Association between dietary patterns and quality of life: A multicenter study in Latin American university students

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Abstract: Association between dietary patterns and quality of life: A multicenter study in Latin American university students. **Introduction:** Dietary patterns significantly influence physical, mental, and emotional health, making them essential for promoting overall well-being. During university years, students often adopt less healthy eating habits, which can negatively impact their quality of life. Understanding this relationship is key to designing interventions that improve the overall health of this population. **Objective:** To evaluate the association between dietary patterns and quality of life in Latin American university students. **Materials and methods:** A multicenter study consisting of a cross-sectional. Research in university students from ten Latin American countries. 4539 university students aged 18 years and older from ten Latin American countries. An online questionnaire was used to collect the data. Multivariate regression analysis, adjusted for control variables. **Results:** Significant differences in quality-of-life scores were observed between the different types of diet. All diets, except the Western diet, were associated with a better quality of life. The vegan diet had the highest association with quality of life (OR: 4.71, 95%CI: 2.32; 9.55), followed by the pescatarian diet (OR: 2.68, 95%CI: 1.79; 4.02) and the prudent diet (OR: 2.14, 95%CI: 1.73; 2.64). **Conclusions:** Vegan, pescatarian, and prudent diets are associated with a better quality of life, especially in men and people over 26 years of age. Further studies are needed to confirm these findings and better understand the mechanisms underlying these associations. **Arch Latinoam Nutr 2025; 75(2): 118-128.**

Keywords: Diet pattern, heath, university students, quality of life.

Resumen: Asociación entre patrones alimentarios y calidad de vida: Un estudio multicéntrico en estudiantes universitarios latinoamericanos. **Introducción:** Los patrones alimentarios influyen significativamente en la salud física, mental y emocional, siendo esenciales para promover el bienestar general. Durante la etapa universitaria, los estudiantes suelen adoptar hábitos alimentarios menos saludables, lo que puede afectar su calidad de vida. Comprender esta relación es clave para diseñar intervenciones que mejoren la salud integral en esta población. **Objetivo:** Evaluar la asociación entre patrones alimentarios y calidad de vida en estudiantes universitarios latinoamericanos. **Materiales y métodos:** Estudio multicéntrico de corte transversal. Investigación en estudiantes universitarios de diez países latinoamericanos. 4539 estudiantes universitarios mayores de 18 años de diez países latinoamericanos. Se utilizó un cuestionario en línea para recoger los datos. Análisis de regresión multivariante, ajustado por variables de control. **Resultados:** Se observaron diferencias significativas en las puntuaciones de calidad de vida entre los distintos tipos de dieta. Todas las dietas, excepto la occidental, se asociaron con una mejor calidad de vida. La dieta vegana presentó la mayor asociación con la calidad de vida (OR: 4,71; IC 95%: 2,32; 9,55), seguida de la dieta pescetariana (OR: 2,68; IC 95%: 1,79; 4,02) y la dieta prudente (OR: 2,14; IC 95%: 1,73; 2,64). **Conclusiones:** Las dietas veganas, pescetariana y prudente se asocian con una mejor calidad de vida, especialmente en hombres y personas mayores de 26 años. Se necesitan más estudios para confirmar estos hallazgos y comprender mejor los mecanismos subyacentes a estas asociaciones. **Arch Latinoam Nutr 2025; 75(2): 118-128.**

Palabras clave: Patrón dietético, salud, estudiantes universitarios, calidad de vida.

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Introduction

Dietary patterns have a great impact on people's health and well-bein (1-2), defined by the US Dietary Guidelines Advisory Committee as: "the amounts, proportions, variety or combination of different foods, beverages and nutrients in the diets that a person usually eats and drinks" (2).

It has been established that diet plays a crucial role in various aspects of human well-being, both in terms of physical and mental health (3). There is a relationship between diet and mood; intake of foods rich in nutrients, such as antioxidants and omega-3 fatty acids, has been associated with better mental and emotional health (4).

Studying dietary patterns is vital for developing effective food and nutrition policies. This research underscores the importance of nutritional factors in enhancing overall health promotion wellness (5). It is also well-established that healthy dietary patterns should include health-promoting foods such as vegetables, fruits, whole grains, legumes, nuts, fresh fish, eggs, and essential fatty acids (5,6).

Research on dietary patterns has shown that food choices are not only shaped by individual factors but are also strongly influenced by the environment (7). From an early age, food preferences begin to develop and are consolidated throughout life. In addition, the presence of a food environment excessive in unhealthy choices, such as processed and ultra-processed food constantly promoted through advertising, has contributed to the widespread adoption of unhealthy Westernized patterns (3,8). Furthermore, advertising campaigns targeting adolescents, primarily through social media, successfully promote the consumption of cheap, easily accessible industrial beverages and processed foods with little nutritional value (9).

This reality supports the importance of understanding how to intervene at both the individual and food environment levels to promote healthier and more sustainable dietary patterns throughout the life cycle.

On the other hand, university students tend to adopt less healthy eating habits during university life as they are defining their dietary and lifestyle patterns, which in most cases continue into later life (10). However, following health influencers may alter the positive relationship between health behaviors and mental health (11). It is important to note that students with higher levels of social media addiction tend to have less healthy lifestyles (12). Some students adopt habits such as alcohol intake and tobacco use, missed meals, physical inactivity, and inadequate sleep; others focus on more calorically dense and/or ultra-processed foods (13,14), which are associated with an increased risk of chronic non-communicable diseases (NCDs) in the long term and confer consequences on physical, mental, and emotional health, with a deterioration in quality of life (15).

In contrast, plant-based dietary patterns appear to have a positive influence on mental health (8). Evidence has emerged at the cellular and molecular level, elucidating the numerous benefits of a plant-based diet (PBD) for preventing and mitigating conditions such as atherosclerosis, chronic noncommunicable diseases, and metabolic syndrome (16). In a study analyzing the relationship between plant-based diets and quality of life domains such as subjective perception of well-being and functioning in the physical, psychological, social, and environmental domains, it was found that the vegetarian diet could influence all these quality-of-life domains, either positively or negatively (17). It is necessary to identify that health consciousness and quality of life are associated with freedom from pathology (18). and a systematic review assessed the nutritional quality of plant-based diets (vegetarian and vegan) and found higher levels of nutritional quality among vegetarians than among omnivores in 9 out of 12 studies (18).

A cohort study examining the association between quality of life and diet quality in older people identified a positive relationship between higher-quality diets and better quality of life (19). In addition, significant associations have been shown between dietary adherence and general health in the elderly. These findings suggest that a high-quality diet may play an important role in well-being and quality of life (20). However, studies in other age groups such as university students are lacking.

Considering that research has suggested that the university years may lead to changes in the quality of life of students (19). and that diet may be a factor

influencing quality of life (21), it is important to identify whether the type of diet of university students is associated with quality of life. It highlights the importance of understanding how the dietary patterns of university students may affect not only their physical health but also their emotional and mental well-being during this crucial transitional phase. University is not only academically challenging but also an environment conducive to the adoption and reinforcement of dietary habits that can have long-term repercussions on quality of life. By closely examining the relationship between diet and quality of life in this specific demographic group, it is hoped to gain a deeper understanding of how dietary choices can influence various aspects of student well-being. The present research aims to associate the dietary patterns of Latin American university students with dimensions of quality of life (physical health, psychological health, social relationships, and the environment).

Materials and methods

Study desing

A cross-sectional, observational, and multicentre study was carried out using non-probabilistic sampling with voluntary participation of university students from 10 Latin American countries (Argentina, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Paraguay, Peru, and Panama). The inclusion criteria were: to be a student actively enrolled in higher education institutions, aged 18 years or older. Those who did not complete the entire survey were excluded.

Data collection

University students were invited to participate in the study via social media platforms (Instagram, Facebook, and Twitter) or institutional emails. A self-administered digital questionnaire in Google Forms format was used to collect dietary habits, physical activity information, and quality of life assessment. Data were collected between November and December 2020. The sample size calculation determined a minimum of 1,194 participants. The sample size calculation was conducted using G*Power. (considering the performance of a logistic regression, a one-sided test, odds ratio = 1.3, Pr (Y = 1 |X = 1) H0 = 0.2, an α of 0.01 and a power (1-β) of 0.9).

Dietary patterns

Participants reported their dietary patterns based on the following question, "Which of the following dietary patterns best describes you?", and the following options:

- Prudent diet: characterized by a prudent and modest intake of all food groups, without excess or avoidance.

- Western diet: characterized by a high intake of ultra-processed and fast foods such as pizza, burgers, fries, snacks, frozen, canned, or fried foods. In addition, a low intake of fruits, vegetables, legumes, and whole grains.

- Ovo-lacto-vegetarian diet: a plant-based diet that includes dairy and eggs, and limits meat products. Increased intake of fruits, vegetables, legumes, and grains.

- Pescetarian diet: a plant-based diet that includes fish, dairy, and eggs. Increased intake of fruits, vegetables, seafood, legumes, and grains.

- Vegan diet: characterized by the exclusive consumption of plant-based foods and the exclusion of honey. Increased intake of fruit, vegetables, pulses, and cereals.

- Other diet: for those who do not identify with any of the previously established patterns.

This questionnaire was prepared by experts (nutritionists with expertise in food studies) in the field of nutrition and public health, and was subsequently validated through an analysis of the Content Validity Index (CVI), through the calculation of Lawshe's Content Validity Ratio (CVR). This questionnaire considers sustainable and environmentally friendly lifestyles. Each expert must assign each item a score based on three possibilities: that the item is "essential" (1) to evaluate the construct; that it is useful, but dispensable (0); or that it is considered unnecessary (0). The following expression is applied to this assessment. Lawshe's original acceptance criterion for 18 experts was an RVC equal to or greater than 0.56; for this question the acceptance corresponded to 0.9.

Measurement of socioeconomic level

To measure it, the World Association of Market Research (ESOMAR) (22) survey was be used ESOMAR, which is a method for defining and measuring socioeconomic levels, which was initially used to unify the criteria of European countries on the subject of socioeconomic level, which has been adapted.

The Socioeconomic Level ESOMAR is based on only two variables: (1) The level of education attained by the main breadwinner and (2) the occupational category of the main breadwinner occupational category of the main breadwinner. Both variables are combined in a Socioeconomic Classification Matrix, which determines the Socioeconomic Level of each family according to the combinations of both variables. combinations of both variables. Six groups are generated: A = Very high B = High Ca = Medium-High Cb = Medium D = Medium-Low E = Low.

Body mass index (BMI)

The body mass index (BMI) in kg/m² was determined based on self-reported weight and height. The cut-off points for normal BMI were <25 kg/m², and for overweight BMI, ≥25 kg/m².

Quality of life

The WHOQOL-BREF Scale (23) is a shortened version of the World Health Organization's WHOQOL-100 Scale (24). In brief, participants are asked to rate their response on a 5-point Likert scale, measuring four domains of quality of life: physical health, psychological health, social relationships, and the environment, with a total of 26 items. As a multidimensional measure of quality of life, it allows for a variety of categories that can indicate different levels of quality of life, both low and high. These categories may include a) Low level of quality of life: This may indicate that participants are experiencing significant difficulties in multiple areas of their lives, such as physical health, mental health, social relationships, and the environment in which they live. A low level of quality of life may reflect health problems, lack of social support, unhealthy environments, or a combination of these factors. b) High level of quality of life: Conversely, a high level of quality of life suggests that participants are experiencing well-being in several areas of their lives. This may manifest itself in good physical and mental health, satisfying social relationships, a supportive environment, and a general sense of satisfaction and fulfilment.

Ethics

All participants agreed to participate in the study through a virtual informed consent form (eConsent). The informed consent form detailed the purpose of the study and the surveys to be completed. Participation was voluntary and anonymous. This study was conducted under the recommendations of the Declaration of Helsinki for human studies. The project protocol was approved by the Ethics Committee of the Universidad de Las Américas de Chile, reference number CEC_FP_2020017.

Statistics

All statistical analyses were performed using the Stata 17.0 software package (StataCorp, College Station, Texas, USA) (25). Normality analysis was performed using the Shapiro-Wilks test for quantitative variables. Quantitative variables are presented as mean and standard deviation (SD), while categorical variables are expressed as frequency and percentage. Multiple logistic regression was used to assess the association between dietary patterns and quality of life dimensions. The response variable was classified as good quality of life (1) and poor quality of life (0). Model 1 was adjusted for sociodemographic variables (sex, age, socioeconomic status, and country); Model 2 included variables from Model 1 plus smoking and physical activity; and Model 3 included variables from Model 2 plus BMI. Measures of association are reported as Odds Ratios (OR) and 95% confidence intervals. An association was considered significant if the *p*-values for ORs were less than 0.05.

Results

Overall, most study participants were female (73.6%) and young people aged 18-25 (85.2%). Middle socio-economic status prevailed (47.7%). The majority did not smoke (92.6%) and had an average sleep time of 6.97 (SD 1.42). The average body mass index (BMI) was 24.39 (SD 4.82). Among those following the Western dietary pattern, there was a slightly higher proportion of men and a higher average BMI than those following other patterns. Among those who reported following

the ovo-lacteal-vegetarian diet, a higher proportion of young people and a lower average BMI were observed (Table 1 and Table 2).

Significant differences in quality of life scores were observed between different dietary patterns (Table S1).

All dietary patterns were positively associated with a better quality of life compared to the Western diet, even after adjusting for factors such as smoking, physical activity, and BMI. The vegan diet had the strongest association (OR: 4.71, 95%CI: 2.32; 9.55), followed by pescetarian (OR: 2.68, 95%CI: 1.79; 4.02) and prudent (OR: 2.14, 95%CI: 1.73; 2.64), in the best-fitting model (Table 3).

Data presented as OR with its 95% confidence interval. Quality of life is the outcome variable I feel 1, good perception of quality of life. The reference group is students with a Western diet. Model 1 adjusted for sex, age, socioeconomic level, country. Model 2 adjusted by model 1 plus.

Figure 1 shows the association between the different types of diet and quality of life, considering the sex and age of the participants. In both women and men, the prudent diet showed significant associations with a better quality of life compared to the Western diet. However, the strength of the association was more pronounced in men than in women. In terms of age, a significant association between the different patterns and better quality of life was observed in both age groups, except for other types of diet. However, the strength of the association is much stronger in the 26-46 age group than in the 18-25 age group.

Table 1. Baseline characteristics by dietary patterns.

	Occidental	Ovo-lacteo-vegetarian	Pescetarian	Prudent	Vegan	Other	Total
	525 (11.55%)	223 (4.91%)	133 (2.93%)	3360 (73.99%)	44 (0.97%)	254 (5.59%)	4539
Sex							
Women	356 (67.8%)	177 (79.4%)	108 (81.2%)	2485 (74.0%)	39 (88.6%)	176 (69.3%)	3341 (73.6%)
Men	169 (32.2%)	46 (20.6%)	25 (18.8%)	875 (26.0%)	5 (11.4%)	78 (30.7%)	1198 (26.4%)
Age (%)							
18-25	424 (80.8%)	197 (88.3%)	99 (74.4%)	2910 (86.6%)	31 (70.5%)	208 (81.9%)	3869 (85.2%)
26-46	101 (19.2%)	26 (11.7%)	34 (25.6%)	450 (13.4%)	13 (29.5%)	46 (18.1%)	670 (14.8%)
Socioeconomic level (%)							
Low	127 (24.2%)	73 (32.7%)	33 (24.8%)	921 (27.4%)	14 (31.8%)	59 (23.2%)	1227 (27.0%)
Medium	252 (48.0%)	96 (43.0%)	69 (51.9%)	1621 (48.2%)	23 (52.3%)	105 (41.3%)	2166 (47.7%)
High	146 (27.8%)	54 (24.2%)	31 (23.3%)	818 (24.3%)	7 (15.9%)	90 (35.4%)	1146 (25.2%)
Country							
Argentina	48 (9.1%)	60 (26.9%)	16 (12.0%)	320 (9.5%)	14 (31.8%)	15 (5.9%)	473 (10.4%)
Colombia	24 (4.6%)	34 (15.2%)	23 (17.3%)	257 (7.6%)	14 (31.8%)	19 (7.5%)	371 (8.2%)
Costa Rica	25 (4.8%)	10 (4.5%)	4 (3.0%)	195 (5.8%)	2 (4.5%)	9 (3.5%)	245 (5.4%)
Chile	53 (10.1%)	27 (12.1%)	12 (9.0%)	414 (12.3%)	8 (18.2%)	27 (10.6%)	541 (11.9%)
Ecuador	75 (14.3%)	15 (6.7%)	18 (13.5%)	492 (14.6%)	1 (2.3%)	35 (13.8%)	636 (14.0%)
Guatemala	50 (9.5%)	15 (6.7%)	11 (8.3%)	244 (7.3%)	1 (2.3%)	11 (4.3%)	332 (7.3%)
Mexico	133 (25.3%)	48 (21.5%)	31 (23.3%)	862 (25.7%)	4 (9.1%)	79 (31.1%)	1157 (25.5%)
Panama	40 (7.6%)	0 (0.0%)	9 (6.8%)	188 (5.6%)	0 (0.0%)	14 (5.5%)	251 (5.5%)
Paraguay	53 (10.1%)	7 (3.1%)	0 (0.0%)	173 (5.1%)	0 (0.0%)	20 (7.9%)	253 (5.6%)
Peru	24 (4.6%)	7 (3.1%)	9 (6.8%)	215 (6.4%)	0 (0.0%)	25 (9.8%)	280 (6.2%)

Table 2. Baseline characteristics by dietary patterns.

	Occidental	Ovo-lacteo-vegetarian	Pescetarian	Prudent	Vegan	Other	Total
Area of study, n (%)							
Arts, architecture, and design	8 (1.5%)	5 (2.2%)	3 (2.3%)	39 (1.2%)	1 (2.3%)	3 (1.2%)	59 (1.3%)
Agricultural and biological sciences	13 (2.5%)	15 (6.7%)	8 (6.0%)	131 (3.9%)	1 (2.3%)	13 (5.1%)	181 (4.0%)
Health Sciences	25 (4.8%)	4 (1.8%)	4 (3.0%)	108 (3.2%)	1 (2.3%)	6 (2.4%)	148 (3.3%)
Administration Sciences and Economics.	288 (54.9%)	140 (62.8%)	82 (61.7%)	2216 (66.0%)	36 (81.8%)	146 (57.5%)	2908 (64.1%)
Education, social sciences, and humanities	27 (5.1%)	14 (6.3%)	11 (8.3%)	119 (3.5%)	4 (9.1%)	7 (2.8%)	182 (4.0%)
Engineering and exact sciences	126 (24.0%)	36 (16.1%)	20 (15.0%)	585 (17.4%)	1 (2.3%)	53 (20.9%)	821 (18.1%)
Other	38 (7.2%)	9 (4.0%)	5 (3.8%)	162 (4.8%)	0 (0.0%)	26 (10.2%)	240 (5.3%)
Year of university, n (%)							
First year	101 (19.2%)	56 (25.1%)	29 (21.8%)	634 (18.9%)	9 (20.5%)	53 (20.9%)	882 (19.4%)
Second year	142 (27.0%)	53 (23.8%)	37 (27.8%)	815 (24.3%)	13 (29.5%)	63 (24.8%)	1123 (24.7%)
Third year	90 (17.1%)	44 (19.7%)	24 (18.0%)	677 (20.1%)	10 (22.7%)	62 (24.4%)	907 (20.0%)
Fourth year	82 (15.6%)	36 (16.1%)	21 (15.8%)	536 (16.0%)	8 (18.2%)	34 (13.4%)	717 (15.8%)
Fifth year	110 (21.0%)	34 (15.2%)	22 (16.5%)	698 (20.8%)	4 (9.1%)	42 (16.5%)	910 (20.0%)
Physical activity, n (%)							
No	422 (80.4%)	124 (55.6%)	87 (65.4%)	2149 (64.0%)	28 (63.6%)	182 (71.7%)	2992 (65.9%)
Yes	103 (19.6%)	99 (44.4%)	46 (34.6%)	1211 (36.0%)	16 (36.4%)	72 (28.3%)	1547 (34.1%)
Quarantine (%)							
No	223 (42.5%)	91 (40.8%)	68 (51.1%)	1310 (39.0%)	26 (59.1%)	87 (34.3%)	1805 (39.8%)
Yes	302 (57.5%)	132 (59.2%)	65 (48.9%)	2050 (61.0%)	18 (40.9%)	167 (65.7%)	2734 (60.2%)
Tobacco consumption, n (%)							
No	470 (89.5%)	204 (91.5%)	122 (91.7%)	3128 (93.1%)	41 (93.2%)	236 (92.9%)	4201 (92.6%)
Yes	55 (10.5%)	19 (8.5%)	11 (8.3%)	232 (6.9%)	3 (6.8%)	18 (7.1%)	338 (7.4%)
Hours sitting, Mean (SD)	9.07 (3.24)	8.50 (3.15)	8.19 (3.17)	8.53 (3.21)	9.55 (3.03)	8.72 (3.31)	8.60 (3.22)
Sleep Hours, Mean (SD)	6.84 (1.53)	7.29 (1.50)	7.13 (1.56)	6.97 (1.39)	7.09 (1.20)	6.83 (1.50)	6.97 (1.42)
BMI, Mean (SD)	27.00 (7.00)	23.72 (4.28)	23.50 (3.61)	24.00 (4.32)	22.63 (2.81)	25.54 (4.87)	24.39 (4.82)

Table S1. Analysis of quality-of-life score comparison between dietary patterns.

	Global	18-25	26-46	Women	Men
Total	54.03 (6.07)	53.92 (5.97)	54.67 (6.63)	54.34 (6.01)	53.15 (6.18)
Occidental	48.00 (6.01)	48.21 (5.84)	47.12 (6.63)	47.91 (6.17)	48.05 (5.94)
Ovo-lacto-vegetarian	55.78 (5.82)	55.57 (5.89)	57.35 (5.11)	54.96 (5.75)	55.99 (5.83)
Pescetarian	57.09 (6.32)	56.83 (6.63)	57.85 (5.31)	52.92 (7.29)	58.06 (5.68)
Prudent	54.87 (5.51)	54.69 (5.48)	56.04 (5.58)	54.17 (5.58)	55.12 (5.46)
Vegan	55.86 (4.63)	54.55 (4.40)	59.00 (3.67)	57.80 (2.49)	55.62 (4.80)
Other	51.88 (5.67)	51.69 (5.57)	52.74 (6.11)	51.86 (6.60)	51.89 (5.23)
p	<0.001	0,03	<0.001		

Table 3. Association of diet patterns and quality of life

	Model 1		Model 2		Model 3	
	OR 95% CI	*p* value	OR 95% CI	*p* value	OR 95% CI	*p* value
Occidental	1.00 (Ref)		1.00 (Ref)		1.00 (Ref)	
Ovo-lacto-vegetarian	2.21 (1.59; 3.08)	<0.001	1.94 (1.38; 2.71)	<0.001	1.74 (1.24; 2.44)	0.001
Pescetarian	3.30 (2.21; 4.91)	<0.001	3.05 (2.04; 4.56)	<0.001	2.68 (1.79; 4.02)	<0.001
Prudent	2.60 (2.12; 3.19)	<0.001	2.37 (1.93; 2.91)	<0.001	2.14 (1.73; 2.64)	<0.001
Vegan	5.99 (2.96; 12.12)	<0.001	5.50 (2.72; 11.13)	<0.001	4.71 (2.32; 9.55)	<0.001
Other	1.58 (1.15; 2.19)	0.005	1.49 (1.07; 2.06)	0.017	1.41 (1.02; 1.96)	0.038

Smoking and physical activity, Model 3 adjusted by model 2 plus BMI.
Data presented as OR with its 95% confidence interval. Quality of life is the outcome variable I feel 1, good perception of quality of life. The reference group is students with a Western diet. Model 1 adjusted for sex, age, socioeconomic level, country. Model 2 adjusted by model 1 plus.

Figura 1. Xxxxxx

Discussion

The main finding of the present study is that individuals following dietary patterns such as the prudent, vegetarian, and especially the vegan diet had a better quality of life than participants eating a Western diet.

A Brazilian study that assessed quality of life using The Specific Vegetarian Quality of Life Questionnaire (VEGQOL) found that vegans had the best results; in addition, older vegetarians, those who had been eating the diet for longer and those who had friends who were also vegetarian; and finally, those who adopted the diet for medical or ethical reasons also had higher scores (26). A cross-sectional study in Venezuela found statistically significant and clinically relevant differences between the three dietary patterns examined, with dietary acid load (DAL) being the emerging marker for measuring diet quality, that plant-based diets are an effective means to reduce DAL scores (27).

A Portuguese study on young people showed that individuals who consumed a Mediterranean diet had a good quality of life (28) as measured by the Kidscreen-10 questionnaire. Other studies, also in Spanish (29) and Greek (30). adolescents, showed that adherence to the Mediterranean diet was associated with better quality of life.

Another study conducted during the period of the COVID-19 pandemic among preschoolers, children and adolescents in Brazil and Spain showed that those who had a higher adherence to the Mediterranean diet had better quality of life scores, using the Quality Index for Children and Teenagers (KIDMED) questionnaire (31). Our study did not directly consult on the Mediterranean diet since olive oil is not widely consumed in the Latin American population, while oils such as palm, sunflower, and canola are more widely accepted and are produced locally. However, it is assumed that the profile of the Mediterranean diet could be considered like the prudent diet analysed in the study.

Consumption of specific food groups has also been associated with better quality of life, as shown in a study in Ghanaian women, where higher vegetable consumption was associated with better quality of life as assessed by self-reported HR-QoL (32), a similar result was found in cancer survivors, where vegetable consumption was associated with better quality of life, the researchers used a simplified Chinese version of the European Organization for Research and Treatment quality of life version 3 (EORTC QLQ-C30) questionnaire (33). A study in endurance runners showed that runners who adhered to a vegetarian or vegan diet had a high quality of life, but that of subjects with an omnivorous diet is unclear.

Although there is uncertainty about the mechanisms that may be involved, it has been hypothesized that the presence of antioxidants, polyphenols, vitamins, and dietary fiber (34) and low dietary acid load (DAL) (35), that are common to the prudent, Mediterranean, vegetarian, and vegan diets may be playing a role in these effects.

Several food groups independently provide nutrients that may be linked to a better quality of life; for example, vegetables provide relatively high amounts of some vitamins and minerals to the diet and are sources of dietary fiber and phytochemicals that function as antioxidants, phytoestrogens and anti-inflammatory agents that have a positive impact on human health (34). Other studies have linked low vegetable intake to depression (36) and dementia in older adults (37), as well as cognitive disorders (38).

Antioxidants present in fruits, vegetables, and vegetable oils decrease levels of oxidative stress and thus reduce oxidative DNA damage, neuronal cell death, and β-amyloid aggregation in the brain, the effect of which has been linked to lower cognitive functioning and mental health (39). In addition, evidence further shows that a dietary pattern rich in vegetables ensures the adequacy of health-enhancing micronutrients (40).

Another possible mechanism of the relationship between a healthy diet and quality of life may be through inflammation (41) a diet rich in energy, saturated fats, trans fats, and refined oils (4), carbohydrates, and cholesterol, i.e. a Western diet, promotes a pro-inflammatory environment, on the contrary a plant-based diet may have significant amounts of beta-carotene, dietary fiber, folic acid, omegas 3, among others (42), many of these foods

or nutrients, can reduce some inflammatory markers such as IL-1β, IL-4, IL-6, IL-10, TNF- α and CRP involved in low-grade inflammation that has been associated with various diseases (42,43) It has also been shown that dairy products, especially yogurt, which is fermented, can reduce low-grade inflammation (44).

In addition, different dietary patterns can lead to changes in the composition of the gut microbiota (45). While vegetarian-vegan diets promote greater microbial diversity and the production of beneficial metabolites such as short-chain fatty acids, Western diets may favor the proliferation of bacteria associated with inflammation and metabolic disease (45). These findings highlight the importance of different diets in modulating gut microbiota and their impact on an individual's overall health.

Among the strengths of the study, we can mention that it worked with a large sample of Latin American students and the use of validated surveys that allow comparison with other studies. However, the study is not free of weaknesses, such as the cross-sectional design, which does not allow us to speak of causality, and the fact that most of the students are female. Another limitation of our study is the small representation of the vegan population, which may impact the generalizability of our results.

Conclusions

This study found that following a prudent vegetarian and especially vegan diet was associated with a better quality of life compared to a Western diet, a result that adds further strength to the benefits for individuals and in particular university students to follow a plant-based diet. It is necessary to increase food and nutrition education to promote healthy eating within Latin American universities. It is also necessary to contribute to the development of more effective food and nutrition policies in educational environments.

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Conflict of Interest

The authors declare no conflict of interest.

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