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Associated factors in adherence to plant-based diets in university students

Fatores associados à adesão a dietas plant based em universitários

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ABSTRACT

Objective

To evaluate the association among plant-based eating patterns and motivations, difficulties and sociodemographic data in university students.

Methods

Quantitative research with a cross-sectional design with 815 university students. Collection was carried out using a structured questionnaire. For data analysis, the Chi-square test, T-test and Anova were used based on the Kolmogorov Smirnov normality test, at a significance level of $p < 0.05$, in addition to descriptive statistics with the aid of the free software PSPP.

Results

Nine point six percent of academics follow plant-based diets, and their adherence is associated ($p < 0.05$) with a left-wing political spectrum, pro-environmental behaviors, concern for animal rights, boycotts of the meat industry and non- like the taste of meat. Omnivores had more difficulty adhering to and maintaining these diets ($p < 0.00$) as well as in food preparation, self-control over meat consumption and eating outside the home.

Conclusion

Enabling behavioral changes in the population in order to promote healthy and sustainable eating should be a priority for public policies and the private sector, considering the impact of the food system on climate change.

Keywords: Diet. Meat. Sustainability. University. Vegetarianism.

RESUMO

Objetivo

Avaliar a associação do padrão alimentar plant based com motivações, dificuldades e dados sociodemográficos em estudantes universitários.



Métodos

Pesquisa quantitativa com delineamento transversal com 815 universitários. A coleta foi realizada por meio de questionário estruturado. Para análise dos dados foram utilizados os testes Qui quadrado, Teste T e Anova a partir do teste de normalidade de Kolmogorov Smirnov, a um nível de significância de $p < 0,05$, além de estatísticas descritivas com auxílio do software livre PSPP.

Resultados

Nove ponto seis por cento dos acadêmicos seguem dietas plant based e sua adesão está associada ($p < 0,05$) com espectro político de esquerda, comportamentos pró-ambientais, preocupação com o direito dos animais, com boicotes à indústria da carne e de não gostar do sabor da carne. Os onívoros tiveram mais dificuldades em aderir e se manter nessas dietas ($p < 0,00$) bem como no preparo de alimentos, autocontrole em consumir carne e em realizar refeições fora de casa.

Conclusão

Viabilizar mudanças comportamentais na população a fim de promover a alimentação saudável e sustentável deve ser uma prioridade das políticas públicas e da iniciativa privada, considerando o impacto do sistema alimentar nas mudanças climáticas.

Palavras-chave: Alimentação. Carne. Indicadores de desenvolvimento sustentável. Universidade. Dieta vegetariana.

INTRODUCTION

Feeding a growing population while ensuring food security has been a major challenge for developing countries. This is particularly evident when considering the changes in dietary habits and the increase in the global population, with a notable rise in the consumption of meat, dairy products, and ultra-processed foods [1]. On the other hand, food and food systems have been at the center of sustainability discussions, given their impacts on the planet related to water and land use, greenhouse gas emissions, deforestation, energy consumption, and other natural resources. Therefore, concerns about diets or dietary patterns extend far beyond nutritional and health aspects, now encompassing respect for ecosystems and contributing to the preservation of natural resources [2]. In this context, Willett et al. [3] propose a planetary diet, emphasizing reduced consumption of meat and its derivatives, considering both health and sustainability. According to the authors, daily per capita consumption of red meat should be between 0 and 14g, and that of chicken and other poultry between 0 and 58g/day, for a diet considered healthy, assuming an average intake of 2,500 kcal/day.

In the wake of these debates, plant-based diets and sustainable diets have been considered more suitable to address both health and sustainability aspects. According to Hargreaves et al. [4], the best definition for a plant-based diet would be an eating pattern in which animal products are partially or totally excluded from the diet. For Meybeck and Gitz [5], sustainable diets are those with low environmental impact, contributing significantly to food quality and safety, not only in the short term but also in the long term, benefiting future generations. Studies point to the consumption of plant-based foods such as fruits, vegetables, grains, and oilseeds, reducing meat consumption [3-5]. Shifting dietary behavior towards these diets would benefit the environment and ecosystems, reducing their negative impact [6].

As a result, plant-based diets (encompassing flexitarian, vegetarian, and vegan diets) have been gaining ground, albeit modestly, but with potential and interesting arguments. Indeed, vegetarians represent a minority group among consumers, even with the growing awareness of the ecological, ethical, and health benefits of vegetarian eating patterns [7]. Therefore, it is essential to identify factors that promote and hinder individuals' ability to adopt and maintain a plant-based diet.

According to the literature, individuals who are ethically motivated by animal rights and welfare, as well as ethical, health, and economic concerns, and influenced by friends and family, are more likely to adopt a plant-based diet [8]. Furthermore, the connection with nature and the environment has the potential to influence individuals to become vegetarians, as pro-environmental attitudes may lead people to be more conscious and responsible in their choices, seeking sustainable behaviors [9].

Prior studies have indicated that young individuals constitute a rapidly growing consumer segment and serve as trendsetters [7]. As a result, young university students comprise a consumer group that is inclined to share their living and learning environments, and, given their heightened receptivity to novel concepts and experiences, are more predisposed to embracing vegetarian lifestyles compared to older adults [7].

In Brazil, there is still a scarcity of scientific literature on the factors associated with the adherence to plant-based diets, which justifies further studies on this topic towards a healthier and more sustainable diet. Therefore, this article aims to assess the association of the plant-based dietary pattern with motivations, difficulties, and sociodemographic data in university students. More specifically, to identify dietary patterns, characterize the sociodemographic profile, verify the reported motivations for adhering to plant-based diets and the difficulties in reducing or excluding meat from the diet, and finally, to analyze the relationship between the dietary pattern and these variables.

It is important to highlight that this research was conducted in a post-pandemic period with an increase in the dissemination of news about climate change, which may have influenced individuals' perceptions of plant-based diets.

METHODS

This study employs a quantitative approach with a cross-sectional design. It was conducted among university students from the Chapecó (SC), Realeza (PR), and Laranjeiras do Sul (PR) campuses of the Universidade Federal da Fronteira Sul (UFFS, Federal University of the Southern Border), between March and April 2023.

The Laranjeiras do Sul-PR Campus currently has 1,381 students enrolled in ten undergraduate programs. The Realeza-PR Campus has seven undergraduate programs with approximately 800 students (estimated number), and the Chapecó-SC Campus has a total of 2,734 students. The sample size calculation was performed considering a 95% confidence interval, 80% statistical power, and a 10% outcome prevalence, resulting in a number of 359 individuals. An additional 50% was added to account for the sample design effect, and 15% for potential confounding factors, resulting in 619 individuals. Furthermore, 10% was added to account for potential losses and refusals, totaling 681 individuals (132 in Realeza, 140 in Laranjeiras do Sul, and 409 in Chapecó). In the end, the data collection reached a total of 815 people, exceeding the required sample size. The distribution among the locations was 617 in Chapecó, 133 in Laranjeiras, and 65 in Realeza.

The structured questionnaire was constructed and adapted based on the study by Krizanova et al. [9]. It comprises sociodemographic data, meat consumption, pro-environmental behaviors, connection with nature, motivation for a meat-restricted diet, difficulties encountered in adopting a plant-based diet, and political ideology. The initial version of the instrument was discussed with two experts who assisted in the development and selection of the most suitable questions for the research purpose and subsequently underwent a pilot test, being applied to a sample of university students. The final version was self-administered in the classroom at the beginning or end of a specific class.

Pro-environmental behaviors were measured using a questionnaire that included items related to keeping the TV on standby overnight; turning off lights in unused rooms; keeping the tap open or closed while brushing teeth; adjusting clothing to avoid using air conditioning; avoiding purchasing products with excessive packaging; purchasing recycled products; bringing reusable shopping bags to the supermarket; separating waste; using public transportation; walking or cycling for short trips; carpooling; limiting air travel; signing environmental petitions; participating in environmental protests or public events in favor of environmental protection; avoiding meat and animal products; purchasing food products with eco-labels; purchasing other products with eco-labels; preferring locally produced products; avoiding food waste; and reducing consumption of non-essential products. Each item was measured using a 5-point Likert scale (never, rarely, sometimes, frequently, always). These items were summed to create a single variable that ranged from 20 to 100, with higher scores indicating a higher frequency of pro-environmental behaviors.

Regarding motivations, it was evaluated what would lead university students to adhere to a restricted or meat-free diet. In this regard, eight questions were included about animal rights; boycott of the meat industry; health; religion; weight loss; influence of friends; influence of family; not liking the taste of meat. The answer was also from a five-point Likert scale (strongly disagree; disagree; neutral; agree; strongly agree).

Regarding difficulties, seven points were evaluated: difficulty in becoming vegetarian; in staying vegetarian; in eating out; in finding vegetarian foods, both in supermarkets and restaurants; in preparing meatless foods; in facing prejudice; and having self-control. The five-point Likert scale consisted of the following options: very difficult; difficult; moderate; easy; and very easy.

The outcome variable was participants' self-reported dietary pattern. An individual was categorized as following a plant-based diet if they reported adhering to a flexitarian, pescovegetarian, lacto-ovo vegetarian, or vegan/strict vegetarian dietary pattern. These dietary patterns were clearly defined in the questionnaire to ensure accurate responses. Specifically, a flexitarian diet was defined as consuming meat no more than once a week, a pescovegetarian diet included fish and seafood but excluded meat (regardless of egg or dairy consumption), a lacto-ovo vegetarian diet allowed for the consumption of eggs and/or dairy but excluded meat, fish, and seafood, and a vegan/vegetarian strict diet was completely plant-based. Two omnivorous patterns were considered, namely omnivore (consumes meat and meat products, fish and seafood, as well as fruits, vegetables and cereals, and other plant foods) and organic omnivore (consumes organic meat, milk and plant foods). The descriptions in parentheses were included in the questionnaire to avoid doubts in the answer.

The pro-environmental behavior variable was derived from the creation of a construct given by the sum of a set of variables. The higher the score, the more frequent the pro-environmental behaviors by the respondents. The other variables were treated according to how they appeared in the questionnaire.

For data analysis, the following tests were used: Chi-squared, t-test, and ANOVA, based on the Kolmogorov-Smirnov test for normality, at a significance level of $p < 0.05$. Descriptive statistics were also calculated using the free software PSPP.

The research was submitted to the Ethics Committee (Certificate of Ethical Review Submission - CAAE: 63863122.2.0000.5564) and required participants to sign an informed consent form.

RESULTS

One of the purposes of this research was to identify the dietary patterns followed by university students and their characteristics (Table 1). Among the results obtained, only 9.6% said they were plant-based (the patterns considered in the instrument were omnivorous; organic omnivorous; flexitarian; pescovegetarian; lacto-ovo vegetarian; vegan or vegetarian) and 16.6% of the sample reported having been vegetarian/vegan at some point in their lives. Of these, it was observed that the largest number of students remained on this diet for only a few days to 6 months (56.2%).

The vast majority (94.5%) of those who stated that they had at some point followed this dietary pattern did not seek out health professionals for monitoring. Regarding the discourse of health professionals on vegetarian/vegan diets, the majority (65.8%) of the sample as a whole considered them neutral, that is, they neither supported nor discouraged these patterns. Most university students reported that there were no nutritional risks related to the vegetarian/vegan diet, but those who responded positively cited nutritional deficiencies, lack of nutritional monitoring, the need for supplementation and the cost of vegetarian/vegan diets, respectively, as the main ones.

The relationship between dietary patterns and respective sociodemographic data can be seen in Table 2.

Table 1 – Characterization of dietary patterns and data on vegetarianism of university students from the Realeza/PR, Laranjeiras do Sul/PR and Chapecó/SC campuses of Universidade Federal da Fronteira Sul, carried out between March and April 2023.

Variables	Number	Percentage
Dietary pattern		
Omnivore	701	86.0
Organic omnivore	36	4.4
Flexitarian	36	4.4
Pescovegetarian	3	0.4
Lacto-ovo vegetarian	31	3.8
Vegan	8	1.0
People who were once vegetarians		
Were vegetarians	135	16.6
Were not vegetarians	680	83.4
Period being a vegetarian		
Omnivores (not applicable)	669	82.1
Up to one month	33	4.0
1 to 6 months	49	6.0
6 to 12 months	12	1.5
1 to 3 years	27	3.3
Over 3 years	25	3.1
Follow-up with a health professional		
Omnivores (not applicable)	654	80.2
Yes	23	2.8
No	138	16.9
Professional's opinion		
Encourage vegetarian/vegan diets	127	15.6
Discourage vegetarian/vegan diets	152	18.7
Neutral	536	65.8
Are there risks in following a vegetarian/vegan eating pattern?		
Yes	273	33.5
No	542	66.5

Table 2 – Relationship between sociodemographic data and the dietary pattern of university students at the Universidade Federal da Fronteira Sul campuses in Realeza/PR, Laranjeiras do Sul/PR and Chapecó/SC, carried out between March and April 2023.

Variable	Omnivore diet		Plant-based diet		p-value
	N	%	N	%	
Campus					
Chapecó	556	75.4	61	78.2	0.18
Laranjeiras do Sul	125	17	8	10.3	
Realeza	56	7.6	9	11.5	
Major areas					
Health	207	28.1	27	34.6	0.13
Agricultural	157	21.3	10	12.8	
Applied social – Social studies	79	10.7	4	5.1	
Exact – Engineering	166	22.5	19	24.4	
Humanities – Literature/Education	128	17.4	18	23.1	
Marital status					
Single, divorced, widowed	639	86.7	73	93.6	0.82
Married, in a stable relationship	98	13.3	5	6.4	
Age					
up to 20 years	262	35.5	20	25.6	0.15
from 20 to 30 years	418	56.7	53	67.9	
over 30 years	57	7.7	5	6.4	
Sex					
Female	442	60	54	69.2	0.11
Male	295	40	24	30.8	
Race					
White	534	72.5	51	65.4	0.23
Black	48	6.5	9	11.5	
Brown	147	19.9	16	20.5	
Other	8	1.1	2	2.6	
Living status					
Parents	207	28.1	20	25.6	0.16
Grandparents or relatives	34	4.6	1	1.3	
Alone	186	25.2	23	29.5	
With friends	183	24.8	26	33.3	
With spouse/children	127	17.2	8	10.3	
Income*					
Not declared	43	5.8	5	6.4	0.11
Up to R\$1320	119	16.1	20	25.6	
From R\$1320 to R\$3960	275	37.3	30	38.5	
More than R\$3960	300	40.7	23	29.5	
Political spectrum					
Far left	24	3.3	7	9.0	0.01
Left	226	30.7	32	41.0	
Center left	106	14.4	15	19.2	
Center	135	18.3	8	10.3	
Center right	48	6.5	5	6.4	
Right	106	14.4	4	5.1	
Far right	13	1.8	0	0.0	
None of the above	79	10.7	7	9.0	

Note: *In Brazilian reais.

Regarding the difficulties encountered in becoming vegetarian/vegan, the data are displayed in Table 3.

Regarding the motivations that lead college students to follow a diet with restriction of meat or meat products, it was observed that among the variables that demonstrated statistical significance were pro-environmental behaviors ($p < 0.00$).

Table 3 – Difficulties that university students from the Universidade Federal da Fronteira Sul campuses in Realeza/PR, Laranjeiras do Sul/PR and Chapecó/SC have or would have in following a meat-restricted diet, carried out between March and April 2023 according to their eating pattern.

Variable	Omnivore diet		Plant-based diet		p-value
	N	%	N	%	
Adhering to the diet					
Very difficult	383	52	7	9.0	0.00
Difficult	181	24.6	10	12.8	
Moderate	137	18.6	26	33.3	
Easy	26	3.5	16	20.5	
Very easy	10	1.4	19	24.4	
On staying on the diet					
Very difficult	402	54.5	9	11.5	0.00
Difficult	197	26.7	13	16.7	
Moderate	119	16.1	23	29.5	
Easy	13	1.8	17	21.8	
Very easy	6	0.8	16	20.5	
Eating out					
Very difficult	279	37.9	16	20.5	0.00
Difficult	182	24.7	17	21.8	
Moderate	159	21.6	28	35.9	
Easy	62	8.4	14	17.9	
Very easy	55	7.5	3	3.8	
Finding food					
Very difficult	121	16.4	8	10.3	0.40
Difficult	176	23.9	21	26.9	
Moderate	276	37.4	35	44.9	
Easy	120	16.3	9	11.5	
Very easy	44	6.0	5	6.4	
Preparing a meal/food					
Very difficult	177	24	4	5.1	0.00
Difficult	137	18.6	7	9	
Moderate	233	31.6	16	20.5	
Easy	140	19	32	41	
Very easy	50	6.8	19	24.4	
Facing prejudice					
Very difficult	75	10.2	8	10.3	0.95
Difficult	110	14.9	11	14.1	
Moderate	236	32	23	29.5	
Easy	183	24.8	19	24.4	
Very easy	133	18	17	21.8	
Having self-control					
Very difficult	350	47.5	5	6.4	0.00
Difficult	181	24.6	9	11.5	
Moderate	148	20.1	17	21.8	
Easy	44	6	26	33.3	
Very easy	14	1.9	21	26.9	

It is worth noting that those who remained on plant-based diets for more than 6 months had higher average scores for pro-environmental behaviors, when compared to omnivores or those who remained less than 6 months on the plant-based diet ($p < 0.05$). In addition to environmental motivation, variables related to animal rights ($p < 0.00$), against the meat industry ($p < 0.00$) and disliking the taste of meat ($p < 0.00$) were also important.

DISCUSSION

It was found that the percentage of students who can be classified as plant-based was only 9.6%. In Brazil, only one survey conducted by *Instituto Brasileiro de Opinião Pública e Estatística* (IBOPE, Brazilian Institute of Public Opinion and Statistics) in 2018, which is currently available on the internet, provides data on the percentage of Brazilians who say they are vegetarians, which would be 14%. However, Carvalho [10] disagrees with this survey, considering that the number is exaggerated, because, for the author, when looking at circles of friends, family, and coworkers, one realizes that this number does not represent the reality of the country. Even though the meat industry is currently trying to accommodate to this audience, there are still few vegetarian/vegan food options in restaurants and supermarkets. This is even more evident considering that within the plant-based standard, only 5.2% of the sample is vegetarian (pescovegetarian or lacto-ovo vegetarian) or vegan. From this, it can be inferred that there is a need for surveys that are more representative of the Brazilian reality, providing more reliable data on the subject.

Another finding is that only 16.6% of the sample reported having been vegetarian at some point in their lives, but not all of them remained on this diet for a long time. Only 3.1% of the sample said they had been following this pattern for more than three years, reflecting the low adherence to this eating pattern. Ortiz et al. [11] suggest that one of the associated factors would be the importance of social support, especially from family and friends, as this would facilitate the process of change and contribute to the feeling of acceptance of the individual who is trying a new diet, consequently contributing to the permanence on the diet. In a study conducted by Krizanova et al. [9], the importance of the individuals' intention to remain vegetarian was considered, after all, violating the diet at the beginning is understandable, due to the difficulty of the change.

As for medical/nutritional monitoring, few opted for this help. This result reflects, to some extent, the inequality of access to health care and the limited knowledge about vegetarianism on the part of the population. More than 30% of the questionnaires answered included some type of nutritional risk related to the plant-based diet, among the most cited risks are: nutritional deficiencies, followed by the lack of nutritional monitoring, supplementation and the cost of the vegetarian/vegan diet. Neufingerl and Eilander [12] emphasize that a plant-based diet, in general, guarantees a good nutritional intake, but observation and monitoring regarding some vitamins and minerals is recommended, especially those that are sources of animal foods, such as vitamin B12 and heme iron, especially in cases of strict vegan/vegetarian diets. It is worth mentioning that plant-based diets are associated with a lower incidence of overweight, Type 2 Diabetes Mellitus (T2DM), hypercholesterolemia, lower oxidative stress, inflammation, better endothelial function and increased insulin sensitivity when implemented with nutritional monitoring [13].

Among the socioeconomic variables investigated, it was identified that political ideology was the factor that presented statistical significance, with the plant-based pattern being more frequent in more left-wing political ideologies. Studies linking ideological beliefs have reported that people who lean to the political left are more likely to commit to sustainable consumption behavior. Right-wing people tend to be conservative and value naturalness and tradition in food, and this may contribute to some more sustainable choices; however, it does not mean that these people are, in fact, attentive to pro-environmental and pro-social issues [14]. Rosenfeld and Tomiyama [15] evaluated how politics interferes in the choice of vegetarianism, and conservatives reported that taste is an important predictor, along with the fact that they believe that the vegetarian diet is nutritionally insufficient.

When analyzing the main difficulties of the respondents, it was found that becoming plant-based, as well as maintaining this diet, is much more difficult for omnivores, which was expected. However, in addition to these issues, eating out and feeling unable to prepare plant-based dishes were also important. Eating out is a social activity that involves interactions with other people, and there is often a difficulty in this regard due to the limited supply of vegetarian and vegan dishes in restaurants [16]. Zinn et al. [17] emphasize that including vegetarian dishes and naming them with sustainable names, instead of neutral and vegetarian names, makes a difference in people's sustainable social identity, because in addition to facilitating the consumption of food outside the home among vegetarians, it implies in the choice of omnivores, which impacts on a greater potential for choosing a meat-free meal.

On the other hand, there is also a need to learn how to cook and learn about plant-based cooking techniques. Culinary skills can be defined as "task-focused" and "person-focused," referring to academic knowledge and also the person's ability to plan ahead [18]. Thus, culinary skills involve confidence, the application of individual knowledge so that culinary activities can be performed, including menu planning, grocery shopping, and food preparation [18]. That being said, knowing how to cook with restrictions on the use of foods of animal origin would make daily life and adherence to plant-based diets easier.

Another associated difficulty was related to self-control to avoid meat consumption. In this sense, social issues and eating habits can explain this culturally and socially learned taste for products of animal origin, especially meat [9-19]. In addition, the country stands out economically as one of the largest consumers, producers and exporters of beef, poultry and pork in the world, with the region of this study being one of the most relevant in the production and export of animal proteins in Brazil [20]. Furthermore, the latest *Pesquisa de Orçamentos Familiares* (POF, Consumer Expenditure Survey) of 2017/2018 [21] indicates that although the frequency of beef consumption has decreased among adolescents, adults and older adults, there was an increase in the frequency of poultry and pork in these age groups, when compared to the POF of 2008/2009 [22].

On the other hand, there is a trend towards the expansion of plant-based diets worldwide. The popularity of plant-based diets has increased in recent years in many Western countries, such as Portugal, where the number of vegetarians increased by 400% from 2007 to 2017, and in the USA, where the plant-based diet has increased by almost ten million in the last 15 years [23]. This point is already connected to the issues related to motivations, in which it was observed that the pro-environmental behaviors of university students largely account for the choice and adherence to plant-based diets. Krizanova et al. [9] identified that pro-environmental behaviors are significant predictors of adherence to these diets. The authors emphasize that pro-environmental behaviors make people more committed to vegetarianism, given that reducing meat consumption mitigates the harmful effects on the environment. This is important evidence in Brazil, because of the lack of studies that relate adherence to plant-based diets to environmental reasons, indicating that, at least in these academic contexts, people have already begun to be aware of this relationship.

Another motivational factor significantly associated with this type of diet was related to animal rights, which corroborates the literature. Dhont and Ioannidou [24], for example, investigated omnivores, vegetarians and vegans and their motivations for reducing meat, dairy and eggs and identified that, in relation to animal rights, vegetarians and vegans are strongly motivated, with vegans being even more motivated to reduce dairy and eggs.

Finally, the boycott of the meat industry was also related to the greater frequency of plant-based eating patterns. According to Bergeret [25], some boycotts of the meat industry have occurred

in the recent past, focusing on deforestation in the Amazon to favor agriculture and stockbreeding. From this, campaigns emerged in Brazil and Europe, insinuating that those who choose to consume meat from the Amazon would be consuming tropical forests. In Europe, supermarkets have even taken measures to no longer buy meat linked to deforestation in the Brazilian Amazon.

CONCLUSION

It was found that there are fewer college students who follow plant-based diets compared to omnivores in the universe investigated. Among the plant-based patterns, it is worth noting that the motivational factors associated with these patterns were collective, such as those linked to pro-environmental behaviors, concern for animal rights, issues of political consumption, and even more individual factors, such as simply not liking the taste of meat. By showing that people with a higher frequency of pro-environmental behaviors are more likely to follow plant-based patterns, it is pointed to the need to increase access to information regarding the link between diets and climate change, for example. In view of this, it would be important to link nutritional and food education to environmental education from an early age among children and to provide support to the general public through the media, food labels, and other sources of information.

On the other hand, there are difficulties, as following these dietary patterns in a society where meat is one of the main foods is a difficult task, after all, there are sociocultural issues involved in this process. It is worth noting that the challenges faced by individuals who opt for a plant-based diet are related to products (un)available in the market and/or restaurants, (un)skilled culinary abilities and difficulty with self-control. To change this context/environment/behavior, it is important to create public policies and initiatives by private companies and organized civil society to review how food is produced, distributed and accessed, so that we do not fall into other dietary contradictions, such as the consumption of pesticides, genetically modified organisms and ultra-processed foods from plant sources. Another potential area of work is related to a greater understanding of consumer behavior and their choices, involving and approaching the field of environmental psychology.

The limitations of this study are highlighted in terms of the target audience, which was restricted to university students and its cross-sectional design. To better understand the motivations, difficulties and behaviors behind the adherence and maintenance of this type of dietary pattern, other longitudinal or qualitative studies are necessary.

REFERENCES

1. Alpino TMA, Mazoto ML, Barros DC, Freitas CM. Os impactos das mudanças climáticas na Segurança Alimentar e Nutricional: uma revisão da literatura. *Ciênc Saúde Coletiva*. 2022;27(1):273-86. doi: <https://doi.org/10.1590/1413-81232022271.05972020>
2. Vieux F, Perignon M, Gazan R, Darmon N. Dietary changes needed to improve diet sustainability: are they similar across Europe? *Eur J Clin Nutr*. 2018;72(7):951-60. doi: <https://doi.org/10.1038/s41430-017-0080-z>
3. Willett W, Rockström J, Loken B, Springmann M, Lang T, Vermeulen S, et al. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet*. 2019;393(10170):447-92. doi: [https://doi.org/10.1016/s0140-6736\(18\)31788-4](https://doi.org/10.1016/s0140-6736(18)31788-4)
4. Hargreaves SM, Rosenfeld DL, Moreira AVB, Zandonadi RP. Plant-based and vegetarian diets: an overview and definition of these dietary patterns. *Eur J Nutr*. 2023;62(3):1109-21. doi: <https://doi.org/10.1007/s00394-023-03086-z>
5. Meybeck A, Gitz V. Sustainable diets within sustainable food systems. *Proc Nutr Soc*. 2017;76(1):1-11. doi: <https://doi.org/10.1017/S0029665116000653>
6. Elliott PS, Devine LD, Gibney ER, O'Sullivan AM. What factors influence sustainable and healthy diet consumption? A review and synthesis of literature within the university setting and beyond. *Nutr Res*. 2024;126:23-45. doi: <https://doi.org/10.1016/j.nutres.2024.03.004>

7. Schenk P, Rössel J, Scholz M. Motivations and constraints of meat avoidance. *Sustainability*. 2018;10(11):3858. doi: <https://doi.org/10.3390/su10113858>
8. Doneda D, Soares CH, Zanini MCC, Silva VL. Vegetarianismo muito além do prato: ética, saúde, estilos de vida e processos de identificação em diálogo. *Rev Ingesta*. 2020;2(1):176-99. doi: <https://doi.org/10.11606/issn.2596-3147.v2i1p176-199>
9. Krizanova J, Rosenfeld DL, Tomiyama AJ, Guardiola J. Pro-environmental behavior predicts adherence to plant-based diets. *Appetite*. 2021;163(105243):105243. doi: <https://doi.org/10.1016/j.appet.2021.105243>
10. Mundstock Xavier de Carvalho M. Vegetarianismo e veganismo: a expansão rápida de uma nova filosofia alimentar no Brasil. *Rev Alim Cult Am*. 2020;2(2):89-101. doi: <https://doi.org/10.35953/raca.v2i2.57>
11. Ortiz R, Massar RE, McMacken M, Albert SL. Stronger together than apart: the role of social support in adopting a healthy plant-based eating pattern. *Appetite*. 2024;198:107341. doi: <http://doi.org/10.1016/j.appet.2024.107341>
12. Neufingerl N, Eilander A. Nutrient Intake and status in adults consuming plant-based diets compared to meat-eaters: a systematic review. *Nutrients*. 2022;14(1):29. doi: <https://doi.org/10.3390/nu14010029>
13. Agnoli C, Baroni L, Bertini I, Ciappellano S, Fabbri A, Goggi S, et al. A comprehensive review of healthy effects of vegetarian diets. *Nutr Metab Cardiovasc Dis*. 2023;33(7):1308-15. doi: <https://doi.org/10.1016/j.numecd.2023.04.005>
14. Tiganis A, Chrysochou P, Krystallis A. Political ideology shapes heterogeneous preferences for food values. *Food Qual Prefer*. 2023;112:105038. doi: <https://doi.org/10.1016/j.foodqual.2023.105038>
15. Rosenfeld DL, Tomiyama AJ. Taste and health concerns trump anticipated stigma as barriers to vegetarianism. *Appetite*. 2020;144:104469. doi: <https://doi.org/10.1016/j.appet.2019.104469>
16. Nezelek JB, Forestell CA. Vegetarianism as a social identity. *Curr Opin Food Sci*. 2020;33:45-51. doi: <https://doi.org/10.1016/j.cofs.2019.12.005>
17. Zinn AK, Zhu OY, Dolnicar S. Increasing meat-free meal selections: the role of social identity salience and identity-related meal names. *Appetite*. 2023;191:107067. doi: <https://doi.org/10.1016/j.appet.2023.107067>
18. Jomori MM, Vasconcelos FAG, Bernardo GL, Uggioni PL, Proença RPC. The concept of cooking skills: a review with contributions to the scientific debate. *Rev Nutr*. 2018;31(1):119-35. doi: <http://doi.org/10.1590/1678-98652018000100010>
19. Maciel ME. Churrasco à gaúcha. *Horiz Antropol*. 1996;2(4):34-48.
20. Associação Brasileira das Indústrias Exportadoras de Carnes. Beef Report 2024: perfil da pecuária no Brasil. Brasília: ABIEC; 2024 [cited 2024 Nov 1]. Available from: <https://www.abiec.com.br/publicacoes/beef-report-2024-perfil-da-pecuaria-no-brasil/>
21. Instituto Brasileiro de Geografia e Estatística. Pesquisa de Orçamentos Familiares 2017-2018: avaliação nutricional da disponibilidade domiciliar de alimentos no Brasil. Rio de Janeiro: IBGE; 2020.
22. Instituto Brasileiro de Geografia e Estatística. Pesquisa de Orçamentos Familiares 2008-2009: avaliação nutricional da disponibilidade domiciliar de alimentos no Brasil. Rio de Janeiro: IBGE; 2010.
23. Milfont TL, Satherley N, Osborne D, Wilson MS, Sibley CG. To meat, or not to meat: a longitudinal investigation of transitioning to and from plant-based diets. *Appetite*. 2021;166(105584):105584. doi: <https://doi.org/10.1016/j.appet.2021.105584>
24. Dhont K, Ioannidou M. Health, environmental, and animal rights motives among omnivores, vegetarians, and vegans and the associations with meat, dairy, and egg commitment. *Food Qual Prefer*. 2024;118:105196. doi: <https://doi.org/10.1016/j.foodqual.2024.105196>
25. Bergeret, D. Beef boycotts aren't enough to save the amazon rainforest. *Foodnavigator/Europa*. England: Willian Reed; 2022 [cited 2023 Oct 18]. Available from: <https://www.foodnavigator.com/Article/2022/08/23/Beef-boycotts-aren-t-enough-to-save-the-Amazon-rainforest>

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