

Proceeding Paper

# Gender Differences in Taste and Food Habits: Implications for Personalized Nutrition <sup>†</sup>

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**Abstract:** Research into the optimal diet's impact on health and the environment underscores the value of a plant-based diet, rich in plant foods and linked to health benefits and sustainability. However, long-term dietary adherence remains a challenge due to individual variation. A study with 3016 participants examined gender-specific differences in dietary behaviors and taste preferences. Women favored whole grains, vegetables, and salty foods, while men consumed less meat. Water and sugary drinks were more common among women. Tailored gender-specific strategies for promoting healthy lifestyles are crucial. These findings highlight societal influences and the potential for precision nutrition strategies integrating genetics, taste, and gender differences to enhance personalized interventions' effectiveness.

**Keywords:** gender differences; taste; food habits; nutriomics; precision nutrition; personalized nutrition; dietary preferences; dietary behaviors; precision nutrition strategies; personalized dietary recommendations

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## 1. Introduction

Understanding the optimal diet for human health and its impact on the planet has been a subject of extensive research [1,2]. In recent years, a consensus has emerged that a plant-based diet, rich in vegetables, whole grains, fruits, legumes, nuts, and seeds, offers significant health benefits and contributes to environmental sustainability [3,4]. This dietary pattern has been linked to the prevention and management of chronic diseases, such as cardiovascular conditions, diabetes, and certain types of cancer. Furthermore, adopting plant-based eating habits can help mitigate the environmental impact of food production by reducing greenhouse gas emissions and preserving natural resources [5]. However, despite the availability of well-defined dietary guidelines, the long-term adherence and effectiveness of nutritional therapies remain challenging [6]. Individual variability in response to dietary interventions necessitates a personalized approach to nutrition, considering factors such as genetics, metabolism, and lifestyle. Within the realm of personalized nutrition, exploring gender differences in taste preferences and food habits holds significant potential for tailoring dietary recommendations to improve compliance and achieve desirable health outcomes.

## 2. Methods

This study was an observational study conducted on men and women aged between 9 and 90 years. Data were collected over a period of 6 months using a questionnaire that focused on dietary habits, including food preferences, taste preferences, and meal frequency, as well as lifestyle factors such as physical activity and smoking habits. Anamnestic data were also collected, including weight, abdominal circumference, and body composition. Statistical analyses were performed using StatTech v. 3.1.6 (StatTech LLC). Stratified analyses and interaction models were employed to assess the impact of gender on dietary behaviors and taste preferences.

## 3. Results

The study included 3016 subjects, with a majority of 60.2% being women. The average age of the participants was 39 years. Among them, 23.8% identified as smokers. In terms of occupation, 42% were employees, 14% were students, 3.5% were retirees, 18.4% were unemployed, and 21.1% fell into other categories. Looking at income distribution, 19.4% earned less than €20,000 per year, while 65% fell within the €20,000 to €40,000 range. Additionally, 13.2% reported an annual income of €40,000 to €60,000, while only 2.6% earned more than €60,000 annually. Statistically significant gender differences were observed in various dietary and lifestyle habits. Women reported higher consumption of plant-based foods like legumes ( $p = 0.049$ ) and cooked vegetables ( $p < 0.001$ ), while men had higher consumption of red meat ( $p < 0.001$ ) and processed meat ( $p < 0.001$ ). In lifestyle habits, 60.2% of men engaged in sports compared to 49.2% of women ( $p < 0.001$ ). Among those who practiced sports, 38.2% of men did so for 5–10 h a week, compared to 19.2% of women ( $p < 0.001$ ). However, for several food items like dairy milk and fish, no statistically significant differences were observed.

## 4. Discussion

Results revealed significant gender-specific differences in dietary habits and taste preferences. Women showed a higher preference for whole grain foods, cereals such as barley, cooked vegetables, and liked salty foods more than sweet foods. On the other hand, men had lower consumption of eggs, meat, and processed meat. Women consumed more water, sugar-sweetened beverages, and alcoholic drinks compared to men. Men exhibited faster eating habits, more nighttime eating, and poorer sleep quality (Figure 1). Additionally, women reported missing more meals and experiencing more uncontrollable eating episodes. Men tended to eat out more frequently and had a tendency to be hungrier later in the day (Figure 2). These findings emphasize the need for gender-specific approaches to promote a healthy lifestyle. Tailored programs considering the distinct dietary habits, taste preferences, and eating behaviors of men and women could prove more effective in supporting individuals in achieving their health and wellness goals. Furthermore, the study highlights the influence of societal perceptions, such as body weight ideals, on nutritional behavior and underscores the importance of considering social factors in understanding and addressing gender-related differences in eating behavior. Integrating the knowledge obtained from nutrionomics approaches with the investigation of gender differences in taste and food habits offers a holistic understanding of the complex interactions between genetics, diet, and gender-specific responses [7,8]. These gender-specific results offer a basis for more comprehensive personalized nutritional strategies. By understanding how gender differences in dietary habits and taste preferences interact with other individual factors such as genetics, metabolism, and lifestyle, more effective and personalized nutritional interventions can be designed.

| <b>RESULTS -<br/>FOOD<br/>PREFERENCES</b> | Food Item                | female vs male | p-value   |
|---|--------------------------|----------------|-----------|
|   | Vegetable Drinks         | ♀              | p = 0.003 |
|   | Legumes                  | ♀              | p = 0.049 |
|   | Cooked Vegetables        | ♀              | p < 0.001 |
|   | Raw Vegetables           | ♀              | p < 0.001 |
|   | Cereals (Spelled Barley) | ♀              | p = 0.027 |
|   | Whole Grains Food        | ♀              | p < 0.001 |
|   | Tofu                     | ♀              | p = 0.019 |
|   | Meat                     | ♂              | p < 0.001 |
|   | Red Meat                 | ♂              | p < 0.001 |
|   | Processed Meats          | ♂              | p < 0.001 |
|   | Eggs                     | ♂              | p = 0.007 |






Figure 1. Food preferences.

|                              |  | <b>RESULTS -<br/>DIETARY<br/>HABITS</b>   |
|------------------------------|--|---|
| <b>Meal Frequency</b>        | Males eat 3-5 times a day, females eat 5-6 times a day.                    |  ≠  |
| <b>Hunger Patterns</b>       | Females feel hungrier in the afternoon, males feel hungrier before dinner. |   |
| <b>Skipping Meals</b>        | Females rarely skip meals, more males skip breakfast.                      |   |
| <b>Eating Speed</b>          | Males eat faster   |   |
| <b>Taste Preferences</b>     | Males slightly prefer saltier foods.                                       |   |
| <b>Eating Location</b>       | More males dine out for lunch, more females bring lunch or eat at work.    |   |
| <b>Uncontrollable Eating</b> | More females report frequent uncontrollable eating.                        |   |
| <b>Snacking Habits</b>       | Males crave more   |   |
| <b>Sleep Quality</b>         | Males report better sleep quality.   |   |




Figure 2. Dietary Habits.

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