

Dominteanu, Teodora et al.

Article

Eating behavior of students in relation to the offer available in the vicinity of the university campus

Amfiteatru Economic

Provided in Cooperation with:

The Bucharest University of Economic Studies

Suggested Citation: Dominteanu, Teodora et al. (2025) : Eating behavior of students in relation to the offer available in the vicinity of the university campus, Amfiteatru Economic, ISSN 2247-9104, The Bucharest University of Economic Studies, Bucharest, Vol. 27, Iss. 69, pp. 535-554, <https://doi.org/10.24818/EA/2025/69/535>

This Version is available at:

<https://hdl.handle.net/10419/319823>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

EATING BEHAVIOR OF STUDENTS IN RELATION TO THE OFFER AVAILABLE IN THE VICINITY OF THE UNIVERSITY CAMPUS

Teodora Dominteanu¹ , Liviu Marian Matak^{2*} ,
Nicholas Victor Julius Alexander³ , Codruța Daniela Pavel⁴ ,
Adrian Iacobini⁵  and Andreea Voinea⁶ 

¹⁾²⁾³⁾⁵⁾⁶⁾ Bucharest University of Economic Studies, Bucharest, Romania

⁴⁾ West University of Timișoara, Timișoara, Romania

Please cite this article as:

Dominteanu, T., Matak, L.M., Alexander, N.V.J., Pavel, C.D., Iacobini, A. and Voinea, A., 2025. Eating Behavior of Students in Relation to the Offer Available in the Vicinity of the University Campus. *Amfiteatru Economic*, 27(69), pp. 535-554.

DOI: <https://doi.org/10.24818/EA/2025/69/535>

Article History

Received: 28 December 2024

Revised: 10 February 2025

Accepted: 28 March 2025

Abstract

Eating behavior of students is a major concern given the prevalence of chronic diseases associated with unhealthy food preferences, such as ultra-processed foods, which are characterized by wide availability, extensive marketing and advertising efforts and affordable prices. At the same time, the proximity of the vendors of such food products to university campuses and the students' financial constraints make this type of consumption exacerbate the pressure on the health care system and generate long-term negative effects on the health of students, future contributors to the labor market.

This study differs from previous research by using a multimodal methodological approach, analyzing the relationship between food supply and demand in the vicinity of the university campus. The investigation examines the correlation between students' food preferences with the distribution of food suppliers, providing a detailed insight into how accessibility, pricing, and commercial strategies influence food choices.

The results of the study indicated a preferential consumption of ultra-processed foods over healthy foods due to both their lower cost and to the presence of numerous vendors selling such food products in the vicinity of the campus. It was also observed that healthy foods were consumed more frequently outside the hours spent at the university, suggesting that the food environment on campus can be influenced by the university through a specific strategy to raise awareness about the risks associated with the consumption of ultra-processed foods, thus, towards healthier eating.

* Corresponding author, **Liviu Marian Matak** – email: liviu.matak@cig.ase.ro



This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. © 2025 The Author(s).

The study contributes significantly to our understanding of the impact of socio-economic and cultural factors on students' food preferences, offering insights into their vulnerability to ultra-processed food supply. In addition, it highlights the existing gaps in food policies and puts forward recommendations with the aim of promoting healthy eating behavior by means of diversifying the offer and optimizing accessibility for the consumption of healthy products. Furthermore, it enhances the body of literature in this particular field.

Keywords: Eating behavior, university campus, students, food supply, ultra-processed foods, Bucharest University of Economic Studies.

JEL Classification: I0, I1, I11, I12, I23

Introduction

In the context of the transition to an independent living, students' eating patterns may develop problematic features, especially when it comes to consumption of ultra-processed foods (UPF), which in the long run can have a negative impact on their health and work productivity. The increased accessibility of ultra-processed foods with high calorie density and low nutritional value contributes to increased risks of chronic diseases, while the proximity of food outlets selling such products and the social and economic constraints intensify these risks, thereby limiting the adoption of a healthy lifestyle. Fondevila-Gascón et al. (2022) and Pop, Iorga and Ioan (2018) also state that the fast-paced nature of students' lives and financial constraints contribute significantly to the consumption of UPF among students and draw attention to the lack of nutrition education and strategies to reduce the consumption of this type of food on university campuses. Universities can become key players in promoting healthy and sustainable eating habits only if they prioritize or focus on implementing policies to diversify the offer and increase access to healthy food, as well as through nutrition education initiatives that can help improve students' eating habits. The purpose of the research was to analyze how the proximity of food vendors and financial constraints influence the students' eating behavior.

This study provides significant contributions from two different perspectives – theoretical and applied. On a theoretical level, the research extends the literature by integrating the economic, social and commercial determinants of the UPF consumption, focusing on the role of marketing and financial constraints as major factors in students' food preference decisions. From an applied perspective, the study provides essential information for the development of public policies in order to regulate the food supply on university campuses and to promote nutrition education. At the same time, the results may contribute to the implementation of institutional interventions, such as diversifying the supply of healthy foods and creating effective nutrition information strategies for students. Thus, this study makes a valuable contribution to the understanding of the determinants of the students' eating behavior, with practical implications for improving the accessibility of healthy foods and in developing sustainable intervention strategies.

Subsequently, the article shifts focus to the literature review, providing an in-depth analysis of representative studies in the field, addressing issues such as the definition, classification, and determinants of ultra-processed food consumption. Subsequently, the research methodology is outlined in detail, highlighting the proposed objectives, the research questions and the design used to address them, followed by results and discussions. In

conclusion, the main findings of the study are analyzed, highlighting both its practical and theoretical implications, and its limitations, thus providing a comprehensive framework that serves as a foundation and guide for future research directions.

1. Review of scientific literature

Although numerous studies have analyzed the negative impact of ultra-processed food (UPF) consumption on students' health, the interaction between food supply and demand on university campuses remains an under-explored topic. International studies on analogous samples of students, conducted in countries such as Greece, the United States and Brazil, have revealed similar trends in ultra-processed food consumption among students, highlighting their negative health impact and the strong correlation between the high accessibility of ultra-processed food, financial constraints and the supply of food vendors in the area of university campuses (Tirodimos et al., 2009; Pultz et al., 2016; Ahmed et al., 2022). Therefore, within the literature review in this field, we will highlight the contribution of several important authors in connection with the factors that may influence students' eating behavior on the university campus.

Monteiro et al. (2019) have defined UPF as industrial food products, mostly composed of modified ingredients and additives, undergoing extensive refining processes to improve their taste, texture and shelf life. These foods are often described as foods high in calories, sugar and fat, low in fiber and micronutrients, promoting "empty calories" and having a negative impact on health, such as: carbonated drinks, snacks, sweetened cereals, frozen meals, etc. (Monteiro et al., 2019; Mititelu et al. 2024).

Food processing can yield significant benefits, such as extending shelf life and improving the bioavailability of certain nutrients (Evrendilek, 2018). For example, pasteurization of milk or fortification of flour with folic acid has reduced the prevalence of diseases such as spina bifida (Atta et al., 2016; Molto-Puigmartí et al., 2011). However, excessive processing may deteriorate nutritional quality, leading to loss of vitamins and minerals and increased additive content. Nevertheless, this food category has become pervasive in student diets.

Traditional dietary patterns are gradually being replaced by diets based on industrialized products, particularly in low- and middle-income countries, where the low cost of UPF coupled with aggressive marketing make them an attractive option (Monteiro, et al., 2013). In Romania, this transition is exacerbated by urbanization, limited accessibility of healthy foods and financial constraints experienced by the population, especially among students (Pop, Iorga, și Ioan, 2019; Mititelu, et al. 2024; Bîlbîie et al., 2021; Cazacu, Carabă and Dimisiano, 2023).

One of the most widely used food classification methodologies is the NOVA system (Framework for grouping foods according to the extent and purpose of the processing they undergo. This system has been used worldwide in nutrition and public health research, policies, and guidelines as a tool for understanding the health implications of different foods), which divides foods into four categories, ranging from unprocessed (group 1) to ultra-processed (group 4) (Monteiro et al., 2016). Other systems, such as ICIF (International Food Information Council, USA) and Siga (Siga Index is a classification system for processed foods developed in France. It is based on the degree of processing and nutritional quality of foods, using a holistic and reductionist approach) proposes various approaches, yet it results

in a lack of consensus. For example, bread can be classified differently, ranging from processed to ultra-processed, depending on the use of additives or fats (de Araújo et al., 2022). Criticisms of NOVA include the complexity of definitions and confusion among consumers with regard to food classification (Jones, 2019). The Siga system offers a more practical approach aimed at supporting both the food industry and consumers (Sadler et al., 2021). However, methodological divergences have the effect of limiting the applicability of these classifications in public policy implementation.

The literature highlights a consistent correlation between high UPF consumption and influence on health outcomes, including obesity, cardiovascular diseases, cancer, type 2 diabetes mellitus, metabolic syndrome, anxiety, asthma, autism, etc. (de Araujo, et al. 2022). For example, Mendonça et al. (2016) reported a 26% higher risk of obesity among consumers of UPF compared to those consuming minimally processed foods. Ultra-processed foods also contribute to increased exposure to harmful substances, such as acrylamide and bisphenol A, which are linked to cardiometabolic and endocrine risks (Hall et al., 2019). At the same time, these foods are characterized by high calorie density which in turn encourages overeating (Forde, Mars and de Graaf, 2020).

Despite documented risks, consumers remain confused when it comes to identifying UPF, and ICIF (International Food Information Council, 2024) studies show that only one third of consumers are acquainted with the term "ultra-processed". Confusion is compounded by aggressive marketing and ambiguity in how foods get classified (Derbyshire, 2019).

In Romania, the significant shortage of nutritional knowledge contributes to suboptimal food choices (Mititelu et al., 2024), while aggressive marketing, focused on promoting ultra-processed foods, plays a pivotal role in the intensification of their consumption. The same authors have shown that advertising creates false perceptions of nutritional value, thereby encouraging the consumption of products that are rich in sugar, fat and salt, while promotional offers on university campuses help strengthen UPF addiction of young students (Mititelu et al., 2024).

In order for universities to implement effective strategies to encourage the consumption of healthy foods, it is essential to consider psychological, economic, and social factors that influence food choices and may undermine the adoption of balanced nutritional habits, such as:

- **Aggressive marketing strategy:** Intensive advertising, strategic positioning of products on store shelves, attractive prices, flavors and packaging of UPF make products rich in sugar, fat and salt to be promoted as affordable, convenient and modern, generating the desire for immediate consumption (Swinburn et al., 2019; Kalog, 2022; Sogari et al., 2018). These issues are relevant in explaining why ultra-processed foods are preferred by students, even when they are aware of the negative health effects.
- **Location and offers of food vendors in the vicinity of university campuses:** Cafés, fast food outlets and confectioneries in the close proximity of the university are strategically located and promoted in social networks (Swinburn et al., 2019), in order to ensure a constant influx of consumers, attracting students with promotional offers and streamlined menus and thus enhancing the frequency of UPF consumption. Food availability on university campuses has proven that the university food environment directly influences the types of food students consume. Universities that impose restrictions on the sale of ultra-processed products and promote healthy alternatives have been able to significantly reduce the consumption of UPF.

In Romania, however, studies by Pop et al. (2019) indicate that the number of ultra-processed product vendors in the vicinity of campuses is significantly higher than the number of healthy food vendors, explaining why students have limited access to healthy options.

- **Academic stress, social pressures, and lack of time** contribute to impulsive food choices (Saha, Al Mamun, & Kabir, 2021). In this context, UPF are perceived as expeditious and affordable solutions, to the detriment of nutritionally balanced meals (Georgescu et al., 2020).

- **Social influence and cultural norms on campus** influence food preferences by adopting collective habits and group pressures. Eating fast food and drinking carbonated beverages is frequently regarded as a social activity, which increases the temptation for this type of food (Scaglioni et al., 2018). Moreover, the adoption of Western diets abundant in processed products is closely associated with the enticement perpetuated by contemporary food markets. (Mititelu et al., 2024).

- **The economic impact and affordability** make ultra-processed foods typically more affordable than healthy alternatives, making them more appealing to students with limited budgets. Low-income students give preference to cheap and convenient foods, which are often UPF, providing a cheap and convenient source of energy, but with low nutritional value, explaining the economic motivation behind students' nutritional choices (Darmon and Drewnowski, 2015; Nistor, 2014). In a context where students have limited financial resources, the price of products plays a critical role in consumption decisions. Mendonça et al. (2016) have demonstrated that subsidizing healthy products and taxing ultra-processed products can change food preferences, but such policies do not exist in Romania.

University campuses are centers of intense consumption, where food supply varies between fast-food restaurants, processed food vending machines, and emerging healthy food initiatives. This diversity is indicative of both the need for convenience, especially during periods of academic stress during exams (Kalog et al., 2022), and to health and sustainability concerns (Pulz et al., 2016). However, the ease with which ultra-processed foods can be accessed due to proximity and low prices (Roy, et al., 2019) contributes to their frequent consumption, with negative health effects (Almoraie et al., 2024). Therefore, a healthy food environment in the proximity of universities is particularly important, given that students spend a large part of their time on campus and have direct access to the various food options available in the area. Furthermore, the accessibility of healthy food offers is a challenge, underscoring the imperative to prioritize the development of food environments that foster balanced nutritional habits and overall health of students (Cazacu, Carabă and Dimisiano, 2023).

Students in Romania are faced with a "food duality", oscillating between the convenience associated with UPF and the growing interest in healthy eating, especially among those informed about the impact of nutrition on health (Boariu et al., 2024). However, this balance is significantly impacted by the diminished accessibility of healthy foods and the higher costs associated with them.

The literature review highlights that previous studies have focused on either individual consumer preferences or the impact of the UPF on health, but have not thoroughly examined or explored in detail the interaction between the offer of food vendors and the students' eating behavior. This research gap highlights the need for an approach that integrates both the consumer perspective and the economic and commercial factors that determine the accessibility of food products in the academic environment.

2. Research Methodology

In addition to extending the theoretical framework, the study makes a significant methodological contribution by adopting a mixed-method approach, which combines the spatial analysis of the distribution of food vendors with a quantitative study of students' eating behavior. Through this methodology, the research provides an integrated and detailed insight into the factors that determine the consumption of UPF on university campuses, thus providing a sound empirical basis for the development of public policies and intervention strategies to promote healthier food alternatives among students.

2.1. Objectives of the Study

The study aims to investigate the food preferences of students in relation to the food supply available in the vicinity of the university campus of the Bucharest University of Economic Studies (ASE), with the following main objectives:

- Assessment of students' eating behavior, with a particular focus on UPF.
- Analysis of the impact of financial constraints on eating behavior.
- To determine the diversity and accessibility of food supply in the area of the university campus.

In order to achieve these objectives, a multimodal methodological approach was used for a detailed assessment of the factors influencing students' eating behavior. A structured questionnaire was administered to a sample of 574 students of the Bucharest University of Economic Studies, aimed at analyzing food preferences, the perception of food accessibility and the impact of financial constraints on food choices. The following questions were posed in this context:

- What are the differences between students' eating behavior while on campus and their general eating habits?
- How do financial constraints influence students' food consumption and eating behavior?
- How does the food offer near the ASE Bucharest university campus influence students' preferences for ultra-processed foods in relation to healthy ones?

At the same time, a spatial analysis of food vendors was conducted within a 600-meter perimeter around the investigated university campus, identifying the share of ultra-processed products compared to healthy alternatives. The data obtained were analyzed using statistical t-test and ANOVA test in order to determine the relationships between variables and the statistical significance of the results, as well as descriptive and comparative analysis methods to gain relevant insights into the eating behavior of the students under review. This analysis contributes to the understanding of the dynamics of students' eating behavior and aims to provide an empirical basis for the practical and theoretical implications of the research, providing recommendations for strategies to improve access to healthy food options and tailored educational interventions.

2.2. Local Context

Romania, located in south-eastern Europe, is a country undergoing an economic transition, characterized by regional and socio-economic disparities, which significantly influence the

lifestyles and eating behaviors of the population. Bucharest, the country's capital and largest city, is an important economic, cultural and educational center, hosting the University of Economic Studies (ASE), one of the most prestigious higher education institutions in Romania, providing a relevant framework for investigating eating behavior and determinants of food preferences among students.

2.3. Study Design

The study, of an observational and exploratory nature, used a multimodal methodology, providing a comprehensive and detailed insight into the eating behavior of students. This approach integrated self-reported data by participants with information about the food offer available in the vicinity of the university campus of the Bucharest University of Economic Studies (ASE). The methodology included the administration of a structured questionnaire, supplemented by a field-based study aimed at identifying the main food vendors in the campus area. This methodological combination enabled a comprehensive analysis of the factors influencing the eating behavior of students.

2.4. Data Gathering

2.4.1. Questionnaire Data Gathering

A structured questionnaire was developed and administered online via the Google Forms platform, between October 12 and November 20, 2024 and sent to the institutional email address of the students enrolled in the study. The selection of this platform was predicated on its efficiency, allowing automatic data collection and storage for real-time analysis, as well as its accessibility, facilitating the expeditious dissemination of the questionnaire via email, direct link and QR code. In addition, the platform ensured the confidentiality of participants' responses through encryption and security. The questionnaire was accompanied by the procedure for obtaining informed consent, based on the ethical norms and principles regarding research on human subjects, according to international legislation, and the study was approved by the Dean of the Faculty of Agrifood and Environmental Economics of the Bucharest University of Economic Studies, by means of ethics approval no. 3713/November 26, 2024. The questionnaire included 18 closed-ended questions:

- Socio-demographic data (10 questions).
- Likert-type complex question about 12 preferences related to healthy food consumption on campus (AS1).
- Likert-type complex question about 19 preferences related to ultra-processed food consumption on campus (AUP1)
- Likert-type complex question about 12 preferences related to healthy food consumption in general (AS2).
- Likert-type complex question about 19 preferences related to ultra-processed food consumption in general (AUP2).
- Likert-type complex question about accessibility to 11 types of food retailers.
- Likert-type complex question about the price-quality ratio at 11 types of food retailers.
- Two questions related to respondents' views in relation to the ASE canteen and nutrition education.

The measurements were carried out using a seven-step Likert scale, adapted to the specifics of the questions in the questionnaire. Participants' inclusion criteria are shown in Table 1.

Table no. 1 Participants' inclusion criteria

Affiliation	Participants in the study are active ASE students at the time of the research.
Location	Participants attend classes on the ASE campus, analyzed in relation to the food supply in the vicinity
Volunteering	Participation was voluntary, based on informed consent.
Accessibility	Participants have access to an internet-connected device to complete the online questionnaire.

Prior to the final implementation, the instrument underwent a preliminary testing process on a sample of convenience (n=10), distinct from the main sample, consisting of students with socio-demographic characteristics similar to those of the final sample, with the objective of assessing the clarity of the questions and instructions. Based on the feedback obtained, the questionnaire was subjected to a process of refinement and optimization with a view to ensuring its validity and comprehensibility. Out of the 586 questionnaires collected, those that did not meet the inclusion criteria were excluded, resulting in a final number of 574 questionnaires accepted for analysis (response rate higher than 90%).

2.4.2. Sample Description

The study sample included 574 ASE students (N = 574) aged between 20 years and 27 years. In terms of accommodation, 46.3% of students live with family members, 21% in student dormitories and 32.7% in rented apartments. The daily budget allocated for meals on days with university activities was less than 2 euro for 5.9% of students, between 2 and 6 euro for 47%, between 6 and 10 euro for 30.7%, between 10 and 14 euro for 10.3%, between 14 and 20 euro for 4.4%, between 20 and 30 euro for 0.3%, and more than 30 euro for 0.7% of participants. With respect to geographical background, 72.5% of students hail from rural areas, 26% from urban areas and 1.6% from other countries.

The distribution of participants according to the locations where the courses were held indicates: 46.9% attended classes held in the Ion N. Angelescu building, 7.7% the Virgil Madgearu building, 24.2% the Victor Slăvescu building and 21.3% the Paul Bran building. The sample size was checked using an online calculator (MyPinio, n.d.) which indicated a minimum required sample size of 384 participants to ensure a level of significance of 0.05.

2.4.3. Field Study Data Collection

The data on food vendors in the vicinity of the ASE University campus were collected using the Google Maps and Google My Maps applications, which provide an appropriate framework for establishing the areas of analysis (Figure no. 1) and checking the details in the field. Using Google My Maps, the study areas were delimited in an area of 600 meters around the buildings Ion N. Angelescu (red color), Virgil Madgearu (green color), Victor Slăvescu (yellow color) and Paul Bran (blue color), a distance selected to ensure accessibility on foot in about 7-8 minutes, according to the recommendations of the scientific literature (Iliescu, C., 2021) (Figure 1). Subsequently, Google Maps was used to accurately ascertain distances and to assess the average prices of products offered by identified vendors.

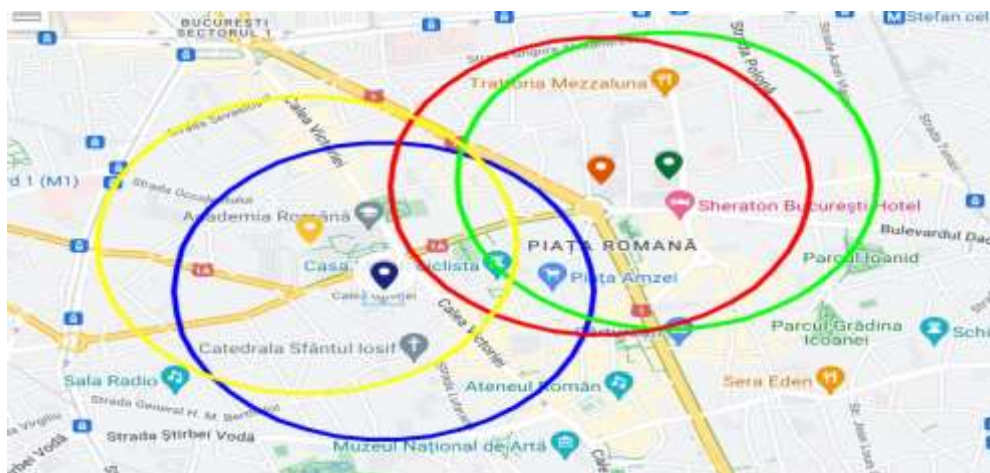


Figure no. 1 Positioning and analysis areas for the four buildings of the ASE University campus
 (Ion N. Angelescu - red, V. Madgearu - green, V. Slăvescu - yellow, Moxa - blue)
 Source: Google Maps

The study was structured in three main stages: vendor identification, data validation and price estimation. The identification included the registration of all food establishments in the vicinity of the ASE campus, including restaurants, fast-food outlets, shops, cafes, cafeterias, confectioneries, pastry shops and bars (Figure no. 2).

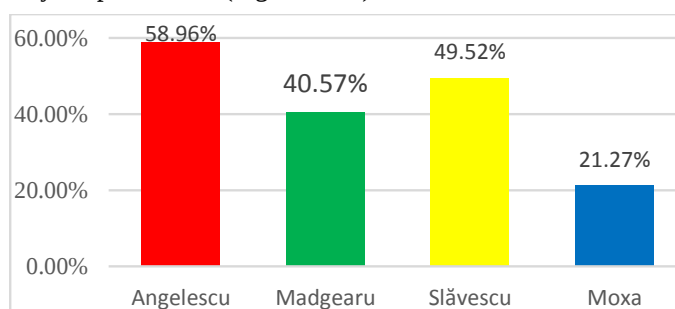


Figure no. 2 Distribution of Food Vendors

The field checks confirmed the accuracy of the locations and information collected, thereby consolidating the database. In the final step, prices were estimated based on available menus and reviews, calculating the minimum cost for a complete meal. A total of 212 food vendors were identified, and the information collected was consolidated into a database, which was subsequently used for detailed analysis.

3. Results

3.1 Data Analysis

The quantitative data collected were processed using SPSS 26 software, applying descriptive and comparative analysis methods to gain relevant insights into food behavior, financial

constraints and food vendors in the vicinity of the ASE university campus. Descriptive analysis was employed to evaluate the socio-demographic characteristics of participants and their perceptions of food establishments and to describe food supply in the area of the ASE university campus.

The t-test for correlated samples was applied to examine the relationships between categorical variables, and the ANOVA test was used to identify significant variations between groups of students. The Shapiro-Wilk test was used to verify the normality of the distribution of the collected data, thereby ensuring the validity and accuracy of the interpretation of the results. The threshold of statistical significance used for all tests applied in this study was set at $p < 0.05$, except for the Shapiro-Wilk test, where a distribution of a quantitative variable is deemed normal if $p > 0.05$. The normality analysis revealed that the variables included in the study follow a normal distribution.

For the validation of the questionnaire items and constructed variables, the Cronbach's alpha coefficient was calculated, with an acceptable minimum value of 0.70. The internal consistency of all the variables of interest exceeded this threshold, demonstrating good reliability of the measuring instruments. The Cronbach's alpha index for the AS1 variable (healthy food 1) was 0.78; for the ultra-processed food variable 1 (AUP1), during periods spent on campus = 0.88; for the accessibility variable = 0.83; for the quality-price variable = 0.86; for the AS2 variable (healthy food 2), 0.75; for the ultra-processed food variable 2 (AUP2), 0.85. These results serve to validate the robustness and internal consistency of the instruments used in the research.

3.2. Analysis of the Administered Questionnaire

To assess whether the research question: **What are the differences between students' eating behavior while on campus and their general eating habits?** is statistically supported, the Student's t-test for related samples was used. The test results confirmed that there was a substantial difference between AS1 and AS2 and AUP1 and AUP2 scores, respectively.

According to the analysis, (Table no. 2), students reported a higher consumption of healthy food (AS) outside class hours, with a mean of 14.585, for $t(573) = 34.080$, $p < 0.001$. At the same time, the consumption of UP food was higher outside class hours, with a mean of 16.861, for $t(573) = 23.119$, $p < 0.001$.

Table no. 2 Pair sample Student's t-test results

Variables analyzed	Mean	Standard deviation	t-test	Degree of freedom	Sig*
AS2 vs. AS1	14.585	10.253	34.080	573	0.001
AUP1 vs. AUP2 consumption	16.861	17.473	23.119	573	0.001

*Note: Sig = statistical significance threshold

Thus, in response to the research question, it can be concluded that students consume healthy food (AS) to a lesser extent during the academic program, whereas ultra-processed food (UPF) is consumed to a greater extent both during and outside the academic program. The results indicate a general preference for ultra-processed foods at the expense of healthy foods, emphasizing the need for interventions aimed at cultivating a balanced eating behavior.

To analyze the research question: **How do financial constraints influence students' food consumption and eating behavior?**, the ANOVA test was applied to compare food

consumption scores according to the budget allocated by students for meals served during classes. The findings of the analysis indicate statistically significant differences between the groups analyzed for the variables of interest. (Table no. 3)

Table no. 3 ANOVA Results

Variables analyzed		Sum of squares	Degree of freedom	Mean of squares	Fisher's exact test	Sig*
AS1	Between groups	2897.134	6	482.856	3.276	0.004
	Between groups	83581.883	567	147.411		
	Total	86479.017	573			
AUP1	Between groups	7585.203	6	1264.200	3.576	0.002
	Intra groups	200446.729	567	353.522		
	Total	208031.932	573	482.856		

*Note: Sig = statistical significance threshold

For the variable, AS1, the F value = 3.276 for $p = 0.004$ confirms the existence of significant differences between groups of students, suggesting that the available budget influences healthy food consumption choices. Similarly, for the AUP1 variable, the F value = 3.576 for $p = 0.002$ highlights significant differences between groups, indicating that the budget available for meals during class hours is conducive to the consumption of ultra-processed food.

The Tukey's LSD Post-hoc test was employed to identify significant differences between groups according to the budget allocated for meals. The results of the analysis indicate that students with higher budgets consume both healthy food (AS) and ultra-processed food (UPF) in a higher proportion (Table no. 4)

Table no.4 LSD post-hoc test results

AS1					UP1				
Meal budget (EUR)	Meal budget (EUR)	Mean difference	Standard error	Sig.	Meal budget (EUR)	Meal budget (EUR)	Mean difference	Standard error	Sig.
< 2	6-10	-4.666	2.274	0.041	< 2	10-14	-9.339	4.048	0.021
	10-14	-6.426	2.614	0.014		14-20	-12.321	4.954	0.013
	14-20	-8.806	3.199	0.006		10-14	-5.792	2.699	0.032
	>25	-13.706	6.418	0.033		14-20	-8.774	3.928	0.026
2-6	6-10	-2.471	1.173	0.036	>30	<2	34.691	9.939	0.001
	10-14	-4.231	1.743	0.015		2-6	31.144	9.469	0.001
	14-20	-6.611	2.537	0.009		6-10	28.795	9.507	0.003
						10-14	25.352	9.715	0.009
Note: Sig = statistical significance threshold						14-20	22.370	10.125	0.028

These findings provide a response to the question of the study, indicating that the budget influences the total amount of food consumed, however the size of the budget does not

significantly influence preferences for AS and UPF. This underscores the complexity of the factors that determine the food choices of students, which can be attributed to an escalating interest in ultra-processed foods, characterized by ease of consumption and attractiveness of taste.

In terms of dining at student canteens, merely 3.7% of students eat daily at ASE canteens (Moxa and Cihoschi), with the majority (66%) claiming too short breaks between classes as the main obstacle. In order to enhance the quality of food consumption among students, participants suggest measures such as the introduction of nutrition education courses (36.9%), the implementation of a mandatory lunch break (21.8%) and subsidies for healthy food (15.3%). These proposals indicate the need for integrated institutional interventions to improve students' eating behavior.

The analysis of students' perception of food vendors, based on distance and value for money criteria, reveals notable differences in relation to vendors in the proximity of ASE campuses. For the analysis, the last three steps of the Likert scale were summed to compute the frequency of responses.

- **Students in the Ion N. Angelescu building** consider bakeries and grocery stores to be the most affordable both in terms of distance and value for money. Cafés are held in high regard due to their proximity, while canteens are considered appropriate from a value-for-money standpoint.

- **Students attending classes in the Virgil Madgearu building** consider bakeries the most appropriate from both perspectives, while grocery stores and fast-food outlets are preferred for their proximity. Canteens and cafés are perceived as favorable in terms of value for money.

- **Students in the Victor Slăvescu building** identify canteens and grocery stores as the most affordable both in terms of distance and value for money. Cafés are held in high regard due to their proximity, while bakeries are considered appropriate from a value-for-money standpoint.

- **Students attending classes in the Paul Bran (Moxa) building** consider canteens and cafés the most appropriate from both perspectives. Grocery stores are preferred for their proximity, and confectioneries are highly regarded for their value for money.

The overall perception indicates that grocery stores and bakeries are considered the most appropriate from both perspectives (55.10% and 68.20%). Canteens are valued mainly for their value for money (79.90%) and cafés are preferred due to their proximity (85%) (Table no. 5).

Table no. 5 Students' perception of food vendors

Vendor	Perception Item	Angelescu	Madgearu	Slăvescu	Moxa	Entire campus
Bar	Distance			36.70%		22.3%
	Quality-price			15.90%		15.9%
Restaurant	Distance	39.80%	34.10%	58.90%	29.50%	41.9%
	Quality-price	27.10%	34.00%	28.70%	26.20%	27.9%
Coffee shop	Distance	84.40%	43.20%	85.00%	73.70%	82.9%
	Quality-price	52.00%	93.10%	46.00%	50.80%	49.7%

Vendor	Perception Item	Angelescu	Madgearu	Slavescu	Moxa	Entire campus
Cafeteria	Distance	40.90%	34.10%	82.70%	73.70%	57.5%
	Quality-price	71%	79.60%	74.90%	73.80%	73%
Sweets shop	Distance	36.00%	38.60%	43.10%	54.10%	35.9%
	Quality-price	30%	34.10%	29.40%	52%	30.7%
Fast-food	Distance	61.00%	61.40%	41.80%	35.20%	50.8%
	Quality-price	39.80%	43.20%	30%	36.10%	36.9%
Grocery store	Distance	68.70%	81.90%	64.80%	74.60%	70.0%
	Quality-price	55.10%	55%	48.90%	48.50%	52.1%
Bakery	Distance	86.60%	93.20%	57.60%	43.50%	70.9%
	Quality-price	65.00%	68.20%	54.00%	40.20%	57.3%

These findings indicate that perceptions of the accessibility of food vendors vary significantly depending on the location of the courses, which highlights the importance of tailoring the food offers to the specific needs of the students in each building.

3.3. Field Study Analysis

In order to analyze how the food offer near the university campuses of ASE Bucharest influences students' preferences for ultra-processed foods over healthy food, a field study was conducted. This approach allowed direct assessment of the relationship between food availability and students' eating behaviors, providing a detailed insight into the determinants of their food choices.

212 food vendors have been identified in the vicinity of the ASE University campus, offering a variety of food products, ranging from ultra-processed options to fresh food. The average cost of a meal at these vendors has been estimated at EUR 9.20, with a standard deviation of EUR 5.59, suggesting significant price variability by product type and vendor. This diversity is indicative of a wide range of food options available, tailored to the different needs and budgets of students.

The distribution of food vendors includes restaurants, cafés, grocery stores and mini-markets, etc., as illustrated in Figure 3.

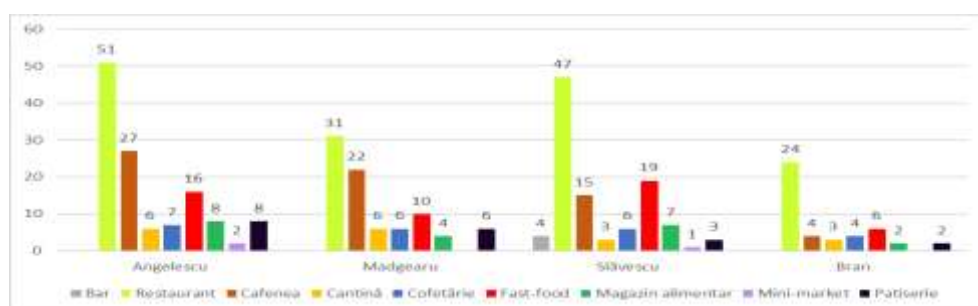


Figure no. 3 Total number of vendors identified in the four study areas

The **Ion N. Angelescu** building area stands out with the highest number of identified food vendors identified, totaling 125 establishments. The accessibility analysis, based on price and distance criteria, shows that mini-markets, grocery stores and bakeries are the most accessible

vendors by price, while from the perspective of distance, bakeries, mini-markets and fast-foods turn out to be located closest to university campuses, according to the data in Table no. 6.

Table no. 6 Area: Ion Angelescu Building (Price-distance results)

Category	Number and (%)	Average price (RON)	Average distance (m)
Restaurant	51 (55.4%)	69.80 ± 3.605	436.27 ± 16.618
Coffee shop	27 (69.2%)	20.56 ± 2.090	347.74 ± 28.585
Cafeteria	6 (54.5%)	35.00 ± 4.282	360.00 ± 68.605
Sweets shop	7 (50%)	27.86 ± 2.143	390.00 ± 43.589
Fast-food	16 (54.5%)	39.06 ± 3.714	342.06 ± 42.785
Grocery store	8 (80%)	18.13 ± 3.889	445.00 ± 59.131
Mini-market	2 (66.7%)	12.50 ± 2.500	335.00 ± 65.000
Bakery	8 (72.7%)	15.00 ± 3.273	283.75 ± 58.308

A total of 86 food vendors have been identified in the vicinity of the **Virgil Madgearu** building. The accessibility analysis by price and distance criteria shows that the most accessible options are, from the price perspective, bakeries, grocery stores and cafés, and from the distance perspective, bakeries, confectioneries and canteens, according to the data shown in Table no. 7.

Table no. 7 Area: Virgil Madgearu Building (Price-distance results)

Category	Number and (%)	Average price (RON)	Average distance (m)
Restaurant	31 (33.7%)	69.52 ± 4.986	425.48 ± 24.203
Coffee shop	22 (56.4%)	19.77 ± 2.219	400.68 ± 37.324
Cafeteria	6 (54.5%)	33.33 ± 4.216	351.67 ± 65.950
Sweets shop	6 (42.9%)	27.50 ± 2.500	316.67 ± 70.317
Fast-food	10 (34.5%)	42.00 ± 5.538	419.00 ± 34.943
Grocery store	4 (40%)	15.00 ± 0.000	392.50 ± 82.500
Bakery	6 (54.5%)	13.33 ± 3.333	250.83 ± 46.483

A total of 105 food vendors have been identified in the vicinity of the **Victor Slăvescu** building. The accessibility analysis, based on price and distance criteria, shows that the most accessible food options, from the price perspective, are bakeries, grocery stores and confectioneries, and from the distance perspective, confectioneries, canteens and bars, according to the data in Table no. 8.

Table no. 8 Area: Victor Slăvescu Building (Price-distance results)

Category	Number and (%)	Average price (RON)	Average distance (m)
Bar	4 (100%)	57.50 ± 14.930	387.50 ± 12.500
Restaurant	47 (51.1%)	66.28 ± 2.632	449.79 ± 19.431
Coffee shop	15 (39.5%)	24.33 ± 3.195	450.27 ± 45.858
Cafeteria	3 (27.3%)	40.00 ± 0.000	366.67 ± 92.796
Sweets shop	6 (42.9%)	20.83 ± 4.902	290.00 ± 66.030
Fast-food	19 (65.5%)	48.16 ± 4.032	414.21 ± 35.470
Grocery store	7 (70%)	18.57 ± 4.461	471.43 ± 51.010
Mini-market	1 (33.3%)	15	550
Bakery	3 (27.3%)	11.67 ± 1.667	416.67 ± 101.379

The **Paul Bran** building area ranks last in terms of the number of identified food vendors, with a total of 45 establishments, according to Table no. 9. The accessibility analysis, based on price and distance criteria, shows that the most accessible vendors from the distance perspective are grocery stores, canteens and restaurants, while from the price perspective, the most accessible options are grocery stores, bakeries and cafés. Despite the limited diversity of the offer, these establishments contribute to meeting the food needs of students in the area.

Table no. 9 Area: Paul Bran Building (Price-distance results)

Category	Number and (%)	Average price (RON)	Average distance (m)
Restaurant	24 (26.1%)	62.50 ± 4.433	463.42 ± 30.406
Coffee shop	4 (10.5%)	27.50 ± 6.292	480.00 ± 87.464
Cafeteria	3 (27.3%)	28.33 ± 7.265	380.00 ± 133.167
Sweets shop	4 (28.6%)	30.00 ± 4.082	575.00 ± 25.000
Fast-food	6 (20.7%)	65.83 ± 4.549	510.00 ± 55.377
Grocery store	2 (20%)	15.00 ± 0.000	375.00 ± 175.000
Bakery	2 (18.2%)	27.50 ± 12.500	550.00 ± 50.000

The field study was conducted by mapping food vendors in the vicinity of the university campus of the Bucharest University of Economic Studies (ASE), supplemented by the analysis of the average price of the products offered and their accessibility from a distance perspective. The distribution and analysis of food offers highlights both the existence of convenient and affordable options for students and the need to improve the quality and accessibility of healthy foods. This perspective highlights considerable potential for optimizing food choices through the implementation of appropriate interventions, such as nutrition education programs and subsidies for healthy products.

In terms of food offer, it was found that:

- Bars, coffee shops, sweets shop, fast-food outlets, bakeries, and mini-markets predominantly offer ultra-processed foods (UPF).
- Grocery stores, coffee shops, restaurants, and cafeterias offer products in both healthy and ultra-processed products.
- Only three vendors have been identified in the entire area of the ASE campus offering exclusively healthy products, namely two restaurants and one coffee shop, located in the vicinity of the Victor Slăvescu building.

These results underscore the need to diversify and promote healthy food offerings in the vicinity of the campus.

4. Discussion

The study highlights the significant influence of the offer of food vendors in the vicinity of university campuses on the eating behavior of students. The results obtained are consistent with the literature, which emphasizes the preference of young people for the predominant consumption of ultra-processed foods (UPF). (Fondevila-Gascón et al., 2022; Mititelu et al., 2024). This trend, observed regardless of the context, suggests the presence of unhealthy eating behaviors which persist throughout adulthood (Boariu et al., 2024). In addition, the

higher consumption of healthy food outside class hours is indicative of growing awareness with regard to nutrition in less restrictive environments.

However, our study contradicts some previous research that argued that low budgets inevitably lead to higher consumption of ultra-processed foods (Pop, Iorga and Ioan, 2018). In contrast, the data obtained indicate the influence of financial constraints only on the total amount of food consumed, without significantly altering the typology of the preferred foods. These findings highlight the importance of factors such as proximity and marketing strategies, which play a more determinant role in food choices rather than the exclusivity of financial constraints.

A significant finding of the study is the close correlation between student perception and field observations. The results show that most of the food vendors accessible in the vicinity of campuses offer predominantly ultra-processed products, which confirms the hypothesis that the food supply influences students' food preferences. Notably, ASE student canteens are regarded as affordable, although this perception does not extend to other canteens in the area, according to field data. The absence of exclusively healthy food options among accessible vendors, as shown by the paper of Cazacu, Carabă and Dimisiano (2023), highlights the need for institutional interventions to improve the accessibility of healthy alternatives.

A key issue identified in this study is the two-way relationship between supply and demand for UPF products. The data obtained suggest that not only demand influences supply, but also vice versa, through a mechanism based on pricing and marketing strategies. This phenomenon was also documented by Swinburn et al. (2019), who highlighted how the aggressive marketing practices of the UPF vendors shape eating behavior.

Several courses of action to improve students' eating habits are outlined based on these conclusions. First of all, it is necessary to diversify the food offer on campuses by introducing healthier and more affordable options. Second, nutrition education programs could help change students' perceptions of the importance of a balanced diet. Third, university policies and local regulations should include initiatives that encourage food vendors to promote healthier alternatives.

Students' eating behavior is also strongly influenced by academic stress, especially during periods when students are engaged in highly focused and rigorous academic work and exam sessions. During these intervals, a significant increase in consumption of ultra-processed foods has been observed, driven by high levels of stress, busy schedule, and reduced time available for preparing meals. Previous studies (Boariu et al., 2024) confirm that under conditions of academic pressure, students are more likely prone to choose fast food options rich in sugars and fats, which provide an immediate source of energy but which may have negative health effects in the long term. In contrast, during the more relaxed periods of the academic year, students are more concerned about nutritional balance, have more free time and are more open and inclined to focus on more varied and healthier food choices.

These seasonal variations in dietary patterns suggest the need for tailored measures throughout the academic year to counteract the negative effects of high UPF consumption during critical periods. For example, university cafeterias could expand the offer of healthy options during exam sessions, and universities could launch nutrition education campaigns to help students maintain balanced eating habits regardless of academic pressure. In addition, regulating the advertising of ultra-processed products during these periods could help reduce their negative impact on health and academic achievement.

Conclusions

This study analyzed the determinants of ultra-processed food (UPF) consumption among students, focusing on the interaction between vendor proximity, economic affordability, and marketing strategies. Results showed that the price and affordability of UPF products influence food choices more than financial constraints, thus contradicting some previous studies that considered economic constraints as the main determinant. Aggressive marketing and strategic positioning of products on store shelves have also been found to have a significant impact on students' food preferences, confirming the findings of previous research on the influence of the university food environment on students' eating behavior.

By integrating a spatial analysis of food vendors and a quantitative study of students' eating patterns, this research provides a holistic perspective on the mechanisms that support high consumption of ultra-processed foods among students. This research, through its multidimensional approach, as an element of originality, extends the literature on highlighting the determinants influencing eating behavior, adding a contextual dimension, which explains the role of local vendors and commercial strategies in determining students' food preferences. Most previous studies have focused on the individual impact of nutrition education and income on eating behavior but this study shows that the food environment plays at least as important a role in consumer decisions.

An important theoretical contribution of the study consists in validating the hypothesis that not only demand shapes supply but also marketing strategies influence consumer perceptions. This is essential for the development of new economic models for analyzing dietary behavior, including the impact of marketing and vendor proximity on consumption decisions.

The study also provides a replicable methodology that can be used in other university or urban contexts, thus contributing to the development of future research directions in the field of behavioral nutrition and food policies.

The results of the study confirm that students' food choices are not determined solely by economic factors but also by the proximity and commercial strategy of vendors, aspects that require specific interventions. Future research should delve deeper into the long-term impact of marketing strategies on ultra-processed food consumption and propose more effective regulatory mechanisms for promoting healthy eating on university campuses.

Acknowledgement: This research was supported by the Bucharest University of Economic Studies through the 2024 Continuing Training for Scientific Research Project.

References

- Ahmed, T., Shane, J., Ilieva, R., Reader, S.M., Aleong, C., Chu, C., Wong, H.I., Brusche, D., Jiang, K., Edwards, A., Lopez, D. and Yan, A., 2022. "I cannot afford lunch": How students' narratives of food insecurity reveal difficulties and coping strategies before and during the COVID-19 pandemic. *Community College Journal of Research and Practice*, 48(6), pp.386-404. <https://doi.org/10.1080/10668926.2022.2135636>.
- Almoraie, N.M., Alothmani, N.M., Alomari, W.D. and Al-amoudi, A.H., 2024. Addressing nutritional issues and eating behaviours among university students: a narrative review. *Nutrition Research Reviews*, pp.1-16. <https://doi.org/10.1017/S0954422424000088>.

- Atta, C.A.M., Fiest, K.M., Frolkis, A.D., Jette, N., Pringsheim, T., St Germaine-Smith, C., Rajapakse, T., Kaplan, G.G. and Metcalfe, A., 2016. Global birth prevalence of spina bifida by folic acid fortification status: A systematic review and meta-analysis. *American Journal of Public Health*, 106(1), pp.e24-e34. <https://doi.org/10.2105/AJPH.2015.302902>.
- Bîlbîie, A., Druică, E., Dumitrescu, R., Aducovschi, D., Sakizlian, R. and Sakizlian, M., 2021. Determinants of fast-food consumption in Romania: An application of the Theory of Planned Behavior. *Foods*, 10(8), art. no. 1877. <https://doi.org/10.3390/foods10081877>.
- Boariu, S.M., Scutariu, A.M., Reurean Pintilei, D., Tarcea, M., Guiné, R.P.F. and Ferreira, M., 2024. Food Literacy Assessment of a Sample of Romanian Higher Education Students. *Sustainability*, 16(3), art.no. 1034. <https://doi.org/10.3390/su16031034>.
- Cazacu, C., Carabă, A. and Dimisiano, G.V., 2023. Measuring geographic accessibility to healthy food for the University of Bucharest student community. In: Kühne, O. et al. (eds.) *Foodscapes. RaumFragen: Stadt – Region – Landschaft*. Springer VS, Wiesbaden. pp.105-119. <https://doi.org/10.1007/978-3>.
- Darmon, N. and Drewnowski, A., 2015. Contribution of food prices and diet cost to socioeconomic disparities in diet quality and health: A systematic review and analysis. *Nutrition Reviews*, 73(10), pp.643-660. <https://doi.org/10.1093/nutrit/nuv027>.
- de Araújo, T.P., de Moraes, M.M., Afonso, C., Santos, C. and Rodrigues, S.S.P., 2022. Food processing: Comparison of different food classification systems. *Nutrients*, 14(4), art.no. 729. <https://doi.org/10.3390/nu14040729>.
- Deliens, T., Clarys, P., De Bourdeaudhuij, I. and Deforche, B., 2014. Determinants of eating behaviour in university students: a qualitative study using focus group discussions, *BMC Public Health*, 14, art. no. 53. <https://doi.org/10.1186/1471-2458-14-53>.
- Derbyshire, E., 2019. Are all ‘ultra-processed’ foods nutritional demons? A commentary and nutritional profiling analysis. *Trends in Food Science & Technology*, 94, pp.98-104. <https://doi.org/10.1016/j.tifs.2019.08.023>.
- Evrendilek, G.A., 2018. Effects of high-pressure processing on bioavailability of food components. *Journal of Nutrition & Food Sciences*, 8(2), art. no. 676. <https://doi.org/10.4172/2155-9600.1000676>.
- Fondevila-Gascón, J.F., Berbel-Giménez, G., Vidal-Portés, E. and Hurtado-Galarza, K., 2022. Ultra-processed foods in university students: Implementing Nutri-Score to make healthy choices. *Healthcare*, 10(6), art. no. 984. <https://doi.org/10.3390/healthcare10060984>.
- Forde, C.G., Mars, M. and de Graaf, C., 2020. Ultra-processing or oral processing? A role for energy density and eating rate in moderating energy intake from processed foods. *Current Developments in Nutrition*, 4(3), art. no. nzaa019. <https://doi.org/10.1093/cdn/nzaa019>.
- Georgescu, M., Tarcea, M., Hadmaş, R., Seni, G., Teodorescu, C., Szasz, S., Guine, R. and Ábrám, Z., 2020. Romanian population perception about food risk behavior starting from their social and cultural profile. *Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca. Food Science and Technology*, 77(2), pp.10-16. <https://doi.org/10.15835/buasvmcn-fst:2019.0039>.
- Hall, K.D., Ayuketah, A., Brychta, R., Cai, H., Cassimatis, T., Chen, K.Y., Chung, S.T., Costa, E., Courville, A., Darcey, V., Fletcher, L.A., Forde, C.G., Gharib, A.M., Guo, J., Howard, R., Joseph, P.V., McGehee, S., Ouwerkerk, R., Raisingier, K., Rozga, I.,

- Stagliano, M., Walter, M., Walter, P.J., Yang, S. and Zhou, M., 2019. Ultra-processed diets cause excess calorie intake and weight gain: An inpatient randomized controlled trial of ad libitum food intake. *Cell Metabolism*, 30(1), pp.67-77. <https://doi.org/10.1016/j.cmet.2019.05.008>.
- Iliescu, C., 2021. Care este viteza medie de mers a unui adult?. [online] Available at: <<https://medro.org/care-este-viteza-medie-de-mers-a-unui-adult>> [Accessed 10 October 2024].
- International Food Information Council (IFIC), 2024. *Food-Health Survey*. [online] Available at: <<https://foodinsight.org/wp-content/uploads/2024/06/2024-IFIC-Food-Health-Survey.pdf>> [Accessed 10 October 2024].
- Jones, J.M., 2019. Food processing: criteria for dietary guidance and public health? *Proceedings of the Nutrition Society*, 78(1), pp.4-18. <https://doi.org/10.1017/S0029665118002513>.
- Kalog, G.L.S., Kasim, F., Anyebuno, B., Tei, S., Kubuga, C.K., Mogre, V. and Aryee, P.A., 2022. Food advertisement influences food decision making and not nutritional status: a study among university students in Ghana. *BMC Nutrition*, 8, art. no. 72. <https://doi.org/10.1186/s40795-022-00571-2>.
- Mendonça, R.D.D., Pimenta, A.M., Gea, A., de la Fuente-Arrillaga, C., Martinez-Gonzalez, M.A., Lopes, A.C.S. and Bes-Rastrollo, M., 2016. Ultraprocessed food consumption and risk of overweight and obesity: The University of Navarra Follow-Up (SUN) cohort study. *The American Journal of Clinical Nutrition*, 104(5), pp.1433-1440. <https://doi.org/10.3945/ajcn.116.135004>.
- Mititelu, M., Stanciu, G., Licu, M., Neacșu, S.M., Călin, M.F., Roșca, A.C., Stanciu, T.I., Busnatu, Ș.S., Olteanu, G., Boroghină, S.C., Nicolescu, T.O., Suciu, F. and Lupu, C.E., 2024. Evaluation of the consumption of junk food products and lifestyle among teenagers and young population from Romania. *Nutrients*, 16(11), article no. 1769. <https://doi.org/10.3390/nu16111769>.
- Moltó-Puigmartí, C., Permanyer, M., Castellote, A.I. and López-Sabater, M.C., 2011. Effects of pasteurisation and high-pressure processing on vitamin C, tocopherols and fatty acids in mature human milk. *Food Chemistry*, 124(3), pp.697-702. <https://doi.org/10.1016/j.foodchem.2010.05.079>.
- Monteiro, C.A., Moubarac, J.C., Cannon, G., Ng, S.W. and Popkin, B., 2013. Ultraprocessed products are becoming dominant in the global food system. *Obesity Reviews: An Official Journal of the International Association for the Study of Obesity*, 14(2), pp.21-28. <https://doi.org/10.1111/obr.12107>.
- Monteiro, C.A., Cannon, G., Levy, R., Moubarac, J.C., Jaime, P., Martins, A.P., Canella, D., Louzada, M., Parra, D., Ricardo, C., Calixto, G., Machado, P., Martins, C., Martinez, E., Baraldi, L., Garzillo, J. and Sattamini, I., 2016. NOVA. The star shines bright. *World Nutrition*, 7(1-3), pp.28-38. Available at: <<https://worldnutritionjournal.org/index.php/wn/article/view/5/4>> [Accessed 14 Oct. 2024].
- Monteiro, C.A., Cannon, G., Levy, R., Moubarac, J.C., Louzada, M.L., Rauber, F., Khandpur, N., Cediel, G., Neri, D., Martinez-Steele, E., Baraldi, L.G. and Jaime, P.C., 2019. Ultra-processed foods: What they are and how to identify them. *Public Health Nutrition*, 22(5), pp.936-941. <https://doi.org/10.1017/S1368980018003762>.

- MyPinio, (n.d.). *Calculator extins pentru dimensiunea eșantionului*. [online] Available at: <<https://mypinio.com/ro/calculator-extins-pentru-dimensiunea-e%C8%99antionului>> [Accessed 14 Oct. 2024].
- Nistor, L., 2014. Between price and quality: The criteria of food choice in Romania. *Czech Sociological Review*, 50(3), pp.391-418. <https://doi.org/10.13060/00380288.2014.50.3.103>.
- Pop, L., Iorga, M. and Ioan, B., 2018. Ethical and social issues related to students' access to healthy food in the university campus: A theoretic approach. *Studia Universitatis Babeş-Bolyai Bioethica*, 63(1-2), pp.11-25. <https://doi.org/10.24193/subbbioethica.2018.01>.
- Pulz, I., Martins, P.A., Feldman, C. and Veiros, M.B., 2016. Are campus food environments healthy? A novel perspective for qualitatively evaluating the nutritional quality of food sold at foodservice facilities at a Brazilian university. *Perspectives in Public Health*, 137(2), pp.122-135. <https://doi.org/10.1177/1757913916636414>.
- Roy, R., Soo, D., Conroy, D., Wall, C.R. and Swinburn, B., 2019. Exploring university food environment and on-campus food purchasing behaviors, preferences, and opinion. *Journal of Nutrition Education and Behavior*, 51(7), pp.865-875. <https://doi.org/10.1016/j.jneb.2019.03.003>.
- Sadler, C.R., Grassby, T., Hart, K., Raats, M., Sokolović, M. and Timotijevic, L., 2021. Processed food classification: Conceptualisation and challenges. *Trends in Food Science & Technology*, 112, pp.149-162. <https://doi.org/10.1016/j.tifs.2021.02.059>.
- Saha, S., Al Mamun, M.A. and Kabir, M.R., 2021. Factors affecting fast food consumption among college students in South Asia: a systematic review. *Journal of the American Nutrition Association*, 41(6), pp.626-636. <https://doi.org/10.1080/07315724.2021.1940354>.
- Scaglioni, S., De Cosmi, V., Ciappolino, V., Parazzini, F., Brambilla, P. and Agostoni, C., 2018. Factors influencing children's eating behaviours. *Nutrients*, 10(6), art. no. 706. <https://doi.org/10.3390/nu10060706>.
- Sogari, G., Velez-Argumedo, C., Gómez, M. I. and Mora, C., 2018. College students and eating habits: a study using an ecological model for healthy behavior. *Nutrients*, 10(12), art. no. 1823. <https://doi.org/10.3390/nu10121823>.
- Swinburn, B.A., Kraak, V.I., Allender, S., Atkins, V.J., Baker, P.I., Bogard, J.R., Brinsden, H., Calvillo, A., De Schutter, O., Devarajan, R., Ezzati, M., Friel, S., Goenka, S., Hammond, R.A., Hastings, G., Hawkes, C., Herrero, M., Hovmand, P.S., Howden, M., Jaacks, L.M., Kapetanaki, A.B., Kasman, M., Kuhnlein, H.V., Kumanyika, S.K., Larijani, B., Lobstein, T., Long, M.W., Matsudo, V.K.R., Mills, S.D.H., Morgan, G., Morshed, A., Nece, P.M., Pan, A., Patterson, D.W., Sacks, G., Shekar, M., Simmons, G.L., Smit, W., Tootee, A., Vandevijvere, S., Waterlander, W.E., Wolfenden, L. and Dietz, W.H., 2019. The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission report. *The Lancet*, 393(10173), pp.791-846. [https://doi.org/10.1016/S0140-6736\(18\)32822-8](https://doi.org/10.1016/S0140-6736(18)32822-8).
- Tirodimos, I., Georgouvia, I., Savvala, T.N., Karanika, E. and Noukari, D., 2009. Healthy lifestyle habits among Greek university students: Differences by sex and faculty of study. *Eastern Mediterranean Health Journal*, 15(3), pp.722-728. <https://doi.org/10.26719/2009.15.3.722>.