



Exploring the willingness of young Portuguese adults to adopt healthy eating habits inspired by the Japanese diet

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Abstract

Abstract: The increase in poor dietary habits and the rise in the prevalence of obesity, diabetes, and cardiovascular diseases are major public health concerns, food choices, impact health and sustainability, making dietary behavior a focus for researchers and policymakers. Among the various dietary models, the Japanese diet is recognized for its benefits, constituted of fiber-rich foods, fermented products and very low in ultra-processed foods. However, there has been very little research exploring young Portuguese adults' willingness to adopt these habits.

This study examines factors influencing the adoption of Japanese diet-inspired habits by this demographic. Statistical analysis shows that health awareness predicts dietary transitions, with individuals who prioritize diet being more likely to adopt healthier eating patterns, while initial correlations suggested associations between gender, BMI, and dietary willingness, these were not statistically significant in the regression model, indicating potential mediating factors. A greater willingness to increase fiber intake and access healthier vending machine options was correlated with dietary change, whereas a preference for refined carbohydrates and processed meats showed a marginally significant negative association.

These findings suggest that structural interventions, such as improving access to healthy food options, could promote healthier choices, and that marketing strategies should highlight fiber-rich and fermented foods within familiar cultural food contexts, while public policies should enhance food accessibility. Despite its contributions, this study is limited by self-reported data and a cross-sectional design, that prevents causal inferences, future research, should adopt longitudinal designs, qualitative approaches, and experimental interventions to assess real-world dietary adoption.

Title of the dissertation: Exploring the Willingness of Young Portuguese Adults to Adopt Healthy Eating Habits Inspired by the Japanese Diet

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Keywords: Eating habits, Japanese diet, public health, consumer behavior, healthy eating, food industry, marketing strategies.

Resumo

Resumo: O aumento de maus hábitos alimentares e o crescimento da obesidade, diabetes e doenças cardiovasculares constituem preocupações de saúde pública, as escolhas alimentares afetam tanto a saúde como a sustentabilidade, tornando o comportamento alimentar um foco para investigadores e decisores políticos. Entre os vários modelos, a dieta japonesa é reconhecida pelos seus benefícios, é constituída por alimentos ricos em fibra, fermentados e muito pouco processados, contudo, existe pouca investigação acerca da disponibilidade dos jovens adultos portugueses em adotar estes hábitos.

Este estudo analisa o que influencia a adoção de hábitos alimentares inspirados na dieta japonesa por parte desta população. A análise estatística demonstra que a consciencialização para a saúde prevê alterações alimentares, embora as correlações iniciais tenham sugerido associações entre género, IMC e disponibilidade alimentar, estas não se revelaram estatisticamente significativas no modelo de regressão, indicando a existência de potenciais fatores mediadores. Uma predisposição para aumentar o consumo de fibra e o acesso a opções mais saudáveis em máquinas de venda automática correlacionaram-se positivamente com mudanças alimentares, enquanto uma preferência por hidratos de carbono refinados e carnes processadas apresentou uma associação negativa marginalmente significativa.

Logo, as estratégias de marketing deveriam destacar alimentos ricos em fibra e produtos fermentados dentro de contextos alimentares culturalmente familiares, enquanto as políticas públicas deveriam melhorar a acessibilidade alimentar. Apesar das contribuições, este estudo apresenta limitações devido ao uso de dados autorreportados e a um desenho transversal que impede inferências causais. Investigações futuras deverão adotar desenhos longitudinais, abordagens qualitativas e intervenções experimentais.

Título da dissertação: Exploração da disposição dos jovens adultos portugueses para adotar hábitos alimentares saudáveis inspirados na dieta japonesa

Autor: Dinis Afonso Dornelas Miranda de Andrade

Palavras-chave: Hábitos alimentares, dieta japonesa, saúde pública, comportamento do consumidor, alimentação saudável, indústria alimentar, estratégias de marketing.

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I hope this work provides some useful information and new points of view in the health space, which as we know (or should know), is very much needed in the present day.

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List of Abbreviations

- **WHO** – World Health Organization
- **UPF** – Ultra-Processed Foods
- **HBM** – Health Belief Model
- **SDT** – Self-Determination Theory
- **TPB** – Theory of Planned Behavior
- **BMI** – Body Mass Index
- **PCA** – Principal Component Analysis
- **VIF** – Variance Inflation Factor
- **G² (Chi-Square)** – Chi-Square Test Statistic
- **R²** – Coefficient of Determination
- **Nagelkerke R²** – Pseudo-R² for Logistic Regression
- **t-test** – Student's t-test
- **p-value** – Probability Value
- **SD** – Standard Deviation
- **WTC** – Willingness to Change

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1 Introduction

1.1 Background and Problem Statement

The rise of poor dietary habits and the prevalence of major health concerns such as obesity, diabetes, and cardiovascular diseases have become major public health issues (Moradi et al., 2023). Food choices are increasingly recognized as an essential part of promoting nutritious diets and improving health and sustainability outcomes (Van Bussel et al., 2022). The relationship between diet and human health is a major topic of concern to the food industry as well, as food brands seek to align better with health-conscious consumers. One of the present and future tasks of marketing managers and food companies is to develop and implement strategies that not only meet consumer needs but also contribute to their long-term health. A

The prevalence of chronic diseases in Japan is generally lower than in Western nations, despite it being a highly developed nation (Nomura et al., 2017; Reynolds et al., 2008). This phenomenon is often attributed to the high-quality diet of the Japanese, whose meals are typically rich in fiber, vegetables, and fish (Matsuyama et al., 2022). This type of diet, characterized by a high intake of whole grains, legumes and fiber, and a low consumption of ultraprocessed foods, is in big contrast to the dietary patterns that we see in Portugal today, where the consumption of ultraprocessed foods and low fiber intake have become prevalent (Pais et al., 2023). These dietary differences come with significant health implications: whereas Japan continues to report very low levels of obesity, diabetes, and cardiovascular disease (Matsuyama et al., 2022), Portugal faces rising rates of these conditions (Crisp, 2015).

However, we should not assume that the diet in Portugal is the single causal link for the rise in these health conditions, other factors influence them, for example, the high levels of sedentary behavior (European Commission. Directorate General for Education, Youth, Sport and Culture., 2022) and the decreased access to primary health services (ERS, sem data).

Initiatives to persuade the Portuguese population to adopt more health-conscious eating patterns offer both great opportunities and even greater challenges. While there is a growing interest in healthier food choices, at least in some groups, cultural preferences and the lack of access to more nutritious foods are important barriers to overcome (Gregório et al., 2018).

Within this scope, the Portuguese food industry has an opportunity to innovate and improve their offer by introducing food products inspired by healthier dietary patterns, such as those seen in Japan. However, for this shift to happen, we need to better understand consumer attitudes towards dietary changes. Only this knowledge will enable stakeholders to address the

barriers that prevent individuals from making healthier food choices. Key areas of research include dietary patterns, degree of health awareness, and the perceived relationship between food choices and overall well-being.

If we can understand consumers' attitudes towards healthier diets better, we can then inform and shed light on what the best marketing strategies for the modern food industry might be. Marketing managers must develop campaigns and products that not only promote healthier eating habits but also match Portuguese cultural preferences. Moreover, the Portuguese food industry could lead in creating a more health-conscious consumer population by offering local products that facilitate these dietary changes.

Despite the well-documented health benefits of high-fiber diets (Veronese et al., 2018), fermented foods (Hill et al., 2023; Marco et al., 2017) and low intake of ultraprocessed foods (Koiwai et al., 2019; Moradi et al., 2023), there still is a large gap in understanding what motivates or hinders Portuguese consumers from altering their dietary habits (Pais et al., 2023). This lack of clear insights about food consumer behavior limits the development of effective marketing strategies and public health interventions.

1.2 Aim and Scope

The goal of this dissertation is to study young Portuguese adults' willingness to undertake dietary changes inspired by the Japanese diet. The findings that come from this research will inform not only the marketing strategies of food brands, but also public health policies aimed at improving the dietary patterns in Portugal.

Consequently, this dissertation addresses two main research questions:

1. What are the key barriers and motivators determining young Portuguese adults' willingness to adopt healthier eating habits??
2. What kind of products and marketing strategies related to the Japanese diet would facilitate the most the adoption of healthier eating habits by Portuguese young?

This dissertation focuses on the dietary habits of Portuguese individuals and seeks to investigate their attitudes towards healthy eating. The object of study is consumer behavior related to food choices, with a specific emphasis on increasing fiber intake, adopting fermented foods and reducing ultraprocessed foods as well as sugar, inspired by the Japanese diet. The scope of this

study is limited to dietary habits and consumer preferences, it does not explore clinical health outcomes directly (cholesterol, blood pressure, blood sugar due to diet).

While this dissertation examined the potential health benefits of dietary changes, it did not focus on individuals with preexisting chronic illnesses. Instead, it focused on dietary habits and health awareness of the general population. Moreover, the research primarily relied on consumer perceptions and self-reported behaviors rather than clinical data. Finally, this study did not test specific nutritional interventions or conduct experimental trials but instead analysed consumer attitudes using a descriptive approach based on survey data.

1.3 Research Methods

To address the problem identified and answer the proposed research questions, this dissertation used a descriptive research method (Saunders et al., 2019), relying on primary data collected through a well-structured survey aimed at the Portuguese young adult population. The survey was designed to capture individuals' attitudes towards dietary changes, especially the ones inspired by the Japanese diet, as well as barriers blocking the adoption of healthier eating habits. Quantitative data was gathered with the goal of assessing individuals' willingness to increase their intake of fermented foods and reduce consumption of sugar and ultraprocessed foods, and to adopt healthier eating habits overall. Their analysis focused on identifying trends and patterns in dietary behavior that could inform private initiatives and public health policies seeking to improve diets and health. The use of a descriptive approach was appropriate as this study sought to understand existing behaviors and attitudes rather than trying to manipulate variables or test interventions (Saunders et al., 2019).

The survey questions focused on key variables such as dietary habits, health awareness, and the perceived relationship between food choices and overall well-being. Additionally, questions assessed consumer openness to dietary changes inspired by Japanese eating patterns.

The methodological approach pursued was grounded in similar studies that have explored consumer behavior in relation to health and dietary habits. Previous research in the field of food consumption and marketing has demonstrated that consumer attitudes and behaviors can be effectively measured through surveys that incorporate both direct and attitudinal questions (Saunders et al., 2019).

1.4 Relevance

This dissertation addresses the growing public health concerns posed by the poor dietary habits of the Portuguese population. It attempts to benefit from the experience and insights offered by the Japanese diet, an eating pattern known for its positive impact on health, as the adoption of this diet may help change current eating patterns in Portugal. This research is valuable to multiple audiences, including marketing managers in the food industry, policymakers, and public health professionals, as it offers practical insights into how healthier food choices can be promoted, approached and adopted.

- For the academic community, it will add to the body of knowledge on consumer behavior, especially related to food consumption, particularly in understanding the barriers and motivators for adopting healthier eating habits.
- For the food industry, the insights can help marketing managers develop more effective strategies for promoting healthier food products that can align more with consumer preferences and health trends. This can lead to an increase in the consumption of healthier foods.
- For policymakers, this study offers data-based recommendations on how to shape public health campaigns and interventions that encourage healthier eating patterns at a national level.

The key outcomes of this research are (1) a deeper understanding of the specific factors that influence Portuguese consumers' willingness to adopt dietary changes; (2) and practical insights for both marketing and public health initiatives, ultimately contributing to the reduction of diet-related health issues in Portugal.

2 Literature Review

2.1 Introduction to Dietary Habits and Health

With the transition from a prevalence of infectious disease to non-infectious disease in the beginning of the XX century, there has been an increase in the average lifespan. This is however it is far greater than that of the healthy lifespan, as evidenced by the rise in chronic diseases, including abdominal obesity, type 2 diabetes, chronic lower respiratory disease, Alzheimer's disease, heart and cerebrovascular diseases, and malignant neoplasms (Eyre et al., 2004). Several causes of this problem have been identified. The chronic disease burden in the USA, for instance, results mostly from a short list of risk factors: tobacco use, poor diet and physical inactivity (both strongly associated with obesity), excessive alcohol consumption, uncontrolled high blood pressure, and hyperlipidaemia (Bauer et al., 2014).

Certain dietary patterns are known to promote obesity, high blood pressure and hyperlipidaemia. These markers are all associated with the onset of chronic disease (Institute of Medicine (U.S.), 2010). This evidence has placed dietary habits at the forefront of public health discussions. The choices individuals make regarding their food consumption play a critical role in determining their long-term health outcomes (Juul et al., 2021). In recent years, governments and health organizations have been increasingly focused on promoting healthier food choices to combat the growing burden of chronic diseases in western countries' health care systems (An, 2013). In this context, improving dietary habits particularly through the reduction of ultraprocessed food and sugar consumption, alongside an increase in fiber and fermented food intake has become a priority.

In Portugal, like many other western countries, dietary patterns have worsened over the last few decades. Western diets are increasingly characterized by a high consumption of ultraprocessed foods, which are often low in essential nutrients, as well as high intakes of red meat, high-fat foods, refined sugars and salt (Navarro-Tapia et al., 2022; Wu et al., 2020). These trends in dietary patterns have contributed to the growing rates of obesity and diet-related chronic diseases in several countries, including Portugal (Crisp, 2015). Studies show that many Portuguese consumers, particularly those from younger generations, tend to favour the consumption of ultraprocessed foods (Magalhães et al., 2021).

Meanwhile, the traditional Japanese diet offers a good model of health-conscious eating that has been widely praised for its association with lower rates of chronic diseases (Matsuyama et al., 2022). Dietary patterns in Japan are characterized by a high consumption of whole grains, vegetables, fish, fiber and fermented foods. Bridging elements of the Japanese diet into the food habits of Portuguese youth presents thus a potential pathway for improving public health outcomes.

2.2 The Japanese Diet

Japan has one of the highest life expectancies compared to almost any other country in the world (Organization, 2016), many factors contribute to this, including diet, active lifestyles, advances in medical technology and a high standard of living. Still, as Japan became increasingly westernized after the Second World War, so did the eating habits of the Japanese (Kagawa, 1978), especially when compared to the Western diet, the Japanese diet is lower on calories (Omodei & Fontana, 2011; Willcox et al., 2007), comprising a higher portion of seafood, such as fish, shellfish, and seaweeds, fermented foods, green tea, vegetables, fruits, and soybeans, all of which have important health benefits. Diets characterized by a moderate daily energy intake and high amounts of fiber and antioxidants have a positive impact on lifespan (Omodei & Fontana, 2011).

2.2.1 Fiber

The traditional Japanese diet is characterized by a high consumption of whole grains, seaweed, vegetables, and fruits. This not only contributes to a balanced intake of essential micronutrients but also ensures adequate intakes of dietary fiber. These food groups are known for their ability to support numerous aspects of human health, from cardiovascular function to metabolic health. Fiber plays a vital role in regulating digestion, ensuring the smooth passage of food through the digestive tract (Yang, 2012), and supporting the growth of beneficial gut bacteria (Zhang et al., 2022). The high fiber intake in the Japanese diet aids in preventing constipation (Van Der Schoot et al., 2022) and reducing the risk of developing diverticulitis (Aune et al., 2020), a common digestive disorder.

In addition to digestive health, fiber is strongly associated with reducing the risk of several chronic diseases, studies show that diets rich in fiber from sources like seaweed, vegetables, and whole grains can lower the risk of all-cause mortality (Yang et al., 2015), thanks to their role in protecting against diseases such as cancer (Arayici et al., 2023; McRae, 2018) and cardiovascular disease (Kim & Je, 2016; Threapleton et al., 2013).

Moreover, fiber is closely linked to weight management and obesity prevention (Cho et al., 2013) as it promotes a feeling of fullness, helping to reduce overeating and therefore it supports healthier body weight. Given that obesity and metabolic conditions like Type 2 diabetes are rising concerns in Portugal (Crisp, 2015), the incorporation of more fiber into daily diets is highly advisable.

2.2.2 Fermented Foods

Another key component of the traditional Japanese diet is the regular consumption of fermented foods which are miso (a paste of fermented soybeans, salt and sometimes with added rice), soy sauce, natto (fermented soybeans), and pickled vegetables.

Historically, fermentation was a process used to preserve and store food, today, it is used to enhance the bioavailability of nutrients (Knez et al., 2023), making it easier for the body to absorb and utilize them. The consumption of fermented foods has been linked to improved gut health due to the presence of probiotics, which play a crucial role in maintaining a healthy balance of gut bacteria (Marco et al., 2017).

A healthy gut microbiome is essential for the immune system, digestion, and even mental health (Clapp et al., 2017), additionally, fermented foods are often rich in enzymes, which help the body break down food more efficiently, supporting better nutrient absorption and reducing the likelihood of gastrointestinal issues (Bedford, 1996).

Furthermore, regular intake of fermented foods has been associated with reduced inflammation (Lorea Baroja et al., 2007) and therefore improved cardiovascular health (Hill et al., 2023) as the probiotics found in these foods help lower cholesterol levels (Hill et al., 2023) and improve heart function.

2.2.3 Soy Products

Soy products are a staple of traditional Japanese diet, providing a plant-based source of high-quality protein with several health benefits, some common soy-based foods are tofu, miso, natto, and soy sauce which are consumed regularly by the Japanese, they provide essential nutrients, including isoflavones, which have been shown to play a role in reducing the risk of certain cancers (Sarkar & Li, 2003). Soy isoflavones also mimic the effects of estrogen, helping to alleviate menopausal symptoms (Messina, 2014) and support bone health, which is critical for preventing osteoporosis, especially in aging populations (Wei et al., 2012).

Soy foods are also known for their heart-health benefits, the regular consumption of soy has been linked to lower cholesterol levels, particularly low-density lipoprotein (LDL) cholesterol, which reduces the risk of heart disease (Jayachandran & Xu, 2019), in addition, soy helps promote healthy blood pressure levels, contributing to overall cardiovascular health (Hasler, 2002).

Compared to animal-based protein sources, soy products are lower in saturated fats, making them a healthier alternative, therefore, bringing a higher consumption of unprocessed soy products into the Portuguese diet could serve as an effective strategy for addressing common health concerns in Portugal, especially cardiovascular disease.

2.2.4 Fish and Shellfish

Fish and shellfish are common in the Japanese diet, providing a rich source of omega-3 fatty acids, which are essential for cardiovascular health, the regular consumption of fish, particularly fatty fish such as salmon, mackerel, and sardines, strongly linked to lower risks of heart disease, stroke, and hypertension (Shahidi & Ambigaipalan, 2018), this is due to the omega-3 fatty acids, which are abundant in these fish, they help reduce inflammation, lower triglyceride levels, and improve blood vessel function, all of which contribute to better heart health (Simopoulos, 2002).

Shellfish such as clams, oysters, and shrimp are also important in the Japanese diet, offering other additional health benefits, shellfish are rich in minerals such as zinc, iron, and iodine (Venugopal & Gopakumar, 2017), which support immune function, thyroid health (Maxwell & Volpe, 2007; Shankar & Prasad, 1998).

While fish is already a big part of the Portuguese culinary tradition, increasing the frequency of consumption, particularly of omega-3-rich fish and shellfish, could have a positive impact on the health status of the population.

2.2.5 Hara Hachi Bu

“Hara Hachi Bu” is a traditional Japanese practice that advises individuals to eat until they are 80% full, encouraging moderation and preventing overeating. By eating until they are just satisfied, rather than full, individuals are better able to maintain a healthy body weight and avoid the negative health effects associated with overeating, such as obesity, metabolic syndrome, and type 2 diabetes (Omodei & Fontana, 2011).

The practice of Hara Hachi Bu also aligns with modern research on caloric restriction and its impact on longevity (Masoro, 2005), studies have shown that reducing caloric intake without malnutrition can extend lifespan and reduce the risk of age-related diseases (Omodei & Fontana, 2011). Adopting the principle of Hara Hachi Bu in Portugal, where overeating and large portion sizes are common, could be a strategy in combating the growing rates of obesity.

2.2.6 Green Tea and Seaweed

Green tea is a popular beverage in Japan, being widely regarded for its numerous health benefits, it is rich in antioxidants, particularly catechins, also it has been linked to improved cardiovascular health, reduced inflammation, and enhanced brain function (Mancini et al., 2017). Regular consumption of green tea has also been associated with a lower risk of cancer (Suganuma et al., 1999) and type 2 diabetes (Park et al., 2014), the anti-inflammatory and

antioxidant properties of green tea help protect against oxidative stress (M.C et al., 2002), which is a major contributor to chronic diseases.

In addition to green tea, seaweed is another key component of the Japanese diet, it is a nutrient-dense food rich in iodine, calcium, iron, and vitamins A, C, and E, seaweed are particularly beneficial for thyroid health due to its high iodine content, which is essential to produce thyroid hormones (Laurberg et al., 2010). Seaweed also contains unique bioactive compounds, such as fucoidans, which have anti-inflammatory and immune-boosting properties (Phull & Kim, 2017).

2.3 Dietary Habits in Portugal

In Portugal, dietary habits have undergone significant changes in the last decades, ultraprocessed foods, which are often high in sugar, unhealthy fats, and sodium, have become a staple in the diets of the Portuguese population, especially in young age groups (Magalhães et al., 2021), and the rise in diet-related chronic diseases, including obesity, diabetes, and cardiovascular disease observed in Portugal younger population is likely to be partly related to this development (Crisp, 2015).

Portuguese dietary patterns differ significantly from those of Japan, while Portugal has a rich culinary heritage that includes fresh vegetables, legumes, and fish, the consumption of these traditional foods has been decreasing, because they are being increasingly replaced with foods prepared away from home (Rei et al., 2025), ultraprocessed products and fast food, especially among the younger generations (De Moraes et al., 2021). The declining consumption of fiber-rich foods, such as fruits, vegetables and whole grains has contributed to poor health outcomes, particularly in younger generations (Araújo et al., 2015), additionally, the food offered in Portuguese restaurants tends to be of lower nutritional quality, often featuring high-calorie, high-fat, and ultra-processed options, which may contribute to unhealthy dietary patterns. (Silva et al., 2024)

Efforts to promote healthier eating habits in Portugal have been met with challenges, including cultural preferences for traditional foods and limited access to affordable, nutritious options (Gregório et al., 2018).

2.4 Barriers and drivers of the adoption of healthy foods

Despite growing awareness about the importance of healthy eating, many barriers prevent individuals from making substantial dietary changes, in Portugal, multiple factors contribute to the difficulty in adopting healthier eating habits, cultural preferences for traditional dishes, coupled with the high cost of healthier food options, pose significant challenges to dietary improvement (Moraes et al., 2020), on top of this, Portugal exhibits a high prevalence of eating away from home, a practice commonly associated with lower nutritional quality and increased sedentary behavior (Rei et al., 2025; Silva et al., 2024).

One crucial barrier identified in this study was related to limited knowledge about healthier dietary alternatives, specifically fermented foods, fiber-rich products, and the Japanese dietary model, this shows that many individuals are not fully aware of the long-term health benefits associated with these dietary components, thus hindering their willingness to adopt healthier eating practices. Price sensitivity and limited availability of nutritious food options also emerged as prominent barriers in the empirical findings of this research, the convenience and affordability of ultra-processed foods significantly increase their appeal, further reinforcing unhealthy dietary patterns (Gregório et al., 2018).

However, some factors can act as drivers, facilitating healthier dietary changes, increased education, and clear labelling of nutritional benefits serve as effective promoters for healthier eating habits, also education campaigns that clearly outline the benefits of consuming foods rich in fiber and probiotics, such as those prevalent in the traditional Japanese diet, could effectively overcome some of these barriers. From the perspective of the Health Belief Model (HBM), public health initiatives that emphasize the severity of health risks associated with poor dietary habits, alongside clear communication of the tangible health benefits of adopting healthier foods, could significantly improve individuals' dietary choices (Rosenstock, 1974), therefore, addressing these barriers through educational interventions and targeted marketing strategies may encourage positive dietary behavior changes in young Portuguese adults.

2.5 Determinants of Dietary Behavior Change

Understanding the theoretical frameworks that underpin dietary behavior change is essential for designing effective strategies that encourage healthier eating habits, several models have been developed to explain how individuals make decisions about their diet and how external and internal factors influence those choices. This section presents key models that shed light on the motivations and barriers to dietary change, focusing specifically on the Health Belief Model (HBM), as it aligns closely with this study's objectives.

2.5.1 Health Belief Model (HBM)

The Health Belief Model (HBM) suggests that individuals are more likely to modify their behaviors when they perceive themselves to be at risk of health issues and believe that acting will improve their outcomes, it emphasizes the role of perceived susceptibility, perceived severity, perceived barriers, perceived benefits, cues to action, and self-efficacy in decision-making (Rosenstock, 1974).

This model has been widely applied in studies of health-related behavior change, including dietary interventions, as it effectively explains why some individuals engage in healthier eating behaviors while others do not (Snetselaar, 2001), due to its strong relevance, this study adopted the HBM as its central theoretical framework, this framework allows a deeper exploration of how health beliefs and perceptions influence dietary choices, specifically how perceived severity, susceptibility, benefits, and barriers impact an individual's decision-making process. Applying this model to young Portuguese adults can improve our understanding of their dietary motivations and barriers, therefore informing effective health promotion strategies.

2.5.2 Health Awareness and Dietary Choices

Health awareness refers to the extent to which individuals recognize the impact of their dietary habits on health outcomes, according to existing research, individuals with greater health awareness tend to show higher motivation and commitment towards healthier eating behaviors

(Snetselaar, 2001), this can significantly influence dietary choices by increasing an individual's perception of both susceptibility to diet-related health issues and the severity of these potential health threats (Glanz & Bishop, 2010).

Studies have consistently demonstrated that heightened health awareness positively correlates with improved eating habits, increased consumption of nutrient-dense foods, and reduced intake of ultra-processed foods (Cheikh Ismail et al., 2025), this not only informs immediate dietary decisions but also influences long-term dietary adherence by reinforcing an individual's perceived benefits of adopting healthier food practices.

2.5.3 The Role of Sex and BMI in Dietary Choices

Demographic factors, such as sex and Body Mass Index (BMI), have been shown to significantly influence dietary behavior (Larenas et al., 2025), research suggests gender differences often manifest in health-related behaviors, with female individuals typically exhibiting a greater awareness and higher predisposition toward healthier dietary choices compared to males (Wardle et al., 2004), additionally, individuals with higher BMI may experience more barriers, such as entrenched eating patterns or lower self-efficacy, potentially limiting their willingness or ability to adopt dietary improvements (Larenas et al., 2025).

Considering the young Portuguese population, it's crucial to assess whether gender and BMI play similar roles, influencing their willingness to integrate healthier elements from the Japanese dietary pattern.

2.5.4 Other Relevant Health Promotion Models

Although the Health Belief Model is the primary theoretical framework guiding this research, additional insights from the Theory of Planned Behavior (TPB) and Self-Determination Theory (SDT) provide valuable complementary perspectives.

The Theory of Planned Behavior (TPB) proposes that an individual's intention to adopt a new behavior is shaped by three key factors: attitudes toward the behavior, subjective norms, and

perceived behavioral control (Ajzen, 1991), this model helps explain how social influences and individual beliefs jointly affect dietary decisions, highlighting the importance of social and psychological factors in predicting dietary change.

On the other hand, the Self-Determination Theory (SDT), emphasizes intrinsic motivation as a critical driver of sustained behavioral change, it posits that autonomy, competence, and relatedness are fundamental psychological needs influencing the individual's ability to maintain new dietary behaviors over time (Ryan & Deci, 2000). In the dietary context, autonomy refers to an individual's control over their food choices, competence relates to their confidence in making healthier decisions, and relatedness underscores the role of social connections in sustaining long-term dietary changes.

Although TPB and SDT provide valuable insights, the Health Belief Model remains the central theoretical lens used in this research due to its specific focus on health-related perceptions and behavioral change in dietary contexts.

2.6 Industry and Marketing's Role in Dietary Change

The food industry and marketing strategies play a critical role in shaping dietary habits by influencing individual food choices and broader societal trends, the marketing efforts, can either encourage healthier dietary behaviors by promoting nutritious food options and educational messaging or hinder these behaviors through the aggressive promotion of ultra-processed foods emphasizing convenience, affordability, and desirability (Carroll et al., 2024), therefore, understanding these dynamics is essential when assessing strategies aimed at improving dietary choices, especially among younger populations.

From the perspective of the Health Belief Model (HBM), marketing interventions serve as important cues to action, significantly affecting individuals' perceived susceptibility to health risks and perceived benefits associated with dietary changes. Marketing campaigns that highlight specific health benefits of nutritious foods, such as increased energy, reduced risk of disease, and effective weight management, reinforce the perceived benefits and encourage individuals to adopt healthier dietary habits, in contrast, intensive marketing practices promoting ultra-processed foods increase perceived barriers by associating these products with

positive attributes like convenience, affordability, and social desirability, thus reducing motivation for healthier dietary choices.

Research consistently highlights the significant impact of emotional and social appeals in food marketing, particularly among younger populations (Carroll et al., 2024; Verstuyf et al., 2012), these strategies, often minimize or obscure the perceived severity of health risks, leading individuals, especially younger consumers, to underestimate the long-term consequences of unhealthy dietary patterns.

Recognizing the influence of these marketing strategies, policymakers and public health organizations, have increasingly emphasized the importance of implementing regulatory interventions, some strategies, such as front-of-pack nutritional labelling, advertising restrictions targeting vulnerable groups (children), and educational public campaigns align closely with Health Belief Model principles, these interventions effectively address perceived barriers and enhance the perceived benefits of adopting healthier eating habits by improving consumer awareness and self-efficacy (Glanz & Bishop, 2010; Snetselaar, 2001).

Incorporating the principles of the HBM into marketing interventions and public health policy is a solid theoretical foundation to encourage sustained dietary behavior change by directly addressing perceived barriers and clearly communicating the health benefits associated with healthier food choices.

2.7 Research Gaps and Hypothesis Development

2.7.1 Identification of Research Gaps

Despite extensive research outlining the health benefits associated with dietary patterns such as the traditional Japanese diet, as well as challenges related to promoting dietary improvements in Western contexts, critical gaps persist within current academic literature. Although the link between unhealthy dietary patterns and chronic diseases (example: obesity, cardiovascular disease, type 2 diabetes) is well established, the application and acceptance of healthier, culturally distinct dietary models, such as the traditional Japanese diet, remain largely unexplored within the Portuguese context, particularly among young adults.

Moreover, existing literature frequently examines general dietary behavior determinants, such as health awareness, gender, and BMI, yet rarely integrates these factors to assess openness toward adopting foreign dietary practices. Specifically, the individual and combined impacts of gender differences, BMI status, and perceived importance of diet in shaping willingness to embrace the Japanese diet have not been comprehensively investigated within the Portuguese population.

Therefore, the primary research gaps identified include:

1. **Cultural Contextualization:** Limited research has been conducted on the willingness of Portuguese young adults to adopt dietary practices inspired by non-Western dietary models, particularly the Japanese dietary pattern, despite its demonstrated health benefits.
2. **Integrated Analysis of Demographic Factors (Sex and BMI):** Although gender and BMI are widely recognized as influential determinants of dietary behaviors, their combined and independent effects in influencing the acceptance of culturally distinct dietary habits remain underexplored in existing literature.
3. **Perceived Importance of Dietary Choices:** There is insufficient exploration into how young Portuguese adults perceived importance of diet, particularly its perceived relationship to health and well-being, influences openness toward adopting alternative, culturally distinct diets.

Addressing these gaps provides an important step forward in understanding the complex interplay between demographic factors, dietary perceptions, and cultural preferences, thus enabling the development of targeted and culturally sensitive dietary interventions.

2.7.2 Hypothesis Development

Based on the identified research gaps and insights drawn from the comprehensive literature review, the following hypotheses were developed to guide empirical investigation. These hypotheses are underpinned primarily by the Health Belief Model (HBM), providing a clear theoretical framework for understanding factors influencing dietary behavior change.

- Hypothesis 1 (H1): “Female individuals show a higher predisposition to adopt elements of the Japanese diet compared to male individuals.”

Previous research indicates women generally exhibit greater openness to dietary change and possess higher health awareness compared to men (Gregório et al., 2018; Wardle et al., 2004). According to the HBM, this may reflect higher perceived susceptibility and perceived benefits associated with healthier dietary choices among women, facilitating their greater willingness to adopt components of the Japanese dietary model.

- Hypothesis 2 (H2): “Individuals with a higher Body Mass Index (BMI) have a lower predisposition to adopt foods characteristic of the Japanese diet compared with those with lower BMI.”

Higher BMI is often linked to increased barriers to dietary change, including entrenched eating habits, lower self-efficacy, and higher perceived difficulty in transitioning to healthier dietary practices (Larenas et al., 2025; Wardle et al., 2004). Thus, individuals with lower BMI might be more receptive to dietary interventions promoting healthier eating patterns, particularly those associated with the Japanese diet.

- Hypothesis 3 (H3): “Individuals who attribute greater importance to diet in maintaining their health and overall well-being exhibit higher willingness to adopt dietary habits inspired by the Japanese diet compared to those who attribute less importance to dietary choices.”

Health perceptions, particularly the perceived benefits of dietary improvement, have been consistently identified as strong predictors of dietary change (Glanz & Bishop, 2010; Rosenstock, 1974). Hence, young adults who prioritize dietary choices in relation to their health outcomes are expected to show greater openness to integrating healthier dietary practices characteristic of the Japanese model, including increased fiber intake, consumption of fermented foods, and reduced intake of ultra-processed foods.

Although these variables are not explicitly hypothesized, their analysis contributes valuable context to understanding broader dietary behavior among Portuguese youth, particularly their openness to adopting foreign dietary practices.

2.8 Conclusion

In summary, the literature reviewed in this chapter provides a robust foundation regarding the relationship between dietary habits and long-term health outcomes, emphasizing the pressing need to address unhealthy eating behaviors prevalent in Western societies, including Portugal. The growing burden of chronic diseases, such as obesity, diabetes, cardiovascular conditions, and certain cancers, has clearly been linked to dietary patterns characterized by excessive consumption of ultra-processed foods, sugars, and unhealthy fats, alongside inadequate intake of fiber-rich and nutrient-dense foods.

The traditional Japanese dietary model emerged prominently from this review as an exemplary dietary pattern associated with significant health benefits, including enhanced cardiovascular health, improved metabolic function, and increased longevity. Key dietary components such as fiber, fermented foods, soy products, fish and shellfish, the cultural practice of "Hara Hachi Bu," and the consumption of antioxidant-rich foods like green tea and seaweed, offer promising pathways for improving health outcomes among Portuguese young adults.

Nevertheless, significant barriers persist in the Portuguese context, hindering the adoption of healthier dietary practices, these barriers include cultural attachment to traditional, often unhealthy, dishes, limited knowledge about the nutritional benefits of alternative foods, price sensitivity, and limited availability of healthy dietary options. To address these challenges, targeted educational interventions, clear nutritional labelling, and strategic public health campaigns designed to enhance consumer awareness and perceived self-efficacy in dietary decision-making is essential.

Furthermore, theoretical frameworks such as the Health Belief Model (HBM), Theory of Planned Behavior (TPB), and Self-Determination Theory (SDT) were critically evaluated. Among these, the HBM emerged as the most appropriate and central model for this study, given its specific focus on health-related perceptions, including perceived susceptibility, severity, benefits, and barriers, as determinants of dietary behavior change, additionally, industry and marketing strategies were identified as critical external factors influencing dietary behaviors. Marketing interventions aligned with the HBM principles, emphasizing the positive health outcomes and addressing perceived barriers, hold substantial potential for facilitating dietary changes, particularly among younger populations.

Lastly, despite the extensive existing literature, clear research gaps remain, notably regarding the specific context of young Portuguese adults. Few studies have explored how demographic factors such as sex and BMI, along with perceived dietary importance, collectively influence openness to adopting a culturally distinct dietary model like the Japanese diet. This thesis addresses these gaps, it aims to provide novel insights into the interplay between dietary perceptions, demographic factors, and openness toward adopting healthier dietary practices, thereby contributing significantly to both academic literature, marketing strategies and public health policies in Portugal.

3 Methodology

3.1 Study Design

This study adopted a descriptive research approach to investigate the willingness of young Portuguese adults to adopt healthier eating habits inspired by the Japanese diet. Primary data was collected through the administration of a survey to a sample of the population of interest, seeking to assess individual attitudes, behaviors and barriers related to dietary changes.

3.2 Population, Sample, and Recruitment

3.2.1 Population

This demographic is significant for shaping the future dietary trends due to their openness to change.

3.2.2 Sample and Recruitment

Participants were recruited using the Prolific platform, which ensured a diverse and representative sample. Screening questions ensured that only eligible participants, Portuguese adults aged 18-40, completed the survey. The recruitment process aimed to capture variations in gender, socioeconomic status, and educational background. Non-nationals or long-term residents, individuals underaged or older than 40 years and those not providing informed consent were excluded. The final sample consisted of 125 valid responses.

3.3 Survey Design and Data Collection

The survey was designed to capture comprehensive insights into dietary habits, health awareness, and willingness to adopt Japanese-inspired dietary practices. It was divided into the following sections:

- **Demographics:** Basic demographic information, including age, gender, income, height, and weight.

- **Food Consumption Frequency:** Participants reported the frequency of consumption of various food items of the previous month. These questions were categorized into FFQ2 (Food Frequency Questions 2), the healthy group (example: vegetables, whole grains) and FFQ1 (Food Frequency Questions 1) the unhealthy group (example: sugary snacks, ultraprocessed foods).
- **Health Awareness:** Measured through a 5-point Likert scale, assessing participants' perceptions of diet's importance to health and the benefits of specific dietary components (fiber, fermented foods, and ultraprocessed food reduction).
- **Belief in Dietary Benefits:** Three additional 5-point Likert scale measures assessing beliefs about fiber, fermented foods, and ultraprocessed food reduction (Belief Fiber, Belief_Ferm, BeliefUltraProc).
- **Barriers to Healthy Eating:** Participants identified obstacles to adopting healthier dietary habits, such as cost, availability, and lack of knowledge. Responses were categorical.
- **Willingness to Adopt the Japanese Foods and Food Practices:** Evaluated using a 5-point Likert scale, assessing participants' openness to incorporating Japanese dietary elements, such as omega-3-rich fish, fermented foods, and the "Hara Hachi Bu" practice.
- **Associations with the Japanese Diet:** one open-ended question collecting qualitative insights into participants' perceptions of the Japanese diet
- **Willingness to Adopt the Japanese Diet (WTAJapan):** was the main dependent variable in this study, measuring participants' openness to changing dietary habits.

The survey included both closed-ended and open-ended questions. Closed-ended questions employed mostly, but not only, 5-point Likert scales and categorical options for ease of quantitative analysis, while open-ended questions provided deeper insights into participants' attitudes and perceptions.

The survey took approximately 5 minutes to complete, anonymity and confidentiality were ensured, and participants were informed of the purpose and significance of the study before beginning the survey. The survey included both validated and adapted psychometric scales to assess key constructs, though most of the questions were adapted specifically for this study.

The variable Health Awareness (*Health Aware*) was measured using a 5-point Likert scale, adapted from existing health consciousness scales (Gould, 1990; Remar, 2023). The Willingness to Adopt Japanese Dietary Practices (*WTAJapan*) scale was developed specifically for this study, based on literature on dietary behavior change, although not previously validated, it follows standard Likert-based measures for behavioral intention.

The full survey can be found in the Appendix 2.

3.4 Data Analysis

3.4.1 Quantitative Analysis

Quantitative data were analysed using R Studio, descriptive and inferential statistics were employed to summarize participants demographic information and overall dietary habits. Techniques such as correlation analysis and regression models were applied to identify relationships between variables, visualization tools, including ggplot, were used to create graphs and plots that illustrate key findings, while correlation analysis helps identify patterns and relationships between variables, it does not establish causality. To further investigate potential predictors of dietary change, regression models will be used to assess the strength and direction of these associations.

3.4.2 Qualitative Analysis

To complement the quantitative findings, a word cloud analysis was conducted based on participants open-ended positive responses (118 out of a total of 125) and, in Excel, it was identified the word that best summarized each response, then, an online word cloud generator was used to identify the most frequently mentioned terms, providing an overview of recurring themes and associations. The word cloud analysis provided an exploratory perspective on participants' views of the Japanese diet, offering insights into their perceived benefits.

3.4.3 Statistical Analysis

To identify dietary patterns within the collected data, a Principal Component Analysis (PCA) was performed, this is a statistical technique used to reduce the dimensionality of large datasets by grouping correlated variables into components. This method allows for the identification of dietary patterns by analysing the structure of food consumption, therefore reducing the need to evaluate large individual food choices.

3.4.3.1 Principal Component Analysis (PCA)

PCA was applied separately for FFQ1 and FFQ2 to derive dietary patterns. The extraction method used was Principal Component Analysis (PCA) with Promax rotation, the decision to use Promax rotation assumed that the dietary components could be correlated.

The adequacy of the dataset for PCA was evaluated through two key tests, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy assessed whether the data were suitable for factor analysis, with values above 0.5 are considered acceptable, and higher values indicating stronger correlations among variables. Bartlett's Test of Sphericity was also conducted to determine whether the correlation matrix was significantly different from an identity matrix, confirming that factor analysis was appropriate.

The number of components to retain was determined using two criteria:

- Kaiser's Criterion: Components with eigenvalues greater than 1 were retained, this rule suggests that only factors accounting for significant portions of variance should be kept.
- Scree Plot Inspection: A visual examination of the Scree Plot was performed to identify the "elbow point," where the eigenvalues start to level off, indicating the number of meaningful components.

3.4.3.2 Principal Component Analysis (PCA) for FFQ1

To identify dietary patterns in the sample, a Principal Component Analysis (PCA) was conducted using Promax rotation, this analysis allowed for the reduction of the dimensionality of the FFQ1 data, grouping foods with similar consumption characteristics.

The sample adequacy test, assessed by the Kaiser-Meyer-Olkin (KMO) = 0.586, indicates an acceptable value for proceeding with the PCA. Bartlett's test of sphericity was significant ($\chi^2 = 86.357, p < 0.001$), confirming that the data were suitable for factor analysis.

The Total Variance Explained Table presents the eigenvalues and the variance explained by the extracted components, three components were retained based on Kaiser's criterion (eigenvalues > 1) and the inspection of the Scree Plot Figure, which shows an inflection point after the third component.

3.4.3.3 Structure of Extracted Components for FFQ1

The Pattern Matrix Table shows the factor loadings of foods in the identified components:

- Component 1: "Western Pattern"
 - White bread (0.713)
 - Red meats (0.703)
 - Processed meats (0.574)
- Component 2: "Processed Food Pattern"
 - Light/sugary soft drinks (0.733)
 - Ready-to-eat meat-based foods (0.656)
 - Sweets and cakes (0.629)
- Component 3: "Dairy-Based Pattern"
 - Eggs (0.845)
 - Cheese and yogurt (0.628)

The components were moderately correlated (Component Correlation Matrix Table), suggesting that the identified dietary patterns share some similarities but represent distinct consumption categories.

3.4.3.4 Discussion of Dietary Patterns for FFQ1

The identified patterns align with previous studies on Portuguese dietary habits, the "Western Pattern" is characterized by frequent consumption of meats and white bread, which are common in the Portuguese diet but may be associated with metabolic health risks, and the "Processed Food Pattern" includes industrialized foods, such as sweets and soft drinks, indicating a group of individuals with a higher tendency for ultra-processed food consumption. Finally, the "Dairy-Based Pattern" reflects a high intake of dairy products, an important source of protein and calcium, the exclusion of the milk variable was necessary due to its low contribution to the factor structure, which could compromise the validity of the classification of dietary patterns.

These results will later be analysed in relation to other variables, such as BMI, age, and health perception, to better understand how dietary patterns impact eating behaviors and barriers to healthy food consumption.

3.4.3.5 Principal Component Analysis (PCA) for FFQ2

To further refine the analysis of dietary patterns, a second PCA was performed using the FFQ2 dataset, this process follows the same methodological approach as FFQ1, applying Promax rotation to allow correlated factors.

The sample adequacy test indicated a KMO = 0.550, which is within the acceptable range. Bartlett's test of sphericity was also significant ($\chi^2 = 89.937, p < 0.001$), supporting the suitability of the data for factor analysis.

The Total Variance Explained Table suggests that three components should be retained, based on Kaiser's criterion and the Scree Plot Figure, which displays a clear inflection point after the third component.

3.4.3.6 Structure of Extracted Components for FFQ2

The Pattern Matrix Table highlights the factor loadings for foods categorized into three primary dietary patterns:

- Component 1: "Healthy Pattern"
 - Fruits (0.786)
 - Vegetables (0.692)
 - Nuts and seeds (0.628)
- Component 2: "Protein-Rich Pattern"
 - Poultry (0.794)
 - Fish (0.779)
- Component 3: "Beverage-Oriented Pattern"
 - Coffee (0.800)
 - Fruit juices (0.517)
 - Whole grains (0.553)

The Component Correlation Matrix Table indicates low correlations between these components, suggesting that they represent distinct dietary behaviors with minimal overlap.

3.4.3.7 Discussion of Dietary Patterns for FFQ2

The dietary patterns identified in FFQ2 reinforce and expand upon the results from FFQ1. The "Healthy Pattern" reflects a diet rich in nutrient-dense foods, such as fruits, vegetables, and seeds, commonly associated with positive health outcomes, the "Protein-Rich Pattern" captures dietary habits emphasizing high-quality protein sources, particularly lean meats and fish. Finally, the "Beverage-Oriented Pattern" indicates a subgroup with distinct beverage consumption habits, particularly coffee, fruit juices, and whole grains.

These patterns will be further examined in relation to other study variables, such as BMI, gender, and health awareness, to explore their influence on dietary behaviors and openness to dietary changes.

3.5 Statistical Modelling and Variable Selection

Quantitative data analysis was conducted using statistical methods to assess the relationship between dietary behaviors, demographic factors, and willingness to adopt the Japanese diet. Initially, a Pearson correlation analysis was performed to identify significant relationships among variables, guiding the selection of independent variables to be included in the subsequent regression model.

Following this exploratory analysis, an ordinal logistic regression model was conducted. This type of regression was chosen because the dependent variable, willingness to adopt elements of the Japanese diet (WTAJapan), was measured on an ordinal scale, capturing ranked levels of agreement. Specifically, the regression was implemented using the “polr” function from the “MASS” package in R, suitable for fitting proportional odds logistic regression models to ordinal data. This method estimates the probability of respondents belonging to a certain category or lower, based on the predictors included in the model, providing insights into the incremental impact of independent variables on the likelihood of individuals adopting dietary changes.

The independent variables included in the regression model were selected based on theoretical relevance and preliminary statistical analyses, initially, a Pearson correlation analysis was performed to assess relationships among potential predictors (example: dietary behaviors, health awareness, demographic factors) and the dependent variable. Variables demonstrating significant correlations were initially considered for the ordinal logistic regression, however, to ensure the validity and interpretability of the regression model, a Variance Inflation Factor (VIF) analysis was conducted to detect multicollinearity among predictors, therefore variables with high collinearity were carefully reviewed, and where high collinearity existed, variables demonstrating stronger theoretical linkage and higher statistical significance were retained, while highly collinear variables were excluded.

Given a strong negative correlation between Sex and BMI ($r = -0.388, p < 0.01$), preliminary analyses separately assessed their individual impacts on willingness to adopt the Japanese diet. Neither Sex nor BMI maintained statistical significance in regression models that included dietary and behavioral variables (e.g., fiber consumption, attitudes towards vending machine

food availability), therefore, to prevent issues arising from multicollinearity, the final regression model prioritized variables directly related to dietary habits and consumer beliefs, such as fiber-rich food consumption (WTCFiber), willingness to consume healthier foods available in vending machines (WTCVending), perceived barriers to healthy eating (BarrierHealthy7), and dietary patterns identified by Principal Component Analysis (Component1).

The final model's fit was evaluated through multiple fit indices: Log-likelihood, Chi-Square (G^2), McFadden's R^2 , Nagelkerke's R^2 , and Cox & Snell's R^2 . These metrics collectively provided an understanding of the model's explanatory power and confirmed its adequacy in capturing the relationship between independent and dependent variables.

3.6 Ethical Considerations

The study adhered to ethical guidelines to ensure participant welfare and data integrity. Informed consent was obtained from all participants, and they were assured of their anonymity and the confidentiality of their responses.

4 Results and Discussion

4.1 Descriptive statistics

4.1.1 Demographic and anthropometric characteristics

The sample consisted of 125 participants who completed the online questionnaire, the demographic and anthropometric characteristics of the respondents are summarized in Table 1.

Table 1. Descriptive statistics of online questionnaire responses ($n = 125$).

Variable	<i>n</i>	%
Age (years)		
18 – 20	1	0.8
21 – 25	59	47.2
26 – 30	33	26.4
31 – 35	22	17.6
36 – 40	10	8
<i>Mean age = 27.38</i>		
Sex		
Male	69	55.2
Female	56	44.8
Body Mass Index (kg/m²)		
< 18.5	6	4.8
18.5 – 24.9	79	63.2
25.0 – 29.9	36	28.8
30.0 ≥	4	3.2
<i>Mean BMI = 23.73</i>		
Marital Status		
Single	112	89.6
Married	9	7.2
Divorced	1	0.8
Other	3	2.4
Chronic Disease		
Yes	16	12.8
No	109	87.2

Income (€)		
0 – 820	3	2.4
820 – 1640	25	20
1640 – 2460	20	16
2460 – 3280	25	20
3280 – 4100	18	14.4
4100 – 8200	14	11.2
8200 ≥	2	1.6
Don't know, don't want to answer	18	14.4
<i>Median Income = 2460-3280</i>		

The mean age of the participants was below 30, with almost half of the respondents falling within the 21–25 age range, in terms of gender distribution, most of the respondents were males. The body mass index (BMI) classification revealed that most participants had a BMI in the 18.5–24.9 range, indicating a normal weight category, then, regarding marital status, almost all the participants were single and the prevalence of chronic diseases among respondents was very low. Finally, the monthly net household income distribution showed that the median income for the sample was within the €2,460–€3,280 range. All this data aligns with the expected characteristics of our intended demographic “Young Portuguese adults”.

4.1.2 Descriptive Statistics of Likert Scale Variables

Table 2 presents the descriptive statistics for all Likert scale variables assessed in the survey, the results indicate that *Belief in Fiber's Importance* had the highest mean score, suggesting a strong recognition of fiber's health benefits among participants, similarly, *Health Awareness* also scored high, reinforcing the importance attributed to health-conscious behaviors. On the other hand, *WTC Fermented Foods* had the lowest mean score, indicating a lower predisposition toward increasing fermented food consumption, whereas *Belief in Ultra-Processed Foods' Health Risks* also received a relatively high score, reflecting concerns about processed food consumption.

Regarding barriers, *Barrier Cooking Knowledge* showed moderate perceived difficulties in terms of knowledge required for food preparation. Finally, *WTC Fiber* and *WTC Vending Machines* presented intermediate values, indicating a mixed willingness to change eating habits in these areas.

Overall, the findings highlight strong awareness of fiber’s health benefits, moderate concerns about ultra-processed foods, and a lower inclination to adopt fermented foods, potentially due to knowledge barriers in food preparation.

Table 2. Descriptive statistics of 5-point Linkert Scale Questions ($n = 125$).

Variable	Mean	σ
HealthAware	4.06	0.78
Belief_Fiber	4.34	0.60
BeliefUltraProc	4.13	1.10
BeliefFerm	3.21	0.71
WTCFiber	3.80	0.89
WTCFerm	2.84	1.01
WTCVending	3.29	1.22
WTAJapan	4.11	0.87
BarrierCookKnow	3.18	0.99

4.1.3 Barriers to Increasing Fermented Food Consumption

Figure 1 presents the barriers identified for increasing the consumption of fermented foods, lack of knowledge about fermented foods emerged as the most significant barrier, suggesting the need for greater awareness and education about these food products, taste preferences were also frequently mentioned, suggesting that individuals regard pleasant taste as a key role in their consumption behavior. Additionally, price was a limiting factor, although less frequently than other barriers, some respondents indicated that availability was an issue, while a smaller proportion mentioned other reasons for not consuming fermented foods. Lastly, an interesting group of participants reported facing no barriers to increasing their intake of fermented foods.

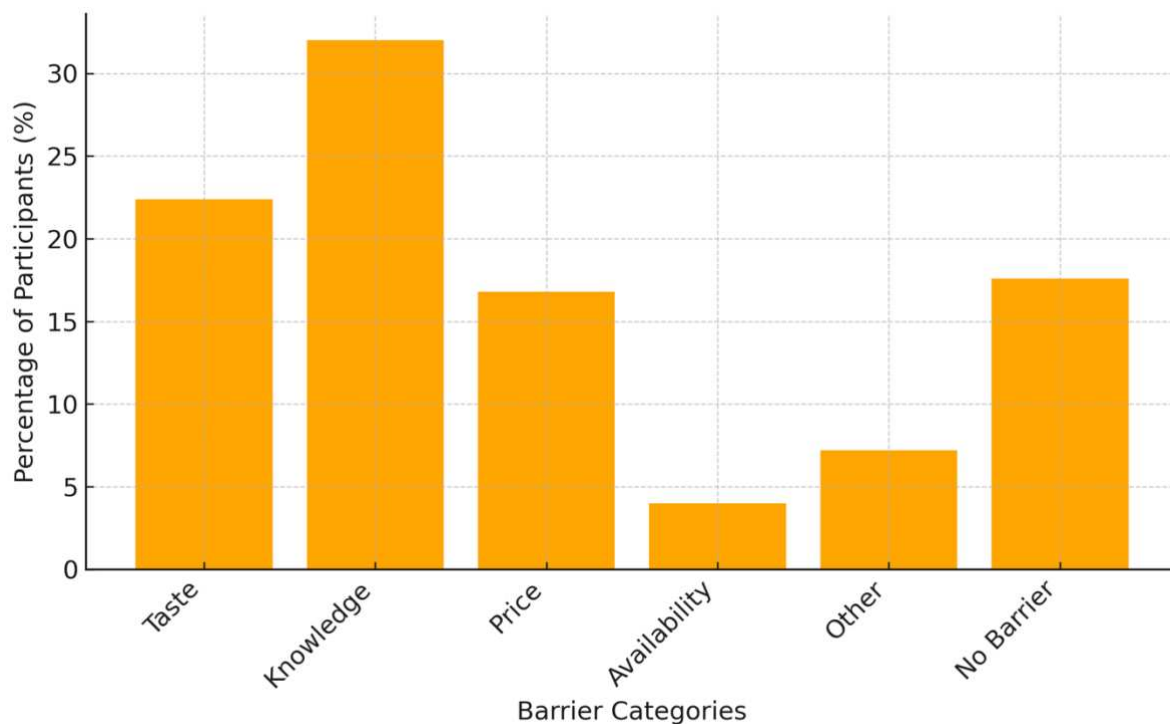


Figure 1. Factors Limiting the Consumption of Fermented Foods

4.1.4 Barriers to Increasing Healthy Food Consumption

Figure 2 illustrates the main barriers reported by respondents regarding increasing their consumption of healthy foods, lack of time for meal preparation was the most frequently mentioned barrier, indicating that convenience plays a crucial role in dietary choices, also, price concerns also emerged as a relevant factor, reflecting financial constraints as a limiting aspect of healthy food consumption. Furthermore, lack of motivation to change dietary habits was identified as a barrier for some participants, while knowledge limitations and availability were also mentioned, they appeared less frequently, notably, a proportion of participants reported facing no obstacles to adopting a healthier diet, aligning with findings that indicate openness to dietary changes.

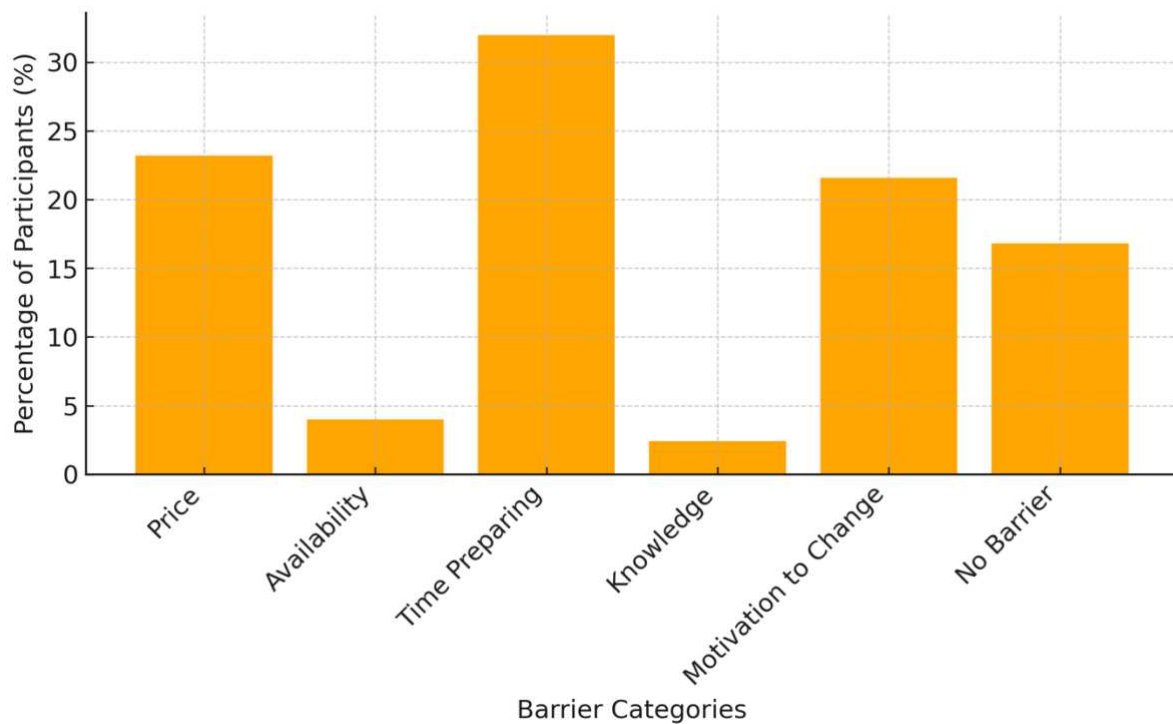


Figure 2. Factors Limiting the Consumption of Healthy Foods

4.1.5 Principal Component Analysis of Dietary Patterns

Table 3 shows the results of the Principal Component Analysis (PCA), which identified six major dietary components among the respondents, the component associated with *Meat and White Bread* showed a relatively high average score, indicating a strong presence of these food items in participants diets. On the other hand, the *Ultra-processed and Sugar* component exhibited the lowest average, suggesting lower overall consumption levels or greater variability in intake patterns, while the *Vegetables and Nuts* component emerged with the highest mean score, reflecting a strong preference for plant-based foods among some participants, similarly, the *Animal Protein* component recorded a high value, indicating the significant role of protein-rich foods in dietary choices. Finally, *Dairy and Eggs* and *Beverages and Carbohydrates* showed intermediate scores, suggesting a more balanced distribution of these food groups across the sample. These findings show that there were distinct dietary patterns among respondents, with some favouring plant-based options while others choosing a higher intake of processed and animal-derived foods.

Table 3. Principal Component Analysis (PCA) ($n = 125$).

Component	Mean	σ
1. Meat and White Bread	4.83	1.02
2. Ultra-processed and Sugar	3.90	0.92
3. Dairy and Eggs	4.50	1.12
4. Vegetables and Nuts	5.21	0.92
5. Animal Protein	4.91	1.01
6. Beverages and Carbohydrates	4.36	1.32

4.2 Correlation Analysis and Study Hypothesis Testing

The study is grounded in the Health Belief Model (HBM), which suggests that individuals' health-related behaviors are influenced by their perceived susceptibility to health risks, the severity of these risks, the benefits of taking, preventive action, and the barriers to doing so.

The complete correlation table can be found in Appendix A.

Therefore, we hypothesize that individuals who perceive their diet as highly important for their health and well-being will demonstrate a greater willingness to adopt healthier dietary practices and the analysis supports this assumption, as Health Awareness was moderately positively correlated with Willingness to Change Dietary Habits (WTC Japan) ($r = 0.193, p < 0.05$). Additionally, other significant associations were observed:

- **Positive Correlations with WTC Japan:**

- WTC Fiber ($r = 0.320, p < 0.01$): Higher fiber consumption is associated with a greater willingness to adopt the Japanese diet.
- WTC Fermented ($r = 0.295, p < 0.01$): Higher consumption of fermented foods is linked to a greater willingness to adopt the Japanese diet.
- WTC Vending ($r = 0.288, p < 0.01$): Indicates a possible association between vending machine food consumption and the willingness to follow the Japanese diet.

- Health Awareness ($r = 0.193, p < 0.05$): Individuals more conscious of the health impact of their diet are more likely to adopt the Japanese diet.
- Sex ($r = 0.254, p < 0.01$): Being female is positively associated with a greater willingness to adopt the Japanese diet.
- **Negative Correlations with WTC Japan:**
 - BMI ($r = -0.202, p < 0.05$): Individuals with a higher body mass index are less likely to adopt the Japanese diet.
 - Component 1 - White bread, red and processed meats ($r = -0.243, p < 0.01$): Greater consumption of red meats and white bread is associated with a lower willingness to adopt the Japanese diet.
- **Other meaningful associations:**
 - Belief in Fiber Benefits correlated with WTC Fiber ($r = 0.359, p < 0.01$) and WTC Fermented ($r = 0.271, p = 0.002$), indicating that individuals who recognize the importance of fiber tend to increase their consumption of fiber and fermented foods.
 - Belief in the Risks of Ultra-Processed Foods correlated positively with WTC Fiber ($r = 0.340, p < 0.01$) and WTC Fermented ($r = 0.330, p < 0.01$), suggesting that those who acknowledge the negative effects of ultra-processed foods are more willing to incorporate healthier alternatives.
 - Sex and BMI ($r = -0.388, p < 0.01$): Women tend to have lower BMI values than men.

These findings confirm that the three key hypotheses are supported:

1. Health-conscious individuals exhibit greater willingness to adopt the Japanese diet.
2. Individuals with a higher BMI are less likely to adopt the Japanese diet.
3. Women show higher predisposition to adopting Japanese dietary habits.

4.3 Regression Analysis

While correlation analysis provides valuable insights, it does not investigate associations at the multivariate level. To further understand the factors influencing WTC Japan, an ordinal logistic regression model was developed, controlling for multiple variables simultaneously.

4.3.1 Multicollinearity Assessment

To assess potential issues in the regression, the presence of multicollinearity was analysed using the Variance Inflation Factor (VIF). The values found indicate that there are no significant collinearity issues among the model variables (Table 4).

Table 4. Variance Inflation Factor (VIF) of the statistically significant variables.

Variable	VIF
WTCFiber	1.296
WTCVending	1.025
BarrierHealthy7	1.039
Component1	1.041

The VIF values indicate that there are no significant multicollinearity issues in the model, as all values are close to 1, suggesting low correlation among the independent variables.

4.3.2 Model Fit Evaluation

To assess the quality of the model fit, different statistics were analysed.

Since ordinal logistic regression was used in this study, traditional metrics like the F-statistic and Adjusted R^2 , commonly applied in linear regression analysis, are not appropriate, instead, model fit was assessed using suitable pseudo- R^2 statistics, among the different indices, McFadden's R^2 and Nagelkerke's R^2 were selected as they provide useful insights into

the model's explanatory power. McFadden's R^2 (0.121) suggests a moderate model fit, while Nagelkerke's R^2 (0.251) indicates that the model explains a considerable portion of the response variability. The complete model fit statistics are presented in Appendix C as (Table 5).

4.3.3 Analysis of Statistical Modelling Results

This section presents the results of the statistical modelling conducted to analyse the factors associated with the acceptance of the Japanese diet (WTAJapan).

The dependent variable used in the analysis was:

- WTAJapan: Willingness to adopt elements of the Japanese diet.

The independent variables included in the model were selected based on previously identified correlations:

- WTCFiber: Consumption of fiber-rich foods, measured through the declared predisposition to increase the intake of foods such as whole grains, fruits, vegetables, and legumes.
- WTCVending: Consumption of foods from vending machines and the perception of impact on reducing the consumption of ultra-processed foods if these machines offered healthier options.
- BarrierHealthy7: Individuals who indicated "I see no barriers to consuming them" in the question about barriers to healthy eating.
- Component1: Dietary pattern of White bread, red and processed meats derived from Principal Component Analysis (PCA).

4.3.4 Variables Initially Showing Significant Correlation but not in the Final Model

Although some variables showed significant correlation with WTAJapan in the preliminary analysis, they did not remain significant in the final model. Among these variables, the most notable are:

- Health Awareness: Initially showed a positive correlation with willingness to adopt the Japanese diet ($r = 0.193$, $p < 0.05$) but lost significance in regression, suggesting that other factors may play a more relevant role.
- Sex: Despite showing a significant correlation with WTAJapan ($r = 0.254$, $p < 0.01$), when controlling for other variables in the model, its influence was no longer statistically relevant.
- BMI: Initially a significant negative predictor ($r = -0.202$, $p < 0.05$) (higher BMI led to lower correlation with WTAJapan) but had no statistical impact in the final model.

The lack of statistical significance of these variables may be related to factors such as collinearity with other variables included in the model or sample size limitations.

4.3.5 Final Model Coefficients

Table 6 presents the estimated coefficients of the final model, standard errors, t-values, and corresponding p-values.

Table 6. Coefficients of the Ordinal Logistic Regression Model.

Variable	Coefficient	Standard Error	t-test	p-value
WTCFiber	0.707	0.217	3.252	0.001
WTCVending	0.390	0.155	2.516	0.011
BarrierHealthy7	1.409	0.509	2.769	0.005
Component1	-0.332	0.182	-1.828	0.067

The results indicate that the variables WTCFiber, WTCVending and BarrierHealthy7 are statistically significant ($p < 0.05$), suggesting that they significantly influence the acceptance of the Japanese diet, the positive coefficient for these variables indicates that as their values

increase, there is a higher probability that an individual will demonstrate greater acceptance of the Japanese diet.

The variable Component1 presents a *p*-value slightly above the 0.05 threshold, indicating a marginally significant trend in its influence on the response.

4.4 Associations with the Japanese Diet

The Figure 3 shows the results of the answers to the open question, its only from the people that, after a brief explanation of the diet, they considered it as a healthy diet and explained why, this was most of the answers, since this world cloud was formed with 118 responses it means that only 7 were negative. The word "Unprocessed" was the most prevalent association which reflects a central characteristic of the Japanese diet: a reliance on natural, minimally processed foods such as fresh vegetables, fruits, fish, and legumes.

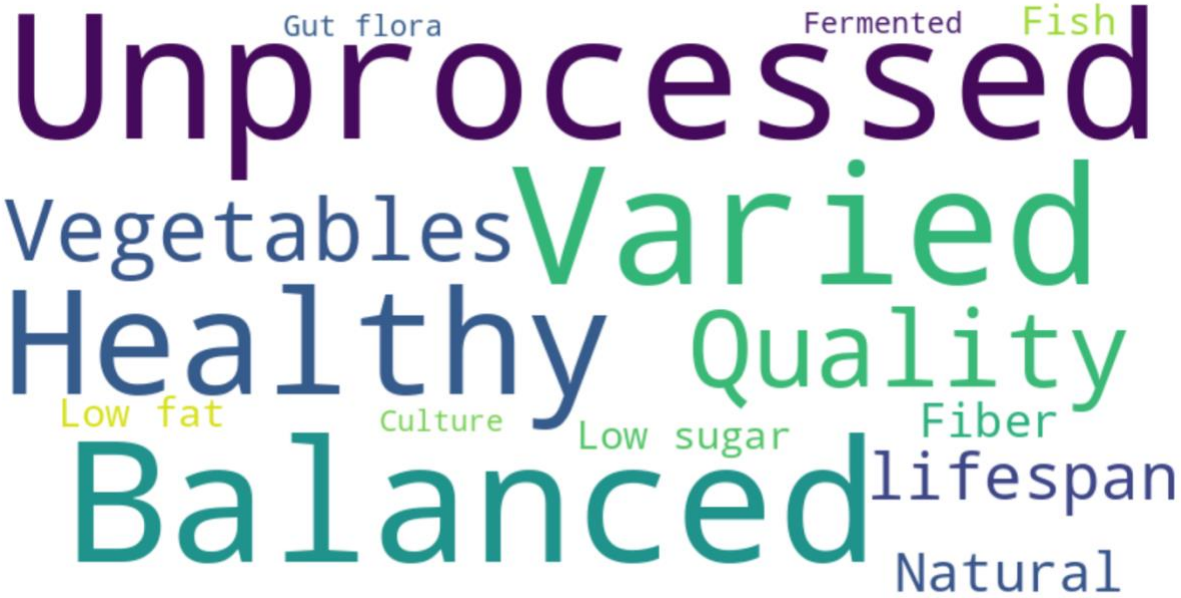


Figure 3 – World Cloud from the positive answers to the Japanese diet model (*n* = 118).

The prominence of "Unprocessed" underscores the diet's appeal as a model for healthy eating, further supported by associated terms such as "Balanced," "Healthy," and "Varied." Also, participants emphasized the role of key dietary components, including "Vegetables," "Fish," and "Fermented" products, such as miso and natto, which are staples in the Japanese diet, these foods not only contribute to its reputation as a wholesome and diverse nutritional model but also highlight its alignment with gut health and longevity, as suggested by terms like "Gut flora" and "Lifespan."

Additionally, the presence of "Low fat" and "Low sugar" in the word cloud indicates a shared recognition of the diet's natural inclination toward health-conscious eating, free from excessive sugar or fat content which is very typical of ultra-processed foods.

4.5 Discussion

The results of this research provide a comprehensive understanding of the willingness of young Portuguese adults to adopt dietary habits inspired by the Japanese diet, throughout the analysis, it was possible to identify factors influencing this dietary transition, highlighting both facilitators and barriers, also, the statistical analysis allowed for testing the formulated hypotheses, clarifying which variables play a significant role in the adoption of these habits.

4.5.1 Hypothesis Testing and Statistical Model Analysis

Hypothesis 1 (H1): *“Female individuals show a higher predisposition to adopt elements of the Japanese diet compared to male individuals.”*

The first hypothesis (H1) predicted that female individuals would be more predisposed to adopting elements of the Japanese diet, however, the results did not support this expectation, as the regression model did not indicate a statistically significant effect of gender on the willingness to adopt the Japanese diet ($p > 0.05$). Although the initial correlation suggested a tendency in this direction, this relationship did not remain significant when controlling for other factors such as health awareness and dietary barriers, this suggests that the impact of gender on the adoption of the Japanese diet may be conditioned by other more determining variables.

Hypothesis 2 (H2): *“Individuals with a higher Body Mass Index (BMI) have a lower predisposition to adopt foods characteristic of the Japanese diet compared with those with lower BMI.”*

The second hypothesis (H2) postulated that individuals with a higher Body Mass Index (BMI) would have a lower predisposition to adopting foods characteristic of the Japanese diet, the correlation analysis indicated a negative relationship between BMI and the willingness to adopt Japanese dietary habits, suggesting that individuals with higher BMI might be less inclined to dietary change, however, this relationship was not statistically significant in the regression model ($p > 0.05$). This result may be explained by collinearity with other variables, particularly health awareness, which proved to be a more predictive factor in diet acceptance, additionally, the data indicated that female individuals had on average, a lower BMI, which may have indirectly influenced this relationship.

Hypothesis 3 (H3): *“Individuals who attribute greater importance to diet in maintaining their health and overall well-being exhibit higher willingness to adopt dietary habits inspired by the Japanese diet compared to those who attribute less importance to dietary choices.”*

The third hypothesis (H3) was confirmed, demonstrating that individuals who attribute greater importance to diet in maintaining health and well-being have a significantly higher predisposition to adopt dietary habits inspired by the Japanese diet, this finding reinforces the Health Belief Model (HBM), indicating that the perception of health benefits has a direct impact on dietary behavior change (Glanz & Bishop, 2010; Rosenstock, 1974).

4.5.2 Analysis of Key Statistical Model Results

The statistical analysis provided a deeper understanding of these effects and highlighted the most relevant variables in the adoption of the Japanese diet, in particular, the willingness to increase fiber intake (WTCFiber) demonstrated to have a significant positive association ($p = 0.001$), this suggested that individuals that are more aware of the importance of fiber intake are more likely to incorporate elements of this diet, similarly, the consumption of foods from vending machines (WTCVending), showed a positive association ($p = 0.011$), indicating that accessibility to healthier options can positively influence the adoption of more balanced dietary habits. Another relevant factor was BarrierHealthy7, representing individuals who perceive

fewer barriers to dietary changes, which also had a significant relationship ($p = 0.005$) with the acceptance of the Japanese diet, highlighting the importance of reducing practical and psychological obstacles in transitioning to healthier eating patterns.

On the other hand, a dietary pattern characterized by frequent consumption of white bread, red meat, and processed meats (Component1) showed a marginally significant negative association ($p = 0.067$) with the willingness to adopt the Japanese diet, although this result does not reach a conventional level of statistical significance, it suggests a trend where individuals with higher consumption of ultra-processed foods are less likely to modify their dietary habits.

Therefore, the findings of this research contribute to a deeper understanding of the factors influencing dietary behavior change among young Portuguese adults, while some of the hypotheses were not fully confirmed, the results demonstrate the importance of individual and structural elements in the acceptance of healthier dietary patterns. Future studies should investigate in greater detail the interaction between health awareness, accessibility to healthy foods, and cultural barriers, allowing for the development of more effective interventions both in public policy and in nutritional marketing strategies.

5 Conclusion

5.1 Conclusions and Implications

This study investigated the willingness of young Portuguese adults to adopt healthy eating habits inspired by the Japanese diet, the findings, confirmed that health awareness plays a critical role in dietary change, significantly predicting the willingness to adopt elements of the Japanese diet, where individuals who valued dietary choices as an essential aspect of health and well-being were more inclined to integrate healthier food components into their diets.

Contrary to expectations derived from previous literature, gender and BMI were initially correlated with willingness to adopt the Japanese diet but did not remain significant predictors in the regression model, this suggests that their effects may be mediated by other factors, such as individual health consciousness and perceived barriers to dietary change or possibly is due to the small sample size.

Additionally, while there was widespread acknowledgment of the benefits of fiber-rich and fermented foods, dietary habits associated with refined carbohydrates, red and processed meats were negatively linked to openness to change, although this trend did not reach full statistical significance, it suggested that the preference for this type of foods and traditional eating patterns may act as barriers to healthier dietary transitions.

These findings have practical implications for both marketing professionals and policymakers, for marketers, the results highlight the need for tailored messaging that aligns with consumer health awareness while addressing existing sensory and cultural preferences, these campaigns should emphasize the health benefits of fiber-rich and fermented foods while integrating them into familiar Portuguese culinary traditions. From a public policy perspective, the results suggest that increasing access to healthier food options, such as through healthier vending machine offerings, could reduce perceived barriers and promote healthier choices, therefore, targeted educational campaigns that reinforce the role of diet in long-term well-being may further encourage healthy food adoption.

5.2 Limitations and Suggestions for Future Research

While this study provides valuable insights into the willingness of young Portuguese adults to adopt dietary habits inspired by the Japanese diet, several limitations must be acknowledged, such as, the reliance on self-reported data that introduces potential biases, including response bias and inaccuracies due to subjective reporting, additionally, the cross-sectional nature of this research prevents definitive causal conclusions from being drawn, as it only captures a snapshot of dietary behaviours at a single point in time. Another limitation is the relatively small sample size, which restricts the generalizability of the findings to the broader young Portuguese population, to overcome these limitations, future research should adopt experimental or longitudinal designs, such as randomized controlled trials or long-term dietary tracking, to validate these findings and establish causal relationships more robustly.

Also, expanding the demographic scope beyond young adults could provide further insights, as dietary attitudes and behaviours may vary significantly across different age groups due to distinct social influences and lifestyle trends, therefore understanding whether similar patterns emerge in older populations or across various socioeconomic backgrounds would enhance the applicability of these findings.

Moreover, qualitative research methods should be incorporated to gain deeper insights into the cultural perceptions and psychological barriers that influence dietary habits, exploring the underlying motivations for resistance or acceptance of dietary changes through interviews or focus groups would allow for a more nuanced understanding of consumer behavior, these approaches could also inform more precise marketing strategies and public policy interventions aimed at promoting healthier dietary patterns inspired by the Japanese diet.

By addressing these gaps, future research can contribute to the development of targeted initiatives that facilitate healthier food choices in a culturally relevant and sustainable manner.

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Appendix A

Table 7. Correlations.

		WTC Fiber	WTC Fermented	WTC Vending	Health Awareness	Belief Ultraprocessed	Belief Fermented	Belief Fiber	Sex	Age	BMI	FFQ1.1 - White bread, red meats	FFQ1.2 - Softdrinks, ready2eat, sweets	FFQ1.3 - Eggs, cheese, iogurte	FFQ2.1 - Frt&Veg	FFQ2.2 - White protein	FFQ2.3 - Beverages & whole bread
WTC Japan	Pearson Correlation	.320**	.295**	.288**	.193*	.212*	.183*	0.080	.254**	- 0.083	- .202*	-.243**	-0.061	0.102	0.041	0.087	0.042
	Sig. (2-tailed)	0.000	0.001	0.001	0.031	0.018	0.041	0.374	0.004	0.358	0.024	0.006	0.496	0.260	0.647	0.337	0.639
WTC Fiber	Pearson Correlation	1	.520**	.210*	.262**	.340**	0.130	.359**	.240**	0.044	- 0.115	-0.099	-0.021	0.085	0.129	0.036	-0.125
	Sig. (2-tailed)		0.000	0.019	0.003	0.000	0.148	0.000	0.007	0.626	0.203	0.273	0.814	0.344	0.152	0.690	0.165
WTC Fermented	Pearson Correlation		1	0.169	.176*	.330**	.462**	.212*	.271**	.194*	- .180*	0.020	-0.011	0.168	.338**	0.153	-0.047
	Sig. (2-tailed)			0.060	0.050	0.000	0.000	0.018	0.002	0.030	0.044	0.829	0.903	0.061	0.000	0.089	0.603
WTC Vending	Pearson Correlation			1	.213*	.292**	.210*	0.173	0.144	- 0.014	- 0.049	-0.167	-0.122	0.124	0.064	-0.026	0.100
	Sig. (2-tailed)				0.017	0.001	0.019	0.053	0.108	0.873	0.587	0.063	0.175	0.169	0.476	0.769	0.269
Health Awareness	Pearson Correlation				1	0.114	.242**	.254**	0.122	- 0.042	- 0.039	-.181*	-.281**	0.035	.259**	-0.067	-0.155
	Sig. (2-tailed)					0.204	0.007	0.004	0.175	0.639	0.665	0.043	0.002	0.700	0.004	0.459	0.084
Belief Ultraprocessed	Pearson Correlation					1	.317**	.227*	.218*	0.100	- 0.130	-0.050	0.041	-0.004	0.090	0.006	-0.140
	Sig. (2-tailed)						0.000	0.011	0.015	0.266	0.148	0.576	0.650	0.969	0.318	0.950	0.120
Belief Fermented	Pearson Correlation						1	0.096	.213*	0.128	- 0.125	-0.040	0.002	0.161	0.153	0.122	0.026
	Sig. (2-tailed)							0.286	0.017	0.156	0.166	0.658	0.982	0.072	0.088	0.176	0.769
Belief Fiber	Pearson Correlation							1	0.074	- 0.104	0.074	-0.035	-0.106	0.027	.226*	0.114	-0.046
	Sig. (2-tailed)								0.412	0.248	0.409	0.700	0.238	0.767	0.011	0.204	0.613

Sex	Pearson Correlation								1	-	-	-.279**	-0.013	-0.099	0.048	-0.027	-0.120
	Sig. (2-tailed)								0.054	.388**	0.002	0.883	0.272	0.594	0.766	0.181	
Age	Pearson Correlation								1	0.027	-0.015	-0.069	0.107	.226*	-0.149	0.033	
	Sig. (2-tailed)								0.761	0.867	0.444	0.234	0.011	0.098	0.718		
BMI	Pearson Correlation									1	-0.022	-0.043	0.151	0.060	0.052	0.052	
	Sig. (2-tailed)									0.804	0.632	0.092	0.507	0.565	0.567		
FFQ1.1 - White bread, red meats	Pearson Correlation										1	0.170	0.102	0.061	.211*	-0.043	
	Sig. (2-tailed)										0.058	0.260	0.502	0.018	0.635		
FFQ1.2 - Softdrinks, ready2eat, sweets	Pearson Correlation											1	0.131	-.308**	.227*	0.154	
	Sig. (2-tailed)											0.144	0.000	0.011	0.087		
FFQ1.3 - Eggs, cheese, iogurte	Pearson Correlation												1	.188*	0.174	.282**	
	Sig. (2-tailed)												0.036	0.052	0.001		
FFQ2.1 - Frt&Veg	Pearson Correlation													1	0.038	0.122	
	Sig. (2-tailed)													0.674	0.174		
FFQ2.2 - White protein	Pearson Correlation														1	0.028	
	Sig. (2-tailed)														0.756		
FFQ2.3 - Beverages & whole bread	Pearson Correlation															1	
	Sig. (2-tailed)																

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Appendix B – Detailed Survey Questions in Portuguese

Standard: 0. Introduction (1 Question)

Standard: 1. Food Frequency (2 Questions)

Standard: 2. Variável independente: Level of health awareness (4 Questions)

Standard: 3. Barriers in adopting (3 Questions)

Standard: 4. Variável dependente: Willingness to adopt (3 Questions)

Standard: 6. Open Question (2 Questions)

Block: 6. Screener Questions (10 Questions)

Início do bloco: 0. Introduction

Boa tarde, sou estudante do Mestrado em Business da CATÓLICA-LISBON School of Business & Economics. O inquérito que está prestes a responder constitui uma parte fundamental da minha dissertação sobre o impacto do consumo alimentar na saúde e demora cerca de 5 minutos a completar. A sua resposta será anónima e não será divulgada nem partilhada de outras formas. Peço-lhe que as suas respostas sejam o mais honestas possíveis, é essencial para obtenção de dados estatísticos relevantes e de qualidade. A minha dissertação debruça-se sobre um grupo específico da população portuguesa. Assim, caso não preencha um dos requisitos em baixo listados, agradeço o seu tempo, mas peço-lhe que não preencha este inquérito:» Idade entre 18-40» Nacionalidade portuguesa. Muito obrigado pelo seu tempo e boas respostas!

Fim do bloco: 0. Introduction

Início do bloco: 1. Food Frequency



FFQ2 Por favor indique em quantos dias do mês ou da semana comeu ou bebeu os seguintes alimentos, no último mês:

	6-7 dias/sema na (7)	4-5 dias/sema na (6)	2-3 dias/sema na (5)	1 dia/sema na (4)	1-3 dias/mê s (3)	1 dia/mê s (2)	Nunc a (1)
Pão – branco (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Doces (ex. Bolos, bolachas, gomas, chocolates, cereais açucarados) (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carnes vermelhas (ex. vaca, porco, borrego e cabrito) (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enchidos (ex. chouriço, presunto, alheira, farinheira, morcela de sangue).							
Carne processada (ex. fiambre, salsicha, hambúrgue r, almôndegas) (24)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Alimentos prontos a comer de origem cárnea (Qualquer produto a designação "pronto-a-comer" com carne; arroz de pato, fatias da carne assada, lasanha). Salgados (ex. rissóis, croquetes, folhados, empadas) (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ovos (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Queijos e iogurtes de qualquer tipo (31)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Refrigerantes light ou açucarados (34)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



FFQ2 Por favor indique em quantos dias do mês ou da semana comeu ou bebeu os seguintes alimentos, no último mês:

	6-7 dias/seman a (7)	4-5 dias/seman a (6)	2-3 dias/seman a (5)	1 dia/seman a (4)	1-3 dias/mê s (3)	1 dia/mê s (2)	Nunc a (1)
Pão - Integral/ mistura e cereais integrais (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Frutos gordos e sementes (ex. abacate, sementes de girassol, sésamo, linhaça, nozes, amêndoas, amendoins) (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vegetais (ex. Rúcula, agrião, espinafres , aipo, brócolos, couve, beterraba, abóbora, cenoura, tomate, etc.) (batata não conta) (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carne de aves (ex. frango, peru) e coelho. (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Peixe de qualquer tipo (atum, salmão, dourada, lulas, polvo, mexilhões, sardinhas, etc.) (27)

Café (29)

Leite de qualquer tipo (sem lactose, com lactose, gordo, meio gordo, magro, chocolate, etc.) (30)

Fruta de qualquer tipo (32)

Sumos de fruta, naturais ou embalados (33)

Fim do bloco: 1. Food Frequency

Início do bloco: 2. Variável independente: Level of health awareness



HealthAware Quão importante considera ser **a sua dieta** para a sua saúde e bem-estar?

- Extremamente importante (5)
 - Muito importante (4)
 - Algo importante (3)
 - Pouco importante (2)
 - Nada importante (1)
-



Belief_Fiber **Em que medida concorda com a seguinte afirmação:** *Consumir produtos alimentares ricos em fibra (ex: cereais integrais, frutas, vegetais, leguminosas) tem um impacto positivo na minha saúde*

- Concordo totalmente (5)
 - Concordo (4)
 - Não concordo nem discordo (3)
 - Discordo (2)
 - Discordo totalmente (1)
-



BeliefUltraProc **Em que medida considera que uma redução do consumo de produtos alimentares ultraprocessados** pode melhorar a sua saúde? *ex: refrigerantes, batatas fritas, sopas embaladas, doces, bolos, snacks, fast-food, pré-cozinhados, cereais de pequeno-almoço*

- Muito significativamente (5)
 - Significativamente (4)
 - Não muito (3)
 - Quase nada (2)
 - Nada (1)
-



BeliefFerm **Em que medida considera que um aumento do consumo de produtos alimentares fermentados** pode melhorar a sua saúde? *ex: iogurtes, kefir (leite fermentado), pickles (vegetais fermentados)*

- Muito significativamente (5)
- Significativamente (4)
- Não muito (3)
- Quase nada (2)
- Nada (1)

Fim do bloco: 2. Variável independente: Level of health awareness

Início do bloco: 3. Barriers in adopting



BarrierHealthy Qual considera ser o principal motivo que o/a impede de **aumentar o consumo de alimentos saudáveis**?

- O nível de preço dos alimentos saudáveis (1)
 - A pouca disponibilidade de alimentos saudáveis no mercado (2)
 - A falta de tempo para escolher e preparar refeições mais saudáveis (3)
 - A falta de conhecimento sobre alimentos saudáveis (4)
 - A falta de motivação para alterar os hábitos alimentares (5)
 - Outro. Qual? (6) _____
 - Não vejo nenhuma barreira para os consumir (7)
-



BarrierFerm Qual considera ser o principal motivo que o/a impede de **aumentar o consumo de alimentos fermentados**? *ex: iogurtes, kefir (leite fermentado), pickles (vegetais fermentados)*

- Não gosto do sabor (1)
 - Não sei muito sobre estes alimentos (2)
 - São caros (3)
 - Não estão disponíveis com frequência (4)
 - Outro. Qual? (5) _____
 - Não vejo nenhuma barreira para os consumir (6)
-



BarrierCookKnow Em que medida alguma **falta de informação sobre como preparar refeições mais saudáveis** - com base em alimentos como a soja, fermentados ou ricos em fibra -, limita a sua capacidade para os consumir?

- Muito significativamente (5)
- Significativamente (4)
- Não muito (3)
- Quase nada (2)
- Nada (1)

Fim do bloco: 3. Barriers in adopting

Início do bloco: 4. Variável dependente: Willingness to adopt



WTCFiber Qual a sua **predisposição para aumentar o consumo de alimentos ricos em fibra** no futuro? *ex: cereais integrais, frutas, vegetais, leguminosas*

- Muita (5)
- Bastante (4)
- Alguma (3)
- Pouca (2)
- Nenhuma (1)



WTCFerm Qual a sua **predisposição para aumentar o consumo de alimentos fermentados** no futuro? *ex: iogurtes, kefir (leite fermentado), pickles (vegetais fermentados)*

- Muita (5)
 - Bastante (4)
 - Alguma (3)
 - Pouca (2)
 - Nenhuma (1)
-



WTCVending Se as máquinas de venda automática de produtos alimentares passassem a ter opções mais saudáveis, **acha que isso iria reduzir o seu consumo de alimentos ultra-processados?** *ex: refrigerantes, batatas fritas, doces, bolos, snacks, fast-food*

- Muito provavelmente (5)
- Provavelmente (4)
- Com alguma probabilidade (3)
- Pouco provável (2)
- Nada provável (1)

Fim do bloco: 4. Variável dependente: Willingness to adopt

Início do bloco: 6. Open Question

DietJapan **A dieta japonesa tradicional é caracterizada pelo consumo de:** » Arroz, peixe e frutos do mar, fruta, legumes e vegetais. » Alimentos fermentados: Miso (pasta de soja fermentada), natto (soja fermentada) e pickles (vegetais fermentados) são os mais comuns. » Soja e derivados: Produtos como tofu e edamame são consumidos regularmente.» Chá verde e algas. Além disso, a dieta japonesa é conhecida pela prática do “Hara Hachi Bu”, que

consiste em comer até estar cerca de 80% satisfeito. **No global, considera que a dieta japonesa é uma dieta saudável?**

Sim. Porquê? (4) _____

Não. Porquê (5) _____

Quebra de
página



WTAJapan Estaria disposto/a integrar elementos da dieta japonesa na sua alimentação?
ex: peixe rico em Omega-3, alimentos fermentados, chá verde, soja, a prática do “Hara Hachi Bu”

Muito provavelmente (5)

Provavelmente (4)

Com alguma probabilidade (3)

Pouco provável (2)

Nada provável (1)

Fim do bloco: 6. Open Question

Início do bloco: 6. Screener Questions

Sex Qual é o seu sexo?

Masculino (1)

Feminino (2)



Age Qual é a sua idade em número?



Height Qual é a sua altura em cm?



Weight Qual é o seu peso em kg?



MaritalStat Qual é o seu Estado Civil?

- Solteiro (1)
- Casado (2)
- Divorciado (3)
- Outro (4)



Household_A Quantos adultos compõem o seu agregado familiar, contando consigo?

- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 ou mais (6)

Children Tem filhos?

Sim (1)

Não (2)



Household_C Quantas crianças (menores que 18) compõem o seu agregado familiar?

0 (0)

1 (1)

2 (2)

3 (3)

4 (4)

5 (5)

6 ou mais (7)



Income Qual é o salário líquido mensal médio do seu agregado familiar?

- 0€ - 820€ (1)
 - 820€ - 1640€ (2)
 - 1640€ - 2460€ (3)
 - 2460€ - 3280€ (4)
 - 3280€ - 4100€ (5)
 - 4100€ - 4920€ (6)
 - 4920€ - 5740€ (7)
 - 5740€ - 6540€ (8)
 - 6540€ - 7380€ (9)
 - 7380€ - 8200€ (10)
 - 8200€ ou mais (11)
 - Não sei/Não quero responder (12)
-

Illness Tem alguma doença crónica? Se sim, por favor indique qual.

- Não (4)
- Sim. Qual? (5) _____

Fim do bloco: 6. Screener Questions

Appendix C

Table 5. Model Fit Statistics.

Metric	Value
Log-Likelihood	-129.72
Null Log-Likelihood	-147.66
G2 (Chi-Square)	35.87
McFadden R ²	0.121
Nagelkerke R ²	0.251
Cox & Snell R ²	0.292