sebze tüketilmesini tavsiye etmektedir? (Bir porsiyona örnek bir elma veya bir avuç doğranmış havuç olabilir.) (Sadece tek bir kutucuğu işaretleyiniz.) a) 2 b)3 c)4 d) 5 veya daha fazla e) emin değilim								
3. Uzmanlar aşağıda verilen türdeki yağlardan hangilerinin daha az tüketilmesi gerektiğini önermektedir? (Her besin için bir kutucuğu işaretleyiniz.)								
	Daha az tüketilmeli	Daha az tüketilmemeli	Emin değilim					
Doymamış yağlar		√						
Trans yağlar	√							
Doymuş yağlar	√							

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
4. Uzmanlar hangi tür süt ürünlerinin tüketilmesi gerektiğini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Tam yağlı (örn: tam yağlı süt) b) Yağı azaltılmış (örn: yağsız ve yarım yağlı süt) c) Hem yağı azaltılmış hem de tam yağlı d) Hiçbiri, süt ürünlerinden kaçınılmalıdır. e) Emin değilim					
5. Uzmanlar haftada kaç kez yağlı balık (örn; somon ve uskumru) tüketilmesini tavsiye etmektedir? a) Haftada 1-2 kez b) Haftada 3-4 kez c) Her gün d) Emin değilim					
6. Günde yaklaşık olarak en fazla kaç adet alkollü içecek tavsiye edilmektedir? (Kesin sayı, içeceğin boyutuna ve sertliğine bağlıdır) (Sadece tek bir kutucuğu işaretleyiniz.) a) Hem erkekler hem de kadınlar için 1 adet/kadeh b) Hem erkekler hem de kadınlar için 2 adet/kadeh c) Erkekler için 2 ve kadınlar için 1 adet/kadeh d) Erkekler için 3, kadınlar için 2 adet/kadeh e) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
7. Uzmanlar haftada kaç kez kahvaltı yapılmasını tavsiye etmektedir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Haftada 3 kez b) Haftada 4 kez c) Her gün d) Emin değilim					
8. Bir kişi günde iki bardak meyve suyu içiyorsa, bu tüketim günlük meyve ve sebze porsiyonunun ne kadarı olarak kabul edilir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Hiç b) Bir porsiyon c) İki porsiyon d) Üç porsiyon e) Emin değilim					
9. Kılavuzlara göre (dengeli ve sağlıklı beslenmek için tüketmesi gereken yiyecek türlerinin oranlarına ilişkin kılavuzlar), bir kişinin diyetinin ne kadarı nişastalı yiyeceklerden oluşmalıdır? (Tek bir kutucuğu işaretleyiniz.) a) Çeyreği b) Dörtte üçü c) Yarısı d) Emin değilim					

Bölüm 2: Uzmanlar besinleri gruplara ayırırlar. Besin gruplarının ve içerdikleri besinlerin farkında olup olmadığınızı görmek istiyoruz.

1. Aşağıda verilen yiyecek ve içeceklerin genel olarak eklenti şeker içeriğinin yüksek mi yoksa düşük mü olduğunu düşünüyorsunuz? (Her yiyecek/içecek için bir kutucuğu işaretleyiniz.)

	Yüksek eklenti şeker	Düşük eklenti şeker	Emin değilim	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
Diyet kola		√						
Doğal Yoğurt		√						
Dondurma	√							
Ketçap	√							
Kavun		√						

2. Aşağıda verilen yiyeceklerin genel olarak tuz içeriğinin yüksek mi yoksa düşük mü olduğunu düşünüyorsunuz? (Her yiyecek için bir kutucuğu işaretleyiniz.)

	Yüksek tuz içeriği	Düşük tuz içeriği	Emin değilim	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
Kahvaltılık gevrek	√							
Dondurulmuş sebze		√						
Ekmek	√							
Pişmiş kuru fasulye	√							
Kırmızı et		√						
Konserve çorba	√							

3. Aşağıda verilen yiyeceklerin genel olarak lif içeriğinin yüksek mi yoksa düşük mü olduğunu düşünüyorsunuz? (Her yiyecek için bir kutucuğu işaretleyiniz.)				Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
	Yüksek lif içeriği	Düşük lif içeriği	Emin değilim					
Yulaf	√							
Muz	√							
Beyaz pirinç		√						
Yumurta		√						
Kabuklu patates	√							
Makarna		√						

4. Aşağıda verilen yiyecekler sizce iyi bir protein kaynağı mıdır? (Her yiyecek için bir kutucuğu işaretleyiniz.)				Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
	İyi bir kaynaştır	İyi bir kaynak değildir	Emin değilim					
Kümes hayvanları	√							
Peynir	√							
Meyve		√						
Pişmiş kuru fasulye	√							
Tereyağı		√						
Sert kabuklu yemişler	√							

5. Uzmanlar aşağıdakilerden hangisini ya da hangilerini nişastalı yiyecek olarak değerlendirmektedirler? (Her yiyecek için bir kutucuğu işaretleyiniz.)				Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
	Nişastalı	Nişastalı değil	Emin değilim					
Peynir		√						
Makarna	√							
Patates	√							
Sert kabuklu yemiş		√						
Muz (Plantain muz)	√							

6. Aşağıda verilen yiyeceklerin her birinde bulunan ana yağ türü nedir? (Her yiyecek için bir kutucuğu işaretleyiniz.)						Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
	Çoklu doymamış yağ	Tekli doymamış yağ	Doymuş yağ	Kolesterol	Emin değilim					
Zeytinyağı		√								
Tereyağı			√							
Ayçiçek yağı	√									
Yumurta				√						

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
7. Aşağıda verilen yiyeceklerden hangisinde trans yağ içeriği en fazladır? (Sadece tek bir kutucuğu işaretleyiniz.) a) Bisküvi, kek ve hamur işleri b) Balık c) Kolza yağı (bir çeşit bitkisel yağ) d) Yumurta e) Emin değilim					
8. Bir bardak yağsız süt ile karşılaştırıldığında bir bardak tam yağlı sütteki kalsiyum miktarı: (Sadece tek bir kutucuğu işaretleyiniz.) a) Aynı sayılır b) Fazladır c) Düşüktür d) Emin değilim					
9. Aşağıdaki verilen besin öğelerinden hangisinin aynı miktarı en fazla kaloriye sahiptir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Şeker b) Nişasta c) Diyet lifi/posası d) Yağ e) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
10. En az düzeyde işlenmiş gıdalarla karşılaştırıldığında işlenmiş gıdalar: (Sadece tek bir kutucuğu işaretleyiniz.) a) Daha yüksek kalorilidir. b) Daha yüksek lif içeriğine sahiptir. c) Daha az tuzludur. d) Emin değilim					
Bölüm 3: Sonraki birkaç madde yemek seçimi ile ilgilidir.					
	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
1. Bir kişi marketten yoğurt almak isterse, hangisinde en az şeker/tatlandırıcı bulunur? (Sadece tek bir kutucuğu işaretleyiniz.) a) %0 yağlı vişneli yoğurt b) Doğal yoğurt c) Kremli dokulu meyveli yoğurt d) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
2. Bir kişi bir restoran veya kafede çorba içmek isterse, aşağıda verilenlerden hangisi en az yağlı seçenek olur? (Sadece tek bir kutucuğu işaretleyiniz.) a) Mantarlı Pirinçli Çorba (tarla mantarı, çörek mantarı, pirinç, tereyağı, krema, maydanoz ve toz karabiber) b) Havuç ve Baharatlı Balkabağı Çorbası (havuç, kabak, tatlı patates, kimyon, kırmızı biber, kişniş tohumu ve limon) c) Kremalı tavuk çorbası (Tavuk, soğan, havuç, kereviz, patates, sarımsak, adaçayı, buğday unu, yoğun krema) d) Emin değilim					
3. Aşağıda verilenlerden hangisi bir restoranda ana yemek için en sağlıklı ve dengeli bir seçim olurdu? (Sadece tek bir kutucuğu işaretleyiniz.) a) Kızarmış hindi, patates püresi ve sebzeler b) Biftek, kızartma hamur işi ve fırında patates c) Bezelye ve tartar sos ile servis edilen balık ve patates kızartması d) Emin değilim					
4. Aşağıda verilenlerden hangisi öğle yemeği için sağlıklı ve dengeli bir seçim olurdu? (Sadece tek bir kutucuğu işaretleyiniz.) a) Jambonlu sandviç + meyve + yaban mersinli muffin + meyve suyu b) Ton balıklı sandviç + meyve + az yağlı yoğurt + su c) Yumurtalı sandviç + gevrek/cips + az yağlı yoğurt + su D) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
5. Tatlı seçiminde aşağıda verilenlerden hangisi en sağlıklı seçenek olur? (Sadece tek bir kutucuğu işaretleyiniz.) a) Kırmızı meyveli sorbe (sadece meyve ile yapılan donuk tatlı) b) Elmalı ve böğürtlenli turta c) Limonlu cheesecake d) Üstü kremalı havuçlu kek e) Emin değilim					
6. Aşağıda verilen salataların içerdikleri sebze kombinasyonlarından hangisi en çok vitamin ve antioksidan içeriğine sahiptir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Marul, yeşil biber ve lahana b) Brokoli, havuç ve domates c) Kırmızı biber, domates ve marul d) Emin değilim					
7. Bir kişi diyetindeki yağ miktarını azaltmak istiyor ancak patates kızartması yemekten vazgeçmek istemiyorsa, aşağıdakilerden hangisi en iyi seçim olurdu? (Sadece tek bir kutucuğu işaretleyiniz.) a) Kalın kesilmiş patates kızartması b) İnce kesilmiş patates kızartması c) Tırtıklı/kafes şeklinde kesilmiş patates kızartması D) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
8. Ekstra yağ veya tuz eklemekten yiyeceklere lezzet katmanın sağlıklı bir yolu şunları eklemektir: (Sadece tek bir kutucuğu işaretleyiniz.) a) Hindistan cevizi sütü b) Baharatlar c) Soya sosu D) Emin değilim					
9. Aşağıda verilen pişirme yöntemlerinden hangisi yağ eklenmesini gerektirmektedir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Izgara b) Buharda pişirme c) Fırında pişirme d) Soteleme e) Emin değilim					
10. Besinleri içeriklerine göre tüketim önerisi açısından trafik ışıkları ile etiketlesek, besinin yağ içeriği için sarı renk ne anlama gelirdi? (Sadece tek bir kutucuğu işaretleyiniz.) a) Düşük düzey yağ içeriği b) Orta düzey yağ içeriği c) Yüksek düzey yağ içeriği d) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz																				
11. Light veya diyet yiyecekler, kalorileri düşük olduğu için her zaman iyi seçimlerdir. (Sadece tek bir kutucuğu işaretleyiniz.) a) Katılıyorum b) Katılmıyorum c) Emin değilim																									
Aşağıdaki sorular gıda etiketleri ile ilgilidir:																									
Ürün 1 (Tatlı Bisküvi) Her bir bisküvi (9.5g) şunları içerir: <table><tr><td>Kalori 43</td><td>Şeker 2g</td><td>Yağ 1g</td><td>Doymuş Yağ 1g</td><td>Tuz 0.1g</td></tr><tr><td>2%</td><td>2%</td><td>2%</td><td>3%</td><td>2%</td></tr></table> Her (satılan) 100g için tipik değer: 450 Kcal İçerik listesi: Yulaf Gevreği, Şeker, Palm Yağı, Modifiye Buğday Unu, Tam Buğday Unu, Fruktoz, Malt Şurubu, Tuz, Kabartıcılar: Sodyum Hidrojen Karbonat, Amonyum Hidrojen Karbonat, Tatlandırıcı Ürün 2 (Tuzlu Bisküvi) Her bir bisküvi (16g) şunları içerir: <table><tr><td>Kalori 66</td><td>Şeker 1g</td><td>Yağ 3g</td><td>Doymuş Yağ İz Miktar 1g</td><td>Tuz 0.3g</td></tr><tr><td>3%</td><td>1%</td><td>4%</td><td>1%</td><td>4%</td></tr></table> Her (satılan) 100g için tipik değer: 412 Kcal İçerik listesi: Buğday Unu, Palm Yağı, Mısır Şurubu, Malt, Tuz, Maya, Kabartıcı Ajanlar (Sodyum Bikarbonat, Amonyum Bikarbonat, Sodyum Pirofosfat), Mısır Nisastası, Soya Lestini, Sodyum Metabisülfite (Pişirme Ajanı)						Kalori 43	Şeker 2g	Yağ 1g	Doymuş Yağ 1g	Tuz 0.1g	2%	2%	2%	3%	2%	Kalori 66	Şeker 1g	Yağ 3g	Doymuş Yağ İz Miktar 1g	Tuz 0.3g	3%	1%	4%	1%	4%
Kalori 43	Şeker 2g	Yağ 1g	Doymuş Yağ 1g	Tuz 0.1g																					
2%	2%	2%	3%	2%																					
Kalori 66	Şeker 1g	Yağ 3g	Doymuş Yağ İz Miktar 1g	Tuz 0.3g																					
3%	1%	4%	1%	4%																					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
12. Şekilde verilen 1 ve 2 numaralı ürünlere baktığınızda hangisi 100 gramda en yüksek kaloriye sahiptir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Ürün 1 b) Ürün 2 c) İkisi de aynı kaloriye sahiptir. d) Emin değilim					
13. 1. ürüne baktığınızda, içindekiler listesindeki şeker kaynakları nelerdir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Şeker ve malt şurubu b) Şeker, fruktoz ve lesitin c) Şeker, fruktoz ve malt şurubu d) Emin değilim					

Bölüm 4: Bu bölüm, diyet ve kilo yönetimi ile ilgili sağlık sorunları veya hastalıklar ile ilgilidir.

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
1. Verilen hastalıklardan hangisi düşük lif alımı ile ilişkilidir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Bağırsak Bozuklukları b) Anemi c) Diş çürümesi d) Emin değilim					
2. Verilen hastalıklardan hangisi ne kadar şeker tüketildiği ile ilişkilidir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Hipertansiyon b) Diş çürümesi c) Anemi d) Emin değilim					
3. Verilen hastalıklardan hangisi ne kadar tuz (veya sodyum) tüketildiği ile ilişkilidir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Hipotiroidizm b) Diyabet c) Hipertansiyon D) Emin değilim					

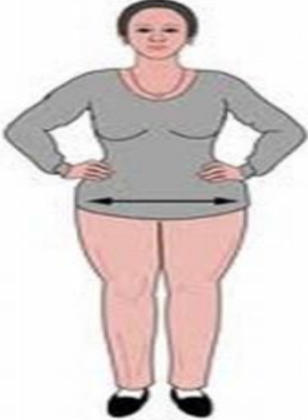
	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
4. Uzmanlar kansere yakalanma riskini azaltmak için aşağıda verilen seçeneklerden hangilerini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Düzenli olarak alkol tüketmek b) Daha az kırmızı et tüketmek c) Besinlerde katkı maddelerinden kaçınmak d) Emin değilim					
5. Uzmanlar kalp hastalığını önlemek için aşağıda verilen seçeneklerden hangisini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Besin takviyesi kullanmak (supplement) b) Daha az yağlı balık yemek c) Daha az trans yağ yemek d) Emin değilim					
6. Uzmanlar diyabeti (şeker hastalığını) önlemek için verilen seçeneklerden hangisini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Rafine edilmiş besinleri daha az tüketmek b) Daha fazla meyve suyu içmek c) İşlenmiş etleri daha fazla yemek D) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
7. Aşağıda verilen yiyeceklerden hangisinin kan kolesterol seviyelerini yükseltme olasılığı daha yüksektir? (Sadece tek bir kutucuğu işaretleyiniz.) a) Yumurta b) Bitkisel yağ c) Hayvansal yağ d) Emin değilim					
8. Aşağıda verilen besinlerden hangisi yüksek glisemik indekse sahip olarak sınıflandırılmaktadır (Glisemik indeks, bir besinin kan şekeri düzeyleri üzerindeki etkisinin bir ölçüsüdür. Yüksek glisemik indeks yemekten sonra kan şekerinde daha fazla artış anlamına gelmektedir.)? (Sadece tek bir kutucuğu işaretleyiniz.) a) Tam tahıllar b) Beyaz ekmek c) Sebze ve meyveler D) Emin değilim					
9. İdeal kiloyu korumak için yağ diyetten tamamen çıkarılmalıdır. (Sadece tek bir kutucuğu işaretleyiniz.) a) Katlıyorum b) Katılmıyorum c) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
10. İdeal kiloyu korumak için yüksek proteinli bir diyet uygulanmalıdır. (Sadece tek bir kutucuğu işaretleyiniz.) a) Katılıyorum b) Katılmıyorum c) Emin değilim					
11. Ekmek yemek her zaman kilo aldırır. (Sadece tek bir kutucuğu işaretleyiniz.) a) Katılıyorum b) Katılmıyorum c) Emin değilim					
12. Lifli gıdalar tüketmek kilo alma olasılığını azaltabilir. (Sadece tek bir kutucuğu işaretleyiniz.) a) Katılıyorum b) Katılmıyorum c) Emin değilim					

13. Aşağıda verilen seçeneklerden hangisi sağlıklı kilonun korumasında yardımcı olabilir? (Her bir seçenek için bir kutu işaretleyin.)				Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
	Evet	Hayır	Emin değilim					
Televizyon izlerken yemek yememek	√							
Besin etiketlerini okumak	√							
Besin takviyeleri kullanmak		√						
Tüketilen besinlerin takibini yapmak	√							
Ağırlık takibi yapmak	√							
Gün içerisinde sürekli atıştırmak		√						

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
14. Hayır Emin Değilim Birinin Beden Kütle İndeksi (BKİ) 23 kg/m2 olsaydı, ağırlık durumu ne olurdu? (Sadece tek bir kutucuğu işaretleyiniz.) a) Zayıf b) Normal c) Fazla kilolu d) Obez e) Emin değilim					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
15. Birinin Beden Kütle İndeksi (BKİ) 30 kg/m² olsaydı, ağırlık durumu ne olurdu? (Sadece tek bir kutucuğu işaretleyiniz.) a) Zayıf b) Normal c) Fazla kilolu d) Obez e) Emin değilim					
Aşağıda verilen vücut şekillerini inceleyiniz:  Elma Tipi  Armut Tipi					

	Uygun	Madde Gözden Geçirilmeli*	Madde Değişmeli*	Madde Uygun Değil*	Öneriniz
16. Verilen vücut tiplerinden hangisi kardiyovasküler hastalık riskini arttırmaktadır (Kardiyovasküler hastalık, anjina, kalp krizi, kalp yetmezliği, genetik kalp rahatsızlıkları ve inme gibi kalpteki kan damarlarının hastalıklarını tanımlayan genel bir terimdir)? (Sadece tek bir kutucuğu işaretleyiniz.) a) Elma tipi vücut b) Armut tipi vücut c) Emin değilim					

8.4. Questionnaire Form

GENEL BESLENME BİLGİSİ ANKETİ				
Bu bir test değil ankettir. Yanıtlarınız, insanların hangi beslenme tavsiyelerini kafa karıştırıcı bulduğunu belirlememize yardımcı olacaktır. Bu anketi kendinizin tamamlaması oldukça önemlidir. Verdiğiniz cevaplar isimsiz olarak kalacaktır. Cevabı bilmiyorsanız tahmin etmek yerine " Emin değilim. " seçeneğini işaretleyiniz.				
Zaman ayırdığınız için teşekkürler.				
Bölüm 1: İlk birkaç madde uzmanların bize ne tavsiye ettiğini düşündüğünüz ile ilgilidir.				
1.	Sağlık alanındaki uzmanlar, aşağıdaki besinlerden daha fazla, aynı miktarda veya daha az tüketilmesini tavsiye ediyor mudur? (Her besin için bir kutucuğu işaretleyiniz.)			
	Daha Fazla	Aynı	Daha Az	Emin Değilim
Meyve	☐	☐	☐	☐
Eklenti şeker içeren yiyecek ve içecekler	☐	☐	☐	☐
Sebze	☐	☐	☐	☐
Yağlı yiyecekler	☐	☐	☐	☐
İşlenmiş kırmızı et	☐	☐	☐	☐
Tam tahıllar	☐	☐	☐	☐
Tuzlu yiyecekler	☐	☐	☐	☐
Su	☐	☐	☐	☐
2.	Uzmanlar günde en az kaç porsiyon meyve ve sebze tüketilmesini tavsiye etmektedir? (Bir porsiyona örnek bir elma veya bir avuç doğranmış havuç olabilir.) (Sadece tek bir kutucuğu işaretleyiniz.)			
2	☐			
3	☐			
4	☐			
5 veya daha fazla	☐			
Emin değilim	☐			
3.	Uzmanlar aşağıda verilen türdeki yağlardan hangilerinin daha az tüketilmesi gerektiğini önermektedir? (Her besin için bir kutucuğu işaretleyiniz.)			
	Daha az tüketilmeli	Daha az tüketilmemeli	Emin Değilim	
Doymamış yağlar	☐	☐	☐	
Trans yağlar	☐	☐	☐	
Doymuş yağlar	☐	☐	☐	
4.	Uzmanlar hangi tür süt ürünlerinin tüketilmesi gerektiğini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.)			
Tam yağlı (örn: tam yağlı süt)	☐			
Yağı azaltılmış (örn: yağsız ve yarım yağlı süt)	☐			
Hem yağı azaltılmış hem de tam yağlı	☐			
Hiçbiri, süt ürünlerinden kaçınılmalıdır.	☐			
Emin değilim.	☐			
5.	Uzmanlar haftada kaç kez yağlı balık (örn; somon ve uskumru) tüketilmesini tavsiye etmektedir? (Sadece tek bir kutucuğu işaretleyiniz.)			
Haftada 1-2 kez	☐			
Haftada 3-4 kez	☐			
Her gün	☐			
Emin değilim	☐			

6.	Günde yaklaşık olarak en fazla kaç adet alkollü içecek tavsiye edilmektedir? (Kesin sayı, içeceğin boyutuna ve sertliğine bağlıdır) (Sadece tek bir kutucuğu işaretleyiniz.)		
	Hem erkekler hem de kadınlar için 1 adet/kadeh	☐	
	Hem erkekler hem de kadınlar için 2 adet/kadeh	☐	
	Erkekler için 2 ve kadınlar için 1 adet/kadeh	☐	
	Erkekler için 3, kadınlar için 2 adet/kadeh	☐	
	Emin değilim	☐	
7.	Uzmanlar haftada kaç kez kahvaltı yapılmasını tavsiye etmektedir? (Sadece tek bir kutucuğu işaretleyiniz.)		
	Haftada 3 kez	☐	
	Haftada 4 kez	☐	
	Her gün	☐	
	Emin değilim	☐	
8.	Bir kişi günde iki bardak meyve suyu içiyorsa, bu tüketim günlük meyve ve sebze porsiyonunun ne kadarı olarak kabul edilir? (Sadece tek bir kutucuğu işaretleyiniz.)		
	Hiç	☐	
	Bir porsiyon	☐	
	İki porsiyon	☐	
	Üç porsiyon	☐	
	Emin değilim	☐	
9.	Kılavuzlara göre (dengeli ve sağlıklı beslenmek için tüketmesi gereken yiyecek türlerinin oranlarına ilişkin kılavuzlar), bir kişinin diyetinin ne kadarı nişastalı yiyeceklerden oluşmalıdır? (Tek bir kutucuğu işaretleyiniz.)		
	Çeyreği	☐	
	Dörtte üçü	☐	
	Yarısı	☐	
	Emin değilim	☐	
Bölüm 2: Uzmanlar besinleri gruplara ayırırlar. Besin gruplarının ve içerdikleri besinlerin farkında olup olmadığınızı görmek istiyoruz.			
1.	Aşağıda verilen yiyecek ve içeceklerin genel olarak eklenti şeker içeriğinin yüksek mi yoksa düşük mü olduğunu düşünüyorsunuz? (Her yiyecek/içecek için bir kutucuğu işaretleyiniz.)		
	Yüksek eklenti şeker	Düşük eklenti şeker	Emin değilim
	Diyet kola	☐	☐
	Doğal Yoğurt	☐	☐
	Dondurma	☐	☐
	Ketçap	☐	☐
	Kavun	☐	☐
2.	Aşağıda verilen yiyeceklerin genel olarak tuz içeriğinin yüksek mi yoksa düşük mü olduğunu düşünüyorsunuz? (Her yiyecek için bir kutucuğu işaretleyiniz.)		
	Yüksek tuz içeriği	Düşük tuz içeriği	Emin değilim
	Kahvaltılık gevrek	☐	☐
	Dondurulmuş sebze	☐	☐
	Ekmek	☐	☐
	Pişmiş kuru fasulye	☐	☐
	Kırmızı et	☐	☐
	Konserve çorba	☐	☐

3. Aşağıda verilen yiyeceklerin genel olarak lif içeriğinin yüksek mi yoksa düşük mü olduğunu düşünüyorsunuz? (Her yiyecek için bir kutucuğu işaretleyiniz.)					
	Yüksek lif içeriği	Düşük lif içeriği	Emin değilim		
Yulaf	☐	☐	☐		
Muz	☐	☐	☐		
Beyaz pirinç	☐	☐	☐		
Yumurta	☐	☐	☐		
Kabuklu patates	☐	☐	☐		
Makarna	☐	☐	☐		
4. Aşağıda verilen yiyecekler sizce iyi bir protein kaynağı mıdır? (Her yiyecek için bir kutucuğu işaretleyiniz.)					
	İyi bir kaynaktır	İyi bir kaynak değildir	Emin değilim		
Kümes hayvanları	☐	☐	☐		
Peynir	☐	☐	☐		
Meyve	☐	☐	☐		
Pişmiş kuru fasulye	☐	☐	☐		
Tereyağı	☐	☐	☐		
Sert kabuklu yemişler	☐	☐	☐		
5. Uzmanlar aşağıdakilerden hangisini ya da hangilerini nişastalı yiyecek olarak değerlendirmektedirler? (Her yiyecek için bir kutucuğu işaretleyiniz.)					
	Nişastalı	Nişastalı değil	Emin değilim		
Peynir	☐	☐	☐		
Makarna	☐	☐	☐		
Patates	☐	☐	☐		
Sert kabuklu yemiş	☐	☐	☐		
Muz (Plantain muz)	☐	☐	☐		
6. Aşağıda verilen yiyeceklerin her birinde bulunan ana yağ türü nedir?(Her yiyecek için bir kutucuğu işaretleyiniz.)					
	Çoklu doymamış yağ	Tekli doymamış yağ	Doymuş yağ	Kolesterol	Emin değilim
Zeytinyağı	☐	☐	☐	☐	☐
Tereyağı	☐	☐	☐	☐	☐
Ayçiçek yağı	☐	☐	☐	☐	☐
Yumurta	☐	☐	☐	☐	☐
7. Aşağıda verilen yiyeceklerden hangisinde trans yağ içeriği en fazladır? (Sadece tek bir kutucuğu işaretleyiniz.)					
Bisküvi, kek ve hamur işleri				☐	
Balık				☐	
Kolza yağı (bir çeşit bitkisel yağ)				☐	
Yumurta				☐	
Emin değilim				☐	
8. Bir bardak yağsız süt ile karşılaştırıldığında bir bardak tam yağlı sütteki kalsiyum miktarı: (Sadece tek bir kutucuğu işaretleyiniz.)					
Aynı sayılır				☐	
Fazladır				☐	
Düşüktür				☐	
Emin değilim				☐	

9.	Aşağıdaki verilen besin öğelerinden hangisinin aynı miktarı en fazla kaloriye sahiptir? (Sadece tek bir kutucuğu işaretleyiniz.)	
Şeker		☐
Nişasta		☐
Diyet lifi/posası		☐
Yağ		☐
Emin değilim		☐
10.	En az düzeyde işlenmiş gıdalarla karşılaştırıldığında işlenmiş gıdalar: (Sadece tek bir kutucuğu işaretleyiniz.)	
Daha yüksek kalorilidir.		☐
Daha yüksek lif içeriğine sahiptir.		☐
Daha az tuzludur.		☐
Emin değilim		☐
Bölüm 3: Sonraki birkaç madde yemek seçimi ile ilgilidir.		
1.	Bir kişi marketten yoğurt almak isterse, hangisinde en az şeker/tatlandırıcı bulunur? (Sadece tek bir kutucuğu işaretleyiniz.)	
%0 yağlı vişneli yoğurt		☐
Doğal yoğurt		☐
Kremsi dokulu meyveli yoğurt		☐
Emin değilim		☐
2.	Bir kişi bir restoran veya kafede çorba içmek isterse, aşağıda verilenlerden hangisi en az yağlı seçenek olur? (Sadece tek bir kutucuğu işaretleyiniz.)	
Mantarlı Pirinçli Çorba (tarla mantarı, çörek mantarı, pirinç, tereyağı, krema, maydanoz ve toz karabiber)		☐
Havuç ve Baharatlı Balkabağı Çorbası (havuç, kabak, tatlı patates, kimyon, kırmızı biber, kişniş tohumu ve limon)		☐
Kremalı tavuk çorbası (Tavuk, soğan, havuç, kereviz, patates, sarımsak, adaçayı, buğday unu, yoğun krema)		☐
Emin değilim		☐
3.	Aşağıda verilenlerden hangisi bir restoranda ana yemek için en sağlıklı ve dengeli bir seçim olurdu? (Sadece tek bir kutucuğu işaretleyiniz.)	
Kızarmış hindi, patates püresi ve sebzeler		☐
Biftek, kızartma hamur işi ve fırında patates		☐
Bezelye ve tartar sos ile servis edilen balık ve patates kızartması		☐
Emin değilim		☐
4.	Aşağıda verilenlerden hangisi öğle yemeği için sağlıklı ve dengeli bir seçim olurdu? (Sadece tek bir kutucuğu işaretleyiniz.)	
Jambonlu sandviç + meyve + yaban mersinli muffin + meyve suyu		☐
Ton balıklı sandviç + meyve + az yağlı yoğurt + su		☐
Yumurtalı sandviç + gevrek/cips + az yağlı yoğurt + su		☐
Emin değilim		☐
5.	Tatlı seçiminde aşağıda verilenlerden hangisi en sağlıklı seçenek olur? (Sadece tek bir kutucuğu işaretleyiniz.)	
Kırmızı meyveli sorbe (sadece meyve ile yapılan donuk tatlı)		☐
Elmalı ve böğürtlenli turta		☐
Limonlu cheesecake		☐
Üstü kremalı havuçlu kek		☐
Emin değilim		☐

6.	Aşağıda verilen salataların içerdikleri sebze kombinasyonlarından hangisi en çok vitamin ve antioksidan içeriğine sahiptir? (Sadece tek bir kutucuğu işaretleyiniz.)	
	Marul, yeşil biber ve lahana	☐
	Brokoli, havuç ve domates	☐
	Kırmızı biber, domates ve marul	☐
	Emin değilim	☐
7.	Bir kişi diyetindeki yağ miktarını azaltmak istiyor ancak patates kızartması yemekten vazgeçmek istemiyorsa, aşağıdakilerden hangisi en iyi seçim olurdu? (Sadece tek bir kutucuğu işaretleyiniz.)	
	Kalın kesilmiş patates kızartması	☐
	İnce kesilmiş patates kızartması	☐
	Tırtıklı/kafes şeklinde kesilmiş patates kızartması	☐
	Emin değilim	☐
8.	Ekstra yağ veya tuz eklemekten yiyeceklere lezzet katmanın sağlıklı bir yolu şunları eklemektir: (Sadece tek bir kutucuğu işaretleyiniz.)	
	Hindistan cevizi sütü	☐
	Baharatlar	☐
	Soya sosu	☐
	Emin değilim	☐
9.	Aşağıda verilen pişirme yöntemlerinden hangisi yağ eklenmesini gerektirmektedir? (Sadece tek bir kutucuğu işaretleyiniz.)	
	Izgara	☐
	Buharda pişirme	☐
	Fırında pişirme	☐
	Soteleme	☐
	Emin değilim	☐
10.	Besinleri içeriklerine göre tüketim önerisi açısından trafik ışıkları ile etiketlesek, besinin yağ içeriği için sarı renk ne anlama gelirdi? (Sadece tek bir kutucuğu işaretleyiniz.)	
	Düşük düzey yağ içeriği	☐
	Orta düzey yağ içeriği	☐
	Yüksek düzey yağ içeriği	☐
	Emin değilim	☐
11.	Light veya diyet yiyecekler, kalorileri düşük olduğu için her zaman iyi seçimlerdir. (Sadece tek bir kutucuğu işaretleyiniz.)	
	Katılıyorum	☐
	Katılmıyorum	☐
	Emin değilim	☐

Aşağıdaki sorular gıda etiketleri ile ilgilidir:

Ürün 1 (Tatlı Bisküvi)

Her bir bisküvi (9.5g) şunları içerir:

Kalori	Şeker	Yağ	Doymuş Yağ	Tuz
43	2g	1g	1g	0.1g
2%	2%	2%	3%	2%

Her (satılan) 100g için tipik değer: 450 Kcal

İçerik listesi: Yulaf Gevreği, Şeker, Palm Yağı, Modifiye Buğday Unu, Tam Buğday Unu, Fruktöz, Malt Şurubu, Tuz, Kabartıcılar: Sodyum Hidrojen Karbonat, Amonyum Hidrojen Karbonat, Tatlandırıcı

Ürün 2 (Tuzlu Bisküvi)

Her bir bisküvi (16g) şunları içerir:

Kalori	Şeker	Yağ	Doymuş Yağ	Tuz
66	1g	3g	İz Miktar	0.3g
3%	1%	4%	1%	4%

Her (satılan) 100g için tipik değer: 412 Kcal

İçerik listesi: Buğday Unu, Palm Yağı, Mısır Şurubu, Malt, Tuz, Maya, Kabartıcı Ajanlar (Sodyum Bikarbonat, Amonyum Bikarbonat, Sodyum Pirofosfat), Mısır Nisastası, Soya Lestini, Sodyum Metabisülfid (Pişirme Ajanı)

12. Şekilde verilen 1 ve 2 numaralı ürünlere baktığınızda hangisi 100 gramda en yüksek kaloriye sahiptir? (Sadece tek bir kutucuğu işaretleyiniz.)

- Ürün 1 ☐
- Ürün 2 ☐
- İkisi de aynı kaloriye sahiptir. ☐
- Emin değilim ☐

13. 1. ürüne baktığınızda, içindekiler listesindeki şeker kaynakları nelerdir? (Sadece tek bir kutucuğu işaretleyiniz.)

- Şeker ve malt şurubu ☐
- Şeker, fruktoz ve lesitin ☐
- Şeker, fruktoz ve malt şurubu ☐
- Emin değilim ☐

Bölüm 4: Bu bölüm, diyet ve kilo yönetimi ile ilgili sağlık sorunları veya hastalıklar ile ilgilidir.

1. Verilen hastalıklardan hangisi düşük lif alımı ile ilişkilidir? (Sadece tek bir kutucuğu işaretleyiniz.)

- Bağırsak Bozuklukları ☐
- Anemi ☐
- Diş çürümesi ☐
- Emin değilim ☐

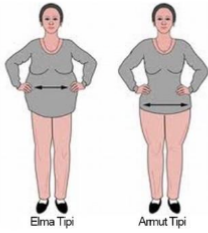
2. Verilen hastalıklardan hangisi ne kadar şeker tüketildiği ile ilişkilidir? (Sadece tek bir kutucuğu işaretleyiniz.)

- Hipertansiyon ☐
- Diş çürümesi ☐
- Anemi ☐
- Emin değilim ☐

3. Verilen hastalıklardan hangisi ne kadar tuz (veya sodyum) tüketildiği ile ilişkilidir? (Sadece tek bir kutucuğu işaretleyiniz.)

- Hipotiroidizm ☐
- Diyabet ☐
- Hipertansiyon ☐
- Emin değilim ☐

4.	Uzmanlar kansere yakalanma riskini azaltmak için aşağıda verilen seçeneklerden hangilerini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.)
	Düzenli olarak alkol tüketmek ☐
	Daha az kırmızı et tüketmek ☐
	Besinlerde katkı maddelerinden kaçınmak ☐
	Emin değilim ☐
5.	Uzmanlar kalp hastalığını önlemek için aşağıda verilen seçeneklerden hangisini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.)
	Besin takviyesi kullanmak (supplement) ☐
	Daha az yağlı balık yemek ☐
	Daha az trans yağ yemek ☐
	Emin değilim ☐
6.	Uzmanlar diyabeti (şeker hastalığını) önlemek için verilen seçeneklerden hangisini önermektedir? (Sadece tek bir kutucuğu işaretleyiniz.)
	Rafine edilmiş besinleri daha az tüketmek ☐
	Daha fazla meyve suyu içmek ☐
	İşlenmiş etleri daha fazla yemek ☐
	Emin değilim ☐
7.	Aşağıda verilen yiyeceklerden hangisinin kan kolesterol seviyelerini yükseltme olasılığı daha yüksektir? (Sadece tek bir kutucuğu işaretleyiniz.)
	Yumurta ☐
	Bitkisel yağ ☐
	Hayvansal yağ ☐
	Emin değilim ☐
8.	Aşağıda verilen besinlerden hangisi yüksek glisemik indekse sahip olarak sınıflandırılmaktadır (Glisemik indeks, bir besinin kan şekeri düzeyleri üzerindeki etkisinin bir ölçüsüdür. Yüksek glisemik indeks yemekten sonra kan şekerinde daha fazla artış anlamına gelmektedir.)? (Sadece tek bir kutucuğu işaretleyiniz.)
	Tam tahıllar ☐
	Beyaz ekmek ☐
	Sebze ve meyveler ☐
	Emin değilim ☐
9.	İdeal kiloyu korumak için yağ diyetten tamamen çıkarılmalıdır. (Sadece tek bir kutucuğu işaretleyiniz.)
	Katılıyorum ☐
	Katılmıyorum ☐
	Emin değilim ☐
10.	İdeal kiloyu korumak için yüksek proteinli bir diyet uygulanmalıdır. (Sadece tek bir kutucuğu işaretleyiniz.)
	Katılıyorum ☐
	Katılmıyorum ☐
	Emin değilim ☐
11.	Ekmek yemek her zaman kilo aldırır. (Sadece tek bir kutucuğu işaretleyiniz.)
	Katılıyorum ☐
	Katılmıyorum ☐
	Emin değilim ☐

12.	Lifli gıdalar tüketmek kilo alma olasılığını azaltabilir. (Sadece tek bir kutucuğu işaretleyiniz.)		
Katılıyorum	☐		
Katılmıyorum	☐		
Emin değilim	☐		
13.	Aşağıda verilen seçeneklerden hangisi sağlıklı kilonun korumasında yardımcı olabilir? (Her bir seçenek için bir kutu işaretleyin.)		
	Evet	Hayır	Emin Değilim
Televizyon izlerken yemek yememek	☐	☐	☐
Besin etiketlerini okumak	☐	☐	☐
Besin takviyeleri kullanmak	☐	☐	☐
Tüketilen besinlerin takibini yapmak	☐	☐	☐
Ağırlık takibi yapmak	☐	☐	☐
Gün içerisinde sürekli atıştırmak	☐	☐	☐
14.	Birinin Beden Kütle İndeksi (BKİ) 23 kg/m ² olsaydı, ağırlık durumu ne olurdu? (Sadece tek bir kutucuğu işaretleyiniz.)		
Zayıf	☐		
Normal	☐		
Fazla kilolu	☐		
Obez	☐		
Emin değilim	☐		
15.	Birinin Beden Kütle İndeksi (BKİ) 30 kg/m ² olsaydı, ağırlık durumu ne olurdu? (Sadece tek bir kutucuğu işaretleyiniz.)		
Zayıf	☐		
Normal	☐		
Fazla kilolu	☐		
Obez	☐		
Emin değilim	☐		
Aşağıda verilen vücut şekillerini inceleyiniz:			
			
16.	Verilen vücut tiplerinden hangisi kardiyovasküler hastalık riskini arttırmaktadır (Kardiyovasküler hastalık, anjina, kalp krizi, kalp yetmezliği, genetik kalp rahatsızlıkları ve inme gibi kalpteki kan damarlarının hastalıklarını tanımlayan genel bir terimdir)? (Sadece tek bir kutucuğu işaretleyiniz.)		
Elma tipi vücut	☐		
Armut tipi vücut	☐		
Emin Değilim	☐		

Bölüm 5: Size kendiniz hakkında birkaç soru sormak istiyoruz		
1.	Cinsiyet	Kadın ☐ Erkek ☐
2.	Şu anki ağırlığınız yaklaşık olarak nedir? Lütfen bunu kilogram cinsinden veriniz.	Kilogram
3.	Şu anki boyunuz yaklaşık olarak nedir? Lütfen bunu santimetre cinsinden veriniz.	Santimetre
4.	Genel olarak sağlığınızın nasıl olduğunu söyler misiniz?	
	Kötü	☐
	İdare eder	☐
	İyi	☐
	Çok iyi	☐
	Mükemmel	☐
5.	Medeni durumunuz;	Bekar ☐ Evli ☐
6.	Çocuğunuz var mı?	
	Yok	☐
	1	☐
	2	☐
	3	☐
	4	☐
	4'ten fazla	☐
7.	Sizinle birlikte yaşayan 18 yaşından küçük çocuğunuz var mı?	
	Var	☐
	Yok	☐
8.	Tamamlamış olduğunuz en yüksek eğitim seviyesi nedir?	
	İlkokul	☐
	Ortaokul	☐
	Lise	☐
	Üniversite	☐
9.	Beslenme bilimi ile ilgili yetkinliğiniz var mı? (ya da bu yetkinliği kazanabilmek için bir eğitim alıyor musunuz)?	
	Evet	☐
	Hayır	☐
	Lütfen belirtiniz:	
10.	Yaşınız..... Yaşadığınız yer..... Kaçınıcı sınıfı okuyorsunuz?..... Bölümünüz.....	

Bu ankete katıldığınız için çok teşekkür ederiz!

GNKQ Türkçe Versiyon

A. İlk birkaç soru uzmanların bize verdiği bilgiler ile ilgili olarak ne düşündüğünüz üzerinedir.

A1. Sizce sağlıkla ilgili konularda uzman olan kişiler aşağıdaki gıdaları eskiye oranla daha çok mu, aynı miktarda mı ya da daha az miktarlarda mı tüketmemizi önermektedir? (Her bir gıda için lütfen bir kutucuk işaretleyiniz)

	Daha çok	Aynı miktarda	Daha az	Emin değilim
Sebzeler				
Şekerli gıdalar				
Kırmızı et, sakatat				
Niştastalı gıdalar				
Yağlı Gıdalar				
Yüksek oranda posa (Diyet lifi) içeren gıdalar				
Meyveler				
Tuzlu gıdalar				

A2. Uzmanlar günde kaç porsiyon sebze ve meyve tüketmemizi önermektedir? Örneğin bir porsiyon meyve 1 orta boy elma, bir porsiyon sebze 1 orta boy havuçtur.
a) 3 b) 4 c) 5 d) Emin değilim

A3. Uzmanlar hangi tip yağların kullanımının azaltılmasının sağlığımız için önemli olduğunu söylemektedir? (Seçeneklerden birini işaretleyiniz)

- a) Tekli doymamış
b) Çoklu doymamış
c) Doymuş
d) Emin değilim

A4. Tuz gıdaların yapısında bulunabilir ya da bizler tarafından sonradan gıdalara eklenebilir. Uzmanlar bir günde tükettiğimiz toplam tuz miktarının ne kadardan fazla olmaması gerektiğini söylemektedirler? (Seçeneklerden birini işaretleyiniz)

- a) Bir çay kaşığından (3 g) fazla olmamalı
b) Bir tatlı kaşığından fazla (6 g) olmamalı
c) Bir yemek kaşığından fazla (10 g) olmamalı
d) Emin değilim

B.Uzmanlar gıdaları gruplara ayırmışlardır. Bu bölümde, bu gruplarda hangi gıdaların yer aldığını bilip bilinmediğini belirlemek istiyoruz.

B1. Aşağıdaki şeker eklenmiş gıdaları şeker içeriklerine göre yüksek ya da düşük olarak sınıflandırınız (Her bir gıda için tek bir kutucuk işaretleyiniz).

	Yüksek	Düşük	Emin değilim
Hazır nar ekşisi sosları			
Hazır meyveli yoğurt			
Dondurma			
Konsantre meyve suyu			
Ketçap			
Fındık Ezmesi (Sarelle vs.)			

B2. Sizce aşağıdakilerden hangisi yüksek ya da düşük miktarda yağ içerir? (Her bir gıda için tek bir kutucuk işaretleyiniz).

	Yüksek	Düşük	Emin değilim
Makarna (pişmiş, sade)			
Düşük yağlı margarin			
Simit			
Salam			
Bal			
Kızarmış yumurtalı ekmek			
Kuruyemiş			
Ekmek			
Lor peyniri			
Ayçiçek yağı			

B3. Sizce uzmanlar aşağıdakilerden hangisini 'nişastalı gıda' olarak kabul etmektedir? (Her bir gıda için tek bir kutucuk işaretleyiniz)	B6. Aşağıdaki gıdalar trans yağ asidi içerir mi? (Her bir gıda için tek bir kutucuk işaretleyiniz)																																																																
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B5. Aşağıdaki gıdaların protein içeriğini yüksek ya da düşük olarak belirtiniz. (Her bir gıda için tek bir kutucuk işaretleyiniz)	B8. Aşağıdaki gıdaların doymuş yağ içeriğini yüksek ya da düşük olarak belirtiniz. (Her bir gıda için tek bir kutucuk işaretleyiniz)																																																																
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B9. Sizce uzmanlar aşağıdaki gıdaları kırmızı etin yerine protein alımı/içeriği açısından bir alternatif olarak önermekte midir? (Her bir gıda için tek bir kutucuk işaretleyiniz)				B15. Kırmızı et ve tavuk omega-3 yağ asitlerinin önemli kaynaklarıdır. (Bir tanesini işaretleyiniz)	
	Evet	Hayır	Emin değilim	a) Katılıyorum b) Katılmıyorum c) Emin değilim	
Ciğer sote				B16. Bir bardak tam yağlı sütte bir bardak yarım yağlı süttten daha çok kalsiyum vardır. (Bir tanesini işaretleyiniz)	
Salam					
Piyaz (kuru fasulye)				a) Katılıyorum b) Katılmıyorum c) Emin değilim	
Kuruyemiş				B17. Katı olan yağlar diğer yağlardan daha fazla doymuş yağ asidi içerir. (Bir tanesini işaretleyiniz)	
Düşük yağlı peynir					
Milföy böreği / kiş				a) Katılıyorum b) Katılmıyorum c) Emin değilim	
B10. Bazı gıdaların yağ içeriği yüksektir ancak bu gıdalar kolesterol içermeyebilirler. (Bir tanesini işaretleyiniz)				a) Katılıyorum b) Katılmıyorum c) Emin değilim	
a) Katılıyorum b) Katılmıyorum c) Emin değilim				C. Bu bölümdeki sorular diyetimizde yer alan gıdalarla ilgilidir.	
B11. Bir çay bardağı şeker katılmamış meyve suyu (taze sıkılmış ve bekletilmemiş) enerji ve vitamin içeriği açısından bir porsiyon meyve yerine geçer. (Bir tanesini işaretleyiniz)				Bu bölümdeki soruları lütfen neyi sevip neyi sevmediğinize göre yanıtlamayınız . Sadece sorunun doğru yanıt olduğunu düşündüğünüz seçeneği işaretleyiniz. Örnek soru. Gıdalarla aldığı yağı azaltmak isteyen bir kişinin aşağıdaki yumurta çeşitlerinden hangisinin tüketilmesi en uygundur?	
a) Katılıyorum b) Katılmıyorum c) Emin değilim				a) Haşlanmış yumurta b) Yağda yumurta c) Patatesli yumurta d) Sucuklu yumurta	
B12. Ispanakta bulunan demir kırmızı ette bulunan demir kadar faydalıdır. (Bir tanesini işaretleyiniz)				Haşlanmış yumurtayı sevmiyor olsanız dahi, buradaki doğru yanıt olduğu için "haşlanmış yumurta seçeneğini işaretlemeniz gerekmektedir.	
a) Katılıyorum b) Katılmıyorum c) Emin değilim				C1. Düşük yağ ve yüksek posa (diyet lifi) içeriğine sahip olan gıdayı seçiniz. (Bir tanesini işaretleyiniz)	
a) Katılıyorum b) Katılmıyorum c) Emin değilim				a) Muhallebi b) Kuru üzüm c) Diyet çikolata d) Simit ve ayran	
B14. Bir bardak tam yağlı sütte bir bardak yarım yağlı süttten daha çok protein vardır. (Bir tanesini işaretleyiniz)					
a) Katılıyorum b) Katılmıyorum c) Emin değilim					

C2. Düşük yağ ve yüksek posa (diyet lifi) içeriğine sahip olan hafif bir aşağıdakilerden hangisi olabilir? (Bir tanesini işaretleyiniz)	C8. Daha fazla miktarda vitamin ve mineral almak isteyen bir kişi aşağıdakilerden hangisini seçmelidir? (Bir tanesini işaretleyiniz)																								
a) Izgara tavuk b) Beyaz ekmek ile yapılmış sucuklu tost c) Mercimek köftesi d) Tavuklu milföy böreği	a) Beyaz ekmek b) Kepekli ekmek c) Tam tahıllı ekmek d) Emin değilim																								
C3. Gıdalarla aldığı yağı azaltmak isteyen bir kişi aşağıdakilerden hangisini seçmelidir? (Bir tanesini işaretleyiniz)	C9. Diyetinin yağdan gelen enerjisini azaltmak isteyen bir kişi, aşağıdakilerden hangisini azaltmalıdır? (Bir tanesini işaretleyiniz)																								
a) Izgara biftek b) Izgara sosis c) Izgara hindi d) Izgara köfte	a) Tereyağı b) Ayçiçek yağı c) İki de aynı d) Emin değilim																								
C4. Tatlı yeme isteği duyan ancak aldığı şeker miktarını kısıtlamak isteyen bir kişinin aşağıdakilerden hangisini tüketmesi uygundur? (Birini işaretleyiniz)	C10. Enerji alımını azaltmak isteyen bir kişi aşağıdakilerden hangisinden en fazla kaçınmalıdır? (Bir tanesini işaretleyiniz)																								
a) Üzerine bal sürülmüş tost ekmeği b) Meyveli gofret c) Bisküvi d) Kayısı (kuru ya da taze) eklenmiş yoğurt	a) Şeker b) Patates c) Yağ d) Emin değilim																								
C5. Aşağıdakilerden hangisinin enerji içeriği daha düşüktür? (Birini işaretleyiniz)	C11. Diyetle kolesterol alımını düşürmek isteyen bir kişi aşağıdakilerden hangisini tüketmemelidir? (Birini işaretleyiniz)																								
a) Fırında pişirilmiş sade elma b) Hazır çilekli yoğurt c) Simit ve ayran d) Sade dondurma	a) Tahıllar b) Hayvansal yağlar c) Bitkisel yağlar d) Emin değilim																								
C6. Aşağıdakilerden hangisi düşük yağlıdır? (Birini işaretleyiniz)	D. Bu bölümdeki sorular hastalıklar ya da sağlık sorunları ile ilgilidir.																								
a) Sade krem peynir b) Koyun peyniri c) Eski kaşar d) Lor peyniri	D1. Aşağıdakilerden hangisi az miktarda meyve tüketiminin neden olduğu hastalık ya da sağlık sorunudur? (Lütfen her biri için bir kutucuk işaretleyiniz)																								
C7. Diyetle aldığı tuzu azaltmak isteyen biri için hangisinin tüketilmesi en uygundur? (Birini işaretleyiniz)	<table><tr><td></td><td>Evet</td><td>Hayır</td><td>Emin değilim</td></tr><tr><td>Kabızlık</td><td></td><td></td><td></td></tr><tr><td>Astım</td><td></td><td></td><td></td></tr><tr><td>Soğuk algınlığı</td><td></td><td></td><td></td></tr><tr><td>Diş çürüğü</td><td></td><td></td><td></td></tr><tr><td>Siroz</td><td></td><td></td><td></td></tr></table>		Evet	Hayır	Emin değilim	Kabızlık				Astım				Soğuk algınlığı				Diş çürüğü				Siroz			
	Evet	Hayır	Emin değilim																						
Kabızlık																									
Astım																									
Soğuk algınlığı																									
Diş çürüğü																									
Siroz																									
a) Hazır pizza b) Et suyu tableti eklenerek hazırlanmış pilav c) Hazır çorba d) Mantarlı omlet																									

D2. Aşağıdakilerden hangisi şeker tüketimine bağlı olarak gelişen hastalık ya da sağlık sorunudur? (Lütfen her biri için bir kutucuk işaretleyiniz)				D6. Sizce aşağıdakiler kalp hastalıklarını önleyebilir mi? (Lütfen her biri için bir kutucuk işaretleyiniz)			
	Evet	Hayır	Emin değilim		Evet	Hayır	Emin değilim
Şeker Hastalığı				Daha fazla posa (diyet lifi) tüketmek			
Katarakt				Daha fazla meyve ve sebze yemek			
Anemi				Daha az tuz tüketmek			
Kalp hastalığı				Daha az doymuş yağ tüketmek			
Saç dökülmesi							
D3. Aşağıdakilerden hangisi tuz ya da sodyum tüketimine bağlı olarak gelişen hastalık ya da sağlık sorunudur? (Lütfen her biri için bir kutucuk işaretleyiniz)				D7. Sizce aşağıdakilerden hangisi antioksidan vitamin sınıfına girer? (Lütfen her biri için bir kutucuk işaretleyiniz)			
	Evet	Hayır	Emin değilim		Evet	Hayır	Emin değilim
Yüksek tansiyon				A vitamini			
İshal				B vitaminleri			
Gece körlüğü				C vitamini			
Hepatit				D vitamini			
Böbrek hastalığı				E vitamini			
D4. Aşağıdakilerden hangisi yağ tüketimine bağlı olarak gelişen hastalık ya da sağlık sorunudur? (Lütfen her biri için bir kutucuk işaretleyiniz)				K vitamini			
	Evet	Hayır	Emin değilim	E. Son olarak sizinle ilgili bir kaç soru sormak istiyoruz.			
Şişmanlık				E1. Cinsiyetiniz	a) Erkek	b) Kadın	
Yüksek Kolesterol				E2. Kaç yaşındasınız?.....			
Migren				E3. Boyunuz.....			
Kabızlık				E4. Kilonuz.....			
Kalp hastalığı				E5. Medeni durumunuz			
D5. Sizce aşağıdakiler bazı kanser türlerine yakalanma riskini azaltabilir mi? (Lütfen her biri için bir kutucuk işaretleyiniz)				a) Bekar b) Evli c) Dul			
	Evet	Hayır	Emin değilim	E6. Çocuğunuz var mı? Varsa lütfen sayısını belirtiniz.			
Daha fazla posa (diyet lifi) tüketmek				a) Hayır b) 1 c) 2 d) 3 e) 4 f) 4'ten fazla			
Daha fazla meyve ve sebze yemek				E7. Öğrenim durumunuz			
Daha az meyve yemek				a) Okur-yazar değil			
Daha az tuz tüketmek				b) Okur-yazar			
Daha az şeker tüketmek				c) İlköğretim			
				d) Lise			
				e) Üniversite			
				f) Yüksek lisans			

E8. Mesleğiniz nedir? (Lütfen belirtiniz.....)	E13. Sağlık ve beslenme ile ilgili bilgileri nereden edirsiniz? (Lütfen sadece en uygun olan bir yanıt işaretleyiniz)
E9. Eğer sizden başka evi geçindiren biri varsa, bu kişinin mesleği nedir? (Lütfen belirtiniz.....)	a) Kitaplar
E10. İş durumunuzla ilgili olarak lütfen birini işaretleyiniz.	b) Gazete-dergi
a) Tam zamanlı çalışıyorum	c) İnternet
b) Yarı-zamanlı çalışıyorum	d) Televizyon ve/veya radyo
c) Çalışmıyorum	e) Doktor/ hemşire
d) Ev kadını	f) Diyetisyen
e) Emekli	g) Okulda öğretmen
f) Öğrenci	h) Diğer.....
g) Özürlü ya da çalışamayacak kadar hasta	
E11. Daha önce sağlık ya da beslenme ile ilgili herhangi bir eğitim aldınız mı?	Bu anketi doldurduğunuz için çok teşekkür ederiz. Eğer anketle ilgili yapmak istediğiniz yorumlar varsa lütfen belirtiniz
a) Evet (Lütfen belirtiniz.....)	
b) Hayır	
E12. Şu anda herhangi bir nedenle diyet veya rejim yapıyor musunuz?	
a) Evet	
b) Hayır	
Eğer cevabınız Evet ise;	
1) Niçin yaptığınızı belirtiniz	
.....	
2) Diyet listenizi nereden edindiğinizi belirtiniz	
.....	

YETBİD

YETİŞKİNLER İÇİN BESLENME BİLGİ DÜZEYİ (YETBİD) ÖLÇEĞİ TEMEL BESLENME VE BESİN- SAĞLIK BİLGİSİ

		Kesinlikle Katılıyorum	Katılıyorum	Ne Katılıyorum Ne Katılmıyorum	Katılmıyorum	Kesinlikle Katılmıyorum
1	Doğal, taze sıkılmış meyve suları şeker içermez.					
2	Havuç iyi bir A vitamini kaynağıdır.					
3	Vitamin ve mineraller enerji verir.					

4	Karbonhidratlar temel enerji kaynağıdır.								
5	Dondurulmuş ürünlerin besin değeri taze besinlerden daha düşüktür								
6	Meyvelerin protein içerikleri yüksektir.								
7	Yumurta ile kırmızı et, içerdikleri protein miktarı açısından benzerdir.								
8	Zeytinyağı tüketmek kolesterolü yükseltir.								
9	Kuru fasulye piyazının lif içeriği yüksektir.								
10	Salam ve sosis gibi işlenmiş et ürünlerinin içerisinde bulunan yağlar sağlık için zararlıdır.								
11	Süt ve süt ürünlerinde bulunan kalsiyum minerali kemik ve diş sağlığı için önemlidir.								
12	Kemik erimesinden korunmada gerekli olan D vitaminin en iyi kaynağı güneştir.								
13	E vitamini görme duyusu için oldukça etkili bir vitamindir.								
14	Portakalda bulunan C vitamini bağışıklığı güçlendirerek soğuk algınlığı ve gribal enfeksiyonlara karşı korur.								
15	İçerdiği vitaminlerden dolayı tam tahıllı(esmer) ekmek tüketmek sinir sistemi için faydalıdır.								
16	Tuzun fazla tüketilmesi tansiyonu etkilemez.								
17	Kırmızı et B12 vitamini içerdiği için unutkanlığı önlemede etkilidir.								
18	Kırmızı ve mor renkli sebze ve meyveler kanserden koruyucudur.								
19	Balığın doymuş yağ içeriği kırmızı etten daha yüksektir.								
20	Yağlar, protein ve karbonhidratlara göre daha az enerji içerirler.								

***Beslenme ve sağlık arasındaki ilişkinin derecesi nasıldır? Değerlendiriniz.

1	2	3	4	5	6	7	8	9	10
← Hiç ilişki olmaması					yüksek ilişki olması →				

BESİN TERCİHİ

		Kesinlikle Katılıyorum	Katılıyorum	Ne Katılıyorum Ne Katılmıyorum	Katılmıyorum	Kesinlikle Katılmıyorum
1	Şeker hastalarının meyve suyu yerine meyveyi kendisinin (mümkünse kabuğunu soymadan) tüketmeleri daha sağlıklıdır.					
2	Şekerli besinler yerine lifli besinler tüketmek kabızlığı önler.					
3	Gıdalarla aldığı yap miktarını azaltmak isteyen bir birey tavuk kızartma yerine tavuk ızgara tercih etmelidir.					
4	Bir öğündeki aldığı proteini artırmak isteyen kişi, bulgurlu ıspanak yemeği yerine yumurtalı ıspanak yemeğini tercih etmelidir.					
5	Ara öğünde tatlı bisküvi tüketmek yerine kepekli galeta tüketmek daha doğru bir seçimdir.					
6	Çocukların beslenme çantasına gofret yerine 3-4 adet kuru kayısı koymak daha faydalıdır.					
7	Bir yetişkinin sıvı ihtiyacını çay ve kahve gibi içecekler yerine su tüketerek karşılaması daha doğrudur.					
8	Vitamin ve mineralleri doğrudan besinlerden almak yerine, ilaç şeklindeki şekilde ki vitaminlerden almak daha faydalıdır.					
9	Hayvansal kaynaklı besinlerin (et, balık süt, yumurta gibi) içerisindeki proteinler, vücut sağlığı için çok önemlidir.					
10	Beyaz ekme, tam tahıllı (esmer) ekmeğe göre daha sağlıklıdır.					
11	Alınan tuzu azaltmak için lahana turşusu yerine lahana salatası tercih edilmelidir.					
12	Gıdalardan aldığı yağ miktarını azaltmak isteyen birisi light süt tercih edebilir.					

***Günlük hayatınızda uyguladığınız besin tercihlerinizi ne kadar doğru buluyorsunuz?

Değerlendiriniz.

1	2	3	4	5	6	7	8	9	10
← Hiç ilişki olmaması					yüksek ilişki olması →				

KATILIMINIZ İÇİN TEŞEKKÜR EDERİZ...

BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU

Sayın Katılımcı;

Katıldığınız bu çalışma bilimsel nitelikte bir araştırma olup konusu “Revize Edilmiş Genel Beslenme Bilgisi Ölçeğinin Türkçe Geçerlilik ve Güvenilirliği: Bir vakıf üniversitesi öğrenci örneklemi” dir.

Bu araştırma, Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Beslenme ve Diyetetik Anabilim Dalı’nda öğrenci olan Nagihan Şen’in yüksek lisans tezi kapsamında yapılmaktadır.

Araştırmanın amacı; “Revised General Nutrition Knowledge Questionnaire(GNKQ-r) ” isimli beslenme değerlendirme ölçeğinin Türkçe’ye uyarlanması ve ülkemizde kullanılabilirliğini saptamak için geçerlilik ve güvenilirlik değerlendirmesinin yapılmasıdır.

Bu çalışmaya katılmak gönüllülük esasına dayanmaktadır. Çalışmaya katılmama ve çalışmanın herhangi bir aşamasında, hiçbir cezaya/yaptırıma maruz kalmaksızın, çalışmadan ayrılma hakkına sahipsiniz. Araştırmada yer almanız nedeniyle size hiçbir ödeme yapılmayacak ve sizden de hiçbir ücret talep edilmeyecektir. Anketi yanıtlamanız, araştırmaya katılım için onam verdiğiniz anlamına gelmektedir. Araştırma hakkında daha fazla bilgi almak için araştırmacı Nagihan Şen’e başvurabilir, araştırmacıya mail adresinden ulaşabilirsiniz.

Araştırmanın bilgilendirilmiş gönüllü olur formundaki tüm açıklamaları okudum/sözlü olarak dinledim. Bana yukarıda konusu ve amacı belirtilen araştırma ile ilgili yazılı ve sözlü açıklama aşağıda belirtilen araştırmacı tarafından yapıldı. Araştırmaya gönüllü olarak katıldığımı istediğim zaman gerekçeli veya gerekçesiz olarak araştırmadan ayrılabileceğimi biliyorum. Söz konusu araştırmaya, hiçbir baskı ve zorlama olmaksızın kendi rızamla katılmayı kabul ediyorum.

Gönüllünün Adı-Soyadı:

İmza:

Tarih:

Tanık Adı-Soyadı:

İmza:

Tarih:

Araştırma hakkındaki yukarıdaki ve istenen diğer bilgiler katılımcıya tarafımdan açıklanmış ve yazılı onamını alınmıştır.

Araştırmacının Adı-Soyadı:
Nagihan ŞEN

İmza:

Tarih:

9. CURRICULUM VITAE

Personal Informations

Name	Nagihan	Surname	Şen
Place of Birth			
Nationality			
E-mail			

Education

Degree	Department	The Name of the Institution Graduated From	Gradition Year
Doctorate			
Master	Nutrition and Dietetic	Yeditepe University	2024
University	Nutrition and Dietetic	Istanbul Medipol University	2019
High School	-	Nevzat Ayaz Anatolian High School	2015

Languages	Grades (#)
YÖKDİL (English)	90

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

Work Experience (Sort from present to past)

Position	Institute	Duration (Year - Year)
Dietitian	Ozel Etiler Hospital	2023-2024
		-

Computer Skills

Program	Level
Microsoft Office	Good
SPSS	Basic

*Excellent, good, average or basic

Scientific Works

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

Articles published in other journals

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

Journals in the proceedings book of the refereed conference/symposium

Others (Projects/Certificates/Rewards)
