HOW DO PARENTS' SUSTAINABILITY CONCERNS AFFECT CHILDHOOD OBESITY? THE MEDIATING ROLE OF SUSTAINABLE FOOD CONSUMPTION AND HEALTHY EATING HABITS.

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THESIS APPROVAL PAGE

I certify that in my opinion the thesis submitted by Arezoo POUYAN titled "HOW DO PARENTS' SUSTAINABILITY CONCERNS AFFECT CHILDHOOD OBESITY? THE MEDIATING ROLE OF SUSTAINABLE FOOD CONSUMPTION AND HEALTHY EATING HABITS." is fully adequate in scope and in quality as a thesis for the degree of PhD in Business Administration.

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DECLARATION

I hereby declare that this thesis is the result of my own work and all information included has been obtained and expounded in accordance with the academic rules and ethical policy specified by the institute. Besides, I declare that all the statements, results, materials, not original to this thesis have been cited and referenced literally.

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FOREWORD

I want to thank GOD for His continuous guidance and strength that allowed me to complete this thesis. I want to express my deepest gratitude to my mother and father for their unwavering support and motivation throughout my academic journey. My mom and dad have been my pillars of strength, always encouraging me to pursue my dreams and standing by me through every challenge and triumph. Mom and Dad, I owe this degree to your love and care. I am deeply grateful for my dear fiancé Volkan, whose unwavering support has been a constant source of strength and inspiration. His presence has enriched this journey, and I am forever thankful to have him by my side. Their love, encouragement, and understanding have been vital in helping me overcome challenges and stay focused on my goals.

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ABSTRACT

The growing issue of global unsustainability and childhood obesity has gradually increased due to modern consumption habits. These challenging issues of contemporary society are alarms for global public health. Therefore, policymakers are working to address the challenges of unsustainability and childhood obesity by developing plans and programs to mitigate their global impact. This study aims to explore the relationship between these two critical concerns. This thesis explores the relationship between parents' sustainability concerns and childhood obesity through an explanatory sequential mixed methods approach. The study involved 205 participants in the quantitative phase and 10 participants in the qualitative phase. The quantitative data was analyzed using structural equation modeling with SmartPLS. The results indicate that parents' sustainability concerns do not directly influence children's body mass index. However, this relationship is fully mediated through two serial mediating variables: sustainable food consumption and healthy eating habits, emphasizing their significance in addressing childhood obesity. To explain, complete, and extend the quantitative results, qualitative data was collected through in-depth interviews and analyzed using thematic analysis. The qualitative results further elucidate the complexities of the relationship, providing deeper insights into how parents' sustainability concerns translate into practices that indirectly affect their children's body mass index. These findings underscore the significance of promoting sustainable food consumption and healthy eating habits as key strategies in addressing childhood obesity. Overall, the study contributes to the understanding of the indirect pathways through which sustainability concerns impact childhood obesity, offering valuable implications for both policy and practice.

Keywords: Sustainability Concerns; Childhood Obesity; Sustainable Food Consumption; Healthy Eating Habits.

ÖZ

Modern tüketim alışkanlıklarının bir sonucu olarak, sürdürülebilirlik sorunları ve çocukluk çağı obezitesindeki artış giderek artmıştır. Bu iki önemli sorun, küresel halk sağlığı için birer alarm niteliğindedir. Bu nedenle, politika yapıcılar sürdürülebilirlik ve çocukluk çağı obezitesi ile ilgili zorlukları ele almak ve küresel etkilerini hafifletmek amacıyla planlar ve programlar geliştirmektedir. Bu çalışma, birbirinden bağımsız gibi görünen bu iki kritik mesele arasındaki ilişkiyi incelemeyi amaçlamaktadır. Bu doğrultuda bu tez çalışması, ebeveynlerin Sürdürülebilirlik endişeleri ile çocukluk çağı obezitesi arasındaki ilişkiyi açıklayıcı karma desen ile araştırmaktadır. Çalışmanın nicel aşamasında 205, nitel aşamasında ise 10 katılımcı yer almıştır. Nicel veriler, SmartPLS kullanılarak yapısal eşitlik modellemesi ile analiz edilmiştir. Sonuçlar, ebeveynlerin sürdürülebilirlik endişelerinin çocukların vücut kitle indeksi üzerinde doğrudan bir etkisi olmadığını, anacak bu ilişkinin sürdürülebilir gıda tüketimi ve sağlıklı beslenme alışkanlıkları aracılığıyla sağlanabileceğini ortaya koymaktadır. Başka bir ifadeyle, analiz sonuçları sürdürülebilir gıda tüketimi ve sağlıklı beslenme alışkanlıklarının ailelerin sürdürülebilirlik endişelerinin çocukluk obezitesi üzerindeki etkisine seri ve tam aracılık ettiğini göstermektedir. Nitel analiz sonuçları, ebeveynlerin sürdürülebilirlik endişelerinin, çocuklarının vücut kitle indekslerini dolaylı olarak etkileyen uygulamalara nasıl dönüştüğüne dair daha derinlemesine bilgiler sağlayarak ilişkinin karmaşıklığını ortaya koymuş ve aydınlaşmıştır. Bu bulgular, çocukluk çağı obezitesini ele alırken sürdürülebilir gıda tüketimi ve sağlıklı beslenme alışkanlıklarının teşvik edilmesinin önemini vurgulamaktadır. Genel olarak, bu çalışma sürdürülebilirlik endişelerinin çocukluk çağı obezitesini etkileyen dolaylı yollarını anlamaya katkıda bulunarak, hem politika hem de uygulama için değerli çıkarımlar sunmaktadır.

Anahtar Kelimeler: Sürdürülebilirlik Endişeleri; Çocukluk Çağı Obezitesi; Sürdürülebilir Gıda Tüketimi; Sağlıklı Beslenme Alışkanlıkları

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ABBREVIATIONS

SC	**:** Sustainability Concerns
SFC	**:** Sustainable Food Consumption
HEH	**:** Healthy Eating Habits
BMI	**:** Body Mass Index
TTM	**:** Transtheoretical Model
WHO	**:** World Health Organization
FAO	: Food and Agriculture Organization of the United Nations
UN	**:** United Nations
PLS-SEM	**:** Partial Least Squares Structural Equation Modeling
TL	**:** Turkish Lira

SUBJECT OF THE RESEARCH

During the development of urban modern consumption patterns, both human health and sustainability have come under threat. Despite evidence indicating human health depends on sustainability, there has been a notable silence in studies concerning childhood obesity and its relationship with sustainability. In this regard, this thesis aims to explore whether parents' sustainability concerns influence their children's BMI. Additionally, it aims to investigate the roles of sustainable food consumption and healthy eating habits in the relationship between parents sustainability concerns and children's BMI and also identify the demographic characteristics of parents that may influence their sustainability concerns. We will be studying this multifaceted subject in the hope of contributing more comprehensive insights to the growing body of literature on the effects of parental sustainability concerns, sustainable food consumption, and healthy dietary habits on childhood obesity.

PURPOSE AND IMPORTANCE OF THE RESEARCH

Problem Statement and Purpose of the Research

Modern consumption patterns have resulted from changes in the food production system by the growing population and urbanization. In turn, these changing habits of consumption have threatened sustainability and human health. Perhaps the most apparent evidence of the threat to health in society is the rising prevalence of obesity, especially in children. Furthermore, the lack of sustainable production and consumption due to such consumption patterns has significantly targeted sustainability issues.

Although in their study Moore et al. (2017) highlighted the fact that the responsibility of parents and social and psychological perspectives in addressing childhood obesity is obvious, marketing and consumer research has remained silent. Hence, Moore et al. proposed a comprehensive framework with a multidisciplinary approach including genetics, physiology, psychology, nutrition, and consumer research with the overall aim of understanding the multi-dimensional phenomenon of obesity. This conceptual framework, entitled the "Family Consumer Socialization Framework", is focused on the role that the parents play in contributing to obesity or protecting

against it. This framework supports a rich set of problems at child, family, and parent-child interaction levels that influence the status of weight in children. This comprehensive model, with the synthesis of knowledge across diverse disciplines, addresses new pathways for further consumer research to bridge gaps in understanding childhood obesity. In a cross-sectional study conducted by Williams et al. (2020), involving 132,489 children aged 6–9 from 23 countries participating in the WHO European Childhood Obesity Surveillance Initiative (COSI) in 2015–2017, the results of a questionnaire containing indicators of diet-related behaviors completed by parents or caregivers of the children highlighted a pressing need for healthier food environments and strengthening health systems to promote healthy diets, thereby supporting efforts to prevent childhood obesity. The study also emphasized the importance of interventions for discouragement in the consumption of unhealthy foods. Similarly, Sarni et al. (2022), through a systematic review where studies published within a decade in PubMed on the relationship between environment and childhood obesity were analyzed, show that dietary habits formed in childhood continue into later life. Given the disturbing trend of preference for ultra-processed food consumption among children, the shifting emphasis has been placed on the role of the Food Guides for fresh or minimally processed foods and against ultra-processed foods. The results also indicate that environmental aspects in regard to childhood obesity have to be considered. It is evident that research aimed at understanding parental consumption behavior with regard to childhood obesity is crucial due to its rich and multifaceted nature. The majority of research conducted in this domain has been undertaken by other disciplines, including medicine, genetics, public health, nutrition, and developmental psychology. Nonetheless, there is a scarcity of studies conducted by marketers and consumer researchers regarding the efficacy of parenting interventions in modifying or improving childhood obesity, although it has been clearly proven the critical role of marketing in providing a platform for obesity-producing environments and parental mediation in a consumer role (Moore et al., 2017). Although a comprehensive literature review about childhood obesity and sustainability issues has identified various deficiencies in this context, the impact of parents' concerns about sustainability on the status of childhood obesity remains largely unaddressed. Further, most studies related to this topic remain confined to quantitative questionnaires alone, which cannot include all the nuanced and latent

dimensions of the research subject. Hence, a mixed-methods approach would yield data that is richer and fuller and help in filling some gaps in the literature.

Therefore, this thesis focuses on parents with children aged six months to six years, as this is the period when weight status resulting from consumption habits originates and continues into adulthood, as supported by the findings (Mahmood et al., 2021; WHO, 2009). Several studies have highlighted the influence of parents' eating habits on children's weight status (Coto et al., 2019; Demir & Bektas, 2017; Tang et al., 2020). However, this thesis examines a gap in the literature regarding how parents' sustainability concerns affect their children's weight status. Another object of the present study is to open a new window in the investigation of consumption behaviors by examining the effects of parents' sustainable food consumption and healthy eating on childhood obesity. Additionally, it aims to find out the clear socio-demographic profile of Turkish parents that might influence their concerns related to sustainability.

To sum up, this thesis provides a sociodemographic profile of Turkish parents which triggers their sustainability concerns, and parents' food product choices influenced by these concerns result in sustainable food consumption hence shaping healthy eating habits and affecting children's weight status. It is expected that the findings enrich the literature of consumer research significantly in this respect.

Importance of the Research

Consumers' concerns about sustainability issues and childhood obesity have garnered significant attention from both practitioners and researchers. However, to our knowledge, no study has yet examined how parents' sustainability concerns may impact the weight status of their children. This thesis addresses this gap in the literature. Furthermore, unlike previous studies that have primarily relied on singular methodologies, our research employs a mixed-method approach to conduct a more comprehensive investigation of these important subjects.

In this quantitative approach, we aim to assess relationships between research constructs that include sociodemographic factors, parental sustainability concerns, parents' sustainable food consumption, dietary habits, and weight status in children. On the contrary, the qualitative approach complements the quantitative approach by by

highlighting the lived experiences of parents; thus, it demonstrates the complex relationships that how parents' sustainability concerns drive their food product choices for households and how impact children's BMI status. Indeed, through such a mixed-method approach, we are able not only to extend the scope of the literature but also to provide further insights into the multilayered influences associated with childhood obesity and sustainability issues.

Theoretical insights gained from this study could assist marketers in identifying important factors from the point of view of consumers regarding sustainability issues and important factors regarding food selection preferences because understanding what consumers associate with sustainability products can impact how a product is or could be marketed. Identifying the contextual factors that stimulate or hinder the transformation of sustainability concerns into purchasing and consumption behavior helps marketers develop strategies to facilitate and promote sustainable consumption practices. Also, assists marketers in estimating the growing trend of consumer demand for sustainable food products in the future. Furthermore, this facilitates marketers' discerning the target segments within the sustainable products market. The findings of this study could assist policymakers and pertinent organizations in developing a comprehensive sustainable and public health program to cover various sustainability aspects that encompass the environment, human equality, support for the labor force and smallholder farmers, and animal welfare, as well as a public health context that helps to prevent and manage overweight and obesity in children and the well-being of the future generation. Moreover, the findings have the potential to assist pediatricians, nutrition experts, and child caregivers in the prevention and management of childhood obesity.

METHOD OF THE RESEARCH

In the present study, a mixed-methods explanatory sequential design was adopted for an in-depth investigation into the influence of parents' sustainability concerns on childhood obesity. This design consists of two phases: first, the collection and analysis of quantitative data, sequentially the collection and analysis of qualitative data. Given the research objectives and questions, this approach was recognized as appropriate for evaluating the complex behavior of sustainable purchase decision-

making and the influence of sustainability concerns on sustainable purchases and obesity among children. Furthermore, this approach has been widely employed in similar studies (Naing et al., 2022; Swindle et al., 2021; White et al., 2024).

Survey data were collected from 205 respondents representing a group of Turkish parents with children aged six months to six years. Quantitative data were gathered through a self-administered questionnaire adapted from prior literature with minor adjustments in wording. A five-point Likert scale was utilized in the questionnaire, and data were collected using a convenience sampling technique. Quantitative data analysis was conducted using SPSS 25 and Smart PLS 4, employing Structural Equation Modeling (SEM) due to its suitability for examining mediating research models.

Qualitative data were collected from 10 respondents from the pool of survey respondents who volunteered to participate in the interview. Participants were purposefully selected based on their sustainability concerns: low, medium, and high. The data collection involved in-depth interviews, using the 'semi-structured interview form' one of the qualitative data collection techniques, followed by qualitative analysis using thematic analysis with MAXQDA 2020 software. The research methodology, including survey design, qualitative design, data collection procedures, and the integration and complementarity of results from both approaches, is comprehensively discussed in Chapter Three of the thesis.

HYPOTHESIS OF THE RESEARCH / RESEARCH PROBLEM

Chapter three provides an exposition of the literature utilized to develop the hypotheses. This section provides summary information, considering the thesis writing guidelines.

Research Hypotheses:

HYPOTHESIS ONE (H1a): Parents' sustainability concerns differ by gender.

HYPOTHESIS ONE (H1b): Parents' sustainability concerns differ by education level.

HYPOTHESIS ONE (H1c): Parents' sustainability concerns differ by parents' age.

HYPOTHESIS ONE (H1d): Parents' sustainability concerns differ by income level.

HYPOTHESIS ONE (H1e): Parents' sustainability concerns differ by job status.

HYPOTHESIS TWO (H2): Parents' sustainability concerns have a negative influence on childhood obesity.

HYPOTHESIS THREE (H3): Parents' sustainability concerns have a positive influence on sustainable food consumption.

HYPOTHESIS FOUR (H4): Sustainable food consumption has a positive influence on healthy eating habits.

HYPOTHESIS FIVE (H5): Healthy eating habits have a negative influence on childhood obesity.

HYPOTHESIS SIX (H6): The relationship between parents' sustainability concerns and childhood obesity will be positively and serially mediated by sustainable food consumption and healthy eating habits.

POPULATION AND SAMPLE

Fundamentally, in low- and middle-income countries, food systems are experiencing significant transformations and rapid alterations, coinciding with a high prevalence of obesity burden. With this in mind, childhood obesity rates in Türkiye are also experiencing an upward trend, mirroring the global scenario. According to Ozcebe et al.'s (2020) findings, Türkiye exhibits one of the highest childhood obesity rates in Europe. Hence, this study focuses on parents who reside in Türkiye and have children between six months and six years old. According to WHO (2009), the recommended age for starting complementary feeding is around 6 months. Furthermore, this age period has been identified in prior studies as an effective period for addressing interventions and preventive measures for childhood obesity (Ling et al., 2016; Matwiejczyk et al., 2018).

The quantitative data were collected by the use of paper-and-pencil questionnaires distributed in kindergartens and children's amusement centers. An online survey was designed using Google Forms. It has been distributed through social networking sites like Instagram, Facebook, websites of kindergartens, and personal instant messaging applications such as WhatsApp.

Data were collected using a convenience sampling technique. To ensure data quality, respondents needed to meet specific research criteria, including (1) having a child between six months and six years old; (2) consuming sustainable food products; (3) having no family history of obesity diagnosis; and (4) being responsible for purchasing more than 50% of the family's food products. Screening questions were employed to ensure only those meeting these criteria proceeded with the survey. It is noteworthy that, in cases where parents had more than one child within the target group, they were instructed to provide information for the child with a higher weight status (Alexander et al., 2015).

Quantitative data was collected through a questionnaire (Appendix A), which has been adapted and modified from previous studies with slight adjustments in phrasing. The questionnaire was translated into Turkish and made available to the participants. Participants were given an explanation of the purpose of the research. All respondents provided informed consent, and it was ensured that their responses would be kept anonymous. A total of 205 questionnaires, out of all received, entered the analysis phase. However, 45 questionnaires were excluded from the analysis phase as they did not meet the research criteria and answered the quality control questions incorrectly.

In the qualitative phase, the researcher grouped the participants into low, medium, and high categories based on their level of sustainability concerns. Participants in each group were selected through purposive sampling from those who had voluntarily agreed to be interviewed during the quantitative phase, with priority given to those whose sustainability concern scores were closest to their group’s average. The researcher recognized reaching saturation at the tenth interview. Hence, the sample size in this qualitative phase was 10 participants.

This study was conducted based on considering all the relevant institutional ethical considerations. In this regard, the researcher requested for approval from the

appropriate ethics review board. Furthermore, the researcher tried to ensure research was conducted by considering privacy and data security standards. Hence, unique identification codes were assigned to them beforehand, and hence no personal identifier remained within the data; as such, no data was traceable back to them. All interviews were video recorded, and the transcripts were encrypted and stored. This information was accessible only to authorized members of the research team. The data will be stored for a period provided by the research protocol, and after that, irreversibly deleted.

SCOPE AND LIMITATIONS / DIFFICULTIES

Scope of the Research

The study was designed to investigate the effect of parents' sustainability concerns on childhood obesity. Besides, it also considered serial mediation of parents' sustainable food consumption and healthy eating habits in this relationship. In this regard, the current study has used a mixed-methods explanatory sequential design that supports and completes quantitative results with the findings of qualitative phases for an in-depth understanding of how sustainability concerns lead to sustainable food consumption, the factors influencing this behavior, and its impact on childhood obesity. The findings provide extensions to the existing literature and have some useful implications for marketers, practitioners, and policymakers.

Limitations and Directions for Future Research

Although the study contributed to providing significant knowledge in literature, it also includes limitations that might be focused on in future studies. The current study was cross-sectional in design. Future studies may focus on a longitudinal design to examine how parents' healthy and sustainable eating behaviors influence children's eating habits and weight status during children's growth. This research employed an explanatory sequential mixed-methods design. Future studies could be designed as an exploratory sequential mixed-methods design where the collection of qualitative data is done first to explore themes across various dimensions of the subjects, then use the findings to develop quantitative instruments. This could mean new insights into

parents' sustainable and healthy eating habits and their possible influence on childhood obesity; hence, setting a broader framework for the quantitative phase.

This research focuses on parents who have children aged between six months and six years. Future studies could consider a broader age. For example, investigate the effect of education on sustainability concerns in children of school age on sustainable eating habits and obesity. Furthermore, investigations about the influence of peers' sustainability concerns on the choice of sustainable and healthy food or comparing younger and older children in our research conceptual model to enhance literature could be subjects of future studies. Another aspect that could be explored involves the role of siblings in the impacts of sustainability and healthy food choices on childhood obesity.

Another limitation is that during modeling and imitation, parents transmit their values and habits to the children. Further research may enhance its contribution by considering moderators in the model, which could be 'parenting style' in the context of our study, and provide further significant insights.

One of the key findings from this qualitative research was contextual factors that turn sustainability concerns into sustainable purchasing and consumption behavior. Further research might examine motivators and barriers as moderators in the relationship between sustainability concerns and sustainable food consumption.

INTRODUCTION

The prevalence of childhood obesity is a major obstacle that global health is scrimmaging with. Failure to promptly implement necessary measures is expected to result in irreparable harm to future generations. So, that is why the issue of stopping and reversing childhood obesity rates has become a priority for governments and affiliated organizations worldwide. The World Health Organization (WHO) has officially acknowledged the prevalence of childhood obesity as a global epidemic, and the World Health Assembly has adopted a "Global Action Plan" aimed at curbing obesity rates worldwide by the year 2025 (WHO, 2021). Except for genetic issues, the roots of childhood obesity can be traced to unhealthy eating habits or other bad lifestyle patterns. The prevalence of overweight and obese children in the age group of

0–4 years has witnessed a significant rise from 32 million in 1990 to 41 million in 2016 on a global scale (WHO, 2017a). As per assessments, it has been observed that the incidence of obesity in girls has escalated from 0.7% in 1975 to 5.6% in 2016, whereas the incidence of obesity in boys has driven up from 0.9% in 1975 to 7.8% in 2016 (Bentham et al., 2017). If current trends in obesity continue, 70 million children will be overweight or obese in 2025 (United Nations, 2015). The prevalence of obesity is considered a major health problem in Europe, and an estimated 7% of the national health budget is used for diseases related to obesity in European countries (Pineda et al., 2018). Findings argued overweight children will probably continue to have excessive weight or obesity during their adult years, thus becoming a major risk factor for several serious and debilitating non-communicable diseases (NCDs) (Llewellyn et al., 2016). Along with potential physical diseases, obese children frequently experience socio-emotional consequences and mental health issues due to being subjected to negative treatment from their peers, such as being labeled as indolent or possessing an unfavorable body image, which results in social exclusion, depression, low self-esteem, and a lower overall quality of life (Moore et al., 2017). Consequently, they will levy both direct (healthcare needs) and indirect (disability and premature death) financial costs on the community (Finkelstein et al., 2009). The characterization of obesity is contingent upon gender and age. For infants up to 24 months, the identification of obesity is predicated on weight-for-length (De Onis et al., 2008). Conversely, for children ranging from 2 to 5 years old, obesity is delineated as a body mass index (BMI) exceeding 3 standard deviations (Dhenge et al.), and Overweight is more than 2 standard deviations (Dhenge et al.) above the average of the World Health Organization's international growth standards (WHO, 2019).

Within this particular context, overweight and obesity are attributed to fundamentally a consumption-related issue whereby a positive chronic imbalance of calories intake and expended causes abnormal and excessive fat accumulation (Guarino et al., 2023). The aforementioned problem arises in children as a result of overeating, intake of unhealthy nutrition, and a lack of physical activity, which is due to the lifestyle of the child's family.

The family is the initial social context in which children are situated, and it is within this context that children acquire knowledge and behaviors related to lifestyle, nutrition and physical activity through the processes of socialization and

internalization. In fact, parents serve as primary role models for their children, and children tend to emulate their parents' conduct in a complex manner. Children tend to imitate their parents' nutrition perspectives, feeding behavior, lifestyle, and parents' image of their bodies. It is imperative that parents engage in early monitoring of their children's weight and establish a schedule for their child's internalization 'of healthy consumption habits.

Internalization refers as the process through which external beliefs, attitudes, or behavioral regulations are slowly internalized within the individual's personal attributes, values, or regulatory styles. There is a psychological process involved in internalization, a 'transformation of external regulations into internalized personal attributes over time' (Grolnick et al., 1997). The home food environment established by the parents through their food purchasing and preparation practices has been seen to have strong influence on the children's food perceptions, preferences, and nutritional behavior in later stages (Moore et al., 2017), thus leading to the internalization of their dietary habits. Evidence from studies indicated that dietary habits are developed very early in childhood. Feeding preferences are established via the maternal amniotic fluid and subsequently through human milk. Dietary patterns tend to manifest in the early stages of life, become entrenched in the first few years of life, and establish fundamental principles for promoting a healthy lifestyle in adulthood. Dietary patterns tend to be stable and are typically sustained during childhood and beyond (De Cosmi et al., 2017). So, maintaining unhealthy eating habits is likely to raise obesity risk factors. Meal quantity, frequency, and duration are observed as obesity-related eating behaviors. Furthermore, the dietary and lifestyle habits of children, including their food preferences (in terms of type and quantity), meal timing, dining-out behavior, and lifestyle (sedentary or physically active), are significantly influenced by the lifestyle choices of their parents. That shows the importance of parents' food-related lifestyle on children's weight status (Mazzocchi et al., 2022).

A literature review revealed that parental healthy nutrition was noted to have significant influences as role models on the children's eating behavior. This role modeling behavior includes entail the availability of healthy food, modeling of healthy eating behavior, and encouraging positive attitudes toward consumption of healthy food (Pearson et al., 2009). Hence, it can be asserted that parents have a significant impact on the early formation of their children's dietary habits. The concept of habit

pertains to acquiring sequences of behavior through learning, their subsequent repetition, and the eventual development of automaticity in a given context. While it is true that repetition is a necessary component in the development of habits, it is important to differentiate between habits and mere repetition. Habits are characterized by the ability to attain specific objectives and accomplishments (Verplanken & Aarts, 1999). Evidence suggests that nutrition and healthy eating habits contribute much to the physical health and mental status of individuals and their quality of life. The definition of healthy eating habits is eating a variety of foods to provide the body with the nutrients and energy that are necessary to ensure health, as well as eating portion-sized food at regular intervals (Lee et al., 2022). However, today people tend to change their eating habits to an urban lifestyle, largely due to modernization as a result of technological advancement and development in society.

The concurrency of the prevalence of non-communicable diseases and obesity worldwide with the transformation of the global food system during the latter half of the 20th century, which prioritized maximum food production with minimum cost production, is an evident phenomenon. The aforementioned process involved a shift towards processed and semi-prepared food items, as well as unhealthy beverages, which were more affordable and readily accessible, as opposed to nutrient-rich options that promote overall well-being (Chan, 2017; Swinburn et al., 2011). In addition, a noteworthy escalation in the density of obesogenic environments, which focus on excessive consumption of fast foods, high-calorie unhealthy foods, and unhealthy beverages, has a substantially detrimental effect on health (Day & Pearce, 2011). According to Afshin et al. (2019), empirical evidence has indicated that an unhealthy diet was responsible for 22% of diseases and premature deaths globally in 2017. On the other hand, the present state of worldwide food production poses a major threat to indigenous ecosystems and the sustainability of the planet's ecological system. In accordance with the findings of Willett et al. (2019), the main threat contributing to the extinction of animal and plant species is the transformation of natural ecosystems into agricultural lands and pastures. Indeed, these dietary patterns prevalent across the globe are commonly referred to as "lose-lose" diets because, owing to their potential, they are considered to threaten human health, which is characterized by the consumption of foods that are high-calorie food items, processed foods, saturated fats, and added sugars. Furthermore, it leads to disturbing environmental sustainability

through the emission of greenhouse gases, pollution caused by nitrogen and phosphorus, loss of biodiversity, and water depletion (Garnett, 2016). Scholars have documented the adverse impacts of increasing production rates and industrial food production, specifically processed foods and conventional agriculture, on both the environment and human health (Chan, 2017; Watts et al., 2019; Willett et al., 2019).

Although there is no one universally accepted definition of healthy nourishment, the EAT-Lancet Commission provided a comprehensive definition that includes both health and environmental considerations. Based on their definition, healthy diets emphasize the major consumption of vegetables, fruits, whole grains, and the wide variety of proteins derived from seafood, lean meats, poultry, eggs, legumes (beans and peas), soy products, nuts, and seeds. It is recommended to limit the intake of red meat, processed meat, added sugar, refined grains, and starchy vegetables, while substituting saturated and trans fats with unsaturated fats (Willett et al., 2019).

Therefore, in order to protect the environment and human health, the issue of sustainable food consumption was delineated. The EAT-Lancet Commission proposed a comprehensive and universally applicable framework for sustainable food systems on a global scale. In accordance with this particular framework, all systems and sub-systems encompassing the production, aggregation, processing, distribution, consumption, and disposal of food are aimed at tackling challenges pertaining to the long-term well-being of human health and the environment. The framework presented aims to concentrate on the ultimate endpoints of the food system, namely, the consumption of food or the adoption of healthy diets, and production, in particular, sustainable food production (FAO, 2018; Willett et al., 2019). Furthermore, during the symposium, a working group was established to discuss and determine the definition of sustainable diets. Such a definition had been discussed by previous initiatives led by various agencies, such as the Sustainability Commission instigated by the UK government, and by UN agencies, specifically the FAO/Bioversity Technical Workshop and Biodiversity and Sustainable Diets. The following definition was introduced during the plenary session of the symposium and thereafter agreed upon by the attendees, described below: "Sustainable diets are those diets with low environmental impacts that contribute to food and nutrition security and to healthy life for present and future generations.". A sustainable diet should be "protective and respectful of biodiversity and of ecosystems; culturally acceptable, accessible,

economically fair, and affordable; nutritionally adequate, safe, and healthy; while optimizing natural and human resources." (Burlingame & Dernini, 2010).

In order to achieve integration, attention has to be focused on developing the integration of environmental and public health approaches. So to successfully accomplish this objective, it is imperative to shift eating habits and lifestyles toward more sustainable choices when it is possible to intervene and modify habits (Mazzocchi et al., 2022). According to this context, inclinations are turned toward nutrition that is more sustainable. The concept of "sustainable nutrition" could be characterized as diets consisting of organic, locally, and seasonally sourced food products, natural products, and minimally processed food products that cause minimal environmental damage throughout the production process (von Koerber et al., 2017). A globally exclusive framework for sustainable nutrition has yet to be established. Numerous countries offer nutritional recommendations for the improvement of public health, taking into account their food culture, agricultural practices, and locally sourced produce. For example, sustainable diets are recognized by the consumption of organic, locally sourced, and natural food, as well as adherence to dietary patterns such as the Mediterranean Diet (MD) and the New Nordic Diet (NND) in Europe (Ulaszewska et al., 2017). In general, these diets based on principles such as food culture, common prevailing ways of life, geographical location, and local products may exhibit a degree of variation in their structure.

As per research findings, consumers exhibit a preference for sustainable food products as a means of preserving environmental sustainability as well as promoting health and wellness in their shopping carts, thereby serving as a healthier substitute to mitigate the risk of excessive weight gain, obesity, and obesity-related non-communicable diseases (Amos et al., 2014), and also to provide sustainable well-being conditions. This crucial subject can be extended to parents' nutritional preferences and children's weight status. The study by Rodgers et al. (2013) revealed a connection between parents' nutritional habits and their children's body mass index. On the other hand, scholarly investigations suggest that intervening during the early ages of development, when children are still imitating, is most effective in cultivating a proclivity towards sustainable food consumption as well as fostering healthy dietary practices.

As mentioned, the concern with regard to public health and sustainability is an inseparable factor. Hence, it would not be an overstatement to claim that parents' responsibility pertaining to their children's future health would not remain confined to their realization of physical health only. In this respect, sustainability concerns have also played significant roles in their decision-making processes during food product selection, buying them, and adhering to particular dietary habits.

1. CHAPTER ONE: LITERATURE REVIEW

This chapter provides a literature review to contextualize the research questions and support the design of the research model and the formulation of the research hypotheses. As Creswell (1998) stated, the most compelling and scholarly rationale for supporting a study is identifying a gap in the literature that highlights the need for deeper research and discussion of a specific issue.

This chapter presents five sections that include: the first section provides a review of childhood obesity and the influencing factors including family structure, employment status, education level, and socio-economic status; the second section presents a general overview of sustainability concerns that consist of environmental issues, biodiversity, animal welfare, and fair trade; the third and fourth sections focus on sustainable food consumption and healthy eating habits. The final section places the particular context of the research in light of childhood obesity and the consumption of sustainable food in Türkiye.

1.1. Childhood Obesity

The global prevalence of obesity has exhibited an upward trend over the last five decades, to the extent that it is now commonly acknowledged as an "obesity pandemic" (d'Errico et al., 2022). The global epidemic of childhood obesity has emerged as a threat to public health. The prevalence of childhood obesity has increased by a factor of ten globally over the last forty years (Garwood et al., 2017). Presently, it is estimated that more than 38 million children who are under the age of 5 are affected by overweight or obesity (Pérez-Escamilla et al., 2021). Obesity is a disease that involves multiple aspects of health conditions. It refers to the condition that excess amounts of adipose tissues in the body can be related to an imbalance between caloric intake and expenditure (d'Errico et al., 2022). Obesity is diagnosed when the body mass index is measured and determined, which is dividing an individual's weight by their height. Obesity in pediatric populations is characterized by weight compared to age, which accounts for the changes in body composition during physical development. Several countries employ distinct reference charts for weight and height. Divergent interpretations of obesity arise as a consequence of this (Apperley et al.,

2022). Obesity is influenced by biological, political, economic, social, and cultural factors that influence nutrition and lifestyle and thus affect calorie imbalance, leading to obesity (Gray et al., 2018).

According to Lee and Yoon (2018), the influences of socioeconomic and cultural factors are more strong on childhood obesity than genetic factors. For instance, their findings suggest countries with high socioeconomic statuses have, in fact, greater prevalence of childhood obesity compared with countries that have low levels. The prevalence of overweight and childhood obesity is on the rise in low- and middle-income countries, particularly in urban regions, which were previously regarded as a concern in high-income countries (Sarni et al., 2022). Moreover, social and cultural factors, including customs, have been identified as additional determinants that influence the likelihood of obesity in children. For instance, in some societies, children overweight is perceived as a measuring factor for good health (Gray et al., 2018). Or as social pressure during earlier times, the emergence of processed food in the market led to its consumption becoming a trend and a marker of social status.

The growing prevalence of childhood obesity is likely to increase further obesity in adulthood, mental disorders, and non-communicable diseases. Economic and social development is hugely affected by obesity. Extremely a third of the world's population currently is considered overweight or obese based on recent estimates of the Global Burden of Disease. According to d'Errico et al. (2022), the treatment of obesity and accompanying diseases would have an average share of 8.4% in all health expenditures worldwide.

Furthermore, if the current trends continue, by the year 2025, more than half of the countries in Europe will experience over obesity prevalence of 20% in their population (Pineda et al., 2018). This will be a driver in increasing the health costs by up to 6% of the total expenditures. Furthermore, indirect costs of obesity will include lowered productivity, loss of income, and low quality of life. These are estimated to be at least double that of the direct costs, and it is further projected that by 2050, obesity will lead to the loss equivalent of 6 million full-time workers (Co-operation & Development, 2019; Dee et al., 2014). Consequently, the prevention of childhood obesity will result in significant economic, social, and cross-generational advantages that are difficult to accuracy calculate (WHO, 2017b).

As previously stated, the increase in obesity prevalence has been associated with the process of modernization and industrialization within the food system. The food industry has been driven to enhance food technology in order to meet the increasing demand of consumers, which has been attributed to the effects of urbanization and globalization. This has resulted in the production of high-calorie, low-nutrient foods that are affordable and accessible to individuals across all income levels. Contemporary consumers, also referred to as modern consumers (Voinea et al., 2019), are likely to adopt unhealthy dietary practices as a result of employment and lack of time to prepare food, financial vulnerability, social and cultural pressures, increased marketing in the presence of obesogenic environments, and hedonism in food selection (FAO, 2019). Indeed, obesogenic environments refer to places where individuals tend to increase excessive portion intake of fast foods, processed foods, and unhealthy beverages (Cammock et al., 2021). The development of such environments is influenced by the contribution of government policies, the food industry, and social pressures (Swinburn et al., 2017). Furthermore, it has been proven that the current food system provides circumstances that threaten public health and lead to an increase in unsustainability problems (Watts et al., 2019; Willett et al., 2019). Specifically, it has been reported that the global food system uses 70% of freshwater resources (Cammock et al., 2021) and emits more than a quarter of greenhouse gases (Springmann et al., 2016). Hence, the consequences of an obesogenic lifestyle, which is characterized by the adoption of an unhealthy eating pattern and sedentary behaviors, in addition to leading to the prevalence of obesity and its associated diseases, cause environmental unsustainability.

The emergence of obesity is rooted in a critical child period (Otten et al., 2017). Obesity is a multifaceted disorder with genetic and environmental influences (Albuquerque et al., 2017). The home and social environments are two environmental contexts that contribute to the development of dietary knowledge and habits. Although environmental influences on childhood obesity are considered at multiple levels, according to the socio-ecological model, the family's food environment has a greater impact on childhood obesity than other environmental factors such as school and society (Boswell et al., 2019). The establishment of the dietary pattern foundation is initiated during the early ages within the household environment. The establishment of the dietary pattern begins during the early ages within the household environment.

Parents act as the first social structure that influences their children's attitudes, perceptions, and dietary behaviors (Mahmood et al., 2021). Research suggests that parental eating habits have formed directly or indirectly over 70% of the children's dietary behaviors (Scaglioni et al., 2011). During the first year of life, children acquire their eating patterns through their parents' eating patterns, which include their parents' food preferences, portion sizes, and eating manners (Ramos & Stein, 2000). Also, parents influence their children's eating habits through their purchase behaviors and role modeling of social norms of consumption (Roberts & Pettigrew, 2013). Moreover, it has been observed that children who exhibit overweight during the first two years of their lives are at a greater risk of developing overweight or obesity during their later ages (Zheng et al., 2018). Hence, it is crucial that parents maintain control over their child's weight status.

1.1.1. Measuring Obesity in Children

As indicated, the concept of childhood obesity is established by an excess of body fat (Nemiary et al., 2012). To assess overweight and obesity in children, the widely employed method is the Body Mass Index (BMI), derived from a child's weight and height. Although the BMI values change with the longitudinal growth of a child, according to Skinner and Skelton (2014), determining BMI in children is related to age and sex. The definition of BMI in children is based on percentiles, where overweight is categorized between the 85th and the 95th percentile, and the definition of obesity is at the 95th percentile or greater (Hamid et al., 2013). Furthermore, obesity in infants up to 24 months is determined based on weight for length (De Onis et al., 2008). Table 1 summarizes the classification of BMI for age and sex for children aged 2 to 6.

Table 1: Classification of BMI-For-Age and sex of children

Classification	Body Mass Index (Kg/m2)
Underweight	Below the 5th percentile ranking
Normal/Recommended	≥ 5th and < 85th percentile ranking
Overweight	≥ 85th and <95th percentile ranking
Obese	≥ the 95th percentile ranking

1.1.2. Family Structure and Childhood Obesity

In the context of social science literature, the family structure is conceptualized as a collective of individuals who come together through marriage, blood ties, or adoption, thereby nurturing and maintaining a common culture (Uddin, 2009). In essence, the family structure represents a human life system intricately structured around family subsystems. These subsystems encompass a range of elements, including but not limited to religion, ethnicity, and culture.

Children spend the majority of their time at home with their parents, where the number of family members and the presence or absence of both parents significantly influence the course and context of children's lives. Recognizing the pivotal role of the family in shaping children's nutritional habits, it can be asserted that family structure constitutes a potential determinant of children's weight status.

The prevalence of childhood obesity could be influenced by familial structural variables, such as the number of children and the marital status of the parents. In contrast to earlier times, when typically one parent assumed the role of caregiver for their children at home, contemporary households often consist of two employed parents and one or two children (Notara et al., 2020). Additionally, single-parent households have become more common due to the development of modern society (Formisano et al., 2014). Findings demonstrated that divorced parents have significant positive associations with their overweight children and thus may serve as predictors for BMI status (Fismen et al., 2022; Yannakoulia et al., 2008). Children raised by divorced parents experience more different life situations than those brought up by both parents. This condition is related to psychological stress and unfavorable behavior, which includes disturbed sleep patterns, unhealthy diet habits, increased sedentary behavior, and extreme screen time (Yannakoulia et al., 2008; Biehl, 2014). Furthermore, it has been observed that children residing with a single parent and a new partner show a noticeably reduced increase in their Body Mass Index (BMI) score compared to those who reside with either one or both parents (Formisano et al., 2014). Additionally, children who were raised solely by their mothers or siblingless demonstrated a higher body mass index over a long period of time (Chen & Escarce, 2014). Siblingless children are often the focus of parents and grandparents; hence, all

of their reasonable and unreasonable requests are satisfied, which is also a factor for obesity (Alghadir et al., 2016; Chen, 2014). Empirical evidence observed that siblings play a major role in increasing physical activities and creating an interest in outdoor activities by offering motivation and support (Notara et al., 2020). On the other hand, findings have highlighted that the family environment enables the adoption of healthy and sustainable behaviors. For instance, empirical evidence has also demonstrated the family structure as a moderator in healthy dietary choices and its effect on the weight status of children (Kanellopoulou et al., 2021). Furthermore, Papadaki and Mavrikaki (2015) suggested that children living with two parents show a greater tendency to maintain healthy eating habits. Similarly, children who experience changes in their family structure are not likely to follow their healthy diets (Augustine and Kimbro, 2013). These findings emphasize the importance of family cohesion, which positively impacts the utilization of healthy family consumption patterns (Franko et al., 2008).

The current literature regarding the association of family structure with children's weight status is limited but is growing significantly. The changes in family structure result in changes in family diet patterns, the level of exercise, income status, parental awareness, absence or presence of both biological parents and time spent interacting in the family environment, all of which influence children's weight status.

1.1.3. Parental Employment Status and Childhood Obesity

Overweight and obesity are a result of an imbalance between intake and expenditure, theorized to be worse by parental employment. Indeed, parents are fundamentally responsible for providing the home conditions where weight-related behaviors take place. Parental employment limits the time spent at home, hence reducing the likelihood of preparing homemade meals. Moreover, parental employment reduces the available time to spend with children. Due to this lack of parental monitoring, children's meal frequency and food selection are negatively affected both in terms of quantity and quality. Fast foods and junk foods, skipping breakfast, avoiding vegetables and fruits, and semi-prepared foods are the common behaviors adopted by children due to their parents' employment.

Another significant employment-related factor adversely influencing habits related to a child's weight in working parents is job stress (Devine et al., 2003;

Losoncz & Bortolotto, 2009). Examples of stress-inducing factors affecting the family environment include job insecurity, the completion of work duties at home, pressure from workload, and jobs categorized as high-stress occupations.

Studies have demonstrated different results concerning the status of the parent's occupation and the occurrence of overweight or obesity in children. In the cross-sectional study about the prevalence of childhood overweight according to parental occupational levels among 123,487 children aged 6-9 years in 24 countries of the European Region of WHO, the findings suggested no significant difference or minor variation in high-income countries (HICs). The results have also shown the BMI was reportedly higher when both parents worked or were self-employed, but this result just was observed in Albania, Bulgaria, Georgia, Montenegro, Romania, and Türkiye (Buoncristiano et al., 2021).

The study was conducted by Zozaya et al. (2022) on data from 32,694 participants in the Health Behaviour in School-Aged Children surveys in 2010 and 2014 in Spain to examine the association between parents' employment and their children's weight status. In this study, the employment status of the parent was categorized into four groups: both parents employed, only the father employed, only the mother employed, and neither parent employed at the time of the survey. The findings demonstrated no significant association between the employment status of parents and children's BMI. However, subgroup analysis reported that girls under 13 who only had their mothers working tended to have higher BMIs. Furthermore, results reported that children with unemployed parents have the risk of having a higher BMI due to their increased likelihood of following unhealthy habits and dietary practices.

An anticipated distinction exists between the unemployment of fathers and mothers, with the unemployment of fathers appearing to have more detrimental effects on children's BMI than the unemployment of mothers (Lissner et al., 2016). On the other hand, evidence from developing countries suggests that a mother's full-time employment with long working hours is associated with an increased risk of childhood obesity (Hope et al., 2015; Meyer, 2016). Hope et al. (2015) referred to findings from the UK Millennium Cohort study, which examined the relationship between parents's employment status and childhood obesity. Findings indicated that children with mothers who worked full-time were more likely to be obese. In addition, they found no

association between full-time paternal employment and the risk of obesity in children. Similarly, a systematic review reported that children with mothers who earned higher incomes and worked overtime had a higher risk of obesity (Mindlin et al., 2009). Despite the global family structure moving toward modernity, in which parents' responsibilities are expected to be shared between both the mothers and fathers, mothers remain the primary caregivers and crucial observers of children's eating behavior in most families (Santiago et al., 2023). In line with these findings, statistics show that the surge in mothers' employment rates, which increased significantly from 31% in 1980 to 58% in 2008, may be linked to the rising prevalence of childhood obesity (Fagan & Norman, 2012; OECD, 2011).

The study conducted in the United States suggested that children of mothers who worked full-time were at an increased risk of being overweight (Anderson et al., 2003). Furthermore, in a similar study that examined the effects of mothers' employment on children's weight by using the National Child Development Study, findings reported mothers who worked full-time during the middle childhood age of their children demonstrated an increased risk of overweight children in 16 years old (Scholder, 2008). Moreover, another study employed the model of household fixed effects to explore the impact of maternal employment on children's mobility patterns and dietary habits. Findings suggested that maternal employment plays an effective role in increasing children's BMI, particularly with single mothers (Fitzsimons & Pongiglione, 2019).

However, findings observed that the parents' employment increases the households' income and, therefore enhances purchasing power for healthier and more sustainable food, which are often more expensive than processed and convenient options. Also, these findings may differ between single or partnered parents. For example, married working parents generally have higher incomes than single parents (Duncan & Hoffman, 1985; Ribar, 2004). In addition, married parents can share the responsibilities of children, allocating more time to their children in comparison to single working parents (Fronstin et al., 2001; Lopoo & DeLeire, 2014). According to findings, individuals working part-time are more likely to adopt a healthy lifestyle, while those who stay at home are more likely to have less healthy behaviors. This trend is particularly evident among the unemployed, shift workers, and those employed

full-time. Furthermore, retirees tend to lead a moderately healthy lifestyle, rather than a lifestyle that is entirely healthy or unhealthy (Contoyannis & Jones, 2004).

1.1.4. Parental Education and Childhood Obesity

Parents' educational level is considered a potential factor that can influence their children's weight status. However, the type of effect on these relationships yet remains vague. Some studies suggested that this relationship may be inverse, when the higher the parental education, the more likely the risk of overweight or obesity for their children is low. Parents with higher education levels are more knowledgeable in nutrition and tend to be more aware of health-related issues. In addition, the higher the level of education, the better the economic level, which can lead to a greater motivation to adhere to healthy lifestyles as role models for children (Panagiotakos et al., 2008; Liu, 2018; Notara, 2020; Yannakoulia et al., 2008). On the other hand, some studies indicated that children of highly educated parents have the potential to become overweight or obese (Liu et al., 2016; Pirinçci, 2010). In this context, parents with higher education tend to provide their children with more facilities and a sedentary lifestyle, which ultimately results in an increased risk of being overweight or obese in their childhood years (Pirinçci, 2010). Parents with higher education usually have jobs that require much time and effort, thus bringing stress, which can decrease the quality of a healthy lifestyle and probably increase the rate of children's obesity.

Conversely, some studies suggest that one of the factors contributing to the growing rates of overweight and obesity in children is parents with lower levels of education (Lamerz et al., 2005; Gopinath, 2012; Androutsos, 2018). In this regard, less educated parents are more likely to be in weaker financial states and thus may be forced to live in low-income areas where the populations are at high risk for obesity due to the high density of fast-food restaurants (Gopinath et al., 2012). However, other studies found no significant association between parental education and childhood obesity (Yannakoulia et al., 2008; Bürgi, 2010).

1.1.5. Parental Socioeconomic Status (SES) and Childhood Obesity

Socioeconomic status has a significant impact on health knowledge, health awareness, decision-making regarding health issues, and access to healthy products and services. Socioeconomic status is a multidimensional construct that includes educational degree, occupational status, and financial status. Research suggested that the parents' SES can be considered as an indicator to predict children's weight status (Notara et al., 2020). The literature demonstrates different findings regarding the relationship between socioeconomic status and the weight status of children. For instance, some studies have reported inverse relationships between SES and childhood overweight or obesity, indicating that low SES increases the risk factor of developing overweight or obesity conditions (Manios et al., 2018; Noh et al., 2014; Rogers et al., 2015). On the contrary, other studies found that higher socioeconomic status is one of the risk factors for increasing obesity conditions (Kondolot et al., 2017; Khashayar et al., 2018). Sobal and Stunkard (1989) also suggested that the rise in affluence in developing countries has contributed to the prevalence of obesity. Nevertheless, a cross-sectional study conducted across multiple nations revealed a negative correlation between economic status and the observed phenomenon in countries with higher economic levels, while a positive correlation was observed in countries with lower economic status (Muthuri et al., 2016).

1.2. Sustainability Concerns

The growth of the world population and the industrial revolution, there was a shift in agricultural and production systems, which prioritized mass production and cost reduction for consumers. Industrial agriculture has expanded rapidly, leading to a considerable increase in yields per hectare. The utilization of genetically modified (GM) products in agriculture has experienced a consistent increase on a worldwide scale during the past few decades. The global cultivation of genetically modified (GM) crops saw a significant rise from 1.7 million hectares in 1996 to 148 million hectares in 2010, with a growing percentage of such crops being cultivated by developing countries (James, 2010). According to James (2010), 29 countries were classified as "biotechnology countries" in 2010, with 19 being developing countries and 10 being industrialized countries. Of these 29 countries, 17 cultivated genetically modified

crops on areas exceeding 50,000 hectares. The increased use of soil and water harvesting, chemical fertilizers, and genetically modified (GM) seeds has led to environmental pollution, a rising carbon footprint, the reducing of agricultural land (commonly known as the farm crisis), and growing concerns about food insecurity and the potential for disease transmission through agricultural products (Reisch et al., 2013). On the other hand, instead of selling their produce in local markets, farmers often sell to complex and extensive supply chains that purchase their products at a quarter of their real value (Tischner & Kjaernes, 2007). Additionally, the absence of local markets has resulted in increased transportation of agricultural products over long distances, making seasonal food products accessible throughout the year and special products for each region available all over the world. The subsequences of industrialized agriculture include health and environmental costs. This emerging trend in the food production system has generated supermarket-based agricultural products, GMO products, and processed and ultra-processed products. Despite the food production chain's efforts to reduce the crisis of food shortages globally, it has not been completely successful. According to research, in some regions, food scarcity and micronutrient deficiencies are still reported (Haddad et al., 2016; Béné, 2019). More importantly, several studies have suggested the negative impact of the modern food production system on human health and the environment (Chan, 2017; Wang et al., 2022; Watts et al., 2019; Willett et al., 2019). The present dietary patterns that are widely adopted worldwide are commonly known as "lose-lose" diets. The modern production system generates food items that are high in calories, saturated fats, and processed ingredients. These products present a significant threat to human health and contribute to the decline of environmental sustainability (Garnett, 2016). Garnett, Godfray, and a group of experts were also invited to comment on the problem. They ratiocinated that ‘‘while the stability and security of the food system are underpinned by its environmental resource base, the evidence overwhelmingly suggests that these resources are being depleted and damaged in ways that threaten food production in the long term (. . .). Much of this damage is caused by the food system itself - food is both an agent and a victim of environmental harm." (Garnett & Godfray, 2012).

Food production and consumption have the most significant impacts on the dimensions of economic, social, and, especially, environmental sustainability. Food production is the largest cause of global environmental change. According to Reisch et

al. (2013), in all stages of the supply chain, from the initial stage of producing agricultural products to the manufacturing process, distribution, retail, home preparation, and waste-food systems, there are significant contributions to emitted greenhouse gases, which include more than 30% globally. Furthermore, the system also leads to excessive land use, soil and water pollution, the consumption of 70% of global freshwater, and a serious threat to biodiversity that finally results in environmental unsustainability. In recent decades, the frequency of crises in agricultural and food systems, along with the numerous scandals in the environment, have made people express mistrust over the quality and safety of the food supply chain, as well as the information provided by the relevant authorities (Falguera et al., 2012; Bánáti, 2011). Indeed, increasing consumer concern about food safety has increased the preference of consumers toward sustainable products. Consequently, stakeholders in all levels of agriculture and the food chain have shown increased commitment to sustainability issues (Vermeir & Verbeke, 2006).

The contemporary consumer attitude is developing beyond satisfying basic needs, such as safety concerns, planetary health, ethical values, and other motives related to product choices (Wang et al., 2022). Similarly, the decision process of food purchasing for sustainable consumers includes multi-dimensional concerns of sustainability, which often involve deciding based on long-term and collective interests versus personal interests (van Strien & Koenders, 2012). The need for sustainable development is developed based on sustainability concerns, which are categorized into three dimensions of environmental, social, and economic issues. In this context, environmental concerns are especially defined based on an individual's awareness of the ecological challenges and their belief in the effect of their action on long-term environmental sustainability (Sreen et al., 2021). These include global warming, greenhouse gas emissions, overuse of limited natural resources (Frison et al., 2011), deforestation, soil, and water pollution (Amundson et al., 2015), the threat of loss of diversity in regional plant and animal species, and welfare of animals (Khoury et al., 2014; Fanzo, 2012). Hence, considering that the population is expected to increase to about 10 billion by 2050, the protection of environmental sustainability has become the most important issue in terms of preventing further planetary degradation (Mazzocchi et al., 2022). Moreover, economic (ethical) sustainability concerns in the food sector include the absence of fixed salaries and financial security, neglect of labor

rights based on labor laws, the use of child labor, lack of education for farmers on sustainable agriculture, insufficient support for local production, and unfair pricing for producers (Béné et al., 2019a). For example, international chain companies from the UK Tesco, Germany Metro Group, and the United States Walmart have been leading the food industries for the past decade. These companies act as typically bottlenecks in supply chains, hold powerful control over producers and farmers, and work mainly on facilitating maximum profitability via labor (Oosterveer & Sonnenfeld, 2012). Consumers' economic and social concerns lead to consumers support for natural, local products (sustainable products), which fosters support for small farms and rural communities, provides fair prices for producers and economic profitability for farmers, enhances regional production, improves social welfare, and contributes to greater economic flexibility (Schader et al., 2015). Social concerns that cause sustainable behavior in choosing a nutritional pattern include humanism, the desire to enhance social conditions, expenditure towards environmental preservation, a sense of equality, trust in others, simplification of lifestyle, tolerance, and respect, as well as the preservation of natural resources to ensure the well-being of future generations (Gulev, 2012).

1.2.1. Environmental Concerns

It is widely acknowledged that environmental issues represent a key concern in the field of sustainability. Indeed, the term "sustainability" was first used in the 1970s in relation to environmental problems. The environmental consequences were a result of economic development and industrialization processes that thus triggered general concern in society. The rapid increase of global environmental crises led the United Nations to address these issues as major obstacles to development. A significant initial step in this effort was the convening of the United Nations Conference on the Human Environment in Stockholm in 1972 (Giovannoni & Fabietti, 2013). Unfortunately, environmental issues have remained an unresolved crisis. The July 2020 UNEP meeting strongly emphasized the alarming environmental crisis, it can even threaten up to 80% of the Goals of Sustainable Development determined in the 2030 Agenda. The meeting focused on addressing three major crises: climate change, biodiversity loss, and pollution. These crises have been identified as central to the strategic direction of

the United Nations Environment Programme (UNEP) for the next five years. In this regard, UNEP aims to establish a comprehensive legal framework at regional, national, and global levels, which will serve as a way to advance sustainability efforts (Coimbra, 2020).

Since unsustainable consumption causes three times more pressure on the environment than it can actually support, it can be claimed that consumption and consumer choices are considered the main threat factors of sustainability (Čater & Serafimova, 2019). Also, the rapid population growth and increased food demand have triggered industrial agriculture production. The modern food system has caused consequences such as deforestation, overuse of limited natural resources, and pollution of water, soil, and air due to chemical fertilizers and pesticides. All these unsustainable production and consumption patterns disrupt the natural ecosystem and threaten biodiversity. The concept of environmental concern represents a collective term including various dimensions of pro-environmental behavior, including environmental orientation and proceedings related to the environment (Kumar et al., 2021). Given the literature review, the levels of environmental concern might be applied as a predictor for pro-environmental behaviors (Sreen et al., 2020). According to the definition of Meeusen (2014), environmental concerns might be regarded as a manifestation of the post-materialist mentality, whereby the individuals' concerns extend beyond considerations of the economic or physical. Based on this perspective, it would appear that such concern is deeply intertwined with a state of knowledge and awareness regarding environmental concerns. Hence, according to Dunlap and Jones (2002), environmental concerns include factors like individuals' awareness of environmental issues, their support for plans to address these problems, and their willingness to actively participate in solutions.

The literature review has suggested that the field of public health is inherently tied to the concept of environmental sustainability. Based on this perspective, an unsustainable environment can reduce food safety and act as a threat to the food security of future generations. Fortunately, over the last decades, there has been a gradual increase in consumer awareness and sensitivity regarding reducing and possibly reversing the damaging environmental impacts of human activities (Dagher et al., 2015). Therefore, to be successful in environmental protection, it is crucial to change consumers' eating habits toward more sustainable food consumption patterns

(Hedin et al., 2019; Magrini et al., 2018). Additionally, findings emphasized the significant effects of consumers environmental concerns on consumers' sustainable food choices (Joshi & Rahman, 2015). Research has observed that consumers tend to develop purchase behaviors that result either in a positive environmental impact or contribute to reduced negative effects (Kadic-Maglajlic et al., 2019). Furthermore, research indicates that individuals who are highly aware of and concerned about environmental issues are more likely to engage in sustainable behaviors and choose food products with inherent sustainability attributes (Dominick et al., 2018; Migliore et al., 2018; Moscato & Machin, 2018).

1.2.2. Biodiversity

In recent decades, given rising levels of income, demand and consumption have increased significantly. Therefore, the governments to respond to these increased demands have been forced to emphasize more production by expanding factory capacities, agricultural lands, and harvesting capabilities beyond the sustainable limits of farming. Hence, increasing production along with overconsumption not only threatens public health and increases early-stage obesity but also harms the sustainability of the environment irrecoverably. This is evident in the reduced biodiversity due to the expanded use of agricultural lands, reduced water resources, polluting water and soil, and finally climate change, all increasing the loss of all types of animal and plant species. It is notably mentioned that this interrelationship between consumption intensity, obesity, and loss of biodiversity is a cycle in which all these elements reinforce each other's impacts.

Biodiversity is a broad concept that includes all life forms within a given natural system, considering their variety and prevalence. It can also be described as the result of the long and extensive evolutionary process over billions of years (Kremen & Merenlender, 2018). The various components of an ecosystem include plants, animals, microorganisms, and the genetic material within them (Rawat & Agarwal, 2015). These elements interact with their surrounding environment, which includes water, soil, and air. Biodiversity involves a complex ecological system that supports the survival of organisms and provides the well-being of human populations throughout the world. Every organism on Earth has a unique role in sustaining this system, and it

is crucial that humans protect their existence, regardless of the perceived benefits to humans (Rawat & Agarwal, 2015). Since all living organisms on Earth belong to the complex system, protecting and preserving each component is important. The loss of any single entity in the ecosystem can disrupt the balance of the ecosystem. Hence, the balanced disruption of biodiversity has been widely identified as one of the main threats to the health and well-being of both current and future generations.

Despite the wide recognition of the importance of biodiversity, current patterns of mismanagement led to a concerning decrease in species diversity, abundance, and distribution across different regions of the world. Whereas species extinction has always been a natural process in the history of Earth, human interventions (both direct and indirect) have significantly increased this process to make the rate of extinction at least 100 times greater than natural (Rawat & Agarwal, 2015). Human activities that include deforestation, land-use change due to agriculture, industrial development, mining, urban expansion, the overexploitation of natural resources, climate change due to global warming, and environmental pollution are major drivers of biodiversity loss, thereby posing the greatest challenge to human food security. Food security and biodiversity are inherently interconnected phenomena in which the dynamics of one aspect tend to influence the other aspect (Fischer et al., 2017; Frison et al., 2011). Furthermore, environmental degradation due to production and consumption threatens to destroy ecosystem sustainability and biodiversity conservation immensely (Crenna et al., 2019). At the same time, findings indicate that the loss of biodiversity, which is important to food production and agriculture, poses a huge threat to the food security of both present and future generations (Crist et al., 2017; Sundar, 2011). Since the impact of food production and consumption systems on biodiversity is complex, prioritizing the importance of various factors influencing it is difficult. The most effective strategy for biodiversity conservation includes sustainable methods of production and ethical consumption.

1.2.3. Animal Welfare

Given the current global social and economic conditions, which lead to increased market demand for animal-derived food products, it seems difficult to avoid livestock production intensification. This growing demand and associated

overproduction not only impair animal welfare but are also a threat to human health through the prevalence of overweight and obesity. The factors of production intensification, excessive consumption, obesity, and animal welfare mutually reinforce each other's consequences, creating a reciprocal and interconnected process.

The global population has experienced a factor of 2.4 increase, while meat consumption has seen a factor of 4.7 increase (Fernandes et al., 2019). In order to achieve a minimum increase of 72 kg in per capita meat consumption by 2050 (Miele, 2016), it is essential to implement structural changes in the livestock industry. Although advancements in the livestock industry have enhanced food security and met consumer demands, various sustainability issues related to livestock production systems have been significantly put at risk. Evidence indicated the rising public concern about the lack of ethical treatment of animals and their welfare within the production systems. Public concerns about animal welfare emerged in the development of animal protection laws by the British government in the 19th century, which increased in importance and influence throughout the following century (Buller et al., 2018). Societal debates and scholarly research have discussed the ethical consequences of intensifying production of industrial livestock (Mulder & Zomer, 2017). For example, these consequences include environmental damage such as producing greenhouse gases and local water, soil, and air pollution as results of intensifying industrial livestock production (Bonnet et al., 2020). Additionally, increased meat safety concerns result from antibiotic overuse in farm animals, socioethical problems such as accidents in livestock transportation over long distances, and cruelty to animals in slaughterhouses (Alonso et al., 2020). The scandals of mistreatment of animals, especially those found with hidden cameras, significantly affected these concerns (Miranda-de la Lama et al., 2019). There is also growing concern about the physiological health and emotional feelings of animals that have been shown to likely impact the food safety (Lundmark Hedman et al., 2021; Robbins et al., 2016).

Therefore, the media perspective on the lack of animal welfare (AW) issues may greatly impact and reduce the value of the livestock industry among consumers (Miranda-de la Lama et al., 2011). In recent decades, consumer protests in support of ethical production practices and the exclusion of products that neglect animal welfare have increased (Broom, 2017). For example, studies conducted in 2006 and 2015 in Europe indicated that consumers' concern for animal welfare increased from 34 to 57%

in 2015 (Alonso et al., 2020). Similarly, a global study on animal welfare indicated that there has been a growing prevalence of animal welfare concerns in society (Eurobarometer, 2007). In response, the International Finance Corporation (IFC) released a Practice Note titled "Animal Welfare in Livestock Operations" in 2014. This publication emphasized the increasing recognition that implementing higher standards of animal welfare is crucial for improving business efficiency and profitability, meeting international market demands, and satisfying consumer expectations (Corporation, 2014). The policies of the International Finance Corporation (IFC) are implemented on a global scale (Broom, 2017).

Animal welfare is widely acknowledged as a crucial component of contemporary industrial production (Temple & Manteca, 2020). The absence of a universally acknowledged definition of animal welfare presents researchers with a diverse spectrum of perspectives and consumers' concerns (Cornish et al., 2016). The concept of animal welfare is characterized by a multidimensional nature (Botreau et al., 2007). According to Alonso et al. (2020), individuals based on their perspectives on animal welfare present differing definitions and interpretations of animal welfare. However, despite the broad range of definitions, there is consensus that animal welfare is an inherent feature of the animal itself and not something dependent upon the surrounding environment. Furthermore, the evaluation of welfare is not a constant process over time and is assessed through the range from very bad to very good (Alonso et al., 2020). According to the definition presented by Fraser et al. (1997), animal welfare can be categorized into three distinct dimensions: biological, emotional, and natural conditions. Although each of these dimensions offers distinct strengths, none is sufficient to comprehensively assess animal welfare on its own. In this regard, an integrated approach is recommended in making an effective assessment of animal welfare. Biologically, animal welfare includes nutritional sufficiency, standard living conditions, and physically healthy appearance, meaning animals are free from diseases and physical injuries (Temple & Manteca, 2020). From the emotional perspective, it should be considered that animals are sentient beings and they are capable of perceiving suffering and experiencing emotional states (Le Neindre et al., 2017). Indeed, it is essential to provide living conditions for animals free from fear, distress, and physical abuse. From a naturalistic perspective, it should facilitate the conditions of their native habitats, allowing them to practice natural tendencies

such as grazing and curiosity (Temple & Manteca, 2020). However, the concept of animal welfare, as defined by the Organization for Animal Health (OIE), is beyond these considerations since more emphasis is on the animals' adaptability and coping mechanisms in response to the conditions they face (Miele, 2016). This definition is acknowledged in the scientific community as an acceptable framework for perceiving animal welfare, focusing on the animal's ability to adjust to the environment and, overcome the circumstances posed by nature (Temple & Manteca, 2020).

Food choice during shopping is a complex process that involves the interplay of egoistic and altruistic factors. According to Cembalo et al. (2016), egoistic factors which are considered by consumers throughout food purchases include price, taste, food safety, and nutritional value. While, altruistic considerations are motivated by ethical concerns (Rollin, 2015). The inclusion of emotional states and empathy in the assessment of animal welfare and concerns about animal suffering is classified as an altruistic factor (Cembalo et al., 2016). Additionally, the egoistic perspective highlights that public opinion frequently emphasizes the negative environmental impacts of modern livestock production methods. According to the findings presented by Bonnet et al. (2020), environmental concerns are the second most influential factor in shaping customer purchasing choices. The livestock industry is considered one of the major factors in the emission of greenhouse gases, known to be among the key drivers of global warming (Bonnet et al., 2020), It is also identified as a key driver of deforestation and the resultant loss of global biodiversity (Shukla et al., 2019). Moreover, it leads to regional ecological degradation, which involves water, land, and air contamination (Poore & Nemecek, 2018). On the other hand, consumers demonstrated significant concerns regarding the impact of animal welfare on food safety and, subsequently human health. These concerns are further emphasized by global risks related to industrial animal husbandry like antibiotic resistance and animal-borne diseases, therefore highlighting the necessity of solving these problems (Bonnet et al., 2020). These findings suggested that egoistic factors are usually preferred over altruistic considerations during shopping decisions (Alonso et al., 2020).

1.2.4. Fair Trade

Individuals concerned with sustainability prioritize sustainable practices in their consumption habits, preferring products that align with the principles of environmental, social, and economic sustainability. Social sustainability, also known as ethical sustainability, includes concepts such as fair trade. Individuals with greater awareness of sustainability concerns are particularly sensitive to fair trade issues and prefer to purchase food products from local producers. This choice reflects their desire to support these producers and ensure the continuity of their production.

The concept of fair trade emerged globally in 1988, initiated by a Dutch non-governmental organization aiming to ensure fair wages for agricultural laborers. Initially popularized under the name 'Max Havelaar,' the fair-trade label originated from a character in Dutch literature who opposed worker exploitation during the colonial period (Schillaci & Norgaard, 2019). The concept of unfair trade refers to circumstances in which larger partners exploit smaller farmers by imposing transactional terms that primarily benefit themselves while minimizing associated risks (Busch & Spiller, 2016). It is important to note that unilaterally imposing obligations and economic risks on one business partner by another, regardless of whether the parties involved have agreed to the transaction conditions, constitutes unfair trade (European Union, 2019). In other words, from a sociological perspective, the lack of recognition and societal respect for farmers' work, coupled with the disregard exhibited by buyers and consumers, reflects a manifestation of unjust conduct (Hellberg-Bahr & Spiller, 2012). The concept of fair trade emerged as a response to the growing prevalence of unfair trade practices.

The concept of fair trade involves the equitable distribution of profits among participants in the agricultural and food supply chain, including producers, processors, marketers, distributors, and retailers (European Union, 2019). According to Adams' (1965) equity theory, it can be argued that the balance between farmers' input and output ratios is often unfavorable, with evidence suggesting that the allocation of income to farmers lacks equity (Busch & Spiller, 2016). Additionally, fair trade supports labor rights, racial equality, and gender equality, aiming to promote equity in both financial gains and working conditions (Busch & Spiller, 2016). This concept is rooted in altruism (De Ferran & Grunert, 2007), as individuals are often motivated by

altruistic tendencies, reciprocity, and a sense of concern over perceived injustices (Andreoni & Vesterlund, 2001; Chang & Lusk, 2009). Fair trade prioritizes cooperation over competition, aiming to establish equitable pricing structures that benefit producers in developing countries who are vulnerable to the adverse effects of free trade (Wang & Chen, 2019).

Hence, growing societal awareness of the absence of equitable trade practices in the food industry has led to increased concerns about unfair trade. Consumers express empathy for vulnerable individuals within the production chain, showing support through the purchase of fair trade products or by advocating for related campaigns. Additionally, consumers may perceive themselves as vulnerable within the agro-food chain, facing challenges similar to those of farmers, as both are faced with potential risks in market (Busch & Spiller, 2016).

Increasing concerns about inequities in pay-offs within agricultural and food supply chains have led to a significant increase in the adoption of the fair-trade model, particularly among global agricultural producers (Schillaci & Norgaard, 2019). This shift has encouraged consumers to give greater emphasis to fairness in their food purchasing decisions (Toler et al., 2009). Consumers prefer allocating surplus income to farmers by purchasing products with fair trade labels (Busch & Spiller, 2016) and exhibit low sensitivity to higher premiums for such products (Rashid & Byun, 2018; Wang & Chen, 2019). Furthermore, research indicates that when fair trade products are unavailable, consumers often choose to purchase from local markets or directly from smallholder farmers to support family farms and ensure fair pricing (Samoggia et al., 2021; Wang & Chen, 2019). Consumers also tend to prefer small and local producer over larger corporations (Eden and Bear, 2010). Ellison et al. (2010) found that consumers express support for small-scale family farms, even when they perceive these farmers to be more financially successful than themselves.

According to the market strategy perspective, fair trade can be viewed as a form of free trade with a high degree of protectionism, offering marketing advantages to both domestic farmers and those in developing countries. Furthermore, from the perspective of social movements, fair trade is seen as a means of promoting equitable production practices and reducing poverty, with the ultimate goal of creating a world characterized by fairness and free from poverty. In general, fair trade enhances social

and economic processes for individuals engaged in the agro-food chain (Goff, 2018; Samoggia et al., 2021; Schillaci & Norgaard, 2019). Fair trade movement has experienced substantial growth and evolution since the inception of "Max Havelaar." Contemporary fair trade practices effectively promote the adoption of ethical and sustainable production practices among farmers in developing countries, leading to an increase in consumer preference for sustainable, natural, local, and organic markets (Schillaci & Norgaard, 2019).

1.3. Sustainable Food Consumption

In this study, the main focus on addressing sustainability concerns is framed within the context of sustainable food consumption, which significantly impacts individual and public health, natural resources, social cohesion, and the economy (Reisch et al., 2013). The promotion of sustainable consumption has become a fundamental policy goal for the new millennium, both domestically and globally, with increasing urgency and importance (Nash, 2009). The Food Systems Summit at the United Nations in 2021 emphasized the need to accelerate effective solutions for achieving the Sustainable Development Goals (SDGs). During this summit, transitioning to healthy and sustainable consumption patterns was identified as one of the five key areas for action (United Nations, 2021). However, despite the growing recognition of the significance of sustainable development and sustainability, a universally accepted definition of sustainable food consumption has yet to be established. The Food and Agriculture Organization defines a sustainable diet as one that protects biodiversity, respects ecosystems, is culturally acceptable, is accessible and affordable across all economic levels, and is nutritionally adequate and safe (FAO, 2010). Similarly, the UK Sustainable Development Commission defines sustainable food as safe, healthy, and nutritious, fulfilling dietary requirements across various income levels (UK Sustainable Development Commission, 2005; 2009).

Sustainable food consumption offers an opportunity for small and vulnerable producers within agricultural and food production chains to focus on generating reasonable profits while ensuring a safe and healthy working environment. Furthermore, supporting the rural economy by emphasizing the consumption of locally sourced food products is imperative, as it reduces food miles and enhances

environmental sustainability. Regarding environmental aspects, attention during the production and processing stages is focused on prioritizing regulations and concerns, as well as efforts to minimize the consumption of natural resources. In the context of animal welfare, significant emphasis is placed on maintaining the highest standards of animal health and welfare. Furthermore, scholars have highlighted the importance of aligning sustainable food practices with the cultural and social diversity of a given society, as well as ensuring the practicality of these approaches in terms of accessibility and affordability (Reisch et al., 2013).

The EAT-Lancet Commission has proposed various policies and implementation programs addressing the intersection of food and planetary health (Rockström et al., 2016). Most developed countries have placed significant emphasis on promoting sustainable food consumption practices, prioritizing health, environmental protection, and ensuring the availability of safe, sufficient, and nutritious food for both current and future generations. For example, Sweden has incorporated sustainable food consumption recommendations into its national food guidelines (Livsmedelsverket National Food Agency Sweden, 2015), and the Australian government's national plans for sustainable diet recommendations are increasingly gaining attention (Bradbear & Friel, 2011; Friel et al., 2014). Additionally, the US Department of Health and Human Services, along with the US Department of Agriculture, is placing greater emphasis on promoting healthy and sustainable food choices (US Department of Health and Human Services and US Agriculture, 2015).

The scientific community has increasingly focused on researching food consumption patterns adopted by consumers that are influenced by sustainability concerns and contribute to the development of sustainable practices. However, due to the broad spectrum of cultural and social values influencing the adoption of consumption patterns, no single pattern has been universally recognized as sustainable food consumption (Mazzocchi et al., 2022). The fact that food consumption patterns are deeply embedded in the food culture, taste preferences, and historical background of nations highlights the significant variation in nutritional patterns both within and across countries. Furthermore, the dietary patterns of different nations are influenced by their specific climatic conditions and the availability of food resources. Consequently, investigations continue regarding the sustainable practices that

individuals adopt in their daily routines or are willing to accept, considering cultural norms, food traditions, and availability (Cohen, 2006; Klintman & Boström, 2013; Wahlen et al., 2012).

The set of sustainability concerns is shaped by a combination of values that has the potential to influence food-related behaviors, including the purchasing and selection of food items that contribute to overall diet quality and sustainability (De Boer et al., 2007). Hence, consumers can play a pivotal role in adopting sustainable consumption patterns by evaluating the sustainability of the production process in their food choices and the required quantity for consumption (Verain et al., 2015). The growing demand for sustainable products, particularly from an environmental perspective, is driven by the imperative to reduce the pressure created by modern lifestyles on the preservation of livability conditions and well-being for future generations (Fuchs & Lorek, 2005). As a result, conventional food supply systems that prioritize mass production and low costs have experienced a decline in market appeal. In contrast, sustainable food supply systems have emerged as practical solutions that have the potential to address sustainability concerns and enhance food safety.

Grunert, Hieke, and Wills (2014) demonstrated that sustainability is an abstract and widespread concept. Sustainable products are defined as products that contribute to addressing one or more sustainability concerns through their attributes and effects (Vermeir & Verbeke, 2006). Consumers refer to sustainable products using a variety of terms, including 'green and good,' 'organic,' 'natural,' 'GMO-free,' and 'local.' Previous research indicates a substantial overlap among categories of sustainable products from the consumer's perspective (Dickson-Spillmann et al., 2011).

Undoubtedly, sustainable food consumption has emerged as a crucial issue in contemporary society. The investigation of consumption behavior has been recognized as an essential area of inquiry for understanding how sustainability can be achieved (Matthies & Wallis, 2015). This reflects the fact that the concurrent existence of consumption and sustainability is no longer viewed as a paradoxical phenomenon (Moschis et al., 2020). Sustainability is significantly impacted by consumers' conscious or unconscious food choices. Consumers, through responsible purchases, the choice of sustainable food products, balancing consumption, reducing food waste, and purchasing in local markets contribute to environmental sustainability and support the

local economy Food purchases and consumption practices are influenced by a wide range of concerns in a complex process. Food purchases and consumption practices are influenced by a wide range of concerns in a complex process (Niva et al., 2014). Indeed, from a consumer standpoint, the concept of sustainable food consumption may create a potential conflict between individual and collective interests, thereby incorporating a pro-social dimension into the act of consuming food. For example, consumers may choose natural and organic foods due to safety and health concerns, local foods to support fair trade and the local economy, limit meat consumption for animal welfare reasons, and select eco-friendly products for environmental concerns (Hedin et al., 2019; Kumar et al., 2021). In general, the fundamental tenets of sustainable food consumption are rooted in the use of organic, natural, locally sourced, and seasonal food items, as well as those that are minimally processed and ecologically sustainable (Mazzocchi et al., 2022).

1.4. Healthy Eating Habits

A habit is a consistent cognitive disposition commonly known as “habitual mind-set”. The term "habit" refers to a pattern of behavior exhibited by an individual that is characterized by automatic responses, irrespective of external stimuli or novel information, and is consistently maintained over time (Verplanken & Aarts, 1999). In a broad sense, it can be declared that habits are a sequential series of acquired actions that exhibit automatic responses to specific stimuli in obtaining certain goals and are likely to become habitual if consistently repeated satisfactorily (Triandis, 1979). Moreover, the strength of a habit is determined by the frequency of its occurrence in the past (Ouellette & Wood, 1998). Although repetition is necessary for the formation of a habit, it is worth noting that habituation differs from mere repetition. In the habituation process, the aim is to attain specific objectives and accomplishments (Verplanken & Aarts, 1999).

The concept of "eating habits" refers to a complex, deliberate, and often automatic set of behaviors that includes not only the purchase and preparation of food but also the development and following dietary patterns, meal timing, frequency, portion sizes, and even the manner in which food is consumed, such as mastication. Dietary patterns are highly variable among individuals and are significantly influenced

by cultural and societal factors (Hu, 2002; Rivera Medina et al., 2020). These patterns include the quantity and quality of meals as well as the types of food and beverage groups consumed (Hu, 2002). While there is no universally accepted definition of a healthy diet, it is generally characterized by a high intake of fresh fruits and vegetables, whole grains, legumes, unsaturated fats, dairy products, minimal meat consumption, and avoidance of processed foods (Sogari et al., 2018).

The dietary habits of individuals are significantly influenced by their beliefs, attitudes, and nutritional knowledge, and are deeply rooted in the prevailing food culture. The foundational dietary habits established during childhood play a critical role in shaping eating behaviors in adulthood. Evidence suggests that children tend to maintain their eating habits into adulthood (Agostoni et al., 2009). Therefore, understanding the dietary habits of children is vital for promoting their overall health and well-being. The principal and primary aspect of the interaction between parents and children involves feeding practices and breastfeeding (Mahmood et al., 2021). Furthermore, maternal roles significantly influence the development of their children's dietary preferences and habits. During this phase, mothers often exhibit a strong emotional investment in their children's eating behaviors. Forestell (2024) indicates that maternal influence on children's food preferences begins as early as the fetal period, where the perception of taste and smell is shaped by the amniotic fluid, which reflects the mother's diet. Following birth, breastfed infants continue to be exposed to a variety of flavors and tastes present in their mother's diet. Therefore, the fetal period plays a crucial role in establishing children's inclinations towards specific healthy dietary patterns, such as the consumption of fruits and vegetables, which often contain aromatic and bitter compounds (Scaglioni et al., 2018).

As children reach the end of their first year and begin to eat solid foods, they initiate the process of learning and adopting the dietary habits of their families (Mahmood et al., 2021). Family meals significantly influence children's consumption behaviors, including food composition, meal frequency, snacking habits, and portion sizes (Agostoni et al., 2009). More broadly, children acquire and perceive nutritional knowledge within their familial, school, and social environments, which shapes their eating habits. However, parents play a pivotal role in the development of children's eating behaviors. Children tend to emulate their parents' behaviors, and due to the significant influence of parental guidance on cognitive development, they often adopt

dietary preferences and consumption habits from their parents (Scaglioni et al., 2018). In this context, the Identification and Prevention of Dietary- and Lifestyle-Induced Health Effects in Children and Infants (IDEFICS) study, which surveyed 1,435 families across eight European countries, found that parents have a more significant influence on food preferences and the consumption of healthy versus unhealthy foods among younger children (Bogl et al., 2017). Social Cognitive Theory (SCT), developed by Albert Bandura in the 1960s, suggests that imitation plays a crucial role in acquiring new behaviors through the influence of appropriate social models. According to this theoretical framework, a family unit with an appropriate role model significantly impacts the cultivation and reinforcement of new behaviors in children. parents significantly influence their children's food preferences due to their responsibility for selecting food for the family. Children perceive their parents as role models and are likely to imitate their behaviors. Consequently, children adopt their parents' eating patterns and preferences, thereby establishing their own dietary habits. Parents' eating behaviors include the passive influences they apply within the home food environment, which unconsciously shapes their children's eating habits. Research indicates that parents contribute to the formation of over 70% of their children's eating habits through parenting and socialization processes (Scaglioni et al., 2011). The home food environment plays a crucial role in fostering healthy eating habits among children. It serves as a framework for dietary intake, eating habits, and routine behaviors, such as food selection, portion sizes, and timing, shaped by factors including household economic means, familial emotional commitment, and the availability of nutritious food options (Haines et al., 2019).

Numerous studies have demonstrated the positive effects of children participating in mealtimes with their parents, including the development of individualized food preferences and the learning of eating and table manners. Indeed, mealtime with family members serve as critical points of social interaction for children. During these meals, parents have the opportunity to serve as role models for food preferences and eating patterns, share knowledge about food culture, and establish guidelines and practices that govern mealtime behavior. Consequently, meals play a significant role in shaping children's socialization experiences within the family unit. The importance of family in the lives of children is paramount (Scaglioni et al., 2018).

A study conducted in Australia on children aged 6 months to 6 years found that having meals with parents and the emphasis on shared mealtime experiences can foster the development of healthy eating habits in children (Litterbach et al., 2017). Similarly, research in the United States involving 980 parents examined the Parent Mealtime Action Scale (PMAS), exploring factors that influence children's dietary behaviors and body mass index during shared meals with their parents. The findings indicated that parental food preferences, shaped by environmental and cultural influences, significantly impact children's dietary habits and weight status (Hendy et al., 2009). Additionally, an umbrella review of systematic reviews on the effectiveness of interventions to promote healthy eating in children aged 2–5 years revealed that such interventions positively affect children's eating patterns, with parental involvement further enhancing these outcomes (Matwiejczyk et al., 2018).

In line with prior research, parental influence on the eating habits of younger children is particularly strong. At this developmental stage, children view their parents as role models and are more likely to imitate their behavior. In a study conducted in Belgium involving four focus groups of parents and guardians, the findings emphasized that parental influence on children's eating habits varies across different age groups. Notably, during the preschool years, parental influence is significantly stronger (Vandeweghe et al., 2016). Regarding these findings, parental intervention should begin early, as parents serve as both role models and enforcers of healthy behaviors. The parental role in shaping children's eating habits is a complex and demanding responsibility. As primary decision-makers regarding food choices and as influential role models, parents should actively promote healthy eating habits, control their responses to various foods, and prioritize the importance of maintaining a healthy body to foster a culture of nutritious eating within the family. By creating a supportive food environment and consistently offering wholesome meals, parents significantly contribute to the long-term adoption of healthy eating behaviors and the overall physical well-being of their children. Consequently, parents play a critical role in childhood obesity prevention strategies and should be regarded as key contributors to intervention efforts.

1.5. Childhood Obesity in Türkiye

National and local surveys indicate that the Turkish population faces nutritional challenges in two distinct forms: insufficient micronutrient intake and excessive weight gain or obesity, both of which increase the risk of non-communicable diseases (FAO, 2001). Furthermore, research suggests that the high prevalence of overweight and obesity in Türkiye can be attributed to an interplay of genetic factors, cultural influences, and established dietary practices (Kesici, 2022).

In line with global trends, childhood obesity rates are increasing in Türkiye. According to Ozcebe et al. (2020), the childhood obesity rate in Türkiye ranks among the highest in Europe. Findings from the TOÇBİ survey indicate that approximately 20% of children in Türkiye are at risk of being overweigh (Özcebe et al., 2016). In a comprehensive study of individuals aged 15 and above across OECD member countries, Türkiye's obesity prevalence is reported at 22.3%, a rate that significantly exceeds the OECD average of 19.5% (OECD, 2017). Furthermore, a comprehensive Turkish nutrition and health survey conducted in 2010, which included 2,567 preschool children, reported an overweight/obesity prevalence of 8.5% (defined as BMI-for-age Z-score ≥ +2 SD). However, the actual prevalence may be underestimated due to potential bias in the selection of healthier children for the sample (Karaketir et al., 2023). However, in Türkiye, there has been insufficient emphasis on addressing the growing urgency of childhood obesity. The number of studies conducted on this issue remains limited, with most employing a cross-sectional design (Karaketir et al., 2023).

Figure 1, drawn from Karaketir et al.'s 2023 study on childhood obesity, clearly illustrates the prevalence of overweight children across different regions of Türkiye. The data used in this figure were gathered from Turkish Demographic and Health Survey (TDHS) reports from 2003, 2008, and 2013. Although more recent data are unavailable, these findings provide a basis for estimating the prevalence of childhood overweight in various Turkish regions in recent years.

The increased prevalence of overweight and obesity in western Türkiye, compared to the eastern region, appears to be linked to the more favorable socioeconomic status (SES) of parents in the West. In a broader context, studies indicate that obesity tends to be more common among children from higher

socioeconomic backgrounds in Türkiye (Bereket & Atay, 2012; Yardim et al., 2019). Indeed, a favorable socioeconomic status is a multifaceted construct, typically associated with higher levels of education, better occupational positions, and greater income. Consequently, the findings from investigations into childhood obesity in Türkiye suggest that parents with higher levels of education and professional occupations may encounter difficulties in preparing healthy food for their children due to time constraints, leading to a reliance on unhealthy, processed, and fast foods. Also, a favorable economic status is likely to further reinforce easier access to these types of foods. In contrast, research by Cammock et al. (2021) highlights that lower socioeconomic regions often have a higher concentration of fast food outlets and retail stores offering processed or semi-prepared foods. These areas present more affordable, accessible, and appealing food options, which contribute to poor dietary habits.

Additionally, in recent years, there has been a notable increase in the popularity of fast food in Türkiye, particularly among younger generations. Chambers et al. (2016) observed that Turkish adolescents commonly use fast food restaurants as places for social interaction, which may further promote unhealthy eating habits. Fast food consumption is widely recognized as a key contributor to obesity, due to its high-calorie content and low nutritional value.

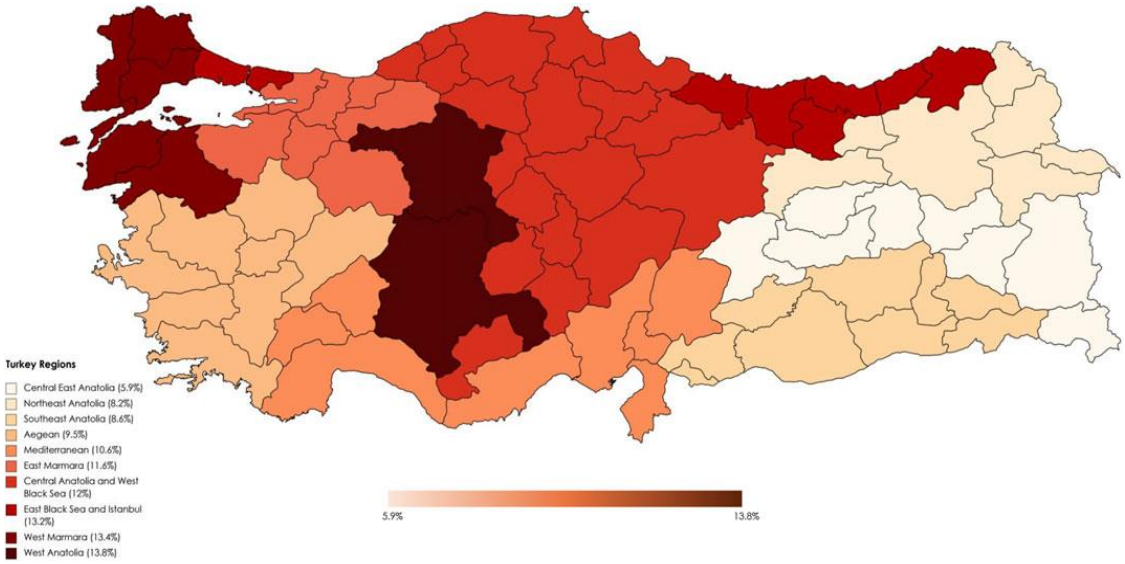

Figure 1: Prevalence of child overweight across various geographical areas (Karaketir et al., 2023).

Regarding the prevalence of overweight and obesity in children categorized by gender, research from various regions in Türkiye indicates that childhood obesity is more prevalent in boys than in girls (Arslan et al., 2021; Dündar & Öz, 2012; Yardim et al., 2019). According to a study conducted by Arslan et al. (2021) involving 9,786 students, 17.2% of boys were identified as overweight, while 12% were classified as obese. In comparison, 16.5% of girls were categorized as overweight, with 9% classified as obese. In this specific research, the average Body Mass Index (BMI) in boys was reported to be 13% higher than that of girls. Furthermore, a study conducted by Alkan et al. (2022), which included 5,620 students, recorded obesity prevalence rates of 17.3% for boys and 14.1% for girls. These findings can be attributed to cultural norms within Turkish families. In Turkish family culture, boys typically experience greater freedom than girls, often spending more time playing video games and having increased access to unhealthy foods. Conversely, girls tend to be more concerned about their body image, which facilitates better control over their dietary consumption.

Another significant factor influencing the prevalence of obesity in Turkish children is culture. A qualitative study conducted by Schwanen (2012) focused on Turkish parents and highlighted the pivotal role of parental cultural norms in shaping children's weight status. According to the study, parents perceived their primary responsibility as creating favorable conditions for their children's well-being and physical growth. Notably, 73.3% of parents who recognized their children's overweight or obesity did not perceive it as a health issue, which may be due to either insufficient knowledge or a lack of awareness regarding the consequences of obesity. They often expressed the belief that "their child is overweight but not sick.". These findings highlight the critical role of culture in shaping parental perceptions of their children's weight status. In Turkish parental culture, there is a prevailing belief that a child's overweight status reflects good health. Furthermore, Bereket and Atay (2012) identified several risk factors associated with childhood obesity in Türkiye, including high socioeconomic status, parental obesity, excessive screen time from television and personal computers, urban living, and exposure to advertising that promotes high-calorie, fatty, and sugary products

The rising prevalence of childhood obesity presents a significant risk to the future efficacy and productivity of society, as well as to economic and social advancement and the well-being of future generations. The World Health Organization (WHO) emphasizes the necessity of closely monitoring trends in childhood overweight and obesity, highlighting the importance of implementing effective control and prevention strategies (De Onis et al., 2010). Therefore, it is crucial to identify preventive strategies and implement optimal intervention approaches for managing and mitigating this epidemic.

1.6. Sustainable Food Consumption in Türkiye

The integration of sustainability and food consumption behavior represents a central objective within comprehensive sustainable development strategies in Türkiye. The importance of this relationship lies in the critical consequences associated with both food production and consumption. These consequences include factors such as the carbon footprint, environmental impacts contributing to climate change, the depletion of plant and animal biodiversity, consumer concerns about food safety and public health, the social and economic aspects of consumption, and the issue of food waste throughout the food supply chain.

Türkiye has implemented efforts to establish a sustainable food system as part of its preparations for the 2021 United Nations Food Systems Summit. In this context, the Turkish government's policy has focused on transitioning toward sustainable consumption and enhancing sustainable food systems. This involves identifying the factors that influence individuals' food consumption behavior and recognizing the barriers to sustainable food consumption, with particular emphasis on preventing and reducing food waste (Republic of Turkey Ministry of Agriculture and Forestry, 2021). To achieve these objectives, the government, as detailed in the 11th Development Plan, emphasizes education and raising consumer awareness regarding food waste management (Presidency of the Republic of Türkiye, 2022).

Over the past decade, Türkiye has experienced an increased focus on research addressing environmental concerns, sustainable consumption, responsible consumer behavior, and green marketing. In this context, a group of researchers conducted a study in 2021 involving in-depth interviews with 25 experts to explore the concept of

sustainable consumption (Tekinbaş Özkaya et al., 2021). The findings revealed three primary strategies for adopting more sustainable food consumption practices. The proposed strategies involve enhancing consumer awareness and knowledge of sustainable food consumption through comprehensive education at all societal levels, disseminating information about healthy eating practices via contemporary communication channels, and promoting a more sustainable lifestyle through collaboration among education centers, relevant organizations, producers, and government policies aimed at advancing sustainable food consumption practices (Tekinbaş Özkaya et al., 2021).

In another investigation conducted by Ayar and Gürbüz (2021) within the framework of the theory of planned behavior, the study examined the influence of consumers' attitudes on sustainable consumption behaviors. The results revealed a significant correlation between attitudes and behavioral intentions. The authors emphasize that changing individuals' attitudes toward sustainable consumption enhances their intention to engage in sustainable practices. These findings highlight the importance of government support in shaping consumer attitudes and emphasize the necessity of environmental protection campaigns to improve consumer awareness regarding sustainable consumption.

In this context, several studies have examined the determinants of sustainable food consumption in Türkiye, identifying relationships between sustainable consumption and factors such as gender, generation, educational attainment, income level, and awareness of sustainability issues (Akgüngör et al., 2010; Bulut et al., 2017; Sawatzki, 2016; Yilmaz & Ilter, 2017). Additionally, a study conducted by Biresselioglu et al. (2023) explored the factors influencing the purchasing preferences of families in Izmir, revealing that socio-demographic elements, including gender, age, education, income level, and household size, play a crucial role in shaping sustainable consumption behaviors. The findings also identified barriers to sustainable consumption, particularly the limited accessibility of organic markets and the high cost of organic products. These insights have significantly informed government policies by identifying socio-demographic groups, as well as drivers and barriers associated with sustainable consumption.

It is important to note that the food sustainability index of Türkiye has received an overall score of 66th out of 78 assessed countries, positioning it in 28th rank according to the Food Sustainability Index (FSI), which was developed by the Barilla Centre for Food and Nutrition Foundation (BCFN) in collaboration with The Economist Intelligence Unit (see Table 2).

Table 2: Turkish food sustainability index

	Rank	**Score**
Overall Score	28	65.8
Food Loss And Waste	23	68.7
Sustainable Agriculture	63	59.8
Nutiitional Challenges	29	69.1

The index identifies Sweden, Japan, and Canada as the leading countries in the rankings. In this context, the food sustainability ratings for Turkish citizens are relatively low compared to those of other countries, primarily due to significantly low scores regarding food loss and waste. However, as illustrated in Figure 2, Türkiye ranks 29th with a score that exceeds the average for the nutritional challenges component of the Food Sustainability Index (FSI). This ranking is supported by its sub-dimensions: quality of life (27th out of 78), life expectancy (38th out of 78), and dietary patterns (49th out of 67) (The Economist Intelligence Unit, 2021).

Figure 2: The rank of Türkiye 's nutritional challenges among the 78 countries

In September 2015, 193 member states of the United Nations adopted the 2030 Agenda for Sustainable Development, marking one of the most comprehensive and collaborative efforts in UN history. This agenda represents a global commitment involving both developed and developing countries, with a central focus on human dignity, equality, and sustainability. A key component of this agenda is Sustainable Development Goal 12 (SDG 12), which emphasizes the importance of sustainable consumption and production (SCP). In alignment with these global efforts, the Government of Türkiye (GoT) has committed to implementing the 2030 Agenda, integrating its national development plans (NDPs) with the SDGs, and providing financial support to facilitate their achievement. In the context of integrating Türkiye's national development programs with the Sustainable Development Goals (SDGs), specifically Goal 12, the focus is on increasing environmental awareness, expanding the production of environmentally sustainable goods, and promoting sustainable consumption patterns. Establishing a sustainable urban environment requires the adoption of several measures, including the use of eco-friendly materials in production processes, the manufacturing of environmentally sustainable products, the reduction of food waste and greenhouse gas emissions, and the preservation of natural resources (Ministry of Development, 2016). Additionally, during the 2013–2017 period, the Ministry of Food, Agriculture, and Livestock in Türkiye committed to three core

missions. These missions include ensuring access to safe and healthy agricultural and food products, promoting sustainable agricultural practices and environmental sustainability, and enhancing rural development by supporting local farmers and improving the well-being of farming communities (Tekinbaş Özkaya et al., 2021).

Although Türkiye holds a favorable position within the European landscape of organic product production, a limited portion of this output is consumed domestically. Hence, intending to improve sustainable and organic consumption within the country while expanding the organic and natural product market, the Buğday Association established the first open-air organic market in Istanbul in 2006, with the support of various stakeholders. The establishment of the open-air organic market in Istanbul represented a pioneering initiative by the Buğday Association, supported by the Şişli municipality, aimed at fostering the growth of eco-friendly and sustainable consumption practices within the country. Subsequently, a second organic market started operations in Istanbul in 2009, leading to an increase in the number of organic markets across the city and other urban areas in Türkiye. These organic markets operate in various neighborhoods on specific days of the week and have persisted over time, indicating the growth of organic consumption. Notably, these markets are supervised by non-governmental organizations (NGOs), specifically the Buğday Association, the Ecologic Producers Association (Davidson & Freudenburg), and the Ecological Agriculture Association (Franzen & Meyer). Furthermore, these markets have established a platform through which local and small-scale farmers, intermediaries, and importers can supply both natural and locally sourced products, in addition to certified organic products.

Moreover, these markets include specific dining sections that offer homemade meals prepared with fresh and natural products sourced from within the market. The increasing availability of organic products, along with the enjoyable experience associated with consuming natural and local food products, has led to a significant rise in demand for such items. In response to this demand, the sectors supplying sustainable food products have expanded, including retail stores specializing in natural and organic offerings, such as Ipek Hanım's Farm and Ekoorganik. Various chain stores, including Carrefoursa and Migros, have also designated shelves for the sale of natural and organic products. Furthermore, online retail platforms, such as Anamur, ÇiftçidenEve, and Koçulu Dairy Products, have emerged to meet consumer needs. This

trend has also resulted in the establishment of restaurants that serve meals prepared from natural products sourced from their own farms or organic ingredients, such as Etrim Doğa Restaurant and Doğacıyız Gourmet. Furthermore, organizations such as the Kadıköy and BÜKOOP cooperatives prioritize sustainability over profitability. The primary objective of these cooperatives is to provide environmentally friendly products at reduced costs to consumers while simultaneously supporting small-scale farmers who utilize ancestral and local seed types and refrain from using synthetic fertilizers, herbicides, and pesticides (Demir, 2013).

2. CHAPTER TWO: THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

This chapter outlines the theoretical frameworks that support the constructs presented in the study. These frameworks provide a structured approach for testing key propositions and strengthening the research foundation. In this study, two theories are applied to support how the learning process develops healthy eating habits in early childhood. The first is Zajonc's (1968) mere exposure effect, which suggests that the positive impact of repeated exposure to a stimulus or behavior increases the likelihood of adopting that behavior. The second is Bandura's social learning theory, which highlights the significance of direct and indirect observation, imitation, and modeling in the learning process. Additionally, the Transtheoretical Model is applied to analyze the stages of sustainable food consumption habits among parents. The research framework is further detailed in the following sections.

Furthermore, in this section, the structural foundation of the study has been established by developing research hypotheses based on research objectives, existing theories, and literature background. The purpose of this section is to provide contextual support for the research hypotheses. Subesquently, the conceptual model is presented as a framework to show the hypothesized relationships.

2.1. Theoretical Framework

Previous studies on sustainability and childhood obesity have focused on traditional linear models such as Stimulus-Organism-Response (SOR) and the Theory of Planned Behavior (TPB). In this study, we believe that a configurational approach is more effective in examining the nuanced and nonlinear relationships and interactions between the studied factors, including the impact of parents' sustainability concerns on childhood obesity through sustainable food consumption and healthy eating habits. This approach enhances the understanding of the distinct effect of each variable and how various combinations of these factors more accurately highlight their effects on childhood obesity. Furthermore, we adopted key theories, including the mere exposure effect, social learning theory, and transtheoretical model (TTM), to support the conceptual framework and hypotheses.

2.1.1. Mere Exposure Effect

According to the mere exposure effect proposed by Zajonc (1968), repeated exposure to a new stimulus inherently decreases negative responses and enhances the formation of a positive emotional response. This repeated exposure provides favorable conditions for strengthening an individual's attitude toward the stimulus. According to this theory, repeated exposure to healthy foods and the avoidance of foods containing sugar and fat significantly impact the formation of children's eating habits (Roberts-Gray et al., 2018).

Research indicates that repeatedly exposing children to a wide range of foods facilitates the acceptance of new foods (Edelson et al., 2016). For instance, in a study conducted by Johansson et al. (2021), children's feeding behavior was influenced by repeated exposure to Nordic fruits and vegetables and a Nordic protein-reduced complementary diet provided by parents over a 12-month period, resulting in changes in the children's eating habits. Similarly, in another study that was conducted through parental interventions to repeated exposure of children to a healthy diet to prevent obesity in children, the effect on children's eating behavior was minimal, while the results demonstrated significant effects on their consumption of fruits and vegetables. Furthermore, the findings emphasized the importance of family-focused feeding in preventing childhood overweight and obesity (Hughes et al., 2020). Accordingly, this research applies the mere exposure effect by Zajonc, illustrating how the theory provides a framework for the effect repeated exposure to healthy food will have on the eating behavior of children.

2.1.2. Social Learning Theory

Social learning theory proposed by Bandura (1977), suggests that learning develops within social contexts through observation, imitation, and modeling. The theory argues that individuals learn behavior either directly by interacting with a model or indirectly by observing the model’s behavior. The learning process consists of four stages: attention, retention, reproduction, and motivation. First, learners need to pay attention to the behavior they wish to replicate or that others expect them to reproduce. During the retention stage, learners internalize the observed behavior by mentally

reviweing it through cognitive processes. Ultimately, the behavior is imitated and reproduced, driven by reinforcement motives based on the information gathered during the attention and internalization phases.

In the context of childhood development, social learning theory suggests that children learn behavior through both direct and indirect exposure to modeled behaviors via imitation and reinforcement (Gardner et al., 2006). Moreover, repeated exposure to a behavior further reinforces the learning and adoption of that specific behavior (Bandura,1977). Lindsay et al. (2006), based on social learning theory, emphasized that imitating the behaviors of important individuals in a child's life plays a crucial role in the development of eating habits. For younger children, the family environment and parent-child relationships serve as the primary influences in this learning process (O'Connor et al., 2013). Consequently, the theory supports the significant role of observational learning and parental modeling in shaping children's eating patterns (Domnariu et al., 2013). Liao and Deng (2021), drawing from social learning theory, asserted that parents' healthy eating habits significantly influence children's healthy eating behaviors during their socialization processes.

Observational learning, or modeling, is one of the components of social learning theory proposed by Bandura. Children inherently tend to imitate behaviors they are exposed to. Thereby, during the process of observational learning, placing children in a family setting during meals facilitates the development of their eating habits and enhances their willingness to try new foods (Mura Paroche et al., 2017). During meals, children are exposed to their parents' eating behaviors and often attempt to imitate them. In this context, Lumeng and Hillman (2007) demonstrated that the presence of role models, such as parents, improves eating behavior in children between 2.5 and 6.5 years old. Similarly, a study conducted by Addessi et al. (2005) found that children were more likely to eat new foods when observed being consumed by a role model. Additionally, Ahern et al. (2013) revealed that modeling parents' eating behaviors significantly enhances children's inclination to consume vegetables.

Verbal modeling presents another component of social learning theory, which particularly supports the process of learning eating behaviors. Verbal modeling includes expressions about foods and eating behaviors (Palfreyman et al., 2015). For instance, parents often model their food preferences through verbal models. Research

demonstrated that verbal modeling and discussions with children about healthy foods are effective strategies for promoting healthy eating behaviors (Throm et al., 2024). Verbal modeling frequently occurs when children are faced with new foods with unfamiliar tastes, effectively encouraging them to try these foods (Edelson et al., 2016). Wiggins (2019) defined verbal modeling “mmms” as parents expressing their enjoyment of the foods they eat, which positively influences children's willingness to try similar foods. Additionally, research indicates that mothers tend to engage in verbal modeling more frequently than fathers during mealtimes (Adi-Bensaid et al., 2022; Orrell-Valente et al., 2007). In line with this, Throm et al. (2024) found that verbal modeling by mothers led to increased consumption of healthy options, such as fresh fruit juice, among children. Consequently, this study is based on Bandura’s social learning theory, which demonstrates how the theory supports the explanation that children's eating behaviors are shaped by the influence of their parents' healthy eating habits.

2.1.3. Transtheoretical Model Stages of Behavior Change

A crucial topic is the extent to which interested consumers turn their attitudes into actual consumption habits. An important point at this stage is recognizing the gap between attitudes and behaviors toward sustainable food consumption. In this regard, the objective is to assess the extent of consumers' sustainable food consumption patterns. The process of changing and adopting certain behaviors happens in stages over time. Based on this concept, we focus on the transtheoretical model (TTM) to characterize the adoption of sustainable food consumption, which includes six stages in order: precontemplation, Contemplation, preparation, action, maintenance, and termination.

In the precontemplation stage, individuals lack the information and motivation needed to take action in the near term (typically within the next month). Individuals may lose motivation and remain in this stage if they are unaware of the consequences of their actions or if they experience failures during the process of behavior modification. Through acquiring knowledge about sustainable consumption and becoming aware of the negative effects of non-sustainability behaviors on health and the environment, individuals sense the necessary motivation to pass this stage and

enter the contemplation stage. The Contemplation is a stage characterized by an individual's intention to take action within a period of six months. At this point, individuals are aware of the advantages and disadvantages of their behavior and aim to adopt sustainable food consumption patterns. In the preparation stage, individuals want to demonstrate sustainable food consumption behaviors in the immediate future with a detailed action plan and comprehensive information, such as how to identify sustainable food products and businesses that supply them. The action stage refers to the period during which individuals have made observable changes in their behavior within the last six months, adjusting their patterns to include sustainable food in daily purchases without deliberation. The maintenance stage is characterized by the individual's efforts to maintain their new habits while reducing tendencies to relapse. However, it is not essential to apply frequent change processes like those that occur in the action stage. Individuals who demonstrate greater resistance to relapse are more likely to have an increased sense of self-efficacy and confidence in their ability to maintain the changes they have made. Based on empirical evidence related to temptation and self-efficacy, the maintenance period is estimated to range from six months to approximately five years. The termination stage is characterized by a complete absence of temptation and a strong sense of self-efficacy. Regardless of the conditions they face, individuals exhibit confidence in their ability to maintain healthy behaviors and avoid returning to unhealthy alternatives. Literally, the individual's adoption of healthy behavior has reached a level of automaticity. The development of sustainable consumption behaviors involves overcoming obstacles and acquiring motivation from the advantages of behavior changes to progress from a willingness to action. The current study considers the first four stages of TTM in order to determine the sustainable food consumption status of consumers (Prochaska, 2008).

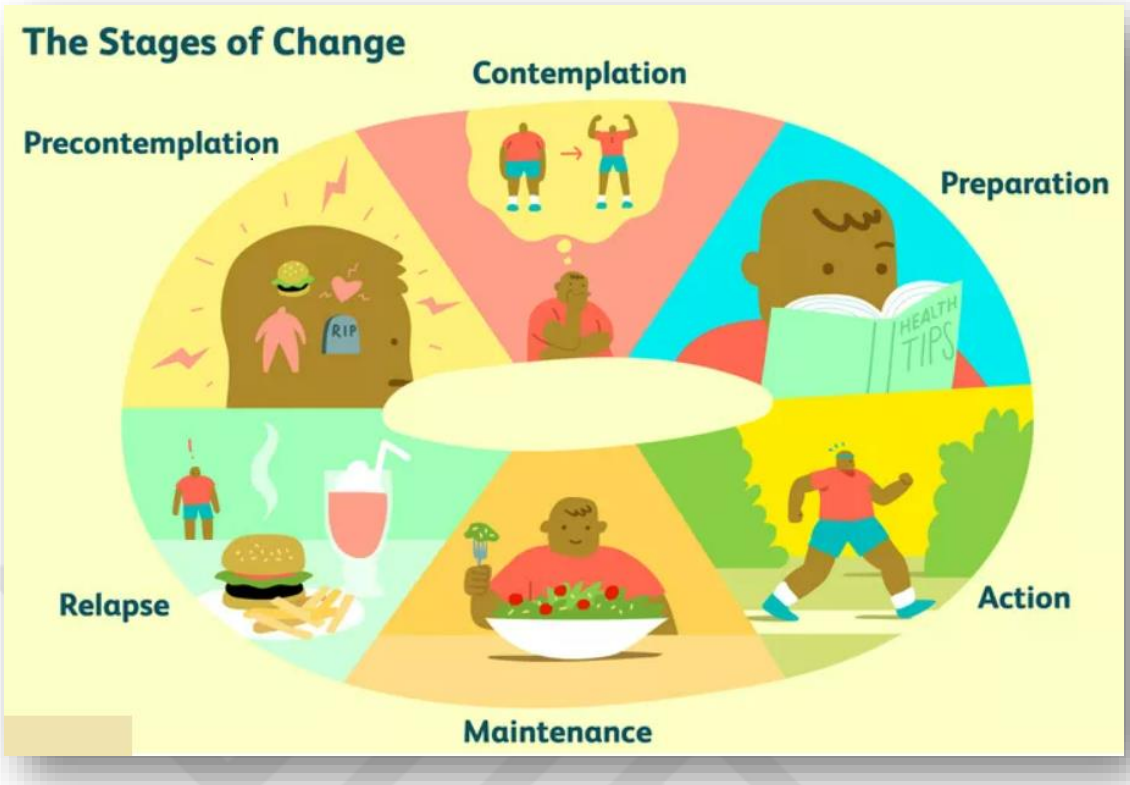

Figure 3: Trans theoretical model (Cherry, 2022).

2.2. Hypothesis Development

In this section, hypotheses are developed based on comprehensive discussions of the literature and the theoretical backgrounds of the research variables.

2.2.1. Parents' Sociodemographic Characteristics and Sustainability Concerns

In the past few decades, concerns about environmental degradation have increased. As a result of recognizing the impact of human actions on ecosystem sustainability and understanding the sensitivity of environmental risks for the survival of all species, humans are increasingly motivated to modify their behavior to reduce environmental hazards. Research indicates that environmental awareness and knowledge influence consumer behavior (Follows & Jobber, 2000). According to Thompson and Barton (1994), these sorts of concerns are referred to as "motivational concerns," and they lead to an increase in environmentally friendly purchasing

behaviors (Manaktola & Jauhari, 2007). Liu et al. (2014) described environmental concerns as being proportional to the perception of environmental issues. Hence, demographic characteristics are likely to be the determining factor in perceptions of environmental problems. Several studies have investigated the correlation between demographic characteristics and environmental concerns (Bulut et al., 2017; Holmes et al., 2021; Tasci et al., 2022). Despite differing findings of previous studies, demographic segmentation remains the most effective method for customer profiling and targeted strategy implementation in the market (Diamantopoulos et al., 2003; Tilikidou, 2007). Moreover, Diamantopoulos et al. (2003) suggested that these inconsistencies in the literature review are a clear indicator of the necessity to investigate the interconnections between demographics and environmental concerns. However, we intend to investigate the impact of demographic characteristics (e.g., gender, education, age, job status, income, and so on) on Turkish parents' concerns about sustainability.

2.2.1.1. Gender

Studies have found varying findings regarding the relationship between gender and sustainability concerns. Some studies argue that the socialization process among genders affects their sustainability concerns. Gender socialization theorists (Chodorow, 1978; Gilligan, 1993), suggest that values and beliefs instilled through socialization assign masculinity to males, characterized by independence, emotional control, responsibility for security, and providing for family needs (Dhenge et al., 2022; Strapko et al., 2016). In contrast, femininity is associated with the female gender and is characterized by compassion, collaboration, and empathy, with responsibilities for fostering intimacy and peace within the family (Dhenge et al., 2022; Xiao & McCright, 2012; Tasci et al., 2022). Based on these different processes in gender socialization, researchers have claimed that females are more sensitive to sustainability issues than males (Abbasi et al., 2019; Dhenge et al., 2022; Koos, 2011; Sundström & McCright, 2014). Additionally, they are more concerned about the effects of their behavior on the environment and human health. They also tend to consume consciously, and incorporate sustainability concerns into their purchasing decisions to a significant degree (Brochado et al., 2017; Liobikienė & Bernatonienė, 2017; López-Mosquera et

al., 2015). Moreover, females tend to pay a higher price for environmentally friendly products (Laroche et al., 2001). On the other hand, other studies reported men have more profound knowledge of sustainability concerns (Mostafa, 2007), demonstrate more concern and consciousness, and behave more friendly with the environment than women (Arbuthnot, 1977; Arcury, 1990). Based on these findings, it can be argued that mothers demonstrate greater concern than fathers regarding their environmental sustainability, aiming to protect the well-being of future generations. However, some research on environmental concerns from the 1960s and 1970s asserted that the influence of gender on environmental concerns is ambiguous, negligible, and weak (Liere & Dunlap, 1980). Jones and Dunlap (1992) concluded that there is no significant difference between genders regarding sustainability concerns. Similarly, Hayes (2001) claimed there is no significant association between gender and sustainability concerns. Although most studies in the literature indicate that sustainability concerns differ by gender, some studies have also reported no association. Therefore, this study developed the following hypothesis to examine this relationship in the current research context:

HYPOTHESIS ONE (H1a): Parents' sustainability concerns differ by gender.

2.2.1.2. Education

The demographic profile in most prior research on education has shown a positive and significant association with sustainability attitudes and behaviors (Holmes et al., 2021; Zsóka et al., 2013). In contrast, some studies have observed only a weak relationship. A longitudinal study by Jones and Dunlap (1992), between 1973 to 1990, reported that individuals with higher education demonstrated slightly greater levels of environmental concern. Since most studies found a significant positive relationship, researchers suggest that intellectual orientation toward sustainability concerns can be effectively predicted by scientific knowledge (Olli et al., 2001; Sánchez-Bravo et al., 2020). The understanding of the environment, shaped by the knowledge individuals gain through education about the genesis of the Earth, natural processes, cycles of nature, renewal periods of natural resources, the importance of biodiversity, the economic well-being of small-scale farmers, and food safety and security, although not specialized, contributes to an acceptable level of sustainability perceptions. As a result

of the knowledge acquired through higher education, individuals are more likely to engage in sustainable, conscious, and responsible behaviors. They express greater concern for maintaining environmental sustainability, human equality, and food security. They are willing to spend more on environmental protection and healthier food products (Diamantopoulos et al., 2003; Finisterra do Paço et al., 2009; Tonin & Benedetto, 2024). Based on these findings, we propose the following hypothesis:

HYPOTHESIS ONE (H1b): Parents' sustainability concerns differ by education level.

2.2.1.3. Age

Age is another demographic characteristic that has been widely examined in studies on sustainability concerns. Although findings remain conflicting, results for this variable may be beneficial in profiling sustainability-conscious individuals. Numerous studies have supported a significant correlation between age and sustainability concerns (Liere & Dunlap, 1980; Holmes et al., 2021; Nguyen & Johnson, 2020). Some research reported a positive correlation (Brochado et al., 2017; Liu et al., 2014). This can be explained by the fact that a large portion of Generation Z includes adolescents who engage in less environmentally conscious behaviors. Many of them are unemployed students with limited purchasing power for eco-friendly products (Jain & Kaur, 2004). Furthermore, Shauki, (2011) suggested that middle-aged individuals are more likely to express concern due to a sense of social responsibility. However, most studies indicate that older individuals behave less sustainability (Sánchez-Bravo et al., 2020), as younger individuals respond with greater care and sensitivity to environmental concerns and demonstrate a stronger understanding of these issues (Diamantopoulos et al., 2003; Johnson et al., 2004). Therefore, this study posits the following hypotheses:

HYPOTHESIS ONE (H_{1c}): Parents' sustainability concerns differ by parents' age.

2.2.1.4. Incomes and Job Status

Income is another demographic factor that researchers have focused on its significant effect on sustainability concerns. These studies demonstrated varying findings. According to Li et al. (2021), sustainability concerns are interpreted through Maslow's hierarchy of needs (Maslow, 1970) at the level of higher-order needs, such as love and self-actualization. Many environmental sociologists thus believe that environmental concerns are directly related to fundamental, lower-order needs. Based on this perspective, individuals with higher incomes, once their basic material needs are met, can focus on higher-order needs and express greater concern about the environment (Liere & Dunlap, 1980). Furthermore, researchers have considered post-materialist values theory. According to this theory, once individuals satisfy their survival-based needs, post-materialist values, such as freedom of expression, gender equality, and environmental concern, develop further with economic growth (Inglehart, 1995). Another perspective on the relationship between sustainability concerns and income is the 'affluence hypothesis' (Diekmann & Franzen, 1999). According to this hypothesis, sustainability is considered a luxury good that is more in demand in affluent societies. In contrast, individuals in less wealthy societies, who are focused on meeting their fundamental needs, tend to demonstrate less concern for environmental protection (Duroy, 2008). In contrast, cross-national comparative research based on the affluence hypothesis did not demonstrate a consistent relationship between national affluence and environmental concerns. Therefore, the assumption that "environmental quality is a luxury good of concern only to the affluent" is no longer considered valid (Dunlap & Mertig, 1995; Dunlap & York, 2008). Several studies have investigated these assumptions, reporting inconsistent results. Findings from some studies suggest that individuals with higher incomes face fewer economic constraints, enjoy better well-being, and are more able to focus on sustainability issues. Individuals with high household incomes tend to adopt a sustainable lifestyle (Anić et al., 2015). They have greater purchasing power for sustainability products, as they can afford the associated marginal cost increase (Franzen & Vogl, 2013). In addition, they are more willing to pay for environmentally friendly activities (De Canio et al., 2021). Indeed, the results indicate a positive correlation between income and sustainability concerns (Franzen & Meyer, 2010; Holmes et al., 2021). On the contrary, some studies have found that individuals with lower incomes are more concerned about sustainability issues

(Gelissen, 2007). Even their income level has no significant effect on their sustainable consumption decisions (Dunlap & Mertig, 1997; Sánchez-Bravo et al., 2020). On the other hand, Sánchez-Bravo et al. (2020) suggested that income level did not demonstrate significant results. Similar,, the research of Park et al. (2012) revealed the nonlinear nature of the interaction between these two factors. Their findings indicated that individuals with the lowest and highest incomes were most concerned about sustainability. Therefore, we developed the following hypothesis:

HYPOTHESIS ONE (H1d): Parents' sustainability concerns differ by income level.

Researchers have reported contradictory findings in prior studies regarding the influence of employment status on sustainability concerns. Some findings suggest that individuals who work outside the home are less concerned about sustainability (Davidson & Freudenburg, 1996; Hayes, 2001). Conversely, other research indicates that individuals with full-time employment demonstrate greater sustainability concerns (Mohai, 1992; Tonin & Benedetto, 2024). Ultimately, based on the research of Xiao and McCright (2014), it was found that there was no significant correlation between sustainability concerns and either full-time employment or working from home. Accordingly, the following hypothesis was proposed:

HYPOTHESIS ONE (H1e): Parents' sustainability concerns differ by job status.

2.2.2. Sustainability Concerns

Sustainability concerns have increased due to the challenges of population growth and modern lifestyles. In this regard, food consumption is highlighted as a key area with the greatest impact on sustainability. Therefore, unsustainable food production needs to shift toward sustainable methods of production and consumption. Moreover, maintaining sustainability is a fundamental aspect of food security and human health (Myers et al., 2013). Indeed, the interaction between healthy consumption and sustainability is inevitable. To uphold this relationship, consumers aware of environmental issues, animal welfare, and social responsibilities, such as supporting local farmers and retailers, combating child labor, and advocating for

workers' rights, are more likely to adopt sustainable food choices (Azzurra et al., 2019).

In this regard, the study by Saari et al. (2021) demonstrated that knowledge about environmental threats and an understanding of associated risks lead to increased environmental concerns. Furthermore, higher environmental concerns positively influence behavioral intentions and increase sustainable consumption behavior. The findings also indicate that greater levels of sustainability concerns influence the intensity of organic consumption (Azzurra et al., 2019). In addition to environmental concerns arising from increased meat and animal product production, concerns about animal welfare have led consumers to choose organic products and reduce meat consumption (Alonso et al., 2020; Bonnet et al., 2020). On the other hand, Bamberg (2003) suggested a weak relationship between environmental concerns and sustainable behaviors. These findings emphasize that public environmental concerns do not directly affect sustainability intentions or behaviors. Instead, they shape how individuals perceive and evaluate situations, particularly regarding personal consequences.

Hence, parents' sustainability concerns may lead to sustainable food consumption. However, despite consumers' awareness of the importance of sustainability issues, these concerns may not be fully reflected in, or influence, their food choices in real life. This gap between attitude and behavior emphasizes the complexity of translating beliefs into actions, which can vary depending on the context. The purpose of this study is to investigate the extent to which these concerns translate into sustainable food consumption behaviors. Additionally, a key aspect of this study theorizes that parents' sustainability concerns significantly influence their food purchasing behaviors, thereby directly impacting their children's weight status. Accordingly, this study developed the following hypotheses:

HYPOTHESIS TWO (H2): Parents' sustainability concerns have a negative influence on childhood obesity.

HYPOTHESIS THREE (H3): Parents' sustainability concerns have a positive influence on sustainable food consumption.

2.2.3. Sustainable Food Consumption

In recent years, several studies have explored how eating habits are shaped by consumption practices (Aksakallı Bayraktar et al., 2023; Bumbac et al., 2020). In this context, policymakers have also attempted to develop regulations aimed at promoting healthy nutrition through sustainable food choices (Hoek et al., 2017). Evidence demonstrates that sustainability issues, sustainable food consumption, and healthy eating patterns are closely interconnected and strengthen each other (Çoker et al., 2022; van der Waal et al., 2022).

In the study conducted by Hamza et al. (2023), consumers concerned with sustainability issues are more likely to change their consumption habits through purchasing, replacing, and avoiding behaviors aimed at promoting more sustainable practices. Additionally, the study observed that consumers aware of sustainability issues tend to engage in healthy eating practices. Similarly, Testa et al. (2019) stated that environmental and social concerns lead individuals to prefer consuming local foods, a behavior that, in turn, encourages healthier eating habits. Another study focusing on environmental concerns suggests that environmental issues have influenced consumption patterns, leading daily consumption to shift toward more sustainable nutrition, which consequently fosters healthier nutritional practices (Niva et al., 2014). In contrast, some studies indicate that consumers who prefer healthy eating tend to consume sustainable (organic) foods; however, this does not necessarily translate into healthier eating habits (Kesse-Guyot et al., 2013). However, Kim et al. (2013) suggested that adopting a sustainable consumption style positively affects individuals' healthy food choices. Donato et al. (2021) found that consumers who are aware of sustainability issues tend to perceive products in sustainable packaging as healthier. Similarly, Salois (2012) observed that local food centers play a role in promoting healthier eating habits. In a related study, Boca (2021) argued that more conscious consumers tend to purchase local food products from small-scale farmers and rural family businesses. Hence, the consumption of local products may increase the likelihood of adopting healthier dietary patterns. These findings suggest a correlation between sustainability awareness, sustainable consumption practices, and healthy eating habits.

Sustainable concerns are increasingly driving consumers' inclination towards the consumption of sustainable food. Furthermore, several studies have shown that family structure and size, as well as the presence of children, increase the degree of sustainable food consumption. Nevertheless, increasing awareness about sustainable consumption does not ensure daily sustainable food choices (Vermeir & Verbeke, 2006) and occasionally remains only at the attitude level. A crucial topic is the extent to which interested consumers turn their attitudes into actual consumption habits. The objective is to assess the extent of consumers' sustainable food consumption patterns. The process of changing and adopting certain behaviors happens in stages over time. Based on this concept, we focus on the transtheoretical model (TTM) to characterize the adoption of sustainable food consumption. In the precontemplation stage, people lack the information and motivation necessary to take action in the near term. Individuals may be discouraged and remain in this stage if they are unaware of the consequences of their actions or if they experience failures during the process of modifying their behavior.

As individuals acquire knowledge about sustainable consumption and become aware of the negative effects of non-sustainable consumption on health and the environment, they find the motivation needed to progress beyond this stage and enter the contemplation phase. At this point, they are aware of the advantages and disadvantages of their behavior and aim to adopt sustainable food consumption patterns. In the preparation stage, individuals plan to demonstrate sustainable food consumption behaviors in the immediate future by developing a detailed action plan and gathering comprehensive information, such as how to identify sustainable food products and businesses that supply them. In the action stage, individuals adjust their behavior patterns and consume sustainable food in their daily purchases automatically and without conscious thought. Individuals in the maintenance and termination stages maintain their new habits with diminishing tendencies to relapse. Developing sustainable consumption behaviors includes overcoming obstacles and gaining motivation from the benefits of behavior change to progress from willingness to action. Therefore, identifying the benefits and obstacles of adopting sustainable consumption behaviors is essential. Furthermore, the process of transformation occurs gradually and non-linearly. For instance, as individuals attempt to balance costs and benefits, they may relapse and return to a previous stage or remain in the

contemplation stage for an extended period. These reactions are commonly referred to as chronic contemplation or behavioral procrastination. Therefore, our study considers the first four stages of the TTM to determine consumers' sustainable food consumption status (Prochaska, 2008). Knowledge, concerns, and pressures contribute to changes in attitudes and the adoption of healthy eating patterns. Therefore, it is assumed that recurrent consumption of sustainable products will enhence sustainability and healthy eating habits. These aspects lead to the development of the following hypotheses:

HYPOTHESIS FOUR (H4): Sustainable food consumption has a positive influence on healthy eating habits.

HYPOTHESIS SIX (H6): The relationship between parents' sustainability concerns and childhood obesity will be positively and serially mediated by sustainable food consumption and healthy eating habits.

2.2.4. Healthy Eating Habits and Childhood Obesity

Parents' eating habits have the greatest influence on their children's eating patterns. Meals prepared by parents are a pivotal point of parental control and interaction with their children. Findings from umbrella systematic reviews on the effectiveness of interventions to promote healthy eating in children aged 2–5 years indicate that these interventions positively affect children's eating patterns. Also, parental involvement strengthens these interventions (Matwiejczyk et al., 2018).

According to research by Mahmood et al. (2021), by the end of a child's first year, they begin to shape their own eating patterns, gradually adopting their parents' dietary habits, which are influenced by parental eating behaviors and practices. This transfer also shapes children's food preferences, the quantity of food consumed, and their manner of eating, demonstrating the broader effect of parents' eating habits (Ramos & Stein, 2000).

Parents have a significant influence in modeling their children's eating habits, with more than 70% of these habits being developed through socialization and internalization methods (Scaglioni et al., 2011). Indeed, parents influence their children's eating behaviors both directly and indirectly through strategies, such as meal planning, role modeling, food availability, and verbal learning (Scaglioni et al., 2011).

The strategy focused on in this study is the impact of parental role modeling, which involves children imitating their parents' behavior, attitudes, and food preferences. This process has the potential to significantly influence children's eating habits (Bronfenbrenner & Morris, 2007). In this regard, numerous studies have demonstrated the impact of parents' nutritional patterns on children's feeding behaviors, which in turn influence children's weight status (Coto et al., 2019; Demir & Bektas, 2017; Erkorkmaz et al., 2013). In this study, the effect of parents' healthy eating habits on children's learning of eating behaviors is developed through the lens of two theories: the mere exposure effect (Zajonc, 1968) and social learning (Bandura, 1977). Similarly, the study conducted by Birch and Doub (2014) identified these two theories as the framework for understanding children's early learning about food and eating. According to the mere exposure effect, the frequency of parents consuming sustainable and healthy food impacts children's perceptions, cognition, and experiences regarding food. Several studies have demonstrated that mere exposure significantly shapes and modifies children's consumption behaviors (Ahern et al., 2013; Hausner et al., 2012; Remy et al., 2013). Additionally, within the framework of social learning theory, children learn healthy eating habits by imitating the observed dietary practices of their parents and through verbal teaching. Numerous studies have also supported children's learning eating habits through social learning theory (Moens et al., 2018; Sun & Zhao, 2023).

Despite considerable evidence highlighting the influence of parents' eating habits on children's feeding patterns, the significance of this relationship to children's overweight and obesity varies across studies (Ihmels et al., 2009; Pearson et al., 2009; Savage et al., 2007). Furthermore, Tang et al. (2020) revealed that the influence of parents' eating habits on their children's weight status decreases as the children's age increases. Therefore, the preschool years, when children are just beginning to form eating habits, may be a more beneficial period for preventing childhood obesity. Thus, the following hypothesis is proposed:

HYPOTHESIS FIVE (H5): Healthy eating habits have a negative influence on childhood obesity.

2.3. Research Model

To illustrate the hypothesized conceptual framework and highlight the relationships between the given variables, the research model is presented in Figure 4.

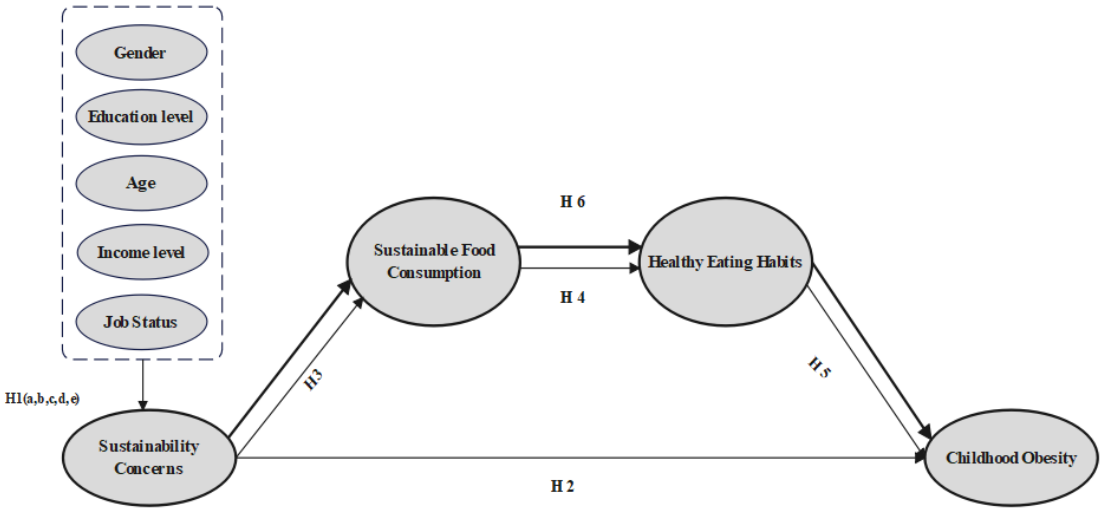

Figure 4: Hypothesized conceptual framework

Direct effect

Serial mediation

3. CHAPTER THREE: METHODOLOGY

This chapter provides comprehensive details of the methodology. The first section of Chapter Three justifies the research approach, design, paradigm, and procedures for the research methodology. The second section outlines the quantitative phase, covering the survey questionnaire method, questionnaire development, questionnaire translation process, population and sample, data collection procedures, and analytical methods. The third section details the qualitative phase. This includes an overview of thematic analysis, the interview method, development of the interview guide, interview population and sampling, interview data collection procedures, and qualitative data analysis methods.

3.1. Justification of the Research Approach

The mixed approach is characterized by incorporating both post-positivist and constructivist philosophical frameworks into the data collection and analysis steps of a single study. This approach offers a deep understanding of complex issues through a logical and flexible cognitive methodology (Dawadi et al., 2021). According to Johnson et al. (2007) mixed methods research is “the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration.”. The mixed-methods was selected as the research methodology for this study. The main reason this study employs a mixed-methods approach is that consumption behaviors are complex and cannot be fully understood through a purely positivist, cause-and-effect methodology. In addition, based on Freud's theories from the early 20th century (1900–1913) highlighted the unconscious mind as a source of creating reality (Freud, 1912). According to Freud, reality, whether internal or external, is a construction of the human mind. It is subject to continuous change through interactions with the environment and others. Hence, adopting a qualitative approach through conducting interviews is suggested to reveal the reality constructed through interactions with people, alongside a quantitative approach. In the mixed-methods approach, the strengths of each method are enhanced while the weaknesses of each are covered. This mixed approach facilitates a more thorough

investigation of the research subject, leading to more reliable inferences and a deeper and wider understanding of the research scope. As highlighted by Powell et al. (2008), mixed-methods research enables researchers to be "more flexible, integrative, and holistic in their investigative techniques" as they aim to address a variety of complex research questions.

Mixed-methods research varies in the timing or sequence of qualitative and quantitative approaches. Generally, mixed-methods are categorized into four main types of design: Concurrent, Embedded, Explanatory, and Exploratory (Harrison & Reilly, 2011).

According to the research objectives of investigating how parents' sustainability concerns influence their children's weight status and the contextual factors affecting this relationship, a mixed-methods explanatory sequential design was recognized as an effective approach for exploring complex behavioral phenomena. Furthermore, this approach has been widely employed in similar studies (Naing et al., 2022; Swindle et al., 2021; White et al., 2024). Although the quantitative phase provides valuable insights into the hypothesized relationships, the qualitative phase offers a deeper understanding and clarification of the phenomena's context, providing a richer interpretation of the statistical findings. As a result, this study utilized a mixed-methods explanatory sequential design to conduct a comprehensive analysis. According to this design, initially, quantitative data collection and analysis are conducted followed by a qualitative phase focusing on the results obtained from the quantitative phase (Creswell & Clark, 2017). Eventually, the findings are integrated and triangulated to either support or reject, and possibly complement, the results of both approaches. In this design, the issue is initially evaluated through numerical data and deeper explored through the insights of interviewees (Krysik & Finn, 2015). As stated by Yildirim and Şimşek (2011), in mixed-methods research, quantitative data contribute to generalization and prediction, while qualitative data provide depth and detail. Indeed, the main purpose of the explanatory sequential design is to utilize qualitative methods to explain and complement the findings from the quantitative phase. Therefore, when the quantitative phase produces significant, insignificant, or unexpected results, qualitative data contribute to explaining the reasons for these outcomes (Creswell & Clark, 2017). Given that no prior academic study had explored the impact of parents' sustainability concerns on children's weight status, a survey and

explanatory research were deemed necessary. Therefore, we adopted the explanatory sequential design method to investigate the issue. Accordingly, the research was conducted in four stages in line with the explanatory sequential design proposed by Creswell and Clark (2017):

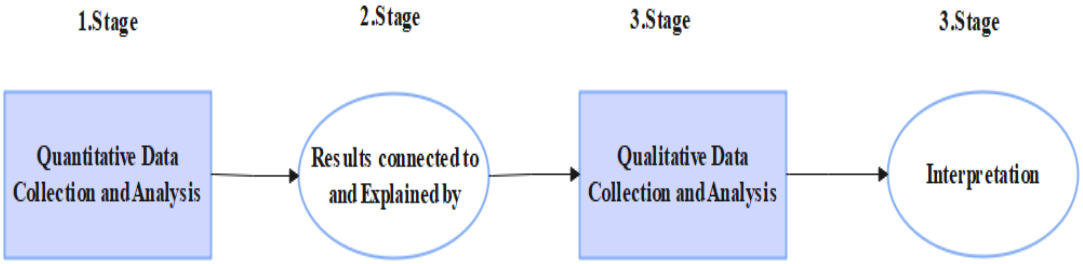

Figure 5: Exploratory sequential design (Creswell & Clark, 2011).

3.2. Research Design

The research design serves as the presentation of the master plan and provides an overview of the research framework. Essentially, it constitutes a strategic plan aimed at identifying solutions to the research problem and addressing research questions by rationally arranging the various stages of the study (Akhtar, 2016). In general, research design includes data collection methods, sampling techniques, measurement procedures, and data analysis techniques. Table 3 provides a summary of the research design for this study, and Figure 6 outlines the steps followed by the researcher throughout the study process.

Table 3: Research design

Research Approach	Explanatory Sequential Mixed Methods
Data Collection Method for Quantitative	Questionnaire
Data Collection Method for Qualitative	In-depth Interview
Sampling Technique for Quantitative Data Collection	Convenience Sampling
Sampling Technique for Qualitative Data Collection	Purposive Sampling
Unit of Analysis	Individuals
Data Analysis Tools for Quantitative Data	SmartPLS 4
Data Analysis Tools for Qualitative Data	MAXQDA 2020

Figure 6: Process diagram

3.3. Research Paradigm

The term "paradigm" originates from the Greek word for "pattern" (Kuhn, 1970). According to Anand et al. (2020), paradigms mean “a shared constellation of group commitments along the spectrum from preferred analogies and metaphors, to shared exemplars, to heuristics, to ontological models, or accepted hypotheses of laws of nature, which influence what would be accepted as a warranted explanation and as a puzzle solution.” The concept of the paradigm highlighted in The Structure of Scientific Revolutions for consensus within the scientific community. As Cohen (1970) revealed, “a scientific community is an immensely efficient instrument for solving the problems or puzzles that its paradigms define.”

This research employs explanatory sequential mixed methods, rooted in the paradigms of post-positivist and constructivism. Post-positivist, inherent in the quantitative approach, relies on research methods, measuring variables, testing hypotheses, and quantifying evidence through deductive reasoning (Creswell & Clark, 2017). This paradigm emphasizes an objective view of reality, selects instruments, measures variables, and employs statistical tests to describe, predict, and confirm experimental relationships (Creswell & Clark, 2017).

Furthermore, the epistemological foundation of the qualitative research phase is grounded in the constructivist paradigm, which is often combined with the interpretivist paradigm (Mertens, 1998). This combination aims to explore and comprehend phenomena deeply. This paradigm emphasizes that the reality of the phenomenon lies in human experiences, and the researcher reasons and interprets by observing people and their interactions (Creswell & Creswell, 2017). In this paradigm, various realities formed within the context of society are considered, with a focus on understanding behavior rather than predicting it (Harrison & Reilly, 2011). The purpose of this paradigm is to understand a specific phenomenon rather than generalize it (Farzanfar, 2005).

The paradigm of mixed-method research focuses on the philosophy of dialectical or pragmatism (Harrison & Reilly, 2011). According to a dialectical stance, employing more than one approach and type of method within a single study allows for the integration of diverse methodologies. This stance maintains the post-positivist assumptions of the quantitative approach while embracing the constructivist paradigm

inherent in the qualitative approach, thereby providing conditions to the integration of diverse methodologies, and fostering a comprehensive understanding (Mertens, 2012). On the other hand, due to its pragmatic nature, mixed-method research is not limited to a single philosophical approach and is guided by research questions (Harrison & Reilly, 2011). Therefore, mixed-method research, with its embedding of both inductive and deductive approaches in testing theories and hypotheses and a discovery approach to uncover new insights has found more acceptance among researchers.

3.4. Methodological Procedures

The research methodology is based on explanatory sequential mixed methods. In this method, quantitative data are first collected and analyzed, followed by qualitative data collection and analysis. Subsequently, the results from both types of data are integrated into a specific stage of the research process within a single study. This method aims to utilize the strengths of both research approaches to enhance analysis and achieve more comprehensive findings. Initially, quantitative data provide a broad understanding of the research matter. Subsequently, the qualitative data results contribute to interpreting the statistical results obtained in the quantitative phase and generates deeper insights (Ivankova et al., 2006).

In the quantitative phase, the data collected through defined variables are translated into numerical data (Apuke, 2017). Indeed, the approach of quantitative studies is to explore the relationships between research variables in order to examine research hypotheses (Walker, 1997). Based on the results obtained from the quantitative phase, specific cases requiring further explanation are identified and examined in the qualitative phase for clarification. A qualitative approach contributes to perceiving the meaning of people's social world (Hesse-Biber, 2010). Qualitative research, with its exploratory features, has the power to address problems by interpreting human behavior and activities (Denzin, 2008). The analysis process is conducted both deductively and inductively by the researcher, focusing on individual themes (Creswell & Creswell, 2017). This approach is especially effective in exploring social contexts, values, beliefs, and behaviors from the perspective of the local population involved in the issues (Mack et al., 2005).

Finally, the last phase of an explanatory sequential design involves integrating and interpreting the qualitative results to explain the quantitative findings and comprehensively answer the research questions. Integration is likely to occur from the initial stage of the study, involving the presentation of research questions, until the interpretation stage, where quantitative and qualitative results are integrated (Ivankova et al., 2006).

In explanatory sequential mixed methods, as Fetters et al. (2013) described, integration occurs at three levels. The first level is during the study design phase. By choosing a mixed methods design, the subsequent stages of integration are also determined. The second level of integration occurs at the methods level, involving the linking of data collection and analysis methods. In the explanatory sequential design, integration happens in the middle stage of the process in two steps. The first step is sampling integration (connecting), where the qualitative phase sampling is based on the participant pool from the quantitative phase. The second step is the integration (building), where the qualitative phase questions are designed based on the results of the quantitative phase.

The third level of integration occurs during the interpretation and reporting phase. At this stage, the researcher bringing both findings of the quantitative and qualitative phases together (merging). The findings from the qualitative phase are used to support and complement the quantitative phase, creating a comprehensive view of the studied phenomenon.

In this study, during the interpretation and reporting phase, integration was conducted using two methods with the complementarity approach to highlight the overlapping aspects of the quantitative and qualitative phases and to enhance the validity of the interpretability of the studied phenomenon (Greene et al., 1989). First, the findings of the quantitative and qualitative phases were presented contiguously through a narrative. Then, through a joint display, the qualitative and quantitative findings were brought together in an integrated matrix to support the results and facilitate side-by-side comparisons. This comprehensive visual display enabled the researcher to draw meta-inferences and provide new insights into the subject using a complementary approach.

Figure 7, based on the flowchart presented in Creswell's book, provides an overview of the sequential procedures for implementing an explanatory design (Creswell & Clark, 2017).

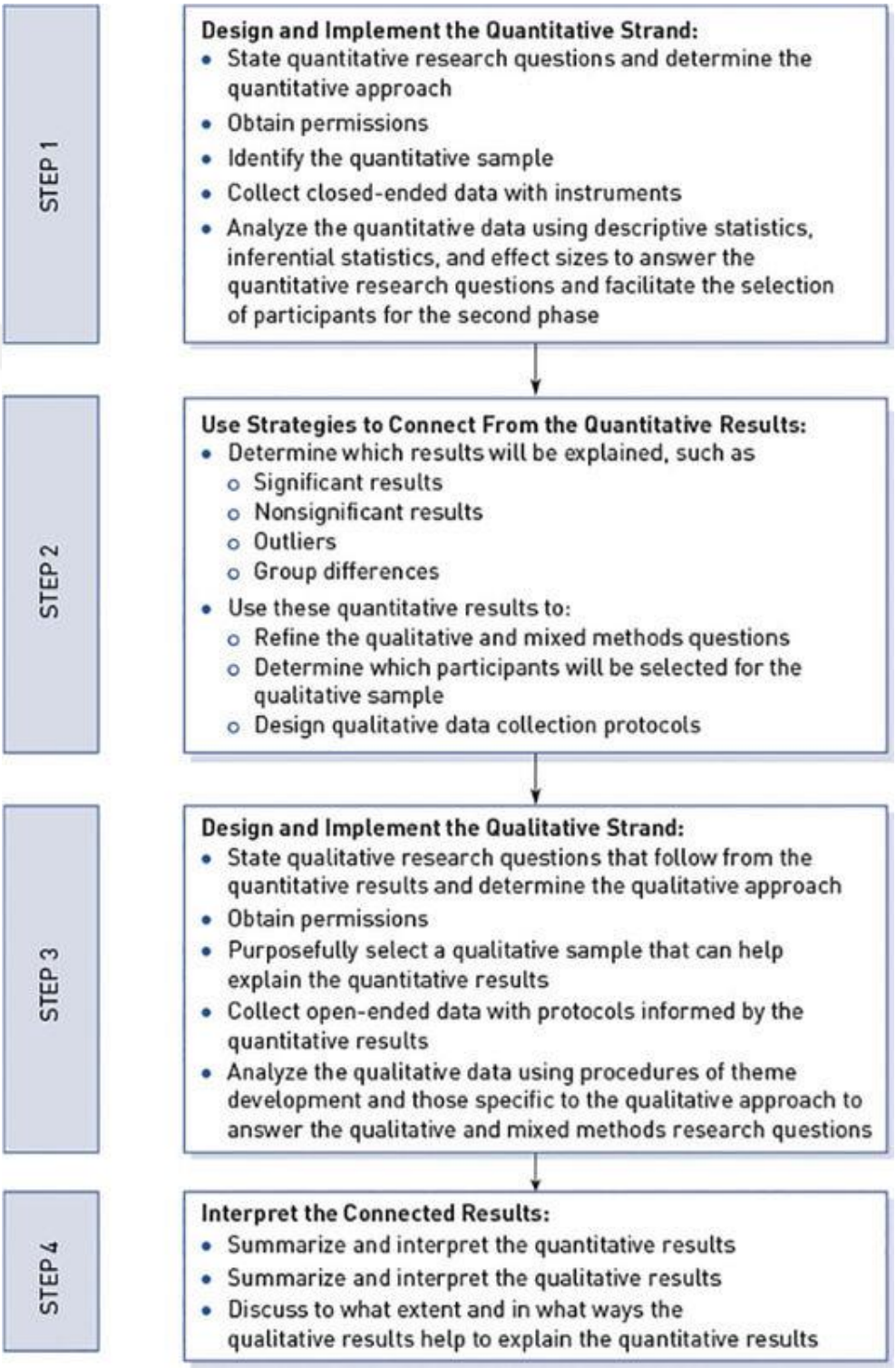

Figure 7: Flowchart of **the** implementing procedures in explanatory sequential mixed methods design

3.5. Quantitative Phase

3.5.1. Quantitative Data Collection Method and Construct Measurements

The quantitative data collection was conducted using the survey method. The questionnaire was adapted from previous studies with slight modifications in wording. The questionnaire was translated into Turkish and distributed among the target population. According to the recommended approach for bilingual survey research, to ensure accurate translation, all questionnaire items were translated into Turkish and then into English by two individuals fluent in languages (Werner & Campbell, 1970). The translations were subsequently reviewed and approved by the supervisor.

The questionnaire consisted of four sections. In the first section, screening questions were presented based on the eligibility criteria of the research, such as having a child between six months and six years old. Participants do not meet these criteria were unable to proceed with the questionnaire. Additionally, the demographic characteristics of the participants and the BMI of their children were collected in this section.

From the second section onwards, the questionnaire included questions adapted to measure the constructs of the models. The scale of sustainability concerns was assessed using eleven items adapted from Azzurra et al. (2019). Participants provided responses on a five-point Likert scale, ranging from “not important at all” (1) to “very important” (5). Sustainable food consumption was measured using six items adapted from Niva et al. (2014). Additionally, the transtheoretical model (TTM) was employed in this section to determine the stage of certain behaviors. Participants demonstrated their progress in adopting sustainable food consumption practices by applying this model. Therefore, our study considers the first four stages of TTM, ranging from "I am not willing to" (1) to "I am doing this already" (4), to assess the status of parents' sustainable food consumption. Healthy eating habits were measured with five items adopted from Verplanken and Orbell (2003). Participants responded by using 5-point Likert scales anchored from “strongly disagree” (1) to “strongly agree” (5). It is worth noting that attention-check questions were employed to ensure respondents'

attentiveness to the survey and accuracy in reading the questions. For this purpose, three phrases, such as "Please mark the option I disagree," were integrated among the main survey items. These questions serve to verify participants' engagement and accuracy.

Table 4: Scales used in the study

Questionnaire Sections	Number of Items	Source
Screening questions	4	
Demographic	8	
Children's BMI	3	
Sustainability Concerns	13	Azzurra et al. (2019)
Sustainable Food Consumption	6	Niva et al. (2014)
Healthy Eating Habits	7	Verplanken and Orbell (2003)

3.5.2. Pilot Study

Before conducting the main quantitative study, a small pilot study was conducted to assess the clarity and understanding of the translated questionnaire questions. During this stage, any procedural problems in the distribution and collection of completed questionnaires were also identified. Paper-and-pen questionnaires were distributed in a kindergarten in Karabuk City, and participants were requested to write in the provided box if they identified a question as unclear or to provide their comments and feedback. To avoid undermining the validity of the results, this kindergarten was excluded from participating in the main study due to the participants' prior familiarity with the questionnaire. Out of the 50 distributed questionnaires, 38 were returned, resulting in an effective response rate of 75%. Participants stated that the questions were clear and understandable. However, they suggested simplifying the definition of specific terms related to sustainable food. Additionally, the researcher requested the inclusion of the option "absence of genetic background of obesity" in the research criteria to enhance the quality of the data.

The data obtained from the pilot study were analyzed using IBM SPSS 25 software. Tests for Cronbach's alpha, AVE, CR, and exploratory factor analysis were

performed, and the results met the necessary thresholds. The findings indicated that the measurements and instruments used in the pilot study were appropriate for use in the main study.

3.5.3. Population and Sample Size for the Quantitative Phase

It is not always possible to collect data from each unit of the research population due to constraints such as time, financial resource limitations, geographic distances, and other factors (Kotrlik & Higgins, 2001). Hence, one of the strategic steps in research is determining the appropriate sample size to reach valid and generalizable findings from the research results (Kumar et al., 2013). Among the criteria that affect sample size is the unit of analysis. This means that if the research population becomes more homogeneous by applying specific research criteria, a smaller sample size is needed (Memon et al., 2020). Conversely, if sampling occurs in a population that is more heterogeneous or composite, a larger sample size is required (Cochran, 1977). Since the current research has applied specific criteria to the target population to obtain quality data (as discussed in the section on population and sample), this approach justifies the sample size used in the study. What is more important than the size of the sample in the sampling process is "the robustness of the sample." (Memon et al., 2020). This means accurately selecting respondents who represent the research population based on specific research criteria. "The robustness of the sample" ensures that the results are consistent and generalizable over time, even if the sample size is small. According to Dastgeer et al. (2012) and Hair et al. (2006), the recommended sample size for SEM analysis based on Maximum Likelihood Estimation (MLE) ranges from 100 to 200. Additionally, the researcher proposed that a 'critical sample size' of 200 participants provides appropriate statistical power for analysis (Garver & Mentzer, 1999; Hoe, 2008; Sivo et al., 2006). Furthermore, Memon et al. (2020) suggested that, based on their experiences, the appropriate sample size for multivariate statistical analysis (PLS-SEM) should be between 160 and 300 samples. Various methods are available for determining the appropriate sample size in Partial Least Squares Structural Equation Modeling (PLS-SEM) research. These methods include guidelines such as calculating sample size using G-Power software (Faul et al.,

2007), the 10-times rule (Hair et al., 2011), the inverse square root and gamma-exponential methods (Kock & Hadaya, 2018), and power tables (Hair Jr et al., 2013).

In this research, we applied three of the mentioned methods to ensure an accurate calculation of the minimum sample size. To calculate the sample size through G-Power, we considered a medium effect size of 0.15, with a significance level of 0.05 and statistical power of 0.95, leading to a minimum sample size of 129. According to the 10-times rule, the largest number of reflective indicators used to measure a single construct in our model was 13, so based on this rule, the minimum sample size is 130. Finally, based on the power table guidelines for determining sample size (Table 5, adapted from Hair Jr et al.'s (2013) book), these guidelines emphasize achieving a statistical power of 80%. The significance level, typically accepted at 0.05 (5%) in social and behavioral science research, indicates the probability of rejecting the null hypothesis (Hair et al., 2010). Model complexity was also evaluated based on the maximum number of arrows pointing to a construct. Hence, we estimated the minimum sample size required to achieve R2 values of 0.10, 0.25, 0.50, and 0.75 for each endogenous construct in the structural model. With a significance level of 5% and a statistical power of 80%, and considering a model complexity with a maximum of 2 arrows per construct based on the conceptual model of the research, the minimum sample sizes were estimated to be 110, 52, 33, and 26, respectively. Thus, a minimum sample size of 110 was predicted for this study.

In this research, quantitative data were collected through convenience sampling. Furthermore, to gather rich and relevant information related to the research objectives, criteria were considered for participant selection, which included (1) having a child between six months and six years old; (2) consuming sustainable food products; (3) having no family history of obesity diagnosis; and (4) being responsible for purchasing more than 50% of the family's food products.

The questionnaire was distributed both online and in paper-and-pen format, with the online version developed using Google Forms. Google Forms proved invaluable for research purposes, offering a free and user-friendly platform with the flexibility to design various question types and no limitation on the number of questions. The questionnaires were distributed between May and November 2023. Based on the research criteria, 250 questionnaires were retained. However, 45

questionnaires were excluded due to incomplete responses to children's BMI questions or incorrect answers to attention-check questions. Consequently, according to the estimated minimum sample size and research criteria, which defined a smaller and more homogeneous population, the final sample size of 205 observations can be considered adequate to ensure the robustness of PLS-SEM analysis.

Table 5: Sample size recommendation a in PLS-SEM for a statistical power of 80%

Maximum Number of Arrows Pointing at a Construct	*Significance Level*											
	1%				*5%*				*10%*			
	Minimum R^2				*Minimum R^2*				*Minimum R^2*			
	0.10	*0.25*	*0.50*	*0.75*	*0.10*	*0.25*	*0.50*	*0.75*	*0.10*	*0.25*	*0.50*	*0.75*
2	158	75	47	38	110	52	33	26	88	41	26	21
3	176	84	53	42	124	59	38	30	100	48	30	25
4	191	91	58	46	137	65	42	33	111	53	34	27
5	205	98	62	50	147	70	45	36	120	58	37	30
6	217	103	66	53	157	75	48	39	128	62	40	32
7	228	109	69	56	166	80	51	41	136	66	42	35
8	238	114	73	59	174	84	54	44	143	69	45	37
9	247	119	76	62	181	88	57	46	150	73	47	39
10	256	123	79	64	189	91	59	48	156	76	49	41

*Source: Adapted from Cohen, J. (1992). A power primer. Psychological Bulletin, 112, 155-519.

3.5.4. Procedures of Quantitative Data Analysis

This study used one-way ANOVA and independent-samples t-test, conducted with IBM SPSS 25, to analyze sociodemographic hypotheses. Additionally, it employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS4 software to estimate cause-and-effect relationships between constructs in the research model. PLS-SEM is a multivariate analysis method used to estimate variance-based structural equation modeling (SEM). It is recognized as one of the most advanced and comprehensive systems for investigating complex relationships, including mediation and moderation in research models (Hair et al., 2018). Additionally, the widespread preference for the PLS-SEM method in management and marketing studies highlights its significance (Cengiz et al., 2024; Zhao et al., 2025). Notably, PLS-SEM is recommended as the most appropriate method when research

objectives result in a small population, leading to a restricted sample size. It is also appropriate when the data distribution lacks normality (Hair et al., 2019).

The evaluation of the model in PLS-SEM consists of a two-stage process that includes the evaluation of the measurement model and the structural model, respectively. Firstly, PLS-SEM assesses the measurement model for evaluating the validity and reliability of constructs by calculating factor loadings, convergent validity, average variance extracted, internal consistency reliability, discriminant validity using the Fornell-Larcker criterion, and the Heterotrait-Monotrait (HTMT) ratio. Ultimately, PLS-SEM assesses the structural model to determine R^2 and Q^2 values and to evaluate relationships between constructs and test hypotheses.

3.6. Qualitative Phase

The purpose of qualitative research is to examine phenomena from the viewpoint of others, collect their perspectives through the lens of the researcher, and give a voice to members of society. Qualitative research operates on the idea that " meaning is socially constructed by individuals interacting with their world " (Merriam & Grenier, 2019), shaped by their understanding and interpretation of social realities (Bryman, 2003). The purpose of qualitative research in the explanatory sequential design is to explore how the participants perceived, understood, and explained the concepts and relationships from the first phase.

One of the basic methods of qualitative analysis is thematic analysis. Thematic analysis presents essential skills that form a useful foundation for other forms of qualitative analysis (Braun & Clarke, 2006). As stated by Holloway and Todres (2003), theme generation is recognized as a common foundational skill in qualitative analysis. Thematic analysis is a flexible and sometimes ambiguous method that extracts rich and subtle insights. The realistic approach of thematic analysis displays the perspectives, experiences, and lived realities of the participants. It contributes to identifying patterns and themes in the participants' perspectives, themes are embedded in the concrete data (Taylor & Ussher, 2001). This process enriches the dataset through systematic data minimization and organization (Braun & Clarke, 2006). Beyond that, based on the discovered themes, it interprets various aspects of the research topic (Braun & Clarke, 2006).

The qualitative phase of this study aims to explore how parents' sustainability concerns influence their children's weight status and lead them to consume sustainable food products. It also investigates how sustainable food consumption affect healthy eating habits in parents and how these habits, in turn, shape their children's eating habits. Additionally, it examines parents' perspectives on the impact of sustainable food consumption and healthy eating habits on their children's weight status.

Thematic analysis was considered the preferred method for analyzing the qualitative data in this study, aiming to discover patterns and identify novel insights that align with the research objectives. The ontology of this research follows an essentialist or realist approach, grounded in the experiences and views of the participants (Braun & Clarke, 2006). To obtain the perspectives and lived experiences of the participants, the in-depth interview method was adopted.

3.6.1. Data Collection Procedures for the Qualitative Phase

In a qualitative study, the research method and data collection procedures are considered key factors in measuring quality and reliability of research (Kallio et al., 2016). In order to gather qualitative data for the research, in-depth interviews were conducted using a semi-structured interview format. This popular qualitative data collection method was adapted based on the literature and aligned with the research objectives. The semi-structured interview method, by creating an environment for participants to express their views and experiences verbally, has proven successful in fostering mutual interaction between the interviewer and the interviewees (Kallio et al., 2016). Opting for in-depth interviews with semi-structured questions was deemed more effective in achieving comprehensive insights into the subject matter. The in-depth interviews also provide a non-judgmental environment for interviewees to speak about issues that concern them and allow space for unexpected issues that could come up during the interview (Clarke & Braun, 2013). The formulation of interview questions was guided by the findings of the quantitative study, which included predicted variables and the relationships between them. In the study conducted by Taylor (2005), a centralized structure for semi-structured interviews was mentioned. However, in qualitative research, it is important to enhance the richness of the results related to the study phenomenon. This is achieved through flexibility in conducting

interviews, rather than strict adherence to structures. The literature on qualitative studies has emphasized the importance of clearly demonstrating all the steps and procedures used by the researcher. Therefore, the researcher aims to describe the steps taken during the qualitative phase, particularly in the field of in-depth interviews.

The open-ended questions were designed before the interview, based on the findings of the first phase. The framwork of questions was approved by the supervisor and then translated into Turkish. Subsequently, the questions were translated back into English to ensure the accuracy of the translation. The supervisor and the interview moderator were fluent in both English and Turkish, and they also reviewed and confirmed the translation of the questions to ensure its reliability. The researcher contacted the volunteers to schedule the interviews at mutually convenient days and times. Interviews were conducted between May and June 2024 through the Zoom video conferencing software. Each interview was completed in a single session, lasting between 30 and 60 min. The use of online interviews facilitates participation from volunteers in various geographical locations at mutually convenient times, while also eliminating travel-related expenses (McCoyd & Kerson, 2006). Additionally, participants can be interviewed from the comfort of their preferred safe location, where they feel more relaxed (Hanna & Mwale, 2017). It is worth mentioning that informed consent was obtained from interview participants at two steps in the study. First, written consent was obtained when they shared their contact information during the questionnaire phase. Then, oral consent was obtained before the interview. At the beginning of each interview, the moderator briefly explained the research's subject and objectives and informed participants that the session would be video recorded. The interviews were facilitated by a two-person team consisting of a researcher and a moderator. The interviews were conducted in Turkish, adopting a conversational approach with a flexible interview flow. During the interviews, no interventions were made to preserve the natural dialogue and ensure participants felt comfortable expressing their perspectives. According to Mayring et al. (2011), participants were encouraged to express themselves authentically, as they would in real life, acknowledging their unique insights. In recognition of their participation, a serial number for a gift card was given to participants at the end of the interview. The semi-structured interview questions are provided in Appendix B.

3.6.2. Thematic Analysis

Data are analyzed using thematic analysis, which focuses on identifying, analyzing, and interpreting patterns within and outside the data based on the experiences, perspectives, and real behaviors of the participants (Clarke & Braun, 2017). Thematic analysis combines a realist ontology with a constructivist epistemology (Maxwell, 2012). The main focus of this approach is to explore and discover how people interpret and understand their experiences in real-world contexts. This approach emphasizes the importance of subjectivity, focusing on both the researcher's own subjectivity and intersubjectivity, which involves reconstructing the researcher's perspective in interaction with others' perspectives. The goal is to ensure that the researcher's interpretation is not dominant and to fairly portray the voices of the participants.

Given the objectives of the study, thematic analysis was considered an appropriate approach for a deep exploration of the experiences and perceptions of parents in the qualitative phase. This method offers a flexible approach to understanding complex and multifaceted behavioral issues, such as how parents' concerns lead them to engage in sustainable consumption, how the context of events and situations affects decisions about food consumption and sustainability, and parents' views regarding the formation of children's eating habits and the impact of parents' habits on their children's weight status. Thematic analysis has been widely employed in studies exploring behaviors related to sustainability concerns, sustainable consumption, and childhood obesity. For instance, it has been used in studies examining sustainability issues (Speidel, 2024), intentions to purchase sustainable food products (Chakraborty et al., 2024), and factors influencing childhood overweight and obesity (Almutairi et al., 2020).

The pioneers of thematic analysis are Braun and Clarke (2006). Based on their approach, the analysis process focuses on searching for patterns of meaning and themes based on the context and purpose of the research. In this research, the process of identifying codes and themes in the data is inductive and follows a bottom-up approach (Braun & Clarke, 2006). "Coding" starts with the researcher immersing themselves in the data. In the stage of creating themes, the researcher combines codes by analyzing their relationships and forming "overarching themes". Throughout the

analysis process, there is a constant back-and-forth between the whole data set, generated codes, and themes. In this iterative flow, the researcher continuously examines the relationships between codes, sub-themes, and overarching themes. Some themes remain unchanged, while others need to be refined, combined, separated, or discarded. The guidelines for implementing thematic analysis are flexible. Themes develop during the process and should not be rushed. Braun and Clarke have outlined six steps in their framework The table 6 is adapted from Braun and Clarke's 2006 study.

Table 6: Phases of thematic analysis (Braun & Clarke, 2006)

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

3.6.2.1. Transcribing the Data

Transcribing the interviews is the first step in qualitative data analysis. Ochs (1979) believed that transcription is more than just a mechanical process of converting spoken language into written form. As Bird (2005) stated, transcription is a crucial stage in qualitative data analysis. In transcription, the primary focus is on transferring meanings from spoken to written language. Although researchers recognize this process as time-consuming and sometimes exhausting, it serves as the first step in becoming familiar with the data (Braun & Clarke, 2006). This step provides an

opportunity for the researcher to immerse themselves in the data and develop initial ideas for analysis before starting the coding process (Bloor, 2001). However, what is important in the transcription step is maintaining careful attention and adopting an interpretive perspective by repeatedly listening to and reviewing the recorded files (Lapadat & Lindsay, 1999).

In this study, the first step of the analysis involved converting audio files containing interviews with 10 volunteers into transcribed files. In addition to video recording, the researcher also took notes during the interview process. The researcher transcribed the interviews word for word by using TurboScribe (https://turboscribe.ai/), which supports the Turkish language. The researcher reviewed and adjusted the recorded files several times to ensure the accuracy of the transcription. During the process of rereading and checking the transcripts compared with the recorded videos, the researcher considered the research goals and underlying assumptions, forming initial patterns subjectively. During transcription, the researcher took notes on points of interest and relevant perspectives. Finally, the interview moderator verified the transcripts by comparing them with the original recordings. The transcripts were then translated into English and subsequently back into Turkish by the researcher and two translators fluent in both languages to ensure translation accuracy.

3.6.2.2. The Process of Coding and Theme Generation

During the analysis process using the thematic analysis approach, the researcher identifies codes and themes within the interviews based on the research objectives. According to Saldaña (2021) definition, a code is “a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data.”. Coding refers to the process that involves grouping together phrases or words within a text or visual data that are meaningful and interpret an aspect of the research objectives, and assigning them a code label. Braun and Clarke (2006) mentioned that a theme is essentially the crystallization of the answers to the research questions in the data. The theme represents the patterns of meaning and responses of the participants in the dataset. However, measuring the prevalence of themes throughout the dataset often becomes challenging. According to Creswell and Poth (2016), if there are 25-30 categories of

codes in the data, they can be grouped into 5-6 themes. Elliott (2018) suggests that with 80-100 codes, they can be divided into 15-20 categories and then reduced to 5-7 themes. In contrast, Braun and Clarke (2006) believe that the significance of a theme is more important than its prevalence. A theme may appear relatively infrequently in the data, but if it clarifies an answer in line with the research objectives, it is considered more important than its low prevalence. There are no rigid rules for creating themes; it is the researcher who plays the outstanding role in determining the themes.

To ensure clarity and facilitate tracking the coding and theme development process, it has been thoroughly documented in this section. Documenting the process of coding and theme development can serve as a touchstone for the dependability of qualitative research. The second and third steps of the current research analysis are as follows:

During the transcription and translation process, the researcher began to familiarize themselves with the data. Coding of the transcribed interviews commenced before all interviews were available, starting with the transcription of the first interview. The first interview transcript was imported into MAXQDA software, read line by line, and initial codes were applied. These codes were revised and expanded upon by revisiting the interviews over time (see Appendix C for examples of coded transcripts).

Qualitative researchers hold differing views on the utility of software in qualitative research (Odena, 2013). Some argue that its use can mislead researchers, shifting focus from meaning to quantity and potentially decontextualizing data (Lu & Shulman, 2008). However, researchers interested in using software assert that it enhances the power of data analysis, contributing to the prediction of links (Hutchison et al., 2010; Silver & Lewins, 2014). Importantly, researchers emphasize that software is for data management only, with analysis remaining the researcher's responsibility. In this study, in line with the research methodology, the use of MAXQDA software was deemed appropriate. Since its establishment in 1989, MAXQDA has been geared towards supporting mixed methods. Furthermore, this software provides beneficial capabilities, such as integrating diverse qualitative data collection methods, ranging from interviews and focus groups to online platforms and social media. Hence, the

data was analyzed using thematic analysis with the support of MAXQDA 2020 software.

To ensure the accuracy of the coding process, we noted sections where appropriate codes could not be assigned and categorized these sections under the code "miscellaneous". This approach allowed us to re-review and eliminate the risk of overlooking any data. After completing the initial coding, efforts were made to identify larger patterns within the codes, grouping homogeneous codes into relevant categories. To prevent confusion from the huge number of codes across all transcription datasets, the development of initial themes began with the first interviews. The coding of interview transcripts and the development of themes continued in this manner. Through a back-and-forth process of reviewing the transcripts, codes, and themes were modified, added, or merged (Braun & Clarke, 2006).

Regarding the process of coding and theme generation, code labeling was conducted based on the researcher's ideas and insights, as well as the predictor variables from the quantitative phase. This approach sought to uphold both the deductive method, driven by research objectives, and the inductive approach, and to highlight the researcher's significant role in the analysis process (Clarke & Braun, 2013). The process of coding and theme development included both the participants' viewpoints (as a descriptive element) and the researcher’s interpretations of less obvious patterns, which stemmed from the researcher's subjective perspective (as an interpretive element) (Clarke & Braun, 2013). Therefore, the researcher’s role as an interpretive element is crucial in expressing participants' experiences, revealing relationships, and giving them meaning based on previous literature (Braun & Clarke, 2006). Persistent, repeated reading of the interview transcripts and note-taking helped the researcher uncover latent patterns and revise and reorganize codes and themes. Throughout this process, the researcher made an effort to stay aligned with the research objectives. However, these initial themes required further examination. During the subsequent phase, 'reviewing themes,' the data were extracted and systematically organized.

3.6.2.3. Reviewing Themes, and Defining and Naming Them

The fourth stage involves reviewing the primary themes identified in the previous stage. Each theme's codes were reviewed for consistency, ensuring they accurately reflected the intended themes. The clarity in distinguishing each theme from others was also assessed. Themes that lacked sufficient data support were excluded, while some were combined or merged into other themes. This process aimed to form logical patterns, ensuring that the data were accurately represented by the themes.

In the fifth stage, each theme was defined based on its key dimensions, and appropriate names were assigned. Emphasis was placed on ensuring that the names and definitions of the themes accurately demonstrate the main nature of the data.

3.6.2.4. Achieving Saturation in Interviews

In qualitative research, saturation is the most commonly used approach for assessing sample adequacy (Morse, 2015), ensuring that the collected data demonstrate content validity through diversity, depth, and nuances in the research context (Francis et al., 2010). Furthermore, the concept of saturation is recognized as "the most frequently touted guarantee of qualitative rigor offered by authors to reviewers and readers" (Morse, 2015). The concept of saturation was originally introduced within grounded theory, referred to as 'theoretical saturation,' and serves as a criterion to determine when data collection regarding a theoretical structure is complete (Glaser and Strauss, 1999). However, not all qualitative research follows a grounded theory approach. In other qualitative research methodologies, saturation is referred to as 'data saturation' or 'thematic saturation' (Hennink et al., 2017).

In the thematic analysis approach through interviews, saturation is assessed through the data. This means continuing interviews until no new codes or themes emerge, and the data begin to repeat, making further data collection redundant (Saunders et al., 2018). As referred to by Fusch and Ness (2015), "If one has reached the point of no new data, one has also most likely reached the point of no new themes; therefore, one has reached data saturation.". Furthermore, the researchers suggested that saturation was confirmed when no new themes were found in two or three consecutive interviews (Coenen et al., 2012; Francis et al., 2010).

In the literature, various methods have been employed to evaluate saturation. Hennink and Kaiser (2022) categorize methods into five approaches which include code frequency counts, comparative method, stopping criterion, high-order groupings, and code meaning. Furthermore, their systematic review suggested that saturation in qualitative studies through interviews can typically be reached between 9 and 17 interviews, especially when the study population is relatively homogeneous and the research objectives are narrowly defined. This study applied the code frequency counts method to assess saturation, as similar thematic analysis studies have utilized this approach (Ando et al., 2014; Morse et al., 2014; Constantinou et al., 2017; Young & Casey, 2019). According to this method, each interview transcript is compared with those of subsequent interviews or set of transcripts to identify the emergence of new codes. This process continues until no new codes are identified. Furthermore, in our study, to minimize the potential for sequential bias, the transcripts were once again examined in random order to evaluate saturation.

When considering saturation in qualitative research, it is important to focus on both the quality (richness) and quantity (thickness) of the data collected. In this regard, Malterud et al. (2016) introduced the concept of 'information power' to describe an appropriate sample size in qualitative studies. Information power suggests that if the collected data provide comprehensive information and fully address the research questions, saturation is reached. According to this study, the required sample size with adequate information power depends on several factors: a) narrow or broad of the study's aim, b) the density or sparsity of sample specificity, c) the presence or absence of theoretical frameworks, d) the strength or weakness of dialogue quality, and e) the use of either case or cross-case analysis strategies.

In our study, the sample consists of a relatively homogeneous population, with participants selected based on specific research criteria, resulting in a dense sample specificity. The study also has a narrow object and employs a case analysis strategy (examining childhood obesity among parents living in Türkiye with children between six months and six years old). Consequently, a smaller sample size is adequate to reach information power and reach saturation. Hence, based on the literature, this study reached saturation, as defined by Saunders et al. (2018), additional interviews did not produce new themes or codes, and the existing themes adequately addressed the

research objectives. Interviews continued until no new codes or themes emerged, with saturation being reached after the tenth interview.

3.6.2.5. Producing the Report

The sixth step includes providing a comprehensive narrative report of the data analysis, moving beyond merely describing the data to addressing the research questions. This report should be a clear, understandable, logical, and coherent narration of the stories presented by the participants (Braun & Clarke, 2006). Additionally, the report should include examples of data extracts to illustrate the nature of the themes. As King (2004) stated, direct quotes from the interviewees is an essential part of the final report. These quotes can be short, aimed at clarifying specific points in the interpretation of the themes, or more extensive to give readers a real sense of the narratives shared by the participants (Nowell et al., 2017). Ultimately, the final analysis report should provide a general story of the themes generated to answer the research topics. The step of "Producing the Report" is presented in detail in the fourth chapter.

4. CHAPTER FOUR: DATA ANALYSIS RESULTS

The results of the current study are presented in three parts. Phase I covers the quantitative analysis of the questionnaire data, including the demographic characteristics of the respondents, descriptive statistics, an assessment of the measurement model, and an assessment of the structural model. In assessing the structural model, statistical evidence is used to address the research questions and test the associated hypotheses. Phase II presents the demographic characteristics of the participants who were interviewed and the results of the qualitative analysis of the interview data. Phase III integrates the results of the qualitative analysis to support and complement the findings from the quantitative analysis.

4.1. Phase I Quantitative Results

4.1.1. Demographic Profile of Respondents for the Quantitative Phase

Sociodemographic studies within consumer research were primarily concentrated in America until the 1980s (Jain & Kaur, 2006). However, from the 1990s, these studies began to expand their geographical focus to encompass Europe and the developing industrialized nations of Asia (Jain & Kaur, 2006). The investigation of sociodemographic factors plays a pivotal role in the development of marketing strategies. By identifying the needs and preferences across various demographic segments, businesses can effectively identify their target market. Consequently, appropriate strategies can be adjusted according to sociodemographic characteristics, and strategic planning can be aimed at developing the target market of products at different levels of consumer profiles.

In this study, among the 205 Turkish parents, 77% were mothers. This result highlights the considerable attention mothers give to matters related to their children. The largest percentage of the sample was 71%, in the age range of 31-40. The marital status of the participants showed that 96% were married. 71% of the participants had a bachelor's degree, and 53% of them worked full-time. Table 7 presents the details related to the sociodemographic characteristics of the participants.

Table 7: Demographic characteristics of respondents for the quantitative phase

	Demographic Characteristics	**N = 205**	
		N	%
Gender	Female	158	77.07
	Male	47	22.9
Age	20-30	43	21.0
	31-40	146	71.2
	41-50	16	7.8
Parent's role	Father	47	22.9
	Mother	158	77.07
Marital Status	Married	197	96.1
	Divorced/ Widow	8	3.9
Education levels	Under bachelor	35	17.07
	Bachelor	146	71.2
	Master	14	6.8
	Above master	10	4.8
Employment Status	Unemployed	70	34.1
	Full time employed	110	53.6
	Part time employed	14	6.8
	Work at home	11	5.3
Household Income*	Less than 8500 TL	6	2.9
	8501- 13500 TL	42	20.5
	13501-18500 TL	62	30.2
	Above of 18500 TL	95	46.3
Residence	Rural	8	3.9
	Urban	197	96.1
Gender of children	Girl	117	57.07
	Boy	88	42.92
Children's weight	Under Weight	25	12.19

status	Healthy Weight	139	67.80
	Over Weight	19	9.26
	Obesity	22	10.73

*During the data collection process from May to November 2023, the minimum wage in Türkiye, referred to as 'Asgari Ücret,' was 8,500 lira.

4.1.2. Descriptive Statistics

Descriptive statistics enhance comprehension of the dataset by summarizing its characteristics, including the means, standard deviations, and correlations of the research variables. Table 8 shows descriptive statistics of variables as well as their items. The overall descriptive statistic for Sustainability Concerns is (M= 4.290, SD= 0.621). The highest Sustainability Concerns item is " It is produced without the use of pesticides." (M = 4.605, SD= 0.588). The lowest Sustainability Concerns items are "It is produced while respecting animal welfare" (M = 4.059, SD= 0.689) and "It is produced with low carbon emissions" (M = 4.059, SD= 0.667). The overall descriptive statistic for Sustainable Food Consumption is (M= 3.741, SD= 0.535). The highest sustainable food consumption item is "Buy sustainable food." (M = 3.844, SD= 0.447). The lowest Sustainable Food Consumption item is "Eat less meat (maximum once or twice per week)" (M = 3.600, SD= 0.589).

The overall descriptive statistic for Healthy Eating Habits is (M= 3.813 , SD= 0.775). The highest Healthy Eating Habits item is "Healthy eating habits are something I do frequently." (M = 4.054, SD= 0.741). The lowest Healthy Eating Habits item is "Healthy eating habits are something I do automatically (without having to think consciously about them)." (M = 3.595, SD= 0.848).

Table 8: Descriptive statistics (N= 205)

Items	Mean	SE	Standard Deviation
SC1	4.380	0.043	0.626
SC3	4.371	0.043	0.624
SC4	4.059	0.048	0.689
SC5	4.605	0.041	0.588
SC6	4.059	0.046	0.667
SC7	4.420	0.045	0.647
SC9	4.268	0.045	0.656
SC10	4.215	0.041	0.587
SC11	4.224	0.041	0.591
SC12	4.220	0.037	0.537
SC13	4.366	0.043	0.615
SFC1	3.795	0.035	0.510
SFC2	3.737	0.039	0.558
SFC3	3.844	0.031	0.447
SFC4	3.780	0.037	0.537
SFC5	3.600	0.041	0.589
SFC6	3.688	0.039	0.567
HEH1	4.054	0.051	0.741
HEH4	3.795	0.055	0.788
HEH5	3.595	0.059	0.848
HEH6	3.663	0.051	0.732
HEH7	3.956	0.053	0.767

Note: HEH= Healthy Eating Habits, SC= Sustainability Concerns, SFC= Sustainable Food Consumption, BMI= Body Mass Index

Table 9 shows the correlation between sustainability concerns, sustainable food consumption, healthy eating habits, and BMI. The negative correlation between sustainability concerns, healthy food consumption, healthy eating habits, and BMI

indicates that individuals who adopt more sustainable practices and maintain healthier diets promote better management of body mass index. The positive correlation between sustainability concerns, sustainable food consumption, and healthy eating habits also shows that these factors are aligned.

Table 9: Correlations of the constructs (N= 205)

Variables	Correlation coefficients			
	1	2	3	4
BMI	_			
Healthy Eating Habits	-0.391	_		
Sustainability Concerns	-0.269	0.441	_	
Sustainable Food Consumption	-0.460	0.574	0.313	_

4.2. Measurement Model Assessment

In this study, we evaluated the measurement model with the implementation of convergent validity, discriminant validity, and internal consistency. For the assessment of construct validity, we applied Cronbach's alpha (CA) with a threshold value of 0.7 (Hair et al., 2018). To evaluate internal consistency reliability, we assessed Composite Reliability (CR) with a threshold value of 0.7 (Hair et al., 2018). To determine convergent validity, we calculated the Average Variance Extracted (AVE), aiming for a minimum threshold value of 0.5 (Hair et al., 2018). AVE measures the average amount of variance captured by the indicators of a latent construct relative to the amount of variance attributable to measurement error. Additionally, we considered factor loading with a minimum threshold value of 0.6 (Birkinshaw et al., 1995).

As presented in Table 10, Cronbach's alpha and composite reliability for all constructs exceeded 0.7, indicating high reliability and validity within the constructs. In terms of convergent validity, the AVE values for environmental concerns, sustainable food consumption, and healthy eating habits were calculated as 0.524, 0.719, and 0.703, respectively. These values demonstrate acceptable levels of convergent validity for the measured constructs. In addition, we retained all factor

loadings above 0.6, except for HEH2, HEH3, SC2, and SC8, which were below 0.6 and thus excluded from further analysis.

Table 10: Construct validity and reliability and factor loadings

Construct	Items	Factor Loadings	CA	CR	AVE
Sustainability Concerns	SC1	0.713	0.911	0.923	0.524
	SC3	0.717			
	SC4	0.650			
	SC5	0.745			
	SC6	0.653			
	SC7	0.796			
	SC9	0.811			
	SC10	0.693			
	SC11	0.661			
	SC12	0.757			
	SC13	0.748			
Sustainable Food Consumption	SFC1	0.863	0.921	0.939	0.719
	SFC2	0.854			
	SFC3	0.877			
	SFC4	0.863			
	SFC5	0.795			
	SFC6	0.832			
Healthy Eating Habits	HEH1	0.876	0.895	0.922	0.703
	HEH4	0.869			
	HEH5	0.820			
	HEH6	0.802			
	HEH7	0.822			

To assess discriminant validity, we employed two distinct criteria. First, we utilized the Fornell and Larcker criterion, as introduced by Fornell and Larcker (1981). This criterion confirms discriminant validity when the square root of the Average Variance Extracted (AVE) for each construct should exceed the correlation between that construct and any other construct in the model, as presented in Table 11. Subsequently, we conducted a test based on the Heterotrait-Monotrait (HTMT) ratio. This criterion was proposed by Henseler et al. (2016). All HTMT indices in our study were found to be below the threshold value of 0.90 (Franke & Sarstedt, 2019). In this context, the results indicate that all constructs in our study meet the criteria for discriminant validity, in line with both the Fornell and Larcker and HTMT criteria.

Table 11: Discriminant validity (Fornell-Larcker Criterion) and Heterotrait-Monotrait Ratio –HTMT

	Fornell-Larcker				**HTMT Ratio**			
	BMI	**HEH**	**SC**	**SFC**	**BMI**	**HEH**	**SC**	**SFC**
BMI	1.000				_			
HEH	-0.391	**0.838**			0.405	_		
SC	-0.269	0.441	**0.724**		0.270	0.467	_	
SFC	-0.460	0.574	0.313	**0.848**	0.478	0.617	0.311	_

*Abbreviations: Sustainability Food Consumption (SFC), Healthy Eating Habits (HEH), Body Mass Index (BMI), Sustainability Concerns (SC).

4.3. Structural Model Assessment

The R^2 value indicates the explanatory power of the model, representing the proportion of variance in the dependent (endogenous) variable(s) explained by all independent (exogenous) variable(s) of the model. The R^2 value follows the recommendation of Falk and Miller (1992) that it should equal or exceed 0.10. Additionally, Q^2 serves as a valuable metric for assessing the predictive performance of a model. As stated by Hair et al. (2019), "Q^2 is based on the blindfolding procedure that removes single points in the data matrix, imputes the removed points with the mean, and estimates the model parameters." Q^2 values should be greater than zero. A

Q2 score above zero indicates the predictive significance of the path model for the endogenous construct. As shown in Table 12, the Q^2 values demonstrate the predictive performance of the model.

Table 12: R2 and Q2 Values

The dependent variable	R^2	Q^2
SFC	0.098	0.074
HEH	0.330	0.120
BMI	0.164	0.050

*Abbreviations: Sustainability Food Consumption (SFC), Healthy Eating Habits (HEH), Body Mass Index (BMI).

4.3.1. Hypotheses Testing

After examining the measurement model, we used a standard bootstrap method in Smart PLS with 5000 sample bootstrapping to assess the path coefficients within our structural model. Additionally, we employed SPSS 4 to assess sociodemographic hypotheses. Initially, we evaluated sociodemographic hypotheses, as demonstrated in Table 13 and 14. Then, we investigated the direct relationships between variables. Subsequently, we examined the serial mediation hypothesis. The outcomes of the structural model are detailed in Table 15.

4.3.1.1. Testing of Sociodemographic Hypotheses

The impact of parents' sociodemographic factors on their sustainability concerns was assessed using IBM SPSS 25 software. The hypothesis H1, which shows the effect of parents' gender on their sustainability concerns, was assessed using an independent-samples t-test. The statistical analysis shows a p-value of 0.608 ($P > 0.05$), suggesting that variances are assumed to be equal. However, when equal variances are assumed, the p-value is 0.032 ($P < 0.05$). This result indicates a significant difference in sustainability concerns between the total means for males and females. Consequently, hypothesis H1a is supported, as detailed in Table 13.

Table 13: Gender hypothesis

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
H1a	Equal variances assumed	0.263	0.608	2.157	203	0.032	0.156	0.072	0.013	0.300
	Equal variances not assumed			2.161	75.69	0.034	0.156	0.072	0.012	0.301

Moreover, we used a one-way ANOVA to explore the effects of other sociodemographic variables, including parents' education, age, income, and job status, on their sustainability concerns.

The results presented in Table 14 indicate that the p-value for H1b is greater than the 0.05 threshold at the 95% confidence level. Therefore, the p-value of 0.144 is not significant. Hence, parents' sustainability concerns do not differ by their education levels, and H1b is not supported.

Furthermore, the results of hypothesis H1c show that a p-value of 0.456 exceeds the 0.05 threshold at a 95% confidence level. Consequently, the findings suggest that there is no significant difference between parents' age and sustainability concerns. Thus, H1c is not supported.

Likewise, the p-values of H1d and H1e are 0.147 and 0.245, respectively, exceeding the 0.05 threshold at a 95% confidence level. Therefore, there is no significant difference in sustainability concerns among parents with various income levels and job statuses. Hence, both H1d and H1e are not supported.

Table 14: Education, Age, Income, Job Status hypotheses

	Hypotheses	df	Mean Square	F	Sig	Results
H1b	**Education level -> Sustainability Concerns**	3	0.352	2.023	0.112	Not supported
H1c	**Age -> Sustainability Concerns**	2	0.154	0.383	0.682	Not supported
H1d	**income level -> Sustainability Concerns**	3	0.348	1.504	0.215	Not supported
H1e	**job status -> Sustainability Concerns**	3	0.271	1.540	0.205	Not supported

To ensure accuracy and robustness of the results, the questionnaire's demographic groups were reclassified into fewer groups (three groups). Subsequently, both parametric and non-parametric tests were conducted to assess the results. In this line, Education levels were combined into three categories: "Under bachelor," "Bachelor," and "Master and above master." Employment status was restructured into three groups: "Unemployed," "Full-time employed," and "Part-time employed and work-at-home." Household income was categorized into three groups: "Less than 13,500 TL," "13,501-18,500 TL," and "Above 18,500 TL."

The results of these assessment retests, in both parametric and non-parametric, did not indicate significant differences and aligned with the outcomes of the original groups. This consistency confirms the initial findings, demonstrating no substantial variation across the sociodemographic categories.

4.3.1.2. Testing of Structural Model Hypotheses

All hypotheses of the structural model were examined using structural equation modeling analysis with Smart PLS 4. Table 15 presents the results of the hypotheses. One of the main objectives of our study was to test whether parents' sustainability concerns would negatively influence childhood obesity. An examination of this pathway reveals a beta coefficient of -0.120, consistent with the hypothesized direction. However, the p-value, which is greater than 0.01, indicates that the results are not statistically significant (β = -0.120, t = 1.644, p = 0.100). These findings suggest that parents' sustainability concerns do not directly impact childhood obesity. Thus, the evidence does not support H2.

Hypothesis 3 posited that parents' sustainability concerns would positively influence sustainable food consumption. The results show a beta coefficient of 0.313. Moreover, as the p-value is less than 0.01, this relationship is statistically significant ($\beta = 0.313$, $t = 5.904$, $p = 0.000$). These results support the hypothesis, indicating that parents who express sustainability concerns actively consume sustainable food. Therefore, H3 is supported.

Hypothesis 4 proposed that sustainable food consumption would positively influence healthy eating habits. The standardized beta coefficient is 0.574. The p-value is less than 0.01, indicating a significant and positive relationship ($\beta = 0.574$, $t = 10.329$, $p = 0.000$). These results provide strong evidence supporting the hypothesis, indicating that parents who engage in sustainable food consumption are more likely to enhance healthy eating habits. Thereby, H4 is supported.

Hypothesis 5 proposed that parents' healthy eating habits would negatively influence childhood obesity. The beta coefficient of this pathway is -0.338, consistent with the hypothesized direction. The p-value is less than 0.01, indicating a statistically significant relationship ($\beta = -0.338$, $t = 4.001$, $p = 0.000$). Thus, Hypothesis 5 is supported.

As outlined in the hypothesis development section, we predicted that the relationship between parents' sustainability concerns and childhood obesity would be negatively mediated through a series of mediating variables including sustainable food consumption and healthy eating habits. The results reveal a beta coefficient of -0.061 for the negative indirect effect, with a p-value lower than 0.01 confirming statistical significance ($\beta = -0.061$, $t = 2.637$, $p = 0.008$, CI [-0.110, -0.022]). These findings confirm the presence of serial mediations, providing support for Hypothesis 6. Furthermore, the absence of a direct relationship between parents' sustainability concerns and children's BMI indicates that sustainable food consumption and healthy eating habits fully mediate this relationship.

Table 15: Structural model hypothesis testing (Hypotheses from H2, H3, H4, H5, and H6)

Hypotheses	Paths	Relationship	Std. Beta	t-value	p-value	Results
H_2	Sustainability Concerns -> BMI	Direct	-0.120	$1.644^{(ns)}$	0.100	Not supported
H_3	Sustainability Concerns -> Sustainable food consumption	Direct	0.313	5.904	0.000	Supported
H_4	Sustainable food consumption -> Healthy eating habits	Direct	0.574	10.329	0.000	Supported
H_5	Healthy eating habits -> BMI	Direct	-0.338	4.001	0.000	Supported
H_6	Sustainability Concerns -> Sustainable food consumption -> Healthy eating habits -> BMI	Serial mediation	-0.061	2.637	0.008	Supported

*Note. $p < .01$, ns: not significant

4.4. Phase II Qualitative Results

The second part of this chapter presents the results of the thematic analysis of the transcripts derived from semi-structured interviews with parents who met the research criteria from the quantitative phase. Participants' quotations (in italics) are tabulated and included in the text to provide evidence for three primary themes: 1) Parents' sustainability concerns, 2) Sustainable food consumption, and 3) Healthy eating habits. These quotations are further divided into sub-themes, each representing a specific manifestation of the primary themes. The qualitative results complement and explain the quantitative findings, which are detailed in the integration phase. The categories and themes developed through the thematic analytic process are presented in Table 17.

4.4.1. Population and Sample Size for the Qualitative Phase

In the explanatory sequential design, sampling for the qualitative phase is selected from the quantitative sample. This approach is based on the design's objective of explaining mechanisms by exploring causal relationships among variables quantitatively and conducting an in-depth examination of existing findings

qualitatively. To facilitate this objective, participants were invited to provide their phone numbers or email addresses in the survey if they were willing to participate in interviews.

Depending on the social context in which individuals reside, they exhibit varying degrees of sustainability concerns and engage in different sustainable consumption behaviors. Hence, participants' sustainability concerns were grouped into low, medium, and high categories based on their z-scores. In the qualitative sampling stage, purposive sampling was employed to ensure maximum diversity among participants across different levels of sustainability concerns. Given that triangulating findings is an integral stage of the explanatory sequential design, qualitative sampling prioritized diversity to form a relatively small sample that reflects the diversity of people. From those who provided contact details for interviews, ten individuals consented to participate. The demographic profiles of these individuals are detailed in Table 16.

Table 16: Demographic characteristics of respondents for the qualitative phase

Participants Codes	Level of sustainability Concerns	Gender	Age	Education	Job	Child Gender	Child Age	Weight Status	City
P1	Low	Male	35	Under Bachelor	Police	Girl	1 year 6 months	Normal	Zonguldak
P2	Medium	Female	32	Ph.D.	Research Assistance	Girl	1 year 5 months	Obesity	Bartin
P3	High	Female	38	Bachelor	Government official	Boy	5 year 4 months	Normal	Ankara
P4	Medium	Male	36	Master	Government official	Girl	4 year 2 months	Over Weight	Istanbul
P5	High	Male	35	Bachelor	Teacher	Girl	3 year 2 months	Normal	Karabuk
P6	Medium	Female	35	Bachelor	Principal of school	Girl	2 year	Normal	Tarakli
P7	Low	Male	32	Specialist/Internist	Internal Medicine Specialist	Girl	2 year 6 months	Over Weight	Bartin
P8	High	Male	47	Master	Bank	Girl	5 year 2 months	Normal	Istanbul
P9	Medium	Male	45	Under Bachelor	Government official	Boy	5 years old	Normal	Ankara
P10	Low	Female	46	Bachelor	Marketing company	Girl	4 years old	Normal	İzmir

4.4.2. Reliability of Qualitative Analysis

Inter-coder reliability is widely recognized as a critical stage in qualitative analysis to ensure the consistency and trustworthiness of the coding process. In this study, three interviews were independently coded by the research team, consisting of the researcher and supervisor. Consensus was reached during meetings to finalize the coding, ensuring reliability. Following the finalization of the code structure, two new interview manuscripts were coded by the researcher and interview moderator, based on the finalized code index, to assess coding consistency. An intercoder agreement test was then performed using MAXQDA software to calculate the percentage of agreement. Miles and Huberman (1994) recommend 80% agreement on 95% of codes as a "rule of thumb" for acceptable reliability. In this study, the intercoder reliability was calculated at 87.78 %, indicating a reliable coding process (See Figure 8).

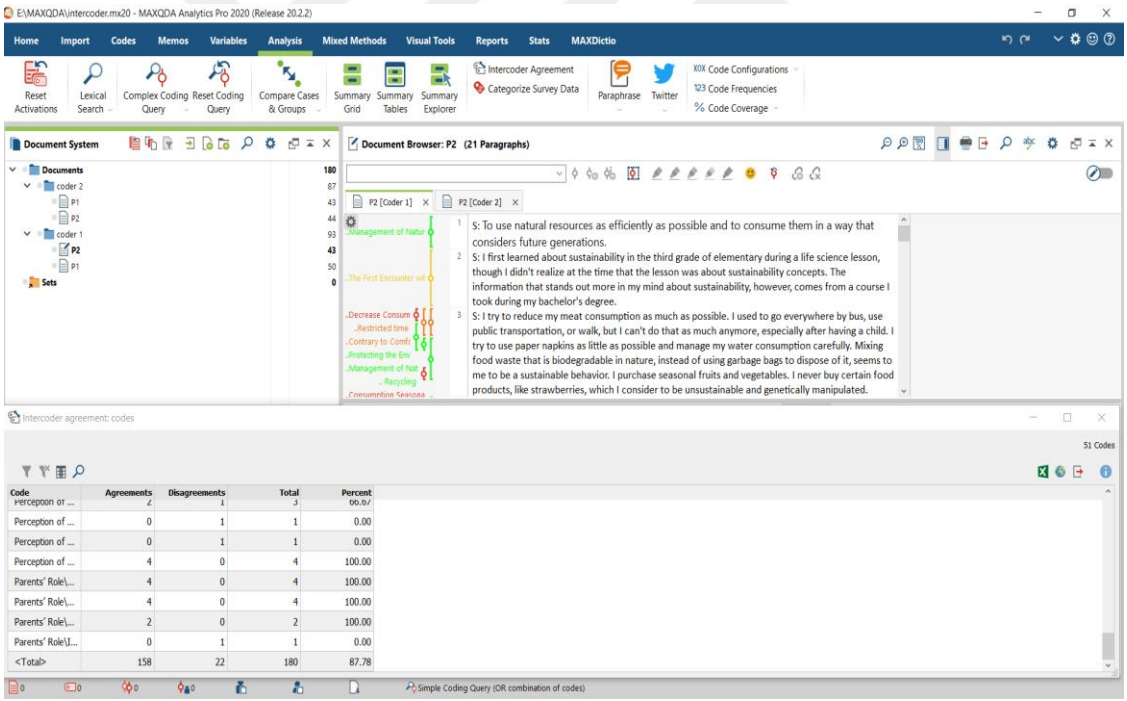

Figure 8: Intercoder agreement

Table 17: Thematic categorization

Categories	Theme	Explanation of theme	Sub-theme	Frequency (N= 10)	Sample quotes
Sustainability Concerns	Sustainability concerns and sustainable food consumption	Sustainability concerns encompass various aspects, including the environment, natural resources, animal welfare, supporting local producers, and maintaining health. These concerns lead parents to choose sustainable foods.	Environmental Issues	7	"Food production damages the environment the most. The less we use factory products and packaging, you automatically support sustainability. In other words, it all depends on our consumption preferences. In fact, it somehow shows the behavior of sustainability in the type of food consumption."
					"I try to buy fruits and vegetables that are in season. However, with so many kinds of fruits and vegetables available throughout the year, whether greenhouse-grown or imported, it has become normal to find all kinds of produce all year. People often buy them automatically without being aware of seasonality."
			Ethical Issues	9	"We cannot treat animals as worthless just because they are not human; they are living beings too. Just as we cannot endure staying in cramped, dark, and oxygen-deprived places, animals deserve the same consideration. (...) Most importantly, since we utilize everything from these animals, they must be raised in the best possible conditions to ensure our health."
					"By buying from local producers, we support their economy and ensure the continuity of local farmers and livestock farming, an activity that is in decline."
			Health Issues	10	"The impact of sustainability on health can be observed through food consumption. There is a concept called ancestral seeds, which refers to seeds that are not genetically modified and are organic. Consuming products derived from genetically modified seeds, or processed products, increase the risk of various diseases, especially cancer. Switching to organic food consumption is more sustainable and guarantees better human health."
	Sustainability concerns and	Parents' sustainability concerns influence their children's weight status through sustainable food	Sustainability concerns and children weight	10	"Parents' sustainability concerns impact the food choices and eating habits of the family, which in turn can affect children's weight. For example, concern for the well-being of local producers often leads to

Categories	Theme	Explanation of theme	Sub-theme	Frequency (N= 10)	Sample quotes
	children's BMI.	consumption.	status		the purchase of local products. This practice ensures that children consume foods free from additives, pesticides, hormones, and antibiotics, while also avoiding processed products, which contributes to maintaining healthy eating habits and a normal BMI. Additionally, buying local products supports local producers and promotes social and economic development within the country."
Sustainable Food Consumption	Sustainable Food Consumption and Healthy Eating Habits	Consuming sustainable food products, such as organic, local, and natural options, leads to healthy eating habits	Suatinable food consumption and Healthy eating habits	10	"Consuming sustainable food 100% of the time promotes the development of sustainable eating habits. I can explain this with an example: If you eat toast at 10:00 PM for three days, you'll crave toast on the fourth day because the microorganisms in your gut become accustomed to it. Similarly, if you eat spinach for three days, your body will start craving spinach on the fourth day. Therefore, whatever you consistently consume, your body begins to desire it. After regularly eating organic food, if non-organic food is never consumed, your body will react strongly to even the smallest additives when they are eventually consumed."
	Barriers and Motivations to Sustainable Food Consumption	Contextual factors can either motivate or hinder the purchase of sustainable food products	Accessibility	10	"Accessing organic and local products can be challenging. Some local products, particularly milk and dairy products, are difficult to find in Istanbul."
			Economic Conditions	9	"As economic conditions become more challenging, people's concerns are no longer sustainability issues, they struggle to live. While I may worry about consuming organic products, others with lower economic means may be more concerned about simply having enough to get by. As economic conditions become more challenging, people's concerns are no longer sustainability issues, they struggle to live. While I may worry about consuming organic products, others with lower economic means may be more concerned about affording basic living expenses (...)."

Categories	Theme	Explanation of theme	Sub-theme	Frequency (N= 10)	Sample quotes
			Time Availability	6	"However, accessing sustainable food can be challenging in today's society, where ready-made meals and fast food are often prioritized due to employment and time constraints within families."
			Social Pressures	6	"All my friends and the people around me are interested in healthy eating. That means the pressure of the social environment around me is in the direction of healthy eating. For example, if I want to eat packaged food products, I can expect some judgment from my peers."
Healthy Eating Habits	Healthy eating habits and children's BMI.	By teaching and modeling healthy eating habits, parents can significantly influence their children's BMI, as children often imitate their parents' eating behaviors.	Children's Imitation of Parental Behavior	6	"Since I believe that children adopt their eating habits from their parents, our family follows the same eating style to ensure my children learn the healthy eating habits I promote at home."
			Parental Teaching of children	9	"Since education begins at home, I feel obligated to teach my children. (...) I try to teach my children and those around me about the importance and health benefits of eating natural foods, especially considering our current lifestyle and various diseases. By educating my children about sustainability, I aim to ensure a better future for them."
					"If my child insists on consuming unhealthy food products, I take a firm stance. I explain to them at length why certain foods are unhealthy and the potential negative impacts on their health, including weakened immunity and illness. I often read the information on product labels to them, as they may not fully understand due to their young age. If they remain unconvinced, I resort to using educational videos, which have proven to be effective with my children."

Categories	Theme	Explanation of theme	Sub-theme	Frequency (N= 10)	Sample quotes
			Children's weight Status	9	"I believe that adopting a sustainable food style may decrease the likelihood of obesity. This is not solely due to eating organically but because individuals following a sustainable diet tend to make healthier choices overall. Their unique food style, such as organic consumption, leads them to avoid certain unhealthy options. For instance, they are more likely to refrain from fast food because it typically doesn't meet their organic criteria."

4.5. Sustainability Concerns

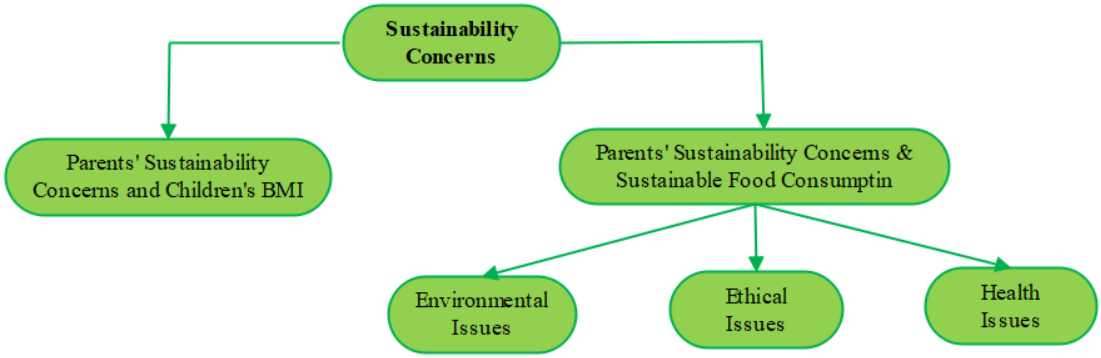

Figure 9: Sustainability concerns

4.5.1. Theme 1: Parents' Sustainability Concerns and Children's BMI

This theme addresses the research question: Do parents' sustainability concerns affect their children's weight status?

Overall, the evidence for this theme indicates that parents' sustainability concerns do not directly impact their children's weight. However, the evidence reveals an indirect relationship. parents' sustainability concerns lead to behaviors and changes in consumption patterns that promote healthier BMIs in children. Specifically, parents with high sustainability concerns tend to make more conscious food purchases and often prefer sustainable products, such as organic and locally sourced foods. These sustainable eating habits contribute to a healthier lifestyle, which can positively impact maintaining normal weight in their children.

P4 highlights the role of sustainability concerns in reducing childhood obesity risks. He explaind, *" In my opinion, two aspects of sustainability concerns can help reduce the risks of childhood obesity. Firstly, supporting local producers who grow products naturally without pesticides and hormones is crucial. Secondly, advocating for the welfare of animals raised for red and white meat, ensuring they are free from hormones, vaccines, and antibiotics, is important. In mass production, antibiotics and hormones are often used to speed up the production process, which negatively impacts children's health and weight. Therefore, supporting local farmers and promoting animal welfare can positively influence children's weight status."*

P6 emphasized the importance of sustainability concerns which prioritized sustainable food choices and promoted healthier lifestyles. She stated, *"Sustainability concerns lead to the consumption of natural and sustainable food products, fostering a natural lifestyle that can positively affect children's weight."*

P8 addresses the impact of sustainability concerns on children's weight, highlighting economic challenges. He remarked, *"Concerns about sustainability, such as protecting the environment, supporting local farmers, and promoting animal welfare through sustainable food consumption, can influence children's weight. Unfortunately, due to poor economic conditions, sustainable foods like organic options, which are often more expensive, are not accessible to everyone. As a result, in low-income countries, obesity rates are higher due to the consumption of unhealthy foods, and only children from wealthy families have consistent access to healthy nutrition. Therefore, in countries like ours, government support is crucial to ensure that all children have access to nutritious foods."*

4.5.2. Theme 2: Parents' Sustainability Concerns and Sustainable Food Consumption

This theme addresses the research question: Do parents' sustainability concerns affect their consumption of sustainable food products?

Sustainability concerns cover a wide range of issues, including the environment, natural resources, animal welfare, supporting local producers, and maintaining health. Given these dimensions, parents tend to choose foods that align with their values and priorities. Evidence shows that parents' sustainability concerns drive them to choose sustainable foods, such as organic, local, and natural products. Parents' statements indicate that their decision to consume sustainable foods is influenced by environmental, ethical, and health motives. Additionally, parents believe that effectively addressing sustainability issues depends on their purchasing behavior and the types of foods they consume. As P8 posited,

"*Food production damages the environment the most. The less we use factory products and packaging, you automatically support sustainability. In other words, it*

all depends on our consumption preferences. In fact, it somehow shows the behavior of sustainability in the type of food consumption."

4.5.2.1. Sub-theme: Environmental Issues

Population growth and urbanization have driven industrialization, leading to mass production systems designed to meet the needs of the growing population. The consequences of modernity and industrialization have positioned the food production and consumption system as one of the most damaging to the environment. As a result, sustainability concerns from an environmental perspective have fostered the emergence of sustainable behaviors at the consumption level. Consumers are increasingly motivated to buy food products that are produced sustainably and in an environmentally friendly manner to protect the environment. For example, as P1 stated,

"*The first thing I pay attention to when shopping is sustainable production methods. I try read the label on the products, which indicates how they are processed or produced."*

Furthermor, P5 expressed that planting crops in a home garden is considered environmentally friendly production.

"*One of the things I do as a sustainability practice is planting crops in my garden, which requires a lot of effort and time. Although it is not on a business scale, I believe it still contributes to sustainability.*"

In contrast, one of the interviewees argues that sustainable production methods have strict criteria, and simply carrying out the production process in a home garden does not necessarily make it sustainable. P8 stated this viewpoint,

"*Consider this scenario: if I have access to products with 90% organic quality in my mother's village, the products grown in my garden in Dilovası may only achieve 50% organic quality. This is because Dilovası is surrounded by industrial activities that have polluted the water and soil. Despite my efforts to cultivate my garden without chemical fertilizers, the end product may not qualify as organic or healthy. Ultimately, ensuring the correct implementation of organic production methods is paramount.*"

Consumers who are aware of sustainability issues tend to avoid buying products with excessive packaging, products shipped from distant geographical areas, and non-seasonal products. They believe that non-seasonal products disrupt the natural cycle, especially if produced in greenhouse conditions, as they are often not natural and usually genetically modified. Additionally, the use of chemical fertilizers in their production increases environmental pollution and the carbon footprint. Furthermore, if non-seasonal products are imported from tropical regions, they also contribute to environmental pollution. In this regard, P5 noted,

"*We are currently in a situation where, due to the change of seasons, we have forgotten which products are eaten fresh in which season. There are many products imported from abroad, allowing us to access almost all products even out of season. For example, tomatoes are always available on the shelves. Normally, tomatoes are a summer product, fresh during that season. However, we now eat tomatoes in both winter and summer. This makes people question whether it is actually the season for them, why we eat them out of season, etc. Despite these concerns, people often continue to consume these products due to ingrained habits.*"

Also, P8 expressed the same feelings,

"*Another aspect of sustainability involves freezing summer produce for use in winter, including peas, tomatoes, and eggplants. This practice avoids both the use of non-seasonal products and packaged products.*"

Another interviewee stated that the consumption of non-seasonal products has become so common that consumers often purchase them unknowingly. P2 said,

"*I try to buy fruits and vegetables that are in season. However, with so many kinds of fruits and vegetables available throughout the year, whether greenhouse-grown or imported, it has become normal to find all kinds of produce all year. People often buy them automatically without being aware of seasonality.*"

Furthermore, sustainable consumers aim to avoid products with excessive packaging due to their contribution to environmental pollution and the additional time and cost required for recycling. P1 stated,

"*In general, we avoid packaged and semi-prepared foods when buying food products. While these items may be more attractive but cheaper than organic*

products. Our choices of over-packaged food products directly impact environmental pollution."

4.5.2.2. Sub-theme: Ethical Issues

Ethical issues within the concept of sustainability concerns include broad topics such as natural resource management and biodiversity conservation. These concepts emphasize the future generation's ability to meet their needs. In this study, the interviews reflected two sub-themes related to ethical concerns: animal welfare and support for local producers.

4.5.2.2.a. Animal welfare

Animal welfare is a crucial ethical concept in sustainability concerns. It encompasses both the physical and psychological conditions of animals. Key considerations include avoiding animal suffering and exploitation, avoiding cruel methods such as confinement or overcrowding, providing shelters with adequate light and space, ensuring proper nutrition, and considering the wildlife of animals, such as access to grazing and maintaining their natural habitats. Sustainability-conscious consumers prioritize buying foods with keeping animal welfare in mind that are both ethical and health-conscious. They believe that the way animals are raised and fed significantly impacts the health quality of the food produced. In this context, P3 commented,

"*We cannot treat animals as worthless just because they are not human, they are living beings too. Just as we cannot endure staying in cramped, dark, and oxygen-deprived places, animals deserve the same consideration. My father had a small ranch, and I remember he took great care to ensure the wellfare of the animals. He built a large* barn *and even created separate areas for eating, defecating (with a system for waste to flow away), and resting. Most importantly, since we utilize everything from these animals, they must be raised in the best possible conditions to ensure our health.*"

Increasing pressure on industrial production due to population growth has led to the neglect of animal welfare. Industrial producers often try to prepare animals for

consumption by injecting them with growth hormones and antibiotics in a short period. The conditions in which these animals are kept are concerning, and their feed lacks essential nutrients. Consequently, these animal products do not offer any health benefits. Informed consumers avoid buying these products, believing that a lack of market demand will eventually stop their production. Hence, P4 Added,

"*When purchasing chickens and eggs, I prioritize the welfare of the animals, and I often discuss this topic with friends and colleagues. It's concerning to think about what goes into the production of our food. We're essentially consuming what is fed to the chickens themselves. In industrial farming, thousands of chickens are confined to cramped spaces, given antibiotics to prevent disease transmission, and injected with hormones to accelerate growth within a short period. Unfortunately, consuming products from such conditions can have adverse effects on our health. It can lead to weight gain, antibiotic resistance, and various health issues. Additionally, it's heartbreaking to consider the situation of these animals subjected to such conditions.*"

One of the interviewees highlighted a significant issue: determining adherence to animal welfare standards in the production process is often challenging. Unless products specifically provide information about animal welfare, it is nearly impossible to identify those that meet these standards. Although respecting animal welfare is a core principle of sustainable food products, information regarding local products often depends solely on trusting the producer. P8 claimed,

"*In fact, ethical production methods hold significant importance for me, as products produced unethically can indeed raise health concerns. However, the point is that, except for products that provide information about animal welfare, it is not possible to consider animal welfare in the production process. I can take the example of Istanbul, which is surrounded by the sea, where accessing sea fish is exceedingly difficult, and distinguishing between sea and farmed fish is nearly impossible. Overall, if a product's production deviates from the natural method, it's likely that the health of that product is also compromised. Sometimes, even products labeled as organic may not fully meet all organic standards due to the challenges and costs involved. For instance, beekeepers with organic certification might need to supplement their bees'*

food with sugar to prevent bee loss, thereby compromising the organic nature of the honey."

4.5.2.2.b. Support for local producers

Although Türkiye 's climate is suitable for raising livestock and producing a variety of fruits and vegetables, there has been an alarming decline in local agriculture and animal husbandry. This is primarily due to the fact that, compared to the costs and efforts undertaken by local producers, the sale of their products is not economically viable or compensatory. Trades between industries and local producers are often unfair, and local producers lack sufficient opportunities to market their products on a large scale. Consequently, local producers are discouraged from continuing their production, so many either migrate to cities to earn a living or convert their agricultural land to mass production. As a result, access to local and natural products has become very challenging and expensive.

To support local producers, the government must implement strategic plans, and consumers can help sustain their production by purchasing from local producers. In this study, interviewees emphasized the importance of fair trade in supporting local producers. In this regard, P5 shared his approach to supporting local economies, "*Another behavior is that I don't buy butter from the market; instead, I purchase it from local producers who are engaged in animal husbandry. By buying from local producers, we support their economy and ensure the continuity of livestock farming, an activity that is in decline. Supporting them through our purchases helps sustain their livelihoods. Additionally, in reason of a lack of support for local farmers and natural producers, resulting in a shortage of natural food in the market. This scarcity leads to high prices, making natural foods unaffordable for many people to buy, which can be seen as an obstacle to the implementation of sustainability*."

P3 emphasized the importance of supporting local producers, explaining, "*The most important step in supporting local producers is to encourage them. If producers cannot sell their products and they remain unsold, they will eventually give up. In this situation, they leave the villages and choose urban life. In fact, if we look at the surrounding villages, the number of households has decreased significantly. Local livestock and agriculture have also declined considerably. In cities today, people have*

started producing their products in their gardens as a hobby. However, because it is done on a small scale and as a hobby, it is not possible to produce a significant amount. Government participation is very important here. Financial support to farmers and ranchers, such as grants, can ensure the continuation of these businesses. In my case, since many local products are not available, I buy vegetables, fruits, dairy products, chickens, and eggs from local farmers through farm markets. Generally, they offer fresh products, which are more expensive than those from other sellers in the markets, but I try to purchase from them whenever possible."

P6 highlighted fair trade policies, stating, "*I think that local farmers are a vulnerable group because cultivating and producing agricultural products is labor-intensive work, and they are not fairly paid for these efforts. Unfortunately, in today's economic conditions, farmers often lack the opportunity to directly market their products. They can only enter the market on a local scale and sell their products directly. I believe that fair trade practices are not upheld with regard to farmers. In fact, I believe that implementing fair trade policies with local farmers should become a key strategy of state policy.*"

4.5.2.3. Sub-theme: Health Issues

Sustainable practices benefit human health. Sustainable production aims to eliminate the use of pesticides, chemical fertilizers, antibiotics, hormones, processing, and genetic manipulations, thereby producing healthy and safe food that protects human health. Foods produced in an unsustainable cycle can lead to diseases such as hormonal disorders, antibiotic resistance, obesity, and cancer. Conversely, a sustainable food system maintains a healthy ecosystem, which provides clean water, soil, and air, all of which play a crucial role in human health. A healthy ecosystem leads to the production of nutritious agricultural products and helps eliminate the risk of many diseases by preserving biodiversity. Anything that deviates from the natural cycle threatens the health of all living beings.

P7 highlighted the health benefits of sustainable foods, stating, "*Organic foods are healthier because they do not contain additives or preservatives. For diseases such as high blood pressure, diabetes, heart disease, cancer and obesity, organic consumption is more beneficial. In contrast, packaged food has a negative effect on*

health and sustainability due to the additives and preservatives it contains. Taking a broader view, the consumption of non-sustainable food leads to non-communicable diseases, which in turn increase treatment costs. (…)"

As P3 stated, "*As you know, the environment is reciprocal. Whatever we give to the environment comes back to us. Hence, it means that maintaining the health of the environment, humanity, and all living beings is interconnected. From a food product perspective, if we want to focus on health, consuming food that is neither genetically modified nor processed has a direct relationship with human health. This includes products such as sujok, rice, bulgur, corn, and even flour. When shopping, I try to buy local products directly from villages or from well-known individuals and reputable sources.*"

In this regard, P5 pointed out the importance of sustainable production methods, explaining, "*The impact of sustainability on health is significant. The more natural the production process, the more sustainable and healthy the food products are. Generally, production that avoids processing, pesticides, drugs, and vaccines is healthier. For example, people raise livestock in both villages and cities. If these animals are given artificial food instead of natural food and grazing, and if they are grown with hormones, the meat loses useful nutrients. Over time, this increases the risk of various diseases. This issue is also present in poultry farms. (...) Natural and local products are produced without manipulation in the production process and without reliance on machines. One of the biggest health problems related to consumption is the prevalence of artificially processed foods and GMOs. Therefore, obtaining food naturally has a positive effect on health. Well, many of the diseases experienced today are caused by the lack of natural methods in the food production process, which are not adequately supported*."

On the other hand, observing sustainable practices not only benefits physical health but also contributes to social and mental well-being. The interviews reflected that the interviewees' concerns about sustainability extend beyond environmental considerations. They emphasized the importance of mental health, which depends on maintaining the integrity of sustainable practices. In this regard, P2 mentioned,

"*I don't know why, but when I think about the relationship between health and sustainability, mental health comes to mind more than physical health. In the past, I*

tried to pay more attention to sustainability issues. At that time, I felt a sense of accomplishment, as if I was putting less pressure on the world. Additionally, focusing on sustainability increased my self-respect. In terms of physical health, since we are still young, we cannot fully appreciate the benefits of observing sustainability practices. However, I believe that by reducing meat consumption and increasing our intake of sustainable foods, we will enjoy better physical health in the future."

4.6. Sustainable Food Consumption

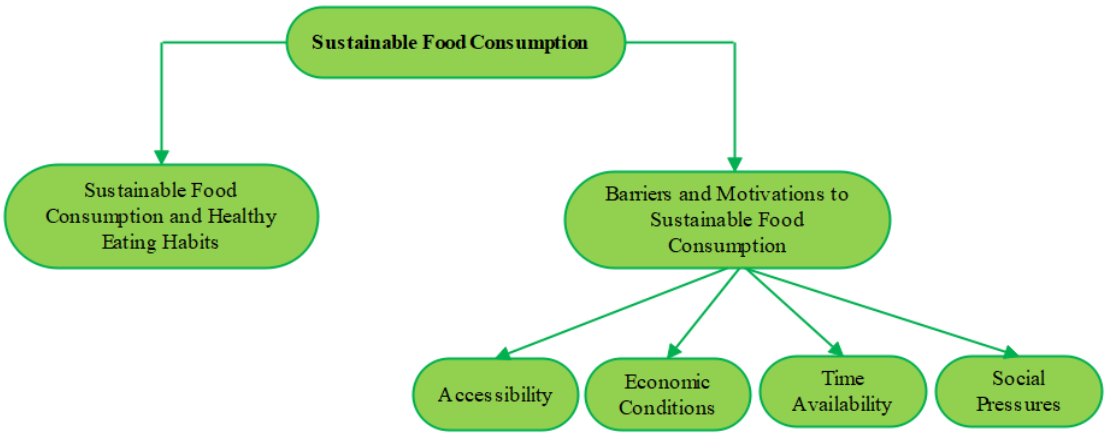

Figure 10: Sustainable Food Consumption

4.6.1. Theme 3: Barriers and Motivations to Sustainable Food Consumption

As detailed in the theme of sustainability concerns, parents' concerns about sustainability lead them to consume sustainable foods. However, the transition from these concerns to actively consuming sustainable food is influenced by various contextual factors. These contextual factors, identified through thematic analysis of the qualitative data, have not been addressed in the quantitative analyses. They play either a motivating or barring role in sustainable consumption and purchasing behavior.

Based on the interviews, these contextual factors can be grouped into four sub-themes: accessibility, economic conditions, time availability, and social pressures. Purchasing behavior is an inherently complex process, involving numerous contextual factors. Consumers who are conscious of sustainability issues are influenced by these

factors, which can either facilitate or hinder their ability to translate concerns into sustainable purchasing and consumption behaviors.

Control over or removal of some barriers, such as limited access to sustainable products during the purchasing process, is often beyond the consumer's control. Understanding these motivating and barring factors provides valuable insights into the context where sustainability concerns can be transformed into sustainable purchasing practices. Identifying and addressing these underlying factors is crucial for reinforcing sustainable behaviors and promoting more consistent adoption of sustainable food choices.

4.6.1.1. Sub-theme: Accessibility

Access to sustainable food products is a significant factor influencing the purchasing process. One major challenge emphasized by interviewees is the lack of or limited access to sustainable food products. Many interviewees pointed out insufficient support for producers of sustainable products, which has led to a decrease in market availability and higher prices. For instance, P9 highlighted that buying local products often requires pre-ordering due to limited production.

" *When I want to purchase butter, I need to place an order first because it is not mass-produced, and I buy directly from the farmer. However, the number of farmers and herders in the country has significantly decreased, resulting in a modest workforce for local food production. Consequently, the remaining individuals produce as much as they can, but the overall production is limited. While I can have access to local producers, production is quite limited. The scarcity of production means I cannot obtain everything I want at any time unless I order in advance. If I can't acquire food from familiar farmers, I prefer not to buy from anyone else."*

In this regard, P8 noted that while the internet facilitates purchasing sustainable products, some foods requiring special transportation conditions cannot be ordered over long distances.

"*It's quite convenient. We follow numerous Instagram pages dedicated to sustainable product production, where we can easily place orders. Although it is possible to order dry organic products, this is not true for all types of products. For*

example, we had an agreement with a person who grew organic fruits and vegetables for weekly delivery. However, due to the long distance, the produce arrived deteriorated. Additionally, the high cost of transportation made it uneconomical, leading to the supplier's bankruptcy."

These points were affirmed by P4 and P9, who also noted that access to local produce often necessitates considerable travel.

P4 stated, "*Accessing organic and local products can be challenging. (…) There is an area called Çatalca where local farmers sell their produce on the side of the road, but it's an hour's drive away. Additionally, accessing local milk can be challenging for us. To buy raw milk, we have to travel a considerable distance. Access to milk is crucial, but it can also be difficult, especially for those of us with small children.*"

P9 mentioned, "*The barrier I face in accessing natural food is the distance I must drive to acquire it.*"

It is worth mentioning that, based on interviews, access to sustainable food products was not related to the population size of cities. Instead, interviewees claimed that access levels were related to the development of agricultural areas around cities and local demand and consumption habits. For example, P8, living in the Kadikoy area of Istanbul, had no access problems, whereas P4 experienced access challenges in Beylikdüzü, Istanbul.

P8 remarked, "*I've had no trouble accessing sustainable products. In Istanbul, with its dense population, shops selling sustainable products can be found in most neighborhoods. Whether I'm in Kadıköy now or in the past when I lived in Fatih, I could easily get milk and butter from Silivri or visit a pickle shop that makes pickles from its own produce. Even if the organic or local item I desired wasn't in a store, I could order it online. In terms of accessibility, I've encountered no problems*."

P4 reported, "*Accessing organic and local products can be challenging. Some local products, particularly milk and dairy products, are difficult to find in Istanbul.*"

Furthermore, P6, who lives in a small town called Tarakli, noted that areas with more developed agriculture and animal husbandry face fewer access problems. In

contrast, P5, who resides in another small town, Karabuk, pointed out that access to sustainable products remains challenging.

P6 expressed, " *I consider myself fortunate to have easy access to sustainable products. In our area, agriculture and animal husbandry are widespread, and due to the higher altitude of our location, honey production is also common. We are in an advantaged position regarding access to both animal products and fresh vegetables and fruits. If we need vegetables, fruits, or honey, we can buy them all organically. Because of this plentiful supply, very few people in our city shop at chain supermarkets, and accessing organic products is relatively easy here. In fact, our area is so rich in agriculture, animal husbandry, and beekeeping that we face no problems obtaining organic and natural products. It's even a popular destination for tourists seeking organic produce.*"

P5 mentioned, "*When buying local products as sustainable products, we cannot buy all types of products locally. We live in a small town, so access to these products should be easier. However, due to the lack of agriculture and animal husbandry in the our region, these products are scarce and access is limited. For example, some time ago, I tried to buy butter, and the producer claimed that it was not possible to produce and supply it. This indicates that this sector is not large enough, and it is not always possible to access these products.*"

4.6.1.2. Sub-theme: Economic Conditions

The production of sustainable products is based on strict conditions in both production and agricultural practices, which require significant effort and financial investment. Additionally, sustainable agricultural products Produce less per unit of land compared to mass-produced items. As a result, sustainable food products are typically more expensive than factory-produced or mass-prduced items. The lack of government support for the fair trade of products has also significantly decreased interest in local agriculture and animal husbandry. These factors have contributed to the scarcity of sustainable products in the market. The high demand for these limited sustainable products has driven up their prices, leading interviewees to describe them as luxury items. Interviewees claimed that maintaining a sustainable lifestyle and continuing sustainable behaviors requires favorable economic conditions. A higher

income allows for greater financial flexibility, enabling people to prioritize sustainability in their purchasing decisions. However, in the face of today's economic inflation, consumers struggle to meet their basic needs and often focus on cost savings, which overshadows high-priced sustainable products.

Interviewees adopt various strategies to manage their limited budgets while purchasing sustainable products. Some try to allocate their budgets to sustainable items by eliminating unnecessary purchases. Others reduce the quantity of sustainable products they buy or limit their purchases to specific items. Some interviewees even stated that they only buy sustainable products for their children.

Based on the interviewees' statements, economic conditions play a crucial role in the decision-making process for purchasing sustainable products. Understanding and addressing the importance of these economic factors is essential for promoting sustainable food practices and making them accessible to consumers from different economic backgrounds. In this context, P7 began his response, stating,

" *The production cost of organic food is high. Additionally, organic farming has lower efficiency, meaning it produces less product per unit of land."*

P5 expressed, " *The main reason for this is the lack of extensive cultivation in this country. The population is high, but due to inadequate local or organic agriculture, there is a reliance on mostly unsustainable food products. Consequently, most local or organic products are priced almost twice as high as mass-produced products. In this economic situation, this has a significant impact on people's purchasing decisions.*"

As a result of the limited production and high price of sustainable food products, P10 stated, " *Organic products are expensive and therefore considered a luxury, which is why organic markets are mostly located in areas where the wealthiest people live.*"

P2 shared her perspective, "*In my opinion, supporting sustainability is inherently tied to economic factors and purchasing power. That means if your purchasing power is good, you can support sustainability.*"

P7 remarked, " *Considering that the majority of Turkish people belong to the middle class and have a medium income, the prices of sustainable products are*

challenging and most people cannot afford them. It is not possible for many to buy certified organic food, but it may be possible to get natural or local food products that lack certification. However, trust in these uncertified products is also low."

P8 highlighted, "*As economic conditions become more challenging, people's concerns are no longer solely about sustainability issues, they struggle to live. While I may worry about consuming organic products, others with lower economic means may be more concerned about affording basic living expenses. This serves as a clear reminder that sustainability is not just an environmental issue but is also deeply intertwined with socio-economic factors.*"

In the context of managing their budgets while attempting to balance the costs and buying sustainable food products, the interviewees employ various strategies. These strategies reflect the challenge of purchasing sustainable products in order to maintain a sustainable and healthy lifestyle. The following quotations from the interviewees illustrate these strategies:

P3 stated, "*To maintain a balance between cost and buying sustainable food products, I try to cut back on other purchases, such as clothes, to afford sustainable products. Honestly, I can't buy as much organic food as I used to. To maintain this balance, I've had to reduce the quantity I purchase.*"

P8 mentioned, "*However, given our current economic circumstances, we can't afford to purchase all organic products. Instead, I prioritize buying organic essential items and those I know to be particularly harmful if non-organic. For instance, non-organic honey often contains additives. Another example is cheese. I rely on my parents to send me cheese from the village, choosing to avoid purchasing factory-produced varieties.*"

P5 highlighted, "*Since it is not possible to buy all food products as sustainable options, we have focused on fostering healthy eating habits for my child and only purchasing sustainable food products for her. This has resulted in a normal weight, a strong immune system, and overall good health.*"

4.6.1.3. Sub-theme: Time Availabilty

Purchasing and consuming sustainable food often requires more time. It involves researching the production process and verifying the authenticity of certifications, which can be time-consuming. Sometimes, short trips or visits to agricultural markets are necessary to obtain sustainable food, which takes more time than shopping at large supermarkets. Consequently, people's available time significantly affects their purchasing decisions. Today, the urban lifestyle and economic conditions force people to work long hours, greatly reducing their free time. In this situation, people inevitably prefer semi-prepared, processed, and fast food over sustainable options. Thereby, limited time is a significant factor in the purchase decision process. Identifying inhibiting factors, such as time constraints, provides insight into how to expand sustainable product sales resources to make sustainable products more accessible and convenient. This can lead to the development of more user-friendly ordering processes and facilities for consumers seeking sustainable options. We provide some interviewees' quotations regarding time availability as follows:

P10 mentioned the difficulties of purchasing sustainable foods due to busy work schedules, stating, "*When it comes to sustainable food, it is difficult to access and requires time due to the busyness of work. For example, there are organic markets around us, but unfortunately, they operate during working hours on weekdays. (...) I definitely buy organic chicken, eggs, honey, and olive oil. I also pay attention to the information on the labels of the food I purchase. For instance, if there are two types of tomatoes available and one is organic and sustainably produced, I will prefer it regardless of the price. However, if I'm in a hurry and only the non-organic variety is available, I will inevitably buy it.*"

P6 expressed, "*However, accessing sustainable food can be challenging in today's society, where ready-made meals and fast food are often prioritized due to employment and time constraints within families.*"

P7 highlighted the time and cost constraints, explaining, " *We try to use organic products as much as possible. However, due to time constraints, accessibility, and the cost of organic products, we prioritize organic food for our child and consume non-organic food ourselves. In general, because of the challenges of limited access,*

time constraints, and the high cost of organic products, we have adopted a separate consumption approach. We ensure that our child consumes organic products, while we consume non-organic and less sustainable options."

4.6.1.4. Sub-theme: Social Pressure

According to the statements of the interviewees, social pressures were recognized as one of the factors that can play a significant role in the decision-making process for sustainable purchases. In a society where respect for sustainability issues is prevalent and consuming sustainable food is considered positive, individuals tend to purchase sustainable products to align with the expectations of their social groups. Conversely, in a society where awareness and education about sustainability are weak, and members do not prioritize these issues, the prevailing culture can gradually weaken and change individuals' sustainability priorities, even if they initially have such concerns.

Peer pressure was also identified as significantly impacting sustainable purchasing decisions. If friends and colleagues are concerned about sustainable consumption, it encourages and motivates individuals towards sustainable choices. Conversely, peer groups can influence others' eating habits or change the perspectives of those sensitive to sustainable consumption through mockery or judgment.

Furthermore, interviewees stated that the role of social media and influencers is recognized as an important factor in encouraging or hindering sustainable consumption. Additionally, the role of the government in facilitating sustainable behaviors and consumption is emphasized. Understanding social pressures can create a strong foundation for promoting sustainable consumption and removing obstacles to its adoption. We present some of the interviewees' insights to highlight how social pressures influence their choices and experiences related to sustainable food from their perspectives.

P8 shared his perspective on how social pressure influences his eating habits, "*All my friends and the people around me are interested in healthy eating. That means the pressure of the social environment around me is in the direction of healthy eating. For example, if I choose to eat packaged food products, my peers often judge me*."

P9 discussed the negative effects of social pressure when choosing sustainable products, explaining, " *I always try to purchase natural and local products, although this shopping routine sometimes exposes me to judgment. Social pressure often affects me negatively, especially when I attempt to choose organic products. Other customers in the shop directed disapproving glances towards me, perhaps due to their own economic constraints. Another instance occurs in my work environment, where I occasionally find myself forced to consume unhealthy meals to follow the choices of my colleagues.*"

P4 expressed his views on the impact of influencers on sustainable behaviors, saying,"*Currently, I believe influencers are ineffective in promoting sustainable behaviors. Perhaps if they were more aware and knowledgeable in this field and actively guided society in implementing sustainability, they could be much more effective. This is because a large group of people are their fans and often imitate their behavior. Unfortunately, many influencers prioritize promoting certain behaviors solely for financial gain and lack sufficient knowledge in the field of sustainability*."

P9 provided his opinion on the negative impact of influencers, stating,, "*In my opinion, the activities of influencers have a negative impact. Some of these individuals provide recipes for preparing foods in unhealthy ways and promote processed foods while creating content.*"

P3 highlighted the weak government efforts to produce sustainable products that meet demand, which forces her to abandon sustainable food practices, "*If I can't find food products locally and naturally, I have to buy them from the grocery store. I don't want to purchase factory-made products, but the current production system pushes me in that direction*."

P5 discussed the postive role of government in promoting sustainability, stating, *" If I were to say that the government does nothing in the field of sustainability, it would be inaccurate. In my role as a school principal, I receive projects and documents related to promoting sustainable behavior and sustainable consumption from the government. However, the challenge lies in how effectively these initiatives can be conveyed to children, parents, and the general public, and how much impact they will have.*"

4.6.2. Theme 4: Sustainable Food Consumption and Healthy Eating Habits.

This theme addresses the research question: Does sustainable food consumption affect healthy eating habits?

A habit is a process that consists of several stages, beginning with a cue or trigger. In the current study, this trigger can be sustainability concerns. In response to these concerns in the consumption context, individuals may choose sustainable food as a behavioral step. During the reward stage, their behavior is reinforced by understanding the benefits of sustainable food, creating a positive habit loop. Constant exposure to the conditions of purchasing and consuming food reinforce the habit. Initially, habits form through conscious choices and consumption, but over time, these behaviors become automatic.

Individuals who adopt sustainable food consumption patterns make more conscious purchasing and consumption decisions. They consider the value of food, how it is produced, and its benefits and harms. Sustainable foods are nutritious and free from toxins, pesticides, hormones, antibiotics, and processing due to strict production rules. Individuals who prioritize sustainable food naturally avoid semi-prepared, processed, and fast foods, leading to the formation and fostering of healthy eating habits. Here, we focus on some interviewees' opinions on the impact of sustainable food consumption on healthy eating habits.

P7 explained the general benefits of sustainable food consumption, which reinforce healthy eating habits, stating, "*In general, sustainable food consumption is safe and healthier. Due to the absence of chemical fertilizers, preservatives, and additives, it is more beneficial for human health. In fact, sustainable consumption is the key to healthy eating. Therefore, people who hold this view are more careful about their daily diet. Including sustainable foods in our diet regularly turns to healthy eating habits.*"

P6 emphasized that sustainable food leads to long-term commitment and forming habits, sharing, "*Consuming sustainable food products results in healthy eating habits because once you experience them, you won't want to purchase anything else. Even if accessing these products is challenging in urban areas, you'll prioritize*

obtaining them due to their health benefits and delicious taste. Once you understand these advantages, you'll continue to incorporate them into your diet."

P10 highlighted how healthy eating habits are formed by sustainable food consumption, mentioning, "*Regarding the impact of agriculture on health, it is important to emphasize sustainable agriculture, which involves using ancestral seeds and avoiding fertilizers and pesticides. In this way, it can be claimed that sustainability is beneficial to human health. Consuming sustainable food 100% of the time promotes the development of sustainable eating habits. I can explain this with an example: If you eat toast at 10:00 PM for three days, you'll crave toast on the fourth day because the microorganisms in your gut adapt to it. Similarly, if you eat spinach for three days, your body will start craving spinach on the fourth day. Therefore, whatever you consistently consume, your body begins to desire it. After regularly eating organic food, if non-organic food is never consumed, your body will react strongly to even the smallest additives when they are eventually consumed*."

P3 pointed out how the benefits of sustainable food consumption boost healthy eating habits, stating, "*Eating sustainable produce definitely leads to healthy eating habits and guarantees better health. I encourage my family, children, and social circle to adopt healthy eating habits. By consuming organic food, my body responds by keeping me healthy because healthy eating habits boost immunity*."

4.7. Healthy Eating Habits

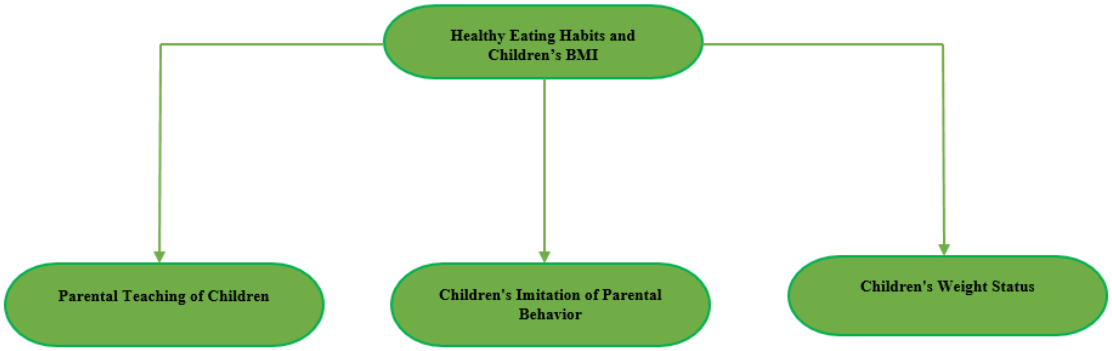

Figure 11: Healthy Eating Habits

4.7.1. Theme 5: Healthy Eating Habits and Children's BMI

This theme addresses the research question: Do parents' healthy eating habits affect their children's weight status?

According to evidence, parents' healthy eating habits instill healthy eating habits in their children, significantly affecting the children's weight status. Parents establish these habits through social learning and behavioral internalization. Children imitate their parents' observed behavior through social learning. Moreover, when parents discuss the benefits of sustainable and healthy eating within the family, it influences children's eating habits through verbal modeling. Repeated exposure to parents purchasing and consuming sustainable foods increases the likelihood of children adopting these healthy habits into their own lifestyles. Additionally, parents, as their children's first teachers, aim to educate them about the benefits of sustainable food and healthy eating habits. Involving children in the process of purchasing and preparing food further reinforces these positive behaviors. This approach directly impacts children's BMI.

In this study, based on the statements of the interviewees, the healthy eating habits of parents shape the healthy eating habits of their children through modeling and teaching. This approach potentially affects children's weight status. Therefore, in this theme, based on the interviewees' statements, three sub-themes are presented: Parents as role models, teaching and establishing healthy eating habits, and children's weight status.

4.7.1.1. Sub-theme: Children’s Imitation of Parental Behavior

The eating habits of parents directly shape those of their children. This influence becomes particularly significant when considering that a mother's eating habits during pregnancy and breastfeeding can affect her child's taste development. As children tend to imitate their parents, parents can utilize this influence to foster healthy eating habits. When parents prioritize purchasing and consuming healthy foods, they create an environment where healthy eating becomes a habit that their children are likely to imitate. Family meals, where the same eating style is shared, provide opportunities for children to model healthy behaviors, such as making nutritious food

choices, understanding portion sizes, and learning proper eating habits (e.g., chewing food slowly). Repeated exposure to these healthy behaviors reinforces their importance, providing children with a clear pattern to follow..

Interviewees stated that parents, as role models, have a profound effect on shaping their children's eating habits. The following are examples of statements made by the interviewees on this topic.

P3 mentioned the importance of adopting a model for children in adopting healthy eating habits, explaining, "*Since I believe that children adopt their eating habits from their parents, our family follows the same eating style to ensure my children learn the healthy eating habits I promote at home*."

P9 highlighted that parents are an initial model for their children, "*When it comes to food, we serve as the primary example for our children. During meals, everyone eats without paying attention to my son, and there are no negative reactions at the table, which encourages him to eat his food even if we do not particularly like it.*"

P4 explained the manners they are adopting for positive reinforcement: "*If she doesn't initially like the food, we still enjoy it with appetite and pleasure, which often encourages her to try it as well. If this approach doesn't work, we don't force her to eat it, instead, we mix it with other foods to make it more appealing*."

P8 discussed the importance of aligning parents' dietary choices with their children's dietary choices, mentioning, " *Our eating habits and my child's eating habits are aligned. We don't have separate shopping lists for my child and ourselves. We all eat the same type of meals. For instance, chips are off-limits as snacks in our home, and sneaking them behind our child's back is not something we do. When we buy organic foods, we eat them together as a family.*"

4.7.1.2. Sub-theme: Parental Teaching of Children

In addition to serving as role models, the interviewees emphasized the importance of teaching in shaping their children's eating habits. The methods parents use to teach children about the nutritional value of sustainable foods can have a profound effect on their healthy eating habits. One effective educational method is

verbal instruction, where parents explain the benefits of sustainable food and healthy eating. By teaching children about the disadvantages of unsustainable food products and their negative effects on health, such as weight gain and dental problems, parents can encourage them to adopt a healthy diet.

Another approach is involving children in purchasing sustainable food by teaching them how to read food labels and choose sustainable options. Furthermore, engaging them in food preparation and healthy cooking can play a significant role in establishing healthy eating habits. Additionally, having open conversations with family members about the benefits of sustainable foods and healthy eating habits can indirectly and unconsciously influence children's minds, encouraging them to eat healthily.

P9 emphasized the role of primary home education, stating, "*Since education begins at home, I feel obligated to teach my children. (...) I try to teach my children and those around me about the importance and health benefits of eating natural foods, especially considering our current lifestyle and various diseases. By educating my children about sustainability, I aim to ensure a better future for them.*"

P8 shared his perspective on instilling healthy eating habits in his daughter , " *My daughter is conscious about distinguishing healthy from unhealthy foods. Whenever she eats, she tends to ask whether a particular food is healthy or not. So, we've made it a priority to teach her about food choices. Let me give you an example, especially when it comes to sweets as snacks. My wife usually orders organic candy for her, or she'll take the time to make homemade cakes and ice cream with my daughter's help. Not only are these options healthier, but they also contribute to my child's overall well-being and behavioral development. We do have some foods that are off-limits in our house, and we rarely purchase snack-like foods. My daughter understands that these kinds of snacks are unhealthy.*"

P3 highlighted her strategy for encouraging her sons to eat foods they dislike, "*For our children who don't like certain types of food, I try to convince them by talking. However, this is often insufficient. So, I mix the disliked food with other ingredients or adopt different preparation methods to ensure they eat it without noticing.*"

P10 explained the strategy she adopts to help her daughter get used to disliked foods, "*If my daughter does not like a food, we have a rule: she must eat at least three spoons of the food she dislikes. If after that she still cannot continue eating it, she can stop. This helps him become familiar with the taste of the food and may help him get used to eating it in the future*."

P3 illustrated the impact of parental guidance on children's eating habits, explaning, "*If my child insists on consuming unhealthy food products, I take a firm stance. I explain to them at length why certain foods are unhealthy and the potential negative impacts on their health, including weakened immunity and illness. I often read the information on product labels to them, as they may not fully understand due to their young age. If they remain unconvinced, I resort to using educational videos, which have proven to be effective with my children. Additionally, I control the intake of sugary substances and snacks throughout the day by setting limits, such as allowing only four small chocolates per day*."

P10 shared how she adopts her shopping routines with her child., " *Fortunately, when we go shopping for food, we already know what we need to buy, so we stick to our list. However, if my child asks for something specific, we can also purchase that product. If I say no, she accepts my decision.*"

4.7.1.3. Sub-theme: Children's Weight Status

The interviewees clearly emphasized that consuming sustainable food and adopting healthy eating habits significantly affect their children's weight status. Sustainable foods, such as organic and natural options, help create a healthy eating style for both parents and their children. In addition to benefit the nutritional value of sustainable foods, they also avoid unhealthy, processed, and genetically modified foods.

Adopting a sustainable eating style often leads to healthier choices. For example, people who follow a sustainable eating style avoid fast food and convenience foods. This approach not only promotes overall health but also protects against the health risks associated with obesity. Parents are aware of the importance of forming healthy eating habits early in their children's lives. They believe that children who are

instilled with sustainable food preferences will maintain these habits into adulthood. By emphasizing sustainable consumption, parents anticipate a healthier and more sustainable future for their children.

P3 emphasized the advantage of organic and natural consumption, saying,, "*Consuming sustainable foods directly helps prevent obesity. In fact, the absence of organic or natural foods in one's diet often leads to weight gain or obesity. As you may have noticed, people who eat processed foods tend to weigh more and suffer from various diseases. Obesity often accompanies these conditions, and I believe the two are directly related*."

P2 explained that sustainable diets can lead to healthier choices, noting, "*I believe that adopting a sustainable food style may decrease the likelihood of obesity. This is not solely due to eating organically but because individuals following a sustainable diet tend to make healthier choices overall. Their unique food style, such as organic consumption, leads them to avoid certain unhealthy options. For instance, they are more likely to refrain from fast food because it typically doesn't meet their organic criteria*"

P9 pointed out the risks of GMOs and processed foods on wieght, stating, "*Genetically modified (GMO) and processed foods often contain substances that stimulate hormone secretion in our bodies, leading to overweight, obesity, and various diseases. In contrast, consuming natural foods promotes healthy eating habits and a healthy weight. For example, consuming natural butter does not contribute to heart vascular problems, whereas purchasing factory-made butter may increase the risk of disease*."

P8 discussed that healthy eating habis affect children's weight, explaining,, "*In my opinion, sustainable food consumption can impact a child's weight. For example, we prioritize organic and healthy foods for our child, which inadvertently controls their weight. However, if we introduce chocolates with snacks, the child tends to consume them more due to pleasure and habit. Therefore, adopting an organic and healthy eating style helps prevent the child's obesity*."

4.8. Phase III: Integration and Complementarity in the Interpretation and Reporting Phase

The core of mixed methods research is the integration phase of quantitative and qualitative results. The integration and complementarity of these results produce a coherent whole, offering an enriched and detailed understanding of various aspects of the central phenomenon. As Greene et al. (1989) mentioned, the purpose of the complementarity approach in integration is "the elaboration, enhancement, illustration, and clarification of the results from one method with the results from the other method." In this study, after analyzing and preparing the qualitative and quantitative data, two approaches were used to integrate and complement the results during interpretation and reporting. First, through a comprehensive narrative, the quantitative and qualitative results are continuously described, allowing for the comparison of findings from both phases and the creation of meta-inferences. Second, a visual display is created using a joint display, presented as a matrix that integrates the results of the quantitative and qualitative phases.

Analyzing data from 205 participants in the quantitative phase demonstrated that parents' sustainability concerns didn’t directly affect children's BMI. Although the beta coefficient was -0.120, indicating a negative relationship consistent with the research hypothesis, the p-value was 0.100, which is greater than 0.05, indicating a lack of significance. As a result, it became clear that parents' concerns didn’t directly impact their children's weight. The results also revealed that parents' sustainability concerns influence sustainable food consumption. The assessment of this relationship resulted a beta coefficient of 0.313 with a p-value below 0.05, suggesting that parents' sustainability concerns lead to an increase in sustainable food consumption. Additionally, a beta coefficient of 0.574 with a p-value below 0.05 supported the hypothesis that sustainable food consumption influences healthy eating habits. The findings demonstrated that consuming sustainable foods promotes the development of healthy eating habits. Another key finding was that healthy eating habits influence children's weight status. The beta coefficient for this relationship was -0.338, with a p-value below 0.05, indicating that healthy eating habits contribute to a decrease in children's BMI. The final notable result demonstrated that the effect of parents' sustainability concerns on children's BMI was mediated by sustainable food

consumption and healthy eating habits. A beta coefficient of -0.061 with a p-value of 0.008 supported a full mediation effect in this relationship.

The analysis of qualitative data from ten in-depth interviews revealed that parents' sustainability concerns indirectly influence their children's weight status, primarily through the purchase and consumption of sustainable foods rather than through direct effects. Participants explained that their concerns such as environmental protection, support for local producers, and animal welfare, affect their children's weight by prompting them to choose and consume sustainable foods like organic, locally sourced, and natural options. This finding supported quantitative results.

Qualitative findings also supported quantitative results indicating that parents' sustainability concerns drive them to consume sustainable foods. For example, parents use seasonal foods to protect the environment, shop at farmers' markets to support local farmers, and prefer organic chicken and eggs to support animal welfare.

Additionally, the qualitative study highlighted a key finding that was not considered in the quantitative study. The analysis of qualitative data uncovered the contextual factors that motivate or hinder the transformation of sustainability concerns into sustainable food consumption. These factors include access to sustainable food, economic conditions, available time, and social pressures. According to interview data, limited access to sustainable food has led to these products being viewed as luxury items, affordable only to those with favorable economic conditions. If access to sustainable food were improved, consumers of any economic status could purchase these products routinely. Moreover, better access could help consumers manage the limited time available for shopping, which is often constrained by employment. Participants also emphasized the importance of social pressures, which can either motivate or hinder the purchase and consumption of sustainable food.

Furthermore, the qualitative study indicated that consuming sustainable foods contributes to establishing healthy eating habits by reducing the intake of fast food, semi-prepared meals, and junk food. The consumption of sustainable foods enhances consumers' perceptions of health benefits due to their safe production methods, which exclude genetic manipulation, pesticides, hormones, and antibiotics. Participants described their preference for sustainable food products and their awareness of the benefits of sustainable foods as factors that led them to avoid unhealthy dietary

choices. Consequently, including sustainable foods in the daily diet, along with consumers' understanding of their health advantages, contributes to the development of healthy eating habits. This finding further supports the results of the quantitative analysis.

The findings indicated that children's repeated exposure to sustainable and healthy food products increases their tendency to consume these items, thereby shaping their healthy eating habits. Additionally, the results highlighted that parents' healthy eating habits contribute to the formation of healthy habits in their children through teaching, observational, and verbal learning. Participants noted that their children imitate the observed behaviors of their parents, and discussions among family members about healthy diets significantly influence children, leading them to frequently ask about the healthiness of various foods. Furthermore, parents actively teach their children about the benefits of healthy eating by involving them in purchasing decisions, engaging them in discussions, and using educational animations. These findings align with social learning theory. These notable findings support and complement the quantitative results. In addition, interviewees highlighted that these healthy eating habits help maintain children's body mass index (BMI) within the normal weight range, which supports the quantitative results.

Table 18 presents a joint display of both quantitative and qualitative findings side-by-side. By integrating and complementing these findings, the joint display table facilitates meta-inferences and provides new insights into the studied phenomenon.

Table 18: Joint display matrix

	Quantitative findings		Qualitative findings		
Dimensions	**Summary**	**β (t stats: p-value)**	**Data Extract**	**Result of Integration**	**Meta-inference**
Sustainability Concerns	Parents' sustainability concerns influence their sustainable food consumption	0.313 (5.904: 0.000)	"In general, we avoid packaged and semi-prepared foods when buying food products. While these items may be more attractive but cheaper than organic products. Our choices of over-packaged food products directly impact environmental pollution. Our choices in buying food products are directly influenced by economic conditions. Financial ability plays a crucial role in ensuring the adoption and ongoing consumption of sustainable products."	The qualitative results supported, complemented, and expanded the quantitative results.	Parents' sustainability concerns significantly influence their preferences for sustainable food consumption. However, translating these concerns into actual sustainable purchasing and consumption behaviors requires supportive contextual conditions. These include easy access to sustainable foods, favorable economic conditions, sufficient time to purchase sustainable products, and social pressures that encourage and reinforce sustainable consumption.
	Parents' sustainability concerns influence children's weight status.	-0.120 (1.644: 0.100)	"Parents' concerns about sustainability, such as supporting animal welfare and local farmers, often lead to the consumption of local and organic products, which can positively affect children's weight. Unfortunately, many children today are exposed to unsustainable products, which can negatively impact their growth hormones and overall healthy	The qualitative results supported, complemented, and expanded the quantitative results.	Although the direct effect of parents' sustainability concerns on children's weight status has not been definitively proven, these concerns can still play an effective role indirectly. By encouraging the purchase and consumption of sustainable foods, sustainability concerns help form sustainable eating habits, which can

	Quantitative findings		Qualitative findings		
Dimensions	**Summary**	**β (t stats: p-value)**	**Data Extract**	**Result of Integration**	**Meta-inference**
			development."		positively influence children's weight status. Therefore, parents' sustainability concerns contribute indirectly to healthier weight outcomes for their children through the promotion of sustainable food behaviors and the formation of healthy eating habits.
Sustainable Food Consumption	Sustainable food consumption influence healthy eating habits	0.574 (10.329: 0.000)	"Consuming sustainable food products results in healthy eating habits because once you experience them, you won't want to purchase anything else. Even if accessing these products is challenging in urban areas, you'll prioritize obtaining them due to their health benefits and delicious taste. Once you understand these advantages, you'll continue to incorporate them into your diet."	The qualitative results supported, complemented, and expanded the quantitative results.	Continuous consumption of sustainable food products increases their exposure rate. This sustained exposure and perceiving their health benefits plays a crucial role in establishing a cycle of healthy eating habits. Hence, individuals who consistently consume sustainable foods and recognize their positive impact on health, they are more likely to avoid unsustainable, processed, and fast foods, thereby developing and maintaining healthy dietary behaviors.

	Quantitative findings		Qualitative findings		
Dimensions	**Summary**	**β (t stats: p-value)**	**Data Extract**	**Result of Integration**	**Meta-inference**
Healthy Eating Habits	Parents' healthy eating habits influence children's weight status.	-0.338 (4.001: 0.000)	"I believe that adopting a sustainable food style may decrease the likelihood of obesity. This is not solely due to eating organically but because individuals following a sustainable diet tend to make healthier choices overall. Their unique food style, such as organic consumption, leads them to avoid certain unhealthy options. For instance, they are more likely to refrain from fast food because it typically doesn't meet their organic criteria."	The qualitative results supported, complemented, and expanded the quantitative results.	Parents' healthy eating habits serve as powerful role models for their children, reinforcing the importance of sustainable and healthy nutrition. Through parents' efforts to teach and exemplify these habits, children are more likely to internalize and institutionalize healthy eating behaviors. Evidence shows that children who adopt these healthy eating habits are more likely to maintain a healthy weight.

5. CHAPTER FIVE: DISCUSSION

The purpose of this study was to identify the effect of parents' sustainability concerns on their children's weight status using an explanatory sequential mixed-methods approach. The specific objectives of the study were to: 1) Identify the effects of socio-demographic factors on parents' sustainability concerns, 2) Examine the impact of sustainability concerns on sustainable food consumption, 3) Investigate the effect of sustainable consumption on the formation of healthy eating habits, 4) Assess the impact of healthy eating habits, resulting from sustainable consumption, on children's weight status, and 5) Explore the context and pathways through which parents' sustainability concerns influence their children's weight status via sustainable food consumption and healthy eating habits. By integrating quantitative and qualitative findings, this study aims to create a comprehensive understanding of how parents' sustainability concerns affect their children's weight status. The quantitative results provide statistical evidence of these relationships, while the qualitative findings enrich and complement these results by illustrating the challenges and contextual conditions involved. This integration allows for a detailed examination of the contexts through which parental sustainability concerns translate into sustainable food consumption, healthy eating habits, and improved weight outcomes for children.

The purpose of this chapter includes discussions on the following topics: (a) The Relationship of the Present Results to theory and Previous research, (b) Practical Implications, (c) Limitations and Suggestions for Future Research, (d) Conclusions Concerning the Findings.

5.1. Relationship of Present Results to Theory and Previous Research

Rapid technological and industrial development in the food sector during the current century has led to the depletion of natural resources, increased environmental damage, and overall unsustainability. Simultaneously, modern consumption driven by industrial growth has contributed to a concerning rise in obesity rates, especially among children, across societies.

Parents are the primary influence on the formation of children's eating habits. Exploring parental attitudes and behaviors is particularly important, as parents can

generally be presumed to act in their children's best interests. Therefore, to prevent childhood obesity, it is crucial to identify and understand these behaviors and attitudes to foster healthy eating habits and provide effective interventions. Hence, our study focused on parental behaviors.

Quantitative results showed that all socio-demographic variables, except gender, do not significantly impact parents' sustainability concerns. The finding that women are significantly more concerned about sustainability than men can be interpreted as women having stronger ethical considerations and a greater sense of responsibility towards society and future generations. These results are consistent with previous research, which indicates that women generally exhibit greater concern for sustainability issues and are more likely to engage in sustainable behaviors (Shrestha et al., 2021; Tien & Huang, 2023). For instance, Oztekin et al. (2017) found that women are more sensitive to recycling issues. Similarly, Zhao et al. (2021) observed that women are more conscious of consuming products with a minimal carbon footprint and have a greater tendency to purchase green products. Additionally, the study by Cantaragiu (2019) study supported the finding that women show greater concern than men in managing food waste. These differences in concern for sustainability issues between men and women can be attributed to gender socialization theories, which highlight distinct socialization processes and gender roles. Women are often socialized to value kindness, moral values, social responsibility, and empathy, which makes them naturally more sensitive to sustainability issues (Bloodhart & Swim, 2020; Nadeem et al., 2020; Ramstetter & Habersack, 2020; Schwartz & Rubel, 2005). In contrast, men and masculinity are typically socialized to prioritize personal ability, ambition, and success (Schwartz & Rubel, 2005; Swim et al., 2018).This value hierarchy can subsequently influence their beliefs and attitudes about sustainability issues (Milfont & Sibley, 2016).

The results of other socio-demographic hypotheses align with the findings of Sargisson et al. (2020), who conducted research involving 11,820 participants across seven European countries. Their study revealed that, except for gender, sociological variables such as income, age, and education are not reliable predictors of environmental concerns. The rejection of these socio-demographic hypotheses may indicate that, within the context of our study, sustainability concerns are uniformly distributed across various demographic variables. This indicates that regardless of

education level, employment status, or income level, people hold similar concerns about sustainability. It may reflect a widespread awareness and understanding of sustainability issues that transcend differences in education, employment, and income. These results could also be viewed from another perspective, suggesting that individuals from different demographic backgrounds might be influenced by factors such as cultural norms, government sustainability policies, or access to faciliates when expressing and acting on their sustainability concerns. As a result, sustainability concerns appear consistent across different social groups. For instance, during an interview, a participant who is a specialist doctor mentioned, "I prefer using my own car over public transportation. Although I know some activities and purchases contribute to environmental pollution, I sometimes prioritize my own well-being." Similarly, another interviewee who held a position as a university professor expressed distrust in sustainability certifications, attributing this distrust to the government's lack of clear and strict regulations on sustainability issues.

These findings are valuable for developing policies and interventions aimed at promoting sustainability, demonstrating that diverse population groups can be targeted to enhance and reinforce sustainability initiatives. However, recognizing women as a group more sensitive to sustainability issues, government strategies could leverage this by encouraging greater involvement of women and positioning them as role models to promote sustainability within families and society.

Another finding of our study offers a comprehensive understanding of the relationship between parental sustainability concerns and sustainable food consumption behaviors. The results of the quantitative phase demonstrate a positive effect of parents' sustainability concerns on sustainable food consumption, suggesting that these concerns drive parents to choose foods that align with their values. These findings are consistent with previous research (Azzurra et al., 2019; Baudry et al., 2017; Shin et al., 2019; Tandon et al., 2020). In this context, Springmann et al. (2018) proposed that adopting sustainable diets is an effective approach to addressing health and environmental concerns. Similarly, Baudry et al. (2017) explored the impact of sustainability dimensions on organic food patterns in their study. Additionally, research by Serra-Majem et al. (2020) highlighted that the Mediterranean diet reflects both health and environmental concerns.

Moreover, the qualitative findings further enhance the understanding of this relationship by identifying factors that play a crucial role in transforming sustainability concerns into sustainable consumption behaviors. In addition to supporting the idea that sustainability concerns drive sustainable food consumption, the qualitative findings highlight contextual factors such as economic conditions, access to sustainable food products, available time, and social pressures, which act as either incentives or barriers.

In this context, parents' financial ability to purchase sustainable food products is a crucial factor in translating their concerns into actual purchasing behavior. Therfore, even if parents have strong concerns about sustainability, unfavorable economic conditions, particularly with the inflation prevailing in society, may lead them to limit their purchase of sustainable foods or switch to more affordable, non-sustainable options.

Access to sustainable food products is another significant factor. If access to sustainable food products is limited, parents may find it challenging to align their sustainability concerns with purchasing sustainable food. This difficulty in access can moderate and hinder both the purchase and consumption of sustainable foods. This highlights the importance of government support for sustainable producers and increasing the distribution channels for sustainable food products. Limited market access also raises the price of sustainable foods, turning them into a luxury. This reduces the purchasing power of individuals across all economic levels.

Another factor identified is limited time. With restricted access to distribution channels for sustainable food products, people who are aware of sustainability issues are forced to spend more time acquiring and purchasing sustainable food, which can be challenging for employed individuals. Additionally, the lack of clear regulations and certifications regarding sustainable food products can make purchasing these items challenging, requiring consumers to spend time researching their sustainability. This poses employed individuals with time constraints face challenges in buying sustainable products.

Social pressures are among the contextual factors identified as influencing sustainable food consumption driven by sustainability concerns. These pressures can affect individuals' food choices by creating and promoting a sense of social approval

and desirability. When the consumption of sustainable food is recognized as a societal value, this social norm reinforces the behavior of purchasing sustainable food products. Conversely, if sustainable food consumption is not widespread and its value is not acknowledged in society, people are less likely to prioritize it while purchase. For example, friendship groups that foster emotional connections can significantly influence purchasing decisions by encouraging the consumption of sustainable foods. Similarly, colleagues who spend a lot of time together can have a strong impact on each other's food choices. Influencers are another social group whose impact was highlighted in qualitative interviews. If influencers are knowledgeable about sustainability issues and the information they share is accurate and reliable, they can be a powerful force in promoting sustainability and encouraging sustainable food consumption.

The findings of our study indicate that the consumption of sustainable food products encourages people to adopt healthier eating habits, a result consistent with previous research (Nemeth et al., 2019; Ruzgys & Pickering, 2024; Stanszus et al., 2019; Voinea et al., 2019). The quantitative phase demonstrated that sustainable food consumption has a positive and significant impact on healthy eating habits. This conclusion is further supported by the qualitative phase, where participants shared narratives that underscore the motivational and experiential aspects of this transition.

According to the Transtheoretical Model (TTM), these results are both understandable and justified. Quantitative data provided statistical evidence of the positive relationship between sustainable food consumption and healthy eating habits. Meanwhile, the qualitative insights, drawn from narratives about motivation and personal experiences, offer deep insights into how individuals transition from sustainable food consumption to adopting healthy eating habits. Participants reported that consuming sustainable food products heightened their awareness of the benefits of a healthy diet, leading them to prioritize healthier choices in their shopping. Concerns related to health, ethics, and environmental sustainability emphasize a more conscious approach to food consumption. Participants in the qualitative phase expressed that their growing awareness of the benefits of sustainable foods, along with repeated exposure to such products, encouraged them to maintain healthy eating habits. They noted that individuals who follow a sustainable diet are more likely to avoid unhealthy, processed, and fast foods, thereby reinforcing their commitment to healthy eating.

Through the lens of TTM theory, the stages of developing healthy eating habits through sustainable food consumption can be clearly understood. Individuals' concerns about health and sustainability issues act as stimuli, leading them to consume sustainable foods. As they recognize the benefits, they become more inclined to change their diet. This leads them to research sustainable products and seek out reliable sellers. Ultimately, the conscious consumption of sustainable food products emerges. The commitment to buying and consuming sustainable foods, despite access and economic challenges, leads to the development of healthy eating habits. This integrated approach offers valuable insights into promoting sustainable consumption patterns and maintaining healthy eating habits.

Our study's findings indicate that parents' healthy eating habits contribute to improvements in their children's weight status, findings supported by previous research (Demir & Bektas, 2017; Kosti et al., 2020; Mahmood et al., 2021; Tang et al., 2020). Quantitative results show that parents with healthy eating habits have a negative impact on their children's body mass index (BMI), leading to its improvement toward a normal weight status. Qualitative findings reinforce these results, with interviewees stating that they shape their children’s eating habits through verbal instruction, and that children often imitate the eating behaviors they observe in their parents.

Theoretical framework of social learning (Bandura, 1977) effectively explain these findings. According to verbal modeling theory, parents can influence their children's eating habits through verbal instructions and education. Our qualitative findings confirm this influence, as interviewees highlighted that by discussing the advantages of healthy foods and the disadvantages of processed and fast foods with their children, they help establish healthy eating habits. Additionally, parents indicated that by limiting unhealthy snacks and increasing the accessibility of sustainable and healthy food products through the mere exposure effect (Zajonc, 1968), they further reinforce these habits.

Furthermore, role modeling (observational modelling) further reveals the impact of parents' behaviors on their children's actions. Through the lens of this theory, the influence of parents' healthy eating habits on their children's dietary patterns becomes clear. Our qualitative study revealed that when parents prioritize consuming sustainable foods and avoid processed, semi-prepared, fast, genetically modified, and

non-sustainable foods, their children tend to imitate these eating patterns and internalize them during the socialization process. Teaching healthy eating patterns and modeling healthy behaviors are powerful mechanisms that shape children's eating habits and influence their BMI. These findings highlight the significant role parents play in shaping their children's food choices through verbal modeling and as role models. Additionally, they highlight the importance of parental involvement in interventions aimed at combating childhood obesity.

5.2. Practical Implications

According to the insights from this study, the government can target all socio-demographic levels to expand awareness and knowledge about sustainability issues. The findings indicate that women are more sensitive to sustainability issues than men and, as key influencers and role models within families, women should be central to the government's executive strategies. Also, in developing sustainability guidelines, efforts should also be made to strengthen men’s motivation to engage in sustainable practices by addressing their values and priorities. From a marketing perspective, the findings contribute to identifying the target market and encouraging consumers to purchase and consume sustainable products. The study provides valuable insights into gender sensitivity. Marketers can use these insights to develop strategies that encourage the purchase and consumption of sustainable products, emphasizing ethical considerations and social responsibilities shaped by male and female socialization processes.

Among the other findings of this study are the contextual factors that either stimulate or inhibit the translation of sustainability concerns into purchasing behavior. One important factor is the easy availability of sustainable food products at a reasonable price. To address this, the government can support sustainable product producers by offering incentives, improving distribution channels, and implementing clear regulations regarding labeling and sustainability certifications. These measures would enhance consumer trust and encourage the purchase of sustainable products. Expanding distribution channels would also lead to more competitive pricing, making sustainable products more accessible to people across various socio-economic levels.

In this context, marketing strategies should focus on promoting awareness, building trust, and offering loyalty programs to reinforce sustainable choices among consumers.

The study also emphasizes the impact of social pressures. The government and marketers can collaborate to create and monitor social media campaigns, leveraging the influence of trusted influencers to reinforce positive social norms and prioritize sustainable food choices within families.

To prevent childhood obesity, public health initiatives should focus on educating parents about the importance of consuming sustainable foods. Government policies can promote parents' knowledge of sustainability issues and sustainable consumption through educational workshops and community programs. Marketers can support these efforts by developing family-oriented strategies and advertisements that emphasize the benefits of sustainable products for children’s health and well-being.

With the combined efforts of the government and the marketing sector, these practical implications can lead to effective interventions that promote sustainable food consumption and ultimately help prevent childhood obesity. This can be achieved by developing implementation strategies and educational programs that build awareness, trust, attractivness, and loyalty toward sustainable products.

5.3. Limitations and Suggestions for Future Research

Although the research criteria produced quality data, the small sample size limits the generalizability of the results in diverse populations. Future research could focus on larger samples to enhance generalizability. Additionally, researchers could be mindful of the difficulties in collecting data within the constraints of research criteria, as this was one of the key limitations encountered in this study.

The current study was cross-sectional in design. Future studies could focus on a longitudinal design to examine how parents' healthy and sustainable eating behaviors influence children's eating habits and weight status during children's growth.

One limitation of this study is the gender imbalance between participants in the quantitative and qualitative phases. During the quantitative phase, mothers were more willing to fill out the questionnaire, while during the qualitative phase, fathers were more likely to participate in interviews. The imbalance may be because mothers felt

more comfortable with the questionnaire and fathers preferred direct conversations, such as interviews, to express their opinions. This imbalance among the genders of participants across research phases may have influenced the findings. Therefore, future studies could consider some strategies to encourage more balanced participation.

Furthermore, this study is the reliance on self-reported data on children's height and weight. This approach may be subject to reporting bias and measurement error. Future research could use a direct measurement strategy to ensure accuracy and reliability.

This study employed a sequential explanatory design, but future research is recommended to use an exploratory mixed-method approach. Starting with a qualitative phase to design the questionnaire for the quantitative phase would allow for a more comprehensive investigation, which can consider all the contextual factors influencing the relationship between sustainability concerns and sustainable food consumption on children's BMI. By beginning with the qualitative phase, researchers can explore contextual variables in greater depth.

The findings of this study indicated that, with the exception of gender, other sociodemographic factors did not significantly differ in their influence on sustainability concerns. Future research could explore the interconnections between sociodemographic variables, as their interactions can influence sustainability concerns through more complex patterns, providing deeper insights into the impact of sociodemographic factors on sustainability concerns and behaviors.

One of the valuable findings of the qualitative phase was the identification of contextual factors, including access to sustainable products, economic conditions, and social norms. Future research could include these as moderating variables in their research models.

This study focused on exploring the impact of sustainability concerns on sustainable food consumption, but it did not differentiate or rank the specific areas of sustainability concerns that might have varying levels of influence. As a limitation, the study treats sustainability concerns as a general construct without exploring which specific concerns such as environmental, ethical, or health-related issues might have a stronger impact on sustainable food consumption. Future research could address this by ranking the different fields of sustainability concerns to determine which areas most

significantly influence sustainable food consumption. This would provide a more comprehensive understanding and could contribute to developing more effective marketing strategies to promote sustainable food consumption.

CONCLUSION

Childhood obesity and sustainability concerns are two of the most significant challenges facing contemporary society, both of which have been intensified by the dominant consumer habits that characterize modern life. The growing prevalence of childhood obesity poses a significant threat to public health, making it essential to deeply investigate the factors that influence children's weight status. Among the various factors influencing these issues, the role of parents is particularly prominent, as they serve as the first social institution in the formation and institutionalization of their children's eating behaviors. Through the choices they make and the habits they model, parents have a profound impact on their children's eating patterns, which, in turn, significantly affect their children's body mass index (BMI) status.

In recent years, parental awareness of the critical need to address childhood obesity and sustainability issues has become more widespread. These concerns have motivated informed parents to adopt more responsible food consumption practices, with the dual purpose of improving their children's health and reducing the broad impacts of unsustainable practices.

This study aimed to bridge this gap by exploring the potential influence of parents' sustainability concerns on their children's obesity status through an explanatory sequential mixed-method approach. The purpose was to understand how parents' attitudes toward sustainability may impact their children's BMI outcomes. To explore this relationship, the researcher conducted a quantitative phase with 205 participants and a qualitative phase with 10 interviewees.

The socio-demographic analysis indicated that, with the exception of gender, other factors such as parents' age, income level, education level, and job status showed no significant differences in sustainability concerns. Furthermore, the findings demonstrated that while parents' sustainability concerns do not directly influence their children's BMI, they can indirectly impact it through mediating variables such as sustainable food consumption and healthy eating habits. These findings were supported and complemented by the qualitative phase. Additionally, the qualitative results revealed that contextual factors play a crucial role in translating parents' sustainability concerns into actual consumption behaviors. Interviewees highlighted economic conditions, the availability of sustainable food products, time constraints,

and social pressures as key factors that either facilitate or hinder sustainable consumption.

These findings offer valuable insights that emphasize the importance of intervention strategies aimed at removing barriers and reinforcing facilitators, thereby promoting sustainable food purchasing and consumption across all sociodemographic groups. Furthermore, the study revealed that sustainable food consumption positively affects the healthy eating habits of both parents and their children, ultimately contributing to healthier BMI status in children. The qualitative findings supported this, showing that parents influence their children's eating habits through theoretical frameworks such as social learning (verbal and observational learning) and mere exposure effect.

Overall, this research emphasized the central role of parents in shaping their children's eating habits and addressing childhood obesity through their sustainability concerns and sustainable food consumption. The study adds deep insights to the existing literature by exploring how contextual factors moderate the impact of parents' sustainability concerns on the purchase of sustainable food products, offering both theoretical and practical contributions to real-world applications.

Finally, the study’s findings provide valuable recommendations for governments and marketers to adjust their strategies accordingly. Moreover, the implications for public health strategies and government sustainability programs are significant, particularly in the context of addressing childhood obesity through the promotion of sustainable food consumption and healthy eating habits.

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Attachments 1: Questionnaire (English)

Dear Participant,

I would like to invite you to participate in a doctoral research survey. Below is a short survey about your sustainability concerns and consumer behaviors and their effects on child obesity. Your responses to this survey will help us investigate how your sustainability concerns and consumer behaviors affect child obesity. The survey is very brief and will only take about 5 minutes to complete. All information about you collected during the study will be kept strictly confidential and stored securely in accordance with the Data Protection Act. No personally identifiable information will be associated with your responses to any reports of these data. The KBU Institutional Review Board has approved this survey. If you would like to take part in this study, you will be asked to verify your voluntary agreement in an online consent form. Should you have any comments or questions, please feel free to contact me at my E-mail:

Thank you very much for your time and cooperation. Feedback from our participants is very important to us.

Researcher:

Arezo Pouyan

PhD Candidate

Supervisor:

Prof. Dr.Hakan Cengiz

Consent to participate:

My participation in the survey is completely voluntary, and I am aware that I can withdraw from this survey at any time.

I agree to the above statements and confirm that I wish to participate.

Signature

Participate in Interview

If you are interested in participating in the interview, we would be pleased to hear from you. Please provide your contact information below so we can reach out to you with further details. I appreciate your interest.

Research Criteria

Do you have any children between 6 months and 6 years old? Yes ☐ No ☐
Do you consume sustainable food? Yes ☐ No ☐
Have you or other family members been diagnosed with obesity in your family? Yes ☐ No ☐
Are you in charge of purchasing food products for your family? Less than 50% ☐ More than 50% ☐
Please fill in this part according to <u>the height (CM) and weight (Kg)</u> of your children under 6 years old. **If you have more than one child under 6 years old, please refer to the child with <u>the higher weight status.</u>**
Your girl's height, weight and age • **Height (CM) .....** • **Weight (Kg) .....** • **Age (Months) .....**
Your boy's height, weight and age • **Height (CM) .....** • **Weight (Kg) .....** • **Age (Months) .....**

SECTION A. Demographic Questions

Please complete the following section by selecting the appropriate answers (mark √ next to only one option).
1. Which of the following best describes your gender? Female ☐ Male ☐ Other ☐
2. Which age range is yours? 20-30☐ 31-40☐ 41-50☐ 51 years and above ☐
3. What is your role as a parent? Father ☐ Mother ☐ Grandparents ☐ Guardians ☐
4. Which of the following best describes your marital Status? Singel ☐ Married ☐ Other ☐
5. What is your education level? Under bachelor ☐ Bachelor ☐ Master ☐ Above master ☐
6. Which of the following best describes your job Status? Unemployed ☐ Full time employed ☐ Part time employed ☐ Work at home ☐
7. Aşağıdakilerden hangisi aylık gelir düzeyinizi en iyi şekilde tanımlar? Less than 8500 TL ☐ 8501- 13500 TL ☐ 13501-18500 TL☐ Above of 18500 TL ☐
8. Which of the following best describes your type of residence? Rural ☐ Urban ☐

SECTION B. Sustainability Concerns

Please complete the following section by selecting the appropriate answers (mark √ next to only one option).					
How important are the following aspects when choosing food products?	**Not important at all**	**Not important**	**Neither important Nor unimportant**	**Important**	**Very important**
1.It is obtained in an environmentally friendly way.					
2. It is produced in a way that respects biodiversity.					
3. It is grown using sustainable agricultural practices.					
4. It is produced while respecting animal welfare.					
5. It is produced without the use of pesticides.					
6. It is produced with low carbon emissions.					
7. It is produced in an unspoiled environment.					
8. It is produced by reducing the amount of food waste.					
9. It is packaged in an environmentally friendly way.					
10. It is locally produced to support local farmers.					
11. It is produced with respect for human rights.					
12. It is sold at a fair price for the producer.					
13. Keep me healthy					

SECTION C. Sustainable Food Consumption

Please complete the following section by selecting the appropriate answers (mark √ next to only one option).				
	I am not doing this and I am not willing to.	**I would like to do this, but I do not know how.**	**I would like to do this, and I already know how to start.**	**I am doing this already.**
1. Buy regional (local) food.				
2. Avoid products with excessive packaging.				
3. Buy sustainble food.				
4. Eat only seasonal fruit and vegetables.				
5. Eat less meat (maximum once or twice per week)				
6. Avoid food products that were imported by airplane.				

SECTION E. Healthy Eating Habits

Please complete the following section by selecting the appropriate answers (mark √ next to only one option).					
	Strongly disagree	**Disagree**	**Neither agree Nor disagree**	**Agree**	**Strongly agree**
1. Healthy eating habits are something I do frequently.					
2. Healthy eating habits are something I find hard to do.					
3. Healthy eating habits are something that makes me feel weird if I do not do them.					
4. Healthy eating habits are something that is part of my normal routine.					
5. Healthy eating habits are something I do automatically (without having to think consciously about them).					
6.Healthy eating habits characterize who I am.					
7. Healthy eating habits are a behavior that I have been doing for a long time.					

Attachments 2: ANKET (Türkçe)

Sayın Katılımcı,

Sizi bir doktora araştırma anketine katılmaya davet etmek istiyorum. Aşağıda, sürdürülebilirlik endişeleriniz ve tüketici davranışları ve bunların çocuk obezitesi üzerindeki etkileri hakkında kısa bir anket yer almaktadır. Bu ankete verdiğiniz yanıtlar, sürdürülebilirlik endişelerinizin ve tüketici davranışlarının çocuk obezitesini nasıl etkilediğini araştırmamıza yardımcı olacaktır. Anket çok kısa ve tamamlanması sadece 5 dakikanızı alacak. Çalışma sırasında hakkınızda toplanan tüm bilgiler kesinlikle gizli tutulacak ve Veri Koruma Yasası uyarınca güvenli bir şekilde saklanacaktır. Kişisel olarak tanımlanabilir hiçbir bilgi, bu verilerin herhangi bir raporuna verdiğiniz yanıtlarla ilişkilendirilmeyecektir. KBU Kurumsal İnceleme Kurulu bu anketi onayladı. Bu çalışmada gönüllü olarak yer almak istiyorsanız, çevrimiçi bir onay formunda doğrulamanız istenecektir. Herhangi bir yorumunuz veya sorunuz varsa, lütfen benimle E-posta adresimden iletişime geçmekten çekinmeyin:

Zaman ayırdığınız ve işbirliğiniz için çok teşekkür ederiz. Katılımcılarımızın geri bildirimleri bizim için çok önemlidir.

Araştırmacı:

Arezo Pouyan

Doktora adayı

Danışman:

Prof. Dr. Hakan Cengiz

Katılım onayı:

Ankete katılım gönüllülük esasına dayalıdır. Çalışmanın herhangi bir aşamasında çalışmadan çekilebileceğimin farkındayım.

Yukarıdaki beyanları kabul ediyorum ve katılmak istediğimi onaylıyorum.

İmza

Mülakata Katılın

Mülakata katılmakla ilgileniyorsanız, sizden haber almak isteriz. Lütfen sizinle iletişime geçebilmemiz için aşağıya iletişim bilgilerinizi bırakın. İlginiz için teşekkür ederiz.

Araştırma kriterleri

6 ay ile 6 yaş arasında çocuğunuz var mı? Evet☐ Hayır☐
Sürdürülebilir gıda ürünleri tüketiyor musunuz? Evet☐ Hayır☐
Aile geçmişinizde size ya da diğer aile bireylerine obezite tanısı konuldu mu? Evet☐ Hayır☐
Aileniz için gıda ürünleri satın almaktan siz mi sorumlusunuz? %50 'den az ☐ %50 üzeri ☐
Lütfen bu kısmı <u>6 yaşından küçük çocuklarınızın boy (CM) ve kilolarına (Kg)</u> göre doldurunuz. ✓ **6 yaşından küçük birden fazla çocuğunuz varsa, <u>lütfen kilo durumu daha yüksek olan çocuğa bakın.</u>**
Kız çocuğunuzun boyu, kilosu ve yaşı • **Boyu (CM) .....** • **kilosu (Kg) .....** • **Yaşı (Ay) .....**
Erkek çocuğunuzun boyu, kilosu ve yaşı • **Boyu (CM) .....** • **kilosu (Kg) .....** • **Yaşı (Ay) .....**

BÖLÜM A. Demografik Sorular

Lütfen uygun cevaplara tıklayarak aşağıdaki bölümü tamamlayın (Lütfen sadece bir seçenek işaretleyin)
1.Aşağıdakilerden hangisi cinsiyetinizi en iyi tanımlar? Kadın☐ Erkek☐ Diğer☐
2. Hangi yaş aralığındasınız? 20-30☐ 31-40☐ 41-50☐ 51 yaş ve üzeri☐
3. Ebeveyn olarak rolünüz nedir? Baba☐ Anne☐ Büyükbaba/Büyükanne☐ Vasiler☐
4. Aşağıdakilerden hangisi medeni durumunuzu en iyi tanımlar? Bekar☐ Evli☐ Diğer ☐
5. Eğitim düzeyiniz nedir? (En son mezun olduğunuz eğitim düzeyiniz?) Lisans altında☐ Lisans☐ Yüksek Lisans☐ Yüksek Lisans Üstü☐
6. Aşağıdakilerden hangisi iş durumunuzu en iyi şekilde tanımlar? Çalışmıyorum☐ Tam zamanlı çalışıyorum☐ Yarı zamanlı çalışıyorum☐ Evden Çalışan☐
7. Aşağıdakilerden hangisi aylık gelir düzeyinizi en iyi şekilde tanımlar? **Not: Lütfen bu soruyu 6 ay önce almış olduğunuz maaşınızı baz alarak cevaplayınız.** 8500 TL'den az☐ 8501- 13500 TL☐ 13501-18500 TL☐ 18500 TL üzeri☐
8. Aşağıdakilerden hangisi ikamet ettiğiniz yeri en iyi şekilde tanımlar? Kırsal☐ Kentsel☐

BÖLÜM B. Sürdürülebilirlik Endişeleri

Lütfen uygun cevaplara tıklayarak aşağıdaki bölümü tamamlayın (Lütfen sadece bir seçenek işaretleyin)					
Gıda ürünlerini seçerken aşağıdaki ifadelerin sizin için önem düzeyi nedir?	**Hiç Önemli değildir**	**Önemli değildir**	**Ne önemlidir Ne önemli değildir**	**Önemlidir**	**Çok Önemlidir**
1. Çevre dostu bir şekilde üretilmesi.					
2. Biyoçeşitliliği koruyacak şekilde üretilmesi.					
3. Sürdürülebilir tarım uygulamaları kullanılarak yetiştirilmesi.					
4. Hayvan refahına saygı gösterilerek üretilmesi.					
5. Tarım ilacı kullanılmadan üretilmesi.					
6. Düşük karbon emisyonlu olarak üretilmesi.					
7. Bozulmamış bir doğal çevrede üretilmesi.					
8. Gıda israfını azaltarak üretilmesi.					
9. Çevre dostu bir şekilde paketlenmesi.					
10. Yerel çiftçileri desteklemek amacıyla üretilmesi.					
11. İnsan haklarına saygılı şekilde üretilmesi.					
12. Üretici açısından adil bir fiyata satılması.					
13. Sağlığımı koruması.					

BÖLÜM C. Sürdürülebilir Gıda Tüketimi

Lütfen aşağıdaki davranışları hangi ölçüde gerçekleştirdiğinizi belirten seçeneği işaretleyin. (Lütfen her bir davranış için sadece tek bir seçenek işaretleyiniz).				
	Bunu yapmıyorum ve yapmaya da istekli değilim.	**Bunu yapmak isterdim ama nasıl yapacağımı bilmiyorum**	**Bunu yapmak istiyorum ve nasıl başlayacağımı zaten biliyorum.**	**Bunu zaten yapıyorum**
1. Bölgesel (yerel) yiyecekler satın almak.				
2. Aşırı ambalajlı ürünlerden kaçınmak.				
3. Sürdürülebilir gıdalar satın almak.				
4. Sadece mevsiminde meyveleri ve sebzeleri yemek.				
5. Daha az et tüketmek (en fazla haftada bir veya iki kez)				
6. Uçakla ithal edilen gıda ürünlerinden kaçınmak.				

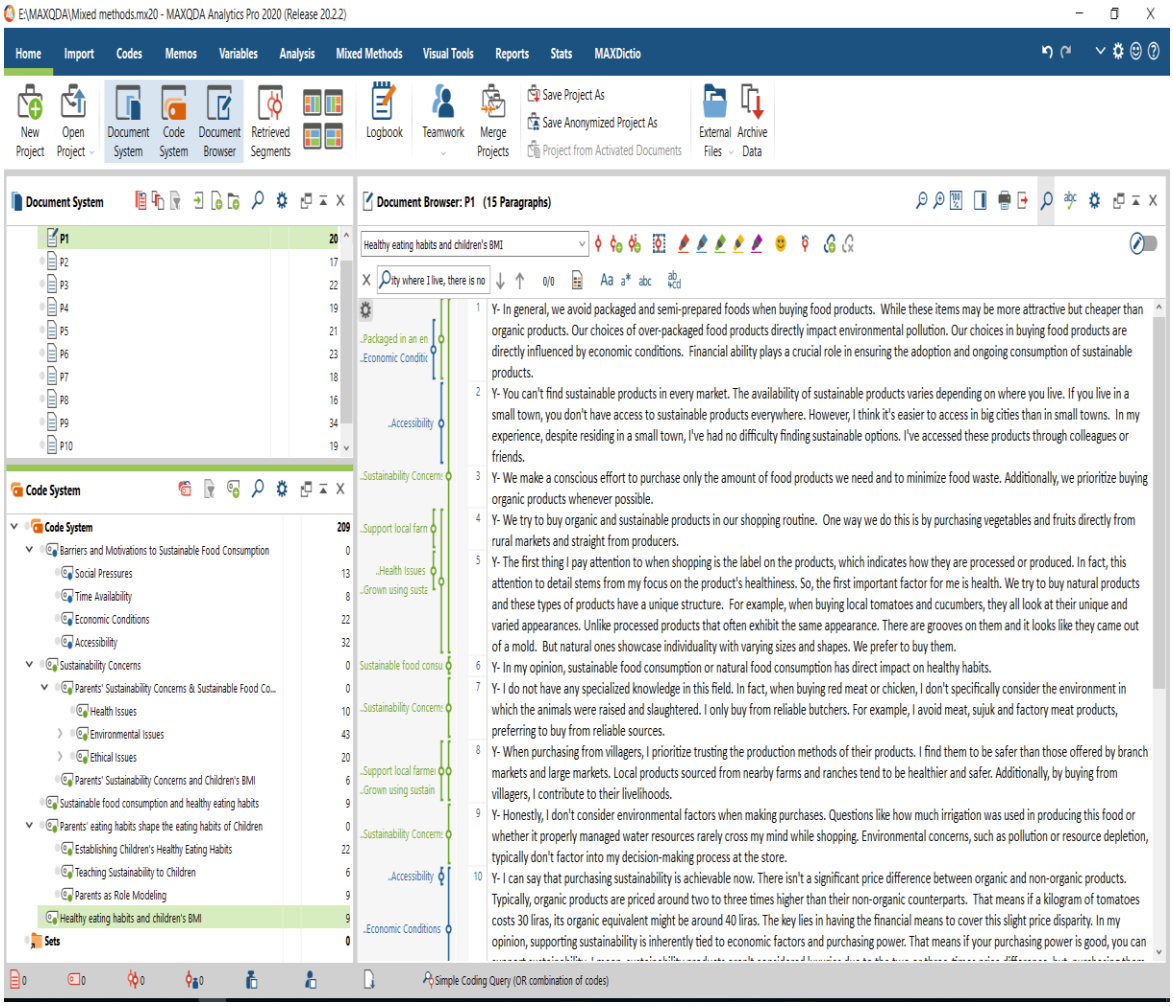
BÖLÜM D. Sağlıklı Beslenme Alışkanlığı

Aşağıdaki ifadelere katılım düzeyinizi işaretleyiniz (Lütfen her bir ifade için sadece tek bir seçenek işaretleyiniz).					
	Kesinlikle Katılmıyorum	**Katılmıyorum**	**Ne katılıyorum Ne katılmıyorum**	**Katılıyorum**	**Kesinlikle Katılıyorum**
1.Sağlıklı beslenme sık yaptığım bir şeydir.					
2. Sağlıklı beslenme alışkanlığı yapmakta zorlandığım bir şeydir.					
3. Sağlıklı beslenememek kendimi garip hissetmeme neden olur.					
4. Sağlıklı beslenme benim normal rutinimin bir parçasıdır.					
5. Sağlıklı beslenme otomatik olarak yaptığım bir şeydir (bunun hakkında bilinçli olarak düşünmek zorunda kalmadan).					
6. Sağlıklı beslenme benim için tipik bir davranıştır.					
7. Sağlıklı beslenme uzun zamandır gerçekleştirdiğim bir davranıştır.					

Appendix B: Semi-Structured Interview Questions

1- Can you describe your opinions regarding sustainability concerns in general?
2- How do you implement your sustainability concerns in your daily life?
3- How would you describe your perspective on sustainable food products?
4- How do your sustainability concerns influence your purchase decisions?
5- Can you describe which sustainability concerns have the greatest influence on your food purchase decisions, and how they impact your choices?
6- How do your sustainability concerns result in sustainable food consumption?
7- In your opinion, how can your consumption of sustainable food establish healthy eating habits?
8- How do your eating habits influence your children's eating habits?
9- In your opinion, how healthy eating habits influence children's weight status?
10- How your sustainability concerns influence your children's weight status? Could you explain your opinion?

Appendix C: An Examples of Coded Transcripts



CURRICULUM VITAE

Curriculum Vitae ; date and place of birth should not be specified; It consists of information about the university and department of graduation, degrees and awards received, publications of the researcher, if any, and academic and professional status. The CV should be written in third person singular language.