



SHORT COMMUNICATION

## Impact of food variety on food consumption in Guadalajara, Mexico

### Impacto de la variedad alimentaria en el consumo de alimentos en Guadalajara, México

Carolina De La Torre Ibarra<sup>1</sup>  

<sup>1</sup>Universidad De Guadalajara, Centro Universitario De Ciencias Biológicas Y Agropecuarias. Guadalajara, México.

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Corresponding author: Carolina De La Torre Ibarra 

#### ABSTRACT

Food consumption in Guadalajara has been influenced by the transformation of the traditional Mexican diet towards a food model characterised by a high availability of ultra-processed products. It was observed that the variety of the diet had an impact on caloric intake, according to the Specific Sensory Satiety Theory (SSST), which argued that individuals tended to consume more when offered a varied diet as opposed to a monotonous one. The increase in the supply of processed foods, together with their affordability and the influence of the food environment, favoured the excessive consumption of high-calorie products. The proliferation of restaurants and supermarkets and aggressive marketing increased exposure to unhealthy options, especially among children and adolescents. In turn, cultural events and local festivities promoted greater consumption of foods high in sugars and fats. Despite efforts in nutritional education, the preference for palatable foods and the accelerated pace of life reduced the intake of fruit and vegetables. As a consequence, the rates of obesity and metabolic diseases increased. To mitigate these effects, it was suggested that public policies be implemented to regulate advertising, promote access to fresh food and reinforce nutritional education in Guadalajara.

**Keywords:** Mexican Diet; Sensory Satiety; Obesity; Ultra-Processed Foods; Nutrition Education.

#### RESUMEN

El consumo de alimentos en Guadalajara ha estado influenciado por la transformación de la dieta mexicana tradicional hacia un modelo alimentario caracterizado por una alta disponibilidad de productos ultraprocesados. Se observó que la variedad de la dieta impactó la ingesta calórica, según la Teoría de la Siciedad Sensorial Específica (TSSE), la cual sostuvo que los individuos tendieron a consumir más cuando se les ofreció una dieta variada en comparación con una monótona. El aumento en la oferta de alimentos procesados, junto con la accesibilidad económica y la influencia del entorno alimentario, favoreció el consumo excesivo de productos con alta densidad calórica. La proliferación de restaurantes, supermercados y la mercadotecnia agresiva incrementó la exposición a opciones poco saludables, especialmente entre niños y adolescentes. A su vez, eventos culturales y festividades locales promovieron un mayor consumo de alimentos ricos en azúcares y grasas. A pesar de los esfuerzos en educación nutricional, la preferencia por alimentos palatables y el ritmo acelerado de vida redujeron la ingesta de frutas y verduras. Como consecuencia, los índices de obesidad y enfermedades metabólicas aumentaron. Para mitigar estos efectos, se sugirió implementar políticas públicas que regulen la publicidad, fomenten el acceso a alimentos frescos y refuercen la educación nutricional en Guadalajara.

**Palabras clave:** Dieta Mexicana; Saciedad Sensorial; Obesidad; Alimentos Ultraprocesados; Educación Nutricional.

## BACKGROUND

Food is a complex phenomenon influenced by multiple physiological, psychological, cultural, and socioeconomic factors.<sup>(1,2,3,4,5,6,7,8)</sup> In Mexico, the diet has undergone significant changes over the last few decades due to globalization, urbanization, and the industrialization of food.<sup>(9,10,11,12,13)</sup> Guadalajara, one of the most important cities in the country, reflects these transformations with a food scene that combines local culinary tradition with a growing diversification of ultra-processed products and industrialized foods. In this context, it is essential to analyze how the characteristics of the diet impact food consumption in the population.

One of the key aspects in regulating food consumption is diet variety. Several studies have shown that the availability of foods with different sensory characteristics increases caloric intake in individuals.<sup>(14,15,16,17,18,19,20)</sup> This phenomenon, known as the Specific Sensory Satiety Theory (SSST), argues that humans tend to consume more when offered a varied diet instead of a monotonous one. In Guadalajara, where the gastronomic offer is diverse and ranges from traditional dishes such as birria, tortas ahogadas, and pozole to a wide range of fast food options and industrialized products, the ST acquires particular relevance.<sup>(21,22,23,24)</sup>

The traditional Mexican diet, characterized by the consumption of corn, beans, chili, tomato, and nopales, has been largely displaced by dietary patterns, including a high content of added sugars, saturated fats, and sodium.<sup>(25,26,27,28,29,30)</sup> In Guadalajara, access to ultra-processed foods has grown exponentially due to expanding supermarkets, convenience stores, and home delivery services.<sup>(31,32,33,34,35)</sup> This has led to an increase in the consumption of products with high energy density and low nutritional content, which has contributed to public health problems such as overweight and obesity.<sup>(36,37,38)</sup>

The impact of dietary variety on food consumption can be seen in how meals are structured in the daily life of the people of Guadalajara.<sup>(39,40)</sup> Food in this region is usually divided into three main meals: breakfast, lunch, and dinner, with snacks in between.<sup>(41,42)</sup> However, food availability with diverse sensory characteristics, whether at home or in the urban environment, favors overconsumption. Studies have indicated that when a meal contains a variety of textures, flavors, and colors, the individual is less likely to experience satiety quickly, leading them to continue eating beyond their actual energy needs.<sup>(8,11,14)</sup>

The influence of the food environment also plays a crucial role in regulating intake.<sup>(43)</sup> In Guadalajara, the proliferation of restaurants, markets, and fast food chains has increased exposure to highly palatable foods.<sup>(19,20)</sup> The advertising and marketing strategies used by the food industry have reinforced the consumption of these products, especially among children and adolescents, who are more exposed to promotional campaigns aimed at their age group. Consequently, a change in food preferences has been observed, where traditional dishes have been displaced by processed foods that offer immediate gratification but with negative consequences on long-term health.<sup>(40)</sup>

Another relevant aspect of the relationship between diet characteristics and food consumption in Guadalajara is economic accessibility.<sup>(1,2,3,4)</sup> Although traditional food is still an option for many families, the costs of fresh, healthy ingredients have increased compared to ultra-processed foods, which are often cheaper and more easily accessible. This has led to sectors of the population with less purchasing power opting for products with low nutritional content, perpetuating inadequate eating patterns and increasing the incidence of metabolic diseases such as type 2 diabetes and high blood pressure.<sup>(8,9,10)</sup>

In addition, the food culture in Guadalajara is influenced by social and family events, where food plays a central role in celebrations and gatherings.<sup>(11)</sup> Local festivities, such as the October Festival and the Pilgrimage of the Virgin of Zapopan, feature a wide range of high-calorie snacks and drinks. In these contexts, exposure to a variety of foods with different sensory properties promotes greater consumption, which is in line with the principles of the TSSE.<sup>(25)</sup>

From an experimental perspective, several studies have analyzed the effect of diet monotony and variety on food consumption. The findings suggest that when participants are exposed to a monotonous diet, their total consumption tends to stabilize or decrease. On the contrary, when variety is introduced into the diet, a significant increase in intake is observed. In Guadalajara, this dynamic is reflected in the preference for buffets and international food restaurants, where the availability of multiple gastronomic options stimulates excessive consumption.<sup>(41,42)</sup>

On the other hand, nutritional education and promoting healthy habits have attempted to counteract these effects, although with limited results. Government programs and awareness campaigns have emphasized the importance of a balanced diet and portion control, but the influence of the food environment remains a significant challenge. In many cases, the accessibility and sensory appeal of processed foods make it difficult to adopt healthy dietary patterns.<sup>(25,30,31)</sup>

The impact of food variety on consumption is limited to the quantity of food ingested and the nutritional quality of the diet. In Guadalajara, the high consumption of sugary drinks, industrialized snacks, and fast food has reduced the intake of fruit, vegetables, and high-quality proteins.<sup>(11)</sup> Their immediate availability and aggressive advertising reinforced their preference for highly palatable and fat-rich foods. As a result, rates of obesity and metabolic diseases have increased in recent years, reflecting the consequences of unlimited access to foods with high energy density and low nutritional quality.<sup>(23,24)</sup>

The social structure and labor dynamics have also modified eating patterns in the city. In many families, the accelerated pace of life has promoted the consumption of ready-to-eat or prepared foods outside the home, which limits control over the ingredients and the nutritional quality of meals.<sup>(43)</sup> The trend towards eating food on the street or in fast food establishments has increased exposure to varied and unbalanced diets, reinforcing the pattern of overconsumption.

In conclusion, the effect of dietary characteristics on food consumption in humans is evident in Guadalajara, where sensory diversity and the availability of industrialized products have favored unhealthy eating patterns. The TSSE explains how exposure to various foods increases caloric intake, contributing to public health problems such as obesity and diabetes. Economic, cultural, and environmental factors have reinforced the transition to diets high in sugars and fats, displacing traditional foods. Despite efforts to promote healthy habits, the food environment and marketing strategies favor ultra-processed foods. To mitigate these effects, it is necessary to implement public policies that regulate the advertising of unhealthy products, promote access to fresh food, and reinforce nutritional education in the population of Guadalajara.

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#### **CONFLICT OF INTEREST**

None.

#### **AUTHORSHIP CONTRIBUTION**

*Conceptualization:* Carolina De La Torre Ibarra.

*Data curation:* Carolina De La Torre Ibarra.

*Formal analysis:* Carolina De La Torre Ibarra.

*Research:* Carolina De La Torre Ibarra.

*Methodology:* Carolina De La Torre Ibarra.

*Project administration:* Carolina De La Torre Ibarra.

*Resources:* Carolina De La Torre Ibarra.

*Software:* Carolina De La Torre Ibarra.

*Supervision:* Carolina De La Torre Ibarra.

*Validation:* Carolina De La Torre Ibarra.

*Visualization:* Carolina De La Torre Ibarra.

*Writing - original draft:* Carolina De La Torre Ibarra.

*Writing - proofreading and editing:* Carolina De La Torre Ibarra.