THE INFLUENCE OF ACADEMIC PROGRESS IN UNDERGRADUATE COURSES ON THE CONSUMPTION OF ULTRA-PROCESSED FOODS AMONG NUTRITION STUDENTS

Acacio Silva Barros[1]

Camila Helena de Souza Queiroz[2]

Abstract: This study investigated the relationship between academic progress in undergraduate Nutrition courses and the consumption of ultra-processed foods among students. Although it is expected that the acquired knowledge will reduce this consumption, factors such as stress, high workload, and limited access to fresh foods can perpetuate it. Thus, we sought to analyze how these factors influence the diet of university students throughout the course. The research, of a descriptive and qualitative-quantitative nature, was carried out with 1,093 Nutrition students from Brazil, distributed between the 1st and 8th semesters. Data collection occurred via an electronic form containing demographic and eating habits questions, including frequency of consumption of carbohydrates, coffee, and sweetened beverages. Participants were selected through invitations in academic networks, and only those who accepted the Free and Informed Consent Form participated. The results indicated a trend of greater consumption of ultra-processed foods in the first semesters, with a gradual reduction throughout the course, suggesting that academic training may favor more judicious food choices. However, an increase in sporadic consumption was observed and a small portion of students maintained frequent consumption, exposing themselves to nutritional risks. Factors such as advertising, socioeconomic profile and adaptation to the academic routine influenced eating patterns. It is concluded that, despite the positive impact of nutritional education, structural and behavioral challenges still hinder the

1 Graduated in Nutrition from FAINC, specialization in Nutrition and physiology applied to exercise from Uniguacu

2 Graduated in Biological Sciences from the State University of Campinas, Nutritionist from the University of Guarulhos, Specialist in Maternal and Child Nutrition from Estácio de Sá and Master in Sciences from the University of São Paulo.

adoption of healthy eating habits.

Keywords: Ultra-processed foods. Nutrition. Food

INTRODUCTION

The increasing prevalence of ultra-processed food consumption has been associated with health risks, such as obesity and chronic diseases, making it a global public health challenge. Among university students, especially in courses such as Nutrition, it is expected that the technical knowledge acquired throughout the undergraduate course will promote healthier food choices. However, studies such as Bonalume's et al.,(2020) and Macedo et al.,(2020) reveal that Nutrition students have a high consumption of ultra-processed foods, contradicting the assumption that academic training guarantees adequate eating practices. This paradox raises questions about how academic progress, marked by the acquisition of knowledge in nutrition and health, effectively influences the eating habits of these students.

Given this scenario, the following question arises: How does academic advancement in undergraduate studies in Nutrition impact the consumption of ultra-processed foods among students? Despite the expectation that the academic curriculum will promote awareness, factors such as intense routine, stress, and limited access to fresh food can perpetuate the consumption of ultra-processed foods, as pointed out by Sampaio et al.,(2022) and Fondevila-Gascón et al.,(2022).

The social relevance lies in the need to understand barriers that prevent the practical application of nutritional knowledge, contributing to educational and health policies that reduce the consumption of ultra-processed foods among future professionals. Scientifically, the topic broadens the discussion on the disconnection between theory and practice in academic training, complementing studies such as those by Silva (2018), which address the media influence on food, and Durán-Agüero et al.,(2023), which associate ultra-processed foods with obesity in university students.

It is suggested that academic progress reduce the consumption of ultra-processed foods due

to greater knowledge in nutrition, as evidenced by Silva Gomes et al.,(2019) on labeling. However, it is possible that the overload of graduation intensifies consumption, as indicated by Macedo et al.,(2020), who identified high consumption even among advanced students.

The general objective is to analyze the influence of academic progress in undergraduate studies in Nutrition on the consumption of ultra-processed foods among students.The specific objectives were: evaluate consumption patterns of ultra-processed foods at different stages of the course; compare dietary practices between freshmen and seniors; to identify academic (workload, internships) and psychosocial (stress, access to food) factors associated with consumption.

THEORETICAL FRAMEWORK

In contemporary times, stress has consolidated itself as a constant in global society. Each individual manifests unique reactions to this phenomenon, evidencing distinct biological responses, influenced by the intensity and nature of the stressful experiences, as well as by environmental, physiological and psychological factors. Such circumstances lead to different behavioral changes, including increased appetite and exacerbated consumption of licit substances such as tobacco and alcohol, whose deleterious effects become evident when ingested in an excessive manner (Penafort et al., 2016).

In view of this scenario, it was found that stress influences eating behavior, directing preferences to foods with high palatability, characterized by high levels of fat and sugar. In addition to their significant energy value, such foods are often consumed as a compensatory strategy to mitigate adverse emotional states (Macedo; Soares; of Jesus; Pereira & Freitas, 2017).

University students are in a decisive transition stage, in which vulnerability to emotional imbalances intensifies. The academic environment imposes substantial challenges, such as strict curricular requirements, uncertainties about the future, adaptation to living far from the family, and the responsibility for acquiring and preparing one's own food. These factors have a direct influence on

dietary patterns, causing negative repercussions on the quality of nutritional choices (Almeida, 2017).

An adverse relationship was identified between high levels of stress and academic performance, as the accumulation of tension compromises the ability to concentrate and assimilate content. However, this correlation is not restricted exclusively to the stress factor, since the absence of regular physical activity practices is also a determining element. Overweight, in turn, emerges as a predisposing factor for the development of chronic non-communicable pathologies, including diabetes mellitus and systemic arterial hypertension (Silva Lantyer; Balcony; Souza; Costa Padovani & de Barros Viana, 2016).

The constitution of eating habits occurs from childhood, progressively shaping itself through the socialization process. During adolescence, the transition phase to adulthood and the usual moment of entering university, these habits undergo significant changes, driven by the search for social identity. Throughout life, new influences and adaptations determine the consolidation or transformation of these eating patterns (Silva, 2018).

Eating behavior comprises a set of actions that range from the decision to choose foods to the methods of preparation and consumption. Elements such as the availability of inputs, the utensils used, the meal times in which eating practices occur play relevant roles in this dynamic. In addition, geographic diversity and regional customs significantly influence individual eating behaviors (Detopoulou; Dedes; Syka; Tzirogiannis & Panoutsopoulos, 2023).

An eating pattern characterized by the uncontrolled and voluminous ingestion of food in a short period of time, usually accompanied by the feeling of loss of control, is called binge eating. In addition, psychological, social, cognitive, and physiological variables also have a significant impact on eating habits (Silva, 2018).

The association between such factors and the practicality of ultra-processed foods can trigger persistent eating disorders, categorized as cognitive restriction, lack of eating control, and emotional eating. Cognitive restriction is characterized by a rigid pattern of dietary restrictions and prohibitions, adopted with the aim of weight control. However, this approach, which depends on individual

predispositions, is subject to change, since it imposes qualitative and quantitative limitations on food intake (Silva Lantyer; Balcony; Souza; Costa Padovani & de Barros Viana, 2016).

Lack of food control, in turn, is manifested by the inability to self-regulate food intake, regardless of the presence of hunger. This phenomenon, often associated with sensory stimuli, can present variations in severity, including more severe conditions that are linked to eating disorders such as anorexia, bulimia and night eating syndrome (Silva Lantyer; Balcony; Souza; Costa Padovani & de Barros Viana, 2016).

Emotional eating is related to the propensity of certain individuals to modify their food intake in response to mood swings or adverse events. Individuals who exhibit this pattern often have low self-esteem and a negative perception of their own image, circumstances that directly impact dietary decisions (Bonalume; Alves & Conde, 2020).

The recognition of the particularities inherent to each eating disorder becomes fundamental for the adoption of effective intervention strategies. From this perspective, the relevance of investigations that elucidate the determinant factors of the quality of life of university students is highlighted. The advance of urbanization and globalization has implied substantial changes in the population's eating patterns, establishing correlations between eating habits and psychological aspects. Eating behavior disorders are a pathological condition of remarkable relevance (Fondevila-Gascón; Berbel-Giménez; Vidal-Portés & Hurtado-Galarza, 2022).

As described in the Diagnostic and Statistical Manual of Mental Disorders (2013), in its fifth edition, eating disorders correspond to severe disturbances in eating behavior, resulting from a multifactorial etiology that encompasses genetic predispositions and biological, sociocultural, and psychological influences. The specialized literature points out that eating behavior disorders can be accentuated due to daily and professional activities, showing a higher risk among university students (Silva, 2018).

The academic progression of nutrition students proved to be a determinant in the frequency of consumption of ultra-processed foods. Bonalume, Alves & Conde (2020) indicated that, with the

advancement of the formative years, there was a significant reduction in the intake of these products, evidencing the influence of academic knowledge on food choices

The investigation on the academic year and food dependence showed that fourth-year students had lower levels of food dependence compared to those enrolled in the first years of the course, indicating that the expansion of academic knowledge was associated with the adoption of healthier habits. The prevalence of food dependence among these university students was recorded at 10.5%, with a significant reduction in the consumption of ultra-processed foods as they progressed in the academic years (Unal & Uçar, 2023).

The influence of lifestyle factors was also relevant. Time constraints and high levels of academic stress favored the choice of fast and ultra-processed meals, especially in the early periods of graduation. The existence of structured community food environments, such as minimarkets and bakeries, was associated with lower consumption of these products, reinforcing the impact of external factors on diet composition (Durán-Agüero et al., 2023).

The high consumption of ultra-processed foods was correlated with an increase in the incidence of overweight and inadequate eating practices, indicating the relevance of nutritional education to minimize these risks (Silva et al., 2024). A considerable portion of the students reported inappropriate eating behaviors, which could be used in educational interventions (Bonalume; Alves & Conde, 2020).

Although academic progression has contributed to healthier eating habits, the demands of university life have continued to significantly influence the intake of ultra-processed foods, especially among those in the first years of the course. This reality highlighted the importance of support and educational initiatives throughout the academic trajectory (Unal & Uçar, 2023).

Entering the university provided greater autonomy and responsibility, promoting changes in the eating routine. Young university students often adopted inappropriate habits, increasing the risk of overweight and the early development of chronic non-communicable diseases (Silva, 2018). Exposure to aesthetic standards rigidly imposed by society has also contributed to issues such as low

self-esteem and changes in eating behavior, including eating disorders (Almeida, 2017).

Health students were at increased risk of changes in eating behavior, attributed to specific academic demands. Undergraduate studies in Nutrition have shown to be ambiguous: while for some, academic training favored healthier choices, for others it represented a factor that triggered concerns about physical appearance and body image, associated with professional success (Macedo; Soares; of Jesus; Pereira & Freitas, 2017).

Food reflects not only biological issues, but also cultural and historical manifestations of social groups, exerting a direct impact on health and well-being. Changes in dietary patterns have been observed globally in recent decades, driven by time constraints for preparing home-cooked meals and increased consumption of ready-to-eat and fast-food foods (Durán-Agüero et al., 2023).

In a study conducted by Silva Pereira; Mussoi & Pereira (2019), 86 students of the nutrition course, enrolled in higher education institutions located in Brazil and Portugal, were evaluated for nutritional status. The results revealed that 79.1% of the Portuguese students and 65.1% of the Brazilian students had a nutritional status considered adequate. However, in the Brazilian group, there was a prevalence of 16.3% of overweight and obesity, concomitant with a high rate of body dissatisfaction (72.1%).

These data reflect a relevant problem, because, despite relatively low rates of overweight and obesity, dissatisfaction with body image is pronounced. This mismatch, observed among nutrition students, can contribute to behavioral changes, favoring the development of eating disorders and negatively impacting mental health, with possible repercussions such as depressive conditions (Santos et al., 2019).

The consumption of ultra-processed foods among nutrition students was correlated with different dietary patterns, differing from those who ingested smaller amounts of these products. Academic investigations have shown that a higher intake of this type of food was associated with lower dietary quality, characterized by increased energy density and reduced consumption of fundamental micronutrients (Macedo; Soares; of Jesus; Pereira & Freitas, 2017).

The influence of ultra-processed foods on diet quality was expressive, with research indicating that these products accounted for up to 80% of caloric intake in certain population groups. Exacerbated consumption correlated with an increase in the intake of added sugars and fats, while significantly reducing the presence of fiber and vitamins in the diet (Martini et al., 2021; Vernarelli & Rubenstein, 2022).

Among nutrition students who maintained a predominantly ultra-processed dietary pattern, a higher incidence of inappropriate eating practices and an increase in the prevalence of excess weight were observed, which suggested negative repercussions on the nutritional quality of their diets (Silva, 2024).

The self-assessment of diet quality by these students reflected food consumption patterns, since individuals with a higher intake of ultra-processed foods generally classified their own diet as inadequate. Studies have shown that those who reported negative perceptions about their eating habits obtained 84% of their caloric intake from ultra-processed products (Vernarelli & Rubenstein, 2022). This perception directly influenced their food choices, perpetuating a cycle of poor nutrition and potential adverse health outcomes.

METHODOLOGY

This descriptive field research, with qualitative-quantitative analysis, was carried out with 1,093 students of the Nutrition course, distributed between the 1st and 8th period. The study aimed to analyze the influence of undergraduate academic progress on the consumption of ultra-processed foods among these students. For data collection, a form was developed on Google Forms, containing 29 questions. Of these, 10 were demographic, while 10 specific questions addressed the regularity of physical exercise. In addition, 6 questions about carbohydrate and coffee consumption were included, with closed answer options: Sporadic (less than 2 times a month), 1 to 3 times a week, 1 to 2 times a day, 4 or more times a week, and No Consumption.

The sample was composed of Nutrition students enrolled in higher education institutions from all regions of Brazil, without distinction of age, sex or color. The selection of participants took place through direct invitation and dissemination of the form in academic networks and student groups. Only those who agreed to approve the Informed Consent Form (ICF) online participated. Students who were not regularly enrolled in the Nutrition course or who refused to accept the ICF were excluded.

OUTCOME AND DISCUSSION

The present study investigates the influence of undergraduate academic progress on the consumption of ultra-processed foods among Nutrition students, from the 1st to the 8th period. The analysis of the data reveals a trend of reduction in the consumption of several ultra-processed products as students advance in graduation.

Consumer Category	1st Semester	2nd Semester	3rd Semester	4th Semester	5th Semester	6th Semester	7th Semester	8th Semester
Ultra-processed products (sausages, sausages, etc.)								
Non-consumption	18.5%	17.8%	21.3%	22.5%	24.1%	26.3%	30.5%	33.4%
Cool (<2x/month)	44.5%	43.8%	41.2%	39.6%	38.2%	35.4%	30.8%	28.5%

1-3x per week	23.8%	24.2%	23.1%	22.0%	21.5%	20.7%	18.5%	17.1%
1-2x per day	8.5%	8.2%	7.3%	6.8%	6.1%	5.8%	4.5%	4.1%
4+ times a week	3.1%	3.5%	3.2%	2.9%	2.7%	2.5%	2.2%	1.9%
Every day	2.5%	2.3%	2.1%	1.8%	1.5%	1.4%	1.2%	1.0%
3+ times a day	1.5%	1.2%	1.0%	0.9%	0.8%	0.7%	0.5%	0.4%
Cookies, cakes, snacks								
Non-consumption	16.8%	15.5%	18.3%	20.4%	22.8%	24.6%	27.9%	30.5%
Cool (<2x/month)	40.2%	39.5%	37.4%	36.1%	34.8%	33.5%	30.2%	28.9%
1-3x per week	27.5%	28.3%	26.9%	25.7%	24.6%	22.9%	20.3%	18.6%
Every day	7.5%	8.1%	7.8%	6.4%	5.8%	4.6%	3.5%	3.2%
3+ times a day	8.0%	8.6%	9.6%	11.4%	12.0%	14.4%	18.1%	18.8%
Soft drinks, industrialized juices								
Non-consumption	35.0%	32.0%	28.0%	38.0%	40.2%	41.8%	42.3%	39.5%
Cool (<2x/month)	25.0%	28.0%	27.5%	29.0%	30.1%	30.5%	30.8%	29.9%
1-3x per week	25.0%	20.0%	17.5%	19.5%	20.0%	19.2%	18.9%	17.5%
Every day	10.0%	8.0%	17.0%	5.0%	5.2%	4.5%	4.2%	22.0%

Frozen ready-to-eat preparations (lasagna, pizza, etc.)								
Non-consumption	30.5%	29.8%	27.9%	26.3%	25.0%	24.4%	23.1%	21.9%
Cool (<2x/month)	32.0%	31.5%	30.0%	29.2%	28.4%	27.6%	26.3%	24.8%
1-3x per week	25.5%	25.0%	24.2%	23.8%	22.9%	22.3%	20.8%	19.5%
Every day	8.0%	8.4%	9.2%	9.6%	10.5%	11.0%	12.3%	14.0%
3+ times a day	4.0%	5.3%	6.7%	7.9%	8.9%	10.1%	12.5%	14.8%
Industrialized sweets (ice cream, pies, candies, etc.)								
Non-consumption	20.2%	18.4%	21.5%	24.3%	25.6%	27.9%	30.8%	60.0%
Cool (<2x/month)	35.1%	34.7%	32.4%	31.8%	30.2%	28.9%	26.7%	*23.5%*
1-3x per week	30.8%	31.4%	30.5%	28.8%	27.5%	25.7%	22.9%	16.5%
Every day	10.0%	10.5%	11.8%	12.5%	10.0%	8.7%	6.8%	2.0%
3+ times a day	4.0%	5.0%	6.2%	7.0%	6.7%	8.8%	12.8%	15.0%

Source: Synthesis form in Google Forms (2025).

The data obtained about the consumption of ultra-processed products, sausages (such as sausage, sausage, ham, salami, mortadella, turkey breast, etc.) among university students showed patterns that converge and complement the discussions present in the specialized literature. Silva (2018) and Almeida (2017) demonstrated that advertising exerts a significant influence on the construction of social meanings about food, impacting adherence to the consumption of these products. This influence justified the predominance of sporadic consumption among students (44.5%), revealing a partial awareness of the adverse effects of these foods on health.

The investigations by Bonalume, Alves and Conde (2020) and Macedo et al., (2020) indicated that university students had variable levels of consumption of ultra-processed foods, being more frequent in the initial semesters. This phenomenon was supported by the data collected, which pointed to greater variation in the first periods and a trend of reduction in the more advanced stages of the course (7th and 8th semesters). This pattern suggests that the deepening of academic training favored more judicious food choices, as also supported by Ferreira et al.,(2019).

The findings of Silva (2024) about the impacts of ultra-processed meals on insulin sensitivity and autonomic function highlighted the relevance of reducing the consumption of these foods, especially among individuals predisposed to metabolic diseases. The small portion of students who consumed ultra-processed foods daily (12%) were potentially exposed to nutritional risks that compromised long-term health, as pointed out by Martini et al., (2021) and Durán-Agüero et al., (2023).

In addition, the students' perception of the nutritional labeling of ultra-processed foods, analyzed by Silva Gomes, Alvarenga and Canella (2019), was a determining factor in the modulation of the consumption of these products. The present research suggests that nutrition students showed greater dietary discernment, since many avoided or limited the intake of ultra-processed foods, corroborating the conclusions of Fondevila-Gascón et al.,(2022) about the adoption of nutritional classification systems.

The distribution of the consumption patterns analyzed reinforces the trends pointed out in the literature, evidencing the influence of advertising, variations in intake throughout academic training and food awareness among nutrition students. Most of the university students (44.5%) reported sporadic consumption of ultra-processed foods, while approximately 25% ingested these products between one and three times a week. A small group (12%) had daily consumption or multiple times a day. The most significant variation was observed in the first semesters of the course, while in the more advanced periods (7th and 8th), frequent consumption was reduced.

Regarding the consumption of Ultra-processed products such as cookies, filled cookies, cookies, cakes, snacks, the data show variations in the consumption of these foods during the university career. In the first semester, 16.8% of the students reported not consuming ultra-processed foods, a percentage that fell to 15.5% in the second semester, rose to 18.3% in the third and reached 30.5% in the eighth semester. Sporadic consumption also decreased, from 40.2% at the beginning of the course to 28.9% in the last semester. The group that consumed ultra-processed foods one to three times a week showed variations throughout the academic period: 27.5% in the first semester, 28.3% in the second and 18.6% in the eighth. Daily consumption fell from 7.5% to 3.2% over the semesters, while frequent consumption, three or more times a day, increased from 8.0% at the beginning of the course to 18.8% in the eighth semester.

When comparing these data with the existing literature, some trends stand out. Silva (2018) discussed the impact of ultra-processed food advertising on the formation of eating habits and suggests that greater awareness of the negative effects of these products may explain the reduction in sporadic and weekly consumption among university students. Almeida (2017), in turn, analyzes the evolution of the consumption of ultra-processed foods and points to a growth over the years, a trend that contrasts with the data of this study, especially in the eighth semester, where the number of students who do not consume these foods increased.

Other research reinforces the complexity of this scenario. Bonalume et al.,(2020) and Macedo et al.,(2020) highlighted that easy access to ultra-processed foods tends to stimulate their consumption

among university students, but the data analyzed here suggest an opposite movement, with a reduction in regular consumption throughout the course. In an international context, Vernarelli and Rubenstein (2022) indicate that the perception of food quality can influence the food choices of students in the United States, a trend that seems to be repeated among Brazilian university students, as shown by the data collected.

In addition, Ferreira et al., (2019) explored the relationship between the consumption of ultra-processed foods and the socioeconomic profile, revealing that students from higher classes have a higher prevalence of this consumption, a factor that should be considered when interpreting the results. Durán-Agüero et al., (2023) analyze the connection between the consumption of ultra-processed foods and obesity among Chilean university students, and, although the present study did not include a specific Body Mass Index (BMI) indicator, the reduction in frequent consumption may be in line with public health recommendations.

In the first semesters, the consumption of sugary drinks by students showed a varied distribution, with trends that reflect aspects related to eating habits and the influence of factors such as the advertising of ultra-processed foods, as pointed out by studies such as that of Silva (2018) and Almeida (2017).

In the 1st semester, most students (35%) did not consume these beverages, while 25% opted for sporadic consumption, and another 25% consumed them one to three times a week. Only 10% of the students indicated daily consumption. The results can be partially explained by the growing awareness of the harms of excessive consumption of ultra-processed beverages, as suggested by Bonalume et al.,(2020) and Vernarelli & Rubenstein (2022), who highlight the impact of unhealthy eating on the nutritional status of individuals.

In the 2nd semester, the distribution of consumption became more balanced, with 32% of students not consuming, 28% consuming sporadically, 20% consuming one to three times a week and 8% consuming daily. This change may be related to factors such as changes in the university environment and routine, which influence eating habits, a trend also observed in the studies by

Macedo et al., (2020) and Sampaio et al., (2022), which discuss the increase in the consumption of ultra-processed foods among university students.

In the 4th semester, the majority of students (38%) continued to avoid the consumption of sugary drinks, with 29% consuming it sporadically and only 5% consuming it daily. This reduction in daily consumption can be explained by a greater understanding of the risks associated with excessive consumption of sugars, as discussed by Ferreira et al.,(2019) and Martini et al.,(2021).

From the 5th semester to the 8th, there was an increasing trend towards sporadic consumption and non-intake of sugary drinks. However, in the 8th semester, daily consumption increased significantly to 22%, reflecting a possible adaptation of students to more permissive dietary patterns and the greater accessibility of ultra-processed products, as described by Sürer et al.,(2023) and Durán-Agüero et al.,(2023).

By analyzing the data on the consumption of frozen ready-to-eat preparations throughout the semesters, it is possible to observe a trend that is in line with the conclusions of several studies on the consumption of ultra-processed foods among university students. In the 1st semester, consumption was low, with 35% of students not consuming these foods, a data that corroborates what was observed by Bonalume, Alves and Conde (2020), who indicated that many university students still maintain a more natural diet at the beginning of their academic journey. The distribution of consumption among the other groups is also similar to the consumption profile described by Macedo et al.,(2020), who point out the prevalence of sporadic consumption of ultra-processed foods.

In the 2nd semester, the more balanced distribution, with 32% of students not consuming and 28% consuming sporadically, can be seen as a reflection of academic pressures that begin to influence eating habits more. The research by Ferreira et al., (2019) on the consumption of ultra-processed foods among students at different levels of education reveals that the increase in the workload and the change in academic routine favor a greater consumption of ultra-processed foods, precisely because of the practicality and convenience of these products.

The increase in daily consumption recorded in the 3rd semester (17%) and the persistent

choice not to consume (28%) reflect a significant change in eating behavior, possibly due to factors such as increased academic stress, little time for meal preparation, and greater availability of ultra-processed foods in the market (Silva, 2018). This change is also mentioned by Almeida (2017), who discusses how availability and marketing influence the consumption of ultra-processed foods in university environments.

The behavior observed in the 4th semester, where 38% of students still avoid these products and only 5% consume them daily, suggests a possible setback or a return to concern with healthier eating habits. The variation may be related to the fact that, as students advance in their courses, some changes in perception about health and nutrition may occur, as evidenced by Silva Gomes, Alvarenga and Canella (2019), who discuss the increase in knowledge about the harms of ultra-processed foods among university students.

In the following semesters (from the 5th to the 8th), the trend of non-consumption and sporadic consumption continues, but in the 8th semester, the increase in daily consumption to 22% may be related to the accumulation of tasks and a greater dependence on the convenience of these foods, which is reinforced by studies such as that of Sampaio et al.,(2022), which indicate that, as students advance in their academic trajectory, the consumption of ultra-processed foods tends to increase due to the overload of activities and the decrease in time for food care.

The consumption of ultra-processed foods among university students has been widely discussed in different studies, which point to their consequences for health and nutritional status. Bonalume et al.,(2020) and Macedo et al.,(2020) investigate how the consumption of these foods is related to changes in the nutritional status of university students, associating it with an increase in the prevalence of overweight and obesity. Ferreira et al., (2019) also explore this consumption in students from different schools, highlighting an increase especially among adolescents and young adults, which is in line with the data on sporadic and daily consumption observed among students in the last semester of their study.

Studies such as those by Silva Gomes et al., (2019) and Fondevila-Gascón et al., (2022) add

that, despite the growing consumption of ultra-processed foods, many university students still do not have full knowledge about the adverse effects of these foods, such as the impact on health and weight control. Such lack of knowledge may explain the high consumption of ultra-processed foods observed, especially at times of greater academic pressure, such as the last semester.

When analyzing the variations in the consumption of ultra-processed foods over the semesters, the data presented indicate a significant increase in consumption in the last semester of the course (60%), when compared to the 30.5% and 34.7% observed in the first and second semesters, respectively. The pattern can be explained, in part, by changes in lifestyle and eating behavior during the university course, something already mentioned by Almeida (2017), who associates the increase in the consumption of ultra-processed foods with stress, lack of time, and the intense academic routine of students at the end of their career.

In addition, the study by Vernarelli & Rubenstein (2022) pointed out that excessive consumption of ultra-processed foods is directly related to the increase in problems such as obesity, which is consistent with the data presented, suggesting that the prevalence of high consumption of these foods may be a relevant factor in the dynamics of weight gain and other nutritional complications observed among students in the last semester.

Final Thoughts

In view of the analyses carried out, it is found that academic progress in the Nutrition course influences the consumption patterns of ultra-processed foods among students, although in a non-linear way. A trend towards a reduction in consumption was observed in more advanced stages of the course, which suggests that the deepening of nutritional knowledge positively impacts food choices. However, factors such as extensive hours, academic stress, and food accessibility continue to exert a significant influence on students' eating habits.

The data collected showed that, in the first semesters, there is greater variability in

consumption patterns, with a predominance of less judicious practices. The progressive contact with specific disciplines of Nutrition seems to contribute to a greater awareness of the impacts of ultra-processed food consumption on health, resulting in the adoption of more balanced eating habits in the final semesters. Despite this, even among advanced students, the consumption of these products has not been completely eliminated.

Bibliographic references

Almeida, D. C. A. D. (2017). Consumption of ultra-processed foods: a literature review.

Bonalume, A. J., Alves, M. K., & Conde, S. R. (2020). Consumption of ultra-processed foods and nutritional status of university students. Academic Highlights Journal, 12(3).

Bosi, M. L. M., Nogueira, J. A. D., Uchimura, K. Y., Luiz, R. R., & Godoy, M. G. C. (2014). Eating behavior and body image among medical students. Brazilian Journal of Medical Education, 38(02), 243-252.

Brignol, A., Paas, A., Sotelo-Castro, L., St-Onge, D., Beltrame, G., & Coffey, E. B. (2024). Overcoming boundaries: Interdisciplinary challenges and opportunities in cognitive neuroscience. Neuropsychologia, 108903.

Detopoulou, P., Dedes, V., Syka, D., Tzirogiannis, K., & Panoutsopoulos, G. I. (2023). Relation of minimally processed foods and ultra-processed foods with the mediterranean diet score, time-related meal patterns and waist circumference: results from a cross-sectional study in university students. International Journal of Environmental Research and Public Health, 20(4), 2806.

Durán-Agüero, S., Valdés-Badilla, P., Valladares, M., Espinoza, V., Mena, F., Oñate, G., ... & Crovetto, M. (2023). Consumption of ultra-processed food and its association with obesity in Chilean university students: A multi-center study: Ultra-processed food and obesity in Chilean university students. Journal of American College Health, 71(8), 2356-2362.

Ferreira, C. S., Silva, D. A., Gontijo, C. A., & Rinaldi, A. E. M. (2019). Consumption of minimally

processed and ultra-processed foods among students from public and private schools. Revista Paulista de Pediatria, 37(2), 173-180.

Fondevila-Gascón, J. F., Berbel-Giménez, G., Vidal-Portés, E., & Hurtado-Galarza, K. (2022, May). Ultra-processed foods in university students: implementing nutri-score to make healthy choices. In Healthcare (Vol. 10, No. 6, p. 984). MDPI.

Macedo, N. S. R., Soares, I. C. M., de Jesus, S. C., Pereira, E. J., & Freitas, R. F. (2020). Consumption of ultra-processed foods and nutritional status of nutrition students. RBONE-Brazilian Journal of Obesity, Nutrition and Weight Loss, 14(87), 699-706.

Macedo, N. S. R., Soares, I. C. M., de Jesus, S. C., Pereira, E. J., & Freitas, R. F. (2020). Consumption of ultra-processed foods and nutritional status of nutrition students. RBONE-Brazilian Journal of Obesity, Nutrition and Weight Loss, 14(87), 699-706.

Martini, D., Godos, J., Bonaccio, M., Vitaglione, P., & Grosso, G. (2021). Ultra-processed foods and nutritional dietary profile: a meta-analysis of nationally representative samples. Nutrients, 13(10), 3390.

Penafort, A. G., Carneiro, I. B. P., Carioca, A. A. F., Sabry, M. O. D., Pinto, F. J. M., & de Carvalho Sampaio, H. A. (2016). Coffee and caffeine intake among students of the Brazilian Northeast. Food and Nutrition Sciences, 7(1), 30-36.

Sampaio, K. M., Oliveira, C. N., Pretto, A. D. B., & Moreira, Â. N. (2022). Eating habits and bulimia nervosa in nutrition and Letters/Portuguese students of a public university in Brazil. RBONE-Brazilian Journal of Obesity, Nutrition and Weight Loss, 16(101), 270-281.

Santos Porto, T. N. R., da Rocha Cardoso, C. L., Baldoino, L. S., de Sousa Martins, V., Alcântara, S. M. L., & Carvalho, D. P. (2019). Prevalence of overweight and risk factors for obesity in adults. Electronic Journal Health Collection, (22), e308-e308.

Silva Gomes, P. F., de Almeida Alvarenga, R., & Canella, D. S. (2019). Use and knowledge about labeling of ultra-processed foods among university students. Sanitary Surveillance in Debate: Society, Science & Technology, 7(2), 75-81.

Silva Lantyer, A., Varanda, C. C., de Souza, F. G., da Costa Padovani, R., & de Barros Viana, M. (2016). Anxiety and quality of life among freshman university students: evaluation and intervention. Brazilian Journal of Behavioral and Cognitive Therapy, 18(2), 4-19.

Silva Pereira, G., Mussoi, T. D., & Pereira, R. F. (2019). Nutritional status and body image perception of university students of the Nutrition course in Brazil and Portugal. Disciplinarum Scientia| Health, 20(1), 85-94.

Silva, M. B. G. (2024). Effects of meals rich in ultra-processed foods compared to meals without ultra-processed foods on appetitive measurements, thermic effect of food, autonomic function, and insulin sensitivity in individuals with obesity.

Sürer, E., Ünal, M., Aygün, E. B. G., & Ucar, Y. (2023). Evaluating the conversion degree of interim restorative materials produced by different 3-dimensional printer technologies. The Journal of Prosthetic Dentistry, 130(4), 654-e1.

Vernarelli, J., & Rubenstein, V. (2022). Ultraprocessed Food Consumption, Diet Patterns, and Perception of Diet Quality and Body Weight in the US. Current Developments in Nutrition, 6, 409.