Perspective on the consumption of ultra-processed foods among university students

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Abstract

The study examines the perspective on the consumption of ultra-processed foods among university students. The consumption of ultra-processed foods by university students has always been a concern for nutrition specialists and university specialists because there is no law that regulates sales in sales centers or stores near the university as there is for regular education. There is also no culture of healthy food consumption in university students, despite being trained in healthy food and eating habits that students immediately fall back on, so the purpose of this research is to analyze and describe the prospects of consumption of ultra-processed foods among university student in the province of Sullana. For which a descriptive design was used with a quantitative, correlational, and intentional sampling approach due to the ease of digital communication, a survey was used in which any student could participate voluntarily and anonymously. This questionnaire had 26 questions whose answers were on a Likert scale of five points, in which 827 university students participated. The results show that there is a high level of consumption of ultra-processed foods among university students, with preferences for pastry products, cookies, and chocolates. It is concluded that university students do not have a culture of healthy food consumption and consume all kinds of products found in the surroundings of the university, and these are what are called "junk" foods that damage health sooner or later.

Keywords: College students, Danish food, Food consumption, Food, Healthy food, Ultra processed food.

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Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Institutional Review Board Statement: The Ethical Committee of the Research Institute of the National Amazonian University of Madre de Dios, Peru has granted approval for this study on 8 May 2023 (Ref. No. 072-2023-UNAMAD-VRI).

1. Introduction

The commercialization of ultra-processed foods (UPF) worldwide is constantly growing, despite the fact that consumers know that they can be harmful to health [1]. Their consumption is associated with poor diet quality, but there is little information on how consumers estimate the level of food processing and how much influence they have on health [2]. The perception of ultra-processed foods is negative, to the point that they are often referred to as unreal foods [3], so different industries seek to reduce the caloric content of their ultra-processed foods by creating new formulas and replacing caloric sugars with calorie-free sweeteners to thus change consumers' perception of how harmful their product they consume is [4].

Recommendations on the intake of ultra-processed foods are increasing as the damage they cause to health becomes evident [5]. Over time, the food industry has been responsible for producing more and more ultra-processed foods, and, at the same time, scientific evidence on the negative effects of this type of food on human health has increased [6]. Food processing has evolved along with the needs of society, and in recent years there has been an excessive increase in the commercialization of ultra-processed foods. It would be impossible to accurately measure the consequences they produce on health, but it is estimated that the main problems generated by the consumption of ultra-processed foods are cardiovascular and different types of cancer [7].

The NOVA (a new system of classifying and distinguishing types of food either according to purpose, nature, or degree of processing in an industrial way, leaving aside the classification according to type and nutrients of each food) system is one of the most widely used in various countries to classify foods according to their degree of processing, but there are no studies that evaluate the level of understanding of this system and of the term "ultra-processed foods" by consumers [8]. In countries such as Brazil and Uruguay, this system is the most widely used to classify products [9]. However, this system classifies ready-to-eat foods of high global demand that are considered ultra-processed but at the same time are not very harmful, as is the case of whole wheat bread, where nutritionists are a key part in disseminating this information and thus preventing the lack of knowledge from causing the exclusion of foods so beneficial to health in the diet [10].

The fact of preparing food at home contributes to a healthier diet [11]. Currently it is essential to develop low-cost healthy food delivery systems; in this way, healthy diets will be available to all social groups, including people with lower incomes [12]. In many countries, the intake of vegetables is only half of what is recommended, in spite of how beneficial they are. The reasons for this low intake are related to current food consumption trends [13]. COVID-19 generated changes in food selection, decreasing the consumption of ultra-processed foods, although again, this bad habit is being resumed [14]. The intake of minimally processed foods is a good option versus the consumption of ultra-processed foods [15]. Therefore, physicians grant restrictions about the consumption of ultra-processed foods based on their knowledge and experience since the weighted average prevalence of addiction to ultra-processed foods is approximately 20% worldwide and varies widely among samples [16].

Several epidemiological studies show that the risk of contracting various incurable diseases is associated with the degree of food processing, and most of this finding was determined by the NOVA system [17]. The consumption of ultra-processed foods is constantly growing, along with the health problems they cause [18]. In adolescents, there is a high rate of consumption of ultra-processed foods, which brings with it behavioral and emotional problems and, therefore, damage to themselves [19]. In the same way, the consumption of ultra-processed foods can pose a high risk of negative effects on the health of mothers and infants [20]. Unfortunately, during the period of complementary feeding, the consumption of ultra-processed foods has become prevalent [21].

1.1. Literature Review

There are studies linking high consumption of ultra-processed foods with diseases resulting from a diet low in nutrients, but very little research has been done on biomarkers of nutrition during pregnancy [22]. Similarly childhood obesity is attributed to the consumption of ultra-processed foods, but there is no clear evidence of this [23], nor has it been possible to prove its relationship with hypertension [24]. Other studies affirm that the intake of ultra-processed foods influences the acquisition of type 2 diabetes; however, due to the great variety of these products and their different nutritional content, it is not possible to affirm that all consumers of ultra-processed foods will present the same results [25] and much less with anemia [26]

Among the main consequences attributed to the intake of ultra-processed foods is the risk of contracting cardiovascular diseases [27]. The relationship between the consumption of ultra-processed foods and the risk of suffering cardio metabolic diseases is directly proportional [28]. It is also believed that the prevalent increase in inflammatory bowel diseases is a product of diets high in fat, sugars, and a high degree of processing [29], and there is also a relationship between muscle weakness and diets low in nutrients [30].

Research on ultra-processed foods associates their consumption with weight gain since their ingestion produces a highly pleasurable sensation that does not allow controlling their consumption. Thanks to this, many suppliers of food additives promote their products under the argument that they increase the palatability of food [31]. Factors such as sensory characteristics and the cost of ultra-processed foods facilitate their incorporation into the diets of the world population [32].

Ultra-processed foods are associated with many diseases with long-term health consequences, but their consumption increases due to the great addiction they generate and the attractive marketing proposals with which they are promoted; basically, their consumption is supported by the emotional influence on consumers [33]. Food labeling plays a vitally important role when making purchasing decisions, the warnings about food processing shown on the labels influence the decision of consumers [34]. Currently, there are a great variety of food classification systems that serve to inform us about

the foods we consume daily and the possible diseases they could cause. Warning labels help consumers choose their food with the necessary knowledge to make a good choice, although in many countries there is still misleading advertising [35].

Many countries have adopted food labeling policies in which it is required to place warnings on the nutritional content so that consumers can be informed about what they consume in order to reduce the consumption of ultra-processed foods [36]. On the other hand, there is a great variety of whole foods that are a healthy alternative to the consumption of ultra-processed foods, and the best way to identify them is through the label [37]. Well, an important tool when deciding to purchase a food is its front label since it provides a scope of what is going to be ingested [38]. A measure that is being taken in several countries is to improve the front labels of products in order to reduce the impact of excessive consumption of ultra-processed foods on health [39]. Also, the food industry is forced to reduce the harmful compounds in their products due to the food labeling policies [40].

The consumption of ultra-processed foods varies according to the socioeconomic level and geographic space, but everywhere it is associated with low-quality diets [41]. It is estimated that there is a relationship between the socio-demographic level and the selection of available foods [42]. A great concern arises in society thanks to the increase in cases of diseases produced by low diet quality, and experts attribute it to important changes in terms of nutrition in the last decades [43]. On the contrary, the changes caused by the COVID-19 pandemic in lifestyle decreased the consumption of ultra-processed foods in people of all ages [44]. However, the commercialization of ultra-processed foods has increased in developing countries generating, new cases of a great variety of diseases [45]. With regard to children and adolescents, the consumption of ultra-processed foods generally occurs in the school environment [46], and it is known that the consumption of ultra-processed foods tends to be higher in children than in adults [47].

1.2. Justification and Objectives of the Research

In the period of university education, students consume foods that are not according to the standards of healthy eating, which are characterized by being foods ready for consumption at any time and in any place because they are produced in large quantities, easily available, cheap, and marketed everywhere. Usually at the doors of educational institutions such as universities are these types of products called food, causing damage to the health of university students and anyone who consumes this type of food. Therefore, our general objective in this research is to analyze and describe the perspectives on the consumption of ultra-processed foods by university students in the province of Sullana, from which we will also have the following specific objectives:

- To identify the level of frequency of consumption of ultra-processed foods among university students in the province of Sullana.
- To identify the groups of ultra-processed foods that is consumed to a greater extent by university students in the province of Sullana.

2. Methodology

The methodology for this research was a quantitative approach, correlational among its elements whose sample is of the intensive type due to the ease of access to the students for the collection of the sample.

2.1. Sample

The population of the present investigation is university students from the province of Sullana, Piura, Peru. The sample was made up of 827 students, of which 49.2% represent the female sex and 50.8% represent the male sex. The participating student's studies in national universities are 70.6%, and those who study in private universities are 29.4%, noting that there is a great superiority on the part of the students of national universities. The ages of the participating students range between 15 and 20 years, old with a large percentage of 55%, followed by 29.4% who are between 21 and 25 years old, and the rest are older than 25 years old. The university students belong to different areas of study, i.e., professional careers such as civil engineering, mining engineering, systems engineering and others related to these careers were 40.5%, the areas of letters that are the careers of law, administration, accounting, and others related to these careers have 28.4%, while the areas of health careers that make it up are human medicine, nursing, psychology and others related represent 14.4%, and the social areas and sciences represent the rest of 16.7%.

The participating students belong to and live in the province of Sullana, where there is only one national university, so they choose to travel to another province for about 50 minutes to receive classes in the province and capital of Piura. In the province of Piura, there is a national university, but there are also more than five private universities.

2.2. Instrument

For the selection of the instrument, seven articles in the English language were selected, and after a rigorous analysis, the article by Bahrampour, et al. [1] was selected, which had more similarities to university students and could also be adapted to the Peruvian version. The researcher examined this questionnaire and found that it met all the requirements for it use.

Data collection was carried out through a survey composed of 26 questions divided into eight dimensions. Dimension 1: Soft drinks, juices, and sweetened beverages (B1: How often do you consume sweetened soft drinks, B2: How often do you consume sugar-free soft drinks? B3: How often do you consume sweetened juices, B4: How often do you consume sugar-free juices), Dimension 2: Pastry products, cookies, and chocolates (Q1: How often do you consume pastries or cakes, Q2: How often do you consume sweetened cookies, P3: How often do you consume sweetened chocolates?), Dimension 3: Sweetened breakfast cereals (C1: How often do you consume sweetened breakfast cereals, C2: How often do

you consume Sweetened cereal bars?), Dimension 4: Sausages and other reconstituted meat products (E1: How often do you consume sausages, E2: How often do you consume jerky and hams? E3: How often do you eat hamburgers?), Dimension 5: Margarine, sauce, and fat spreads (M1: How often do you eat margarine? M2: How often do you eat butter? M3: How often do you eat mayonnaise?), Dimension 6: Fast food (D1: How often do you eat hot dogs? D2: How often do you eat oven-baked pies? D3: How often do you eat fried pies? D4: How often do you consume Pizzas?), Dimension 7: Sweetened dairy (L1: How often do you consume sweetened or high-fat milk, L2: How often do you consume sweetened or high fat yogurt, L3: How often do you consume sweetened or high-fat yogurt, L4: How often do you consume sweetened or high-fat yogurt, L5: How often do you consume sweetened or high-fat yogurt? L3: How often do you consume Gouda cheese or other processed cheese?), Dimension 8: Salty snacks (S1: How often do you consume potato chips, S2: How often do you consume cheese sticks, S3: How often do you consume flavored tortilla chips, S4: How often do you consume soufflés?).

The intake of ultra-processed foods will be studied from the perspective of university students in the province of Sullana. Using the survey in a Peruvian context, this instrument is divided into 8 dimensions: "soft drinks, juices, and sugary drinks"; "pastry products, cookies, and chocolates"; "sweetened breakfast cereals"; "sausages and other reconstituted meat products"; "margarine, sauce, and fat spreads"; "fast food"; "sweetened dairy products"; and "salty snacks." For the eight dimensions of this instrument, a 5-point Likert scale was used (1= "never," 2= "rarely," 3= "occasionally," 4= "frequently," 5= "very frequently").

The original article has valid statistics obtained by the factor analysis of validation, since the original article already had its respective validation. The original article was in English, which was translated into Spanish by three native experts of the language, and then reliability and validation were performed with a sample of 75 students. The value of Cronbach's Alpha was calculated, resulting in 0.896, and the instrument was validated by four experts who rated three aspects, such as clarity of the questions (Cl), coherence between the questions (Co), and relevance (Re) of each of the 26 questions of the survey. The questions had scores from 1 to 4. The instrument was validated in its Peruvian version with the V Aiken test (as shown in Table 1), obtaining accepted values of 0.958, and in each dimension, it has significant values.

Table 1.
Distribution of the mean scores of the experts.

Mean expert rating			Aiken V test	Dimensions	Significance value
Cl	**Co**	**Re**			
3.75	3.75	4	0.944		
4	4	3	0.889	0.94	Significant
4	3.75	4	0.972		
3.5	4	4	0.944		
3.5	4	3.5	0.889		
4	3.75	4	0.972	0.94	Significant
4	4	3.75	0.972		
3.5	4	3.75	0.917	0.94	Significant
4	4	3.75	0.972		
4	4	3.75	0.972		
4	4	4	1.000	0.97	Significant
3.75	4	3.75	0.944		
4	3.75	4	0.972		
4	4	4	1.000	0.99	Significant
4	4	4	1.000		
4	3.75	4	0.972		
4	3.75	4	0.972	0.96	Significant
3.75	4	3.75	0.944		
4	4	3.5	0.944		
4	4	3.75	0.972		
4	4	3.25	0.917	0.95	Significant
3.75	4	4	0.972		
4	4	4	1.000		
4	3.75	3.75	0.944	0.97	Significant
4	3.75	4	0.972		
4	3.75	3.75	0.944		
3.904	3.913	3.808		0.958	

Then we proceeded to conduct the online survey with university students in the province of Sullana. The survey was conventional, online, voluntary, and anonymous; it was assembled in Google Forms to be shared in the fastest way among students, colleagues who work in state universities and private universities in the region, or where more students are concentrated in the city of Sullana.

2.3. Procedure and Data Analysis

The research began after knowing and observing the consumption of ultra-processed food by university students at the change of class time, who go out quickly to buy everything they find in the windows of the stores near the university or do it in other places on their way home with the sole purpose of satisfying the hunger of the moment. Thus, the instrument (survey) was adapted to the Peruvian version and elaborated in the Google Form, where it was configured so that they could respond with any type of email. Once the survey was revised and several simulations were made, it was shared through a link among the students of the universities in the Province of Sullana, and they shared it in different groups and classes at the university level.

The survey was available to students for 2 months (June and July). Once the date was over, we proceeded to download the survey in Excel format and have it revised to adapt it to the SPSS format of version 25. With this version, we analyzed the different statistical data such as mean (), standard deviation, kurtosis, reliability, and Cronbach's Alpha (0. 919) as well as the different Kaiser Meyer Olkin tests (0.924), Bartlett's test of sphericity (8898, 836), goodness of fit test (753,919), Hotelling test (F=46.887) and others that are valid to continue with the research.

3. Results

Table 2 shows the statistical values of each dimension, where the highest mean of dimension 1 is B1 (2.503), which mentions the consumption of sugary drinks that are never missing in a store, bodega, or any sales stand and are strategically located so that the student can consume them immediately; in dimension 2, the highest mean is P2 (2.467), which mentions sweetened cookies that are never missing in stores and therefore never missing in pockets, backpacks, or bags as long as they are easily accessible and can be consumed immediately. 467) which mentions about sweetened cookies, which are never missing in stores and therefore never missing in pockets, backpacks and bags as long as it is easily accessible and can be consumed at any time of the day; in dimension 3 the highest mean is from C1 (1. 975) which mentions the consumption of sweetened cereals and this is one of the means with the lowest score, i.e. despite the fact that the consumption of cereals is recommended because they are rich in sugars, carbohydrates and others, their consumption in university students is very low, it may suddenly be because of the high price they have compared to cookies, or because of the low content they have or simply because of preferences, when in fact cereals are well regarded by nutritionists but university students do not see it that way.

Table 2.
Distribution of the means of the dimensions of the ultra-processed products.

Item	Mean	Standard deviation	Variance	Asymmetric	Kurtosis
B1	2.503	0.9470	0.897	0.441	-0.150
B2	2.114	1.0481	1.098	0.777	-0.031
B3	2.496	0.9237	0.853	0.442	-0.026
B4	2.244	1.1018	1.214	0.742	-0.111
P1	2.388	0.8540	0.729	0.614	0.700
P2	2.467	0.8965	0.804	0.499	0.130
P3	2.439	0.9577	0.917	0.635	0.149
C1	1.975	0.9455	0.894	0.938	0.648
C2	1.914	0.9093	0.827	0.964	0.843
E1	2.374	0.9462	0.895	0.517	0.080
E2	2.242	0.9269	0.859	0.700	0.402
E3	2.411	0.9830	0.966	0.560	0.103
M1	1.839	0.9665	0.934	1.157	1.000
M2	2.220	0.9503	0.903	0.787	0.442
M3	2.407	1.0046	1.009	0.589	0.006
D1	1.752	0.9555	0.913	1.339	1.451
D2	2.307	0.9541	0.910	0.686	0.305
D3	2.260	1.0187	1.038	0.689	0.099
D4	2.433	0.9687	0.938	0.463	-0.028
L1	2.108	0.9449	0.893	0.708	0.171
L2	2.248	0.8913	0.794	0.594	0.209
L3	2.297	0.9723	0.945	0.485	-0.265
S1	2.753	0.9986	0.997	0.290	-0.317
S2	1.985	0.9704	0.942	0.890	0.421
S3	1.883	0.9814	0.963	1.045	0.595
S4	1.773	0.9600	0.922	1.348	1.617

Dimension 4 with the highest mean is E3 (2. 411), which mentions the consumption of hamburgers. With the simple fact of asking the students if they prefer a meal instead of hamburgers, the answer is no, that is to say they have a greater preference for hamburgers, which are not recommended by nutritionists, and this "food" is frequently consumed by the students of the afternoon shift at the exit of classes (7:00 pm), because the sales stand is strategically located so that when

they go out, the first thing they see are the hamburgers dimension 5. With the highest mean is M3 (2. 407), which mentions the companion of every hamburger: mayonnaise, a must in every type of combination, and even at mealtimes, mayonnaise is the favorite companion of every food that comes in every meal, and of course at home it is never missing, even mixed alone with a cookie or some bread.

In dimension 6 has the highest mean D4 (2.433) which deals with the favorite food in the evenings or at any time of the day: pizza, which is now sold at the request of the money you have, because the normal price of a whole pizza is S/ 40.00 soles but when selling to university students a cut or slice (as it is known here) has the price of S/ 3.00 soles, which is available to university students and as the penultimate dimension is dimension 7 which has the highest mean is L3 (2. 297) which deals with the consumption of cheese, but of processed cheeses and not natural ones, this is consumed together with their hamburgers and combined with any common bread or sliced bread and finally dimension 8 which is S1 (2.753) the inevitable French fries, even in the lunch boxes are never missing, and now they come precooked to be consumed immediately with just the bread or simply adding the cheese on top.

Figures 1 to 8 show the results of the dimensions studied, clearly noting that university students responded according to their perspectives on the consumption of ultra-processed foods, always showing preferences for some foods.
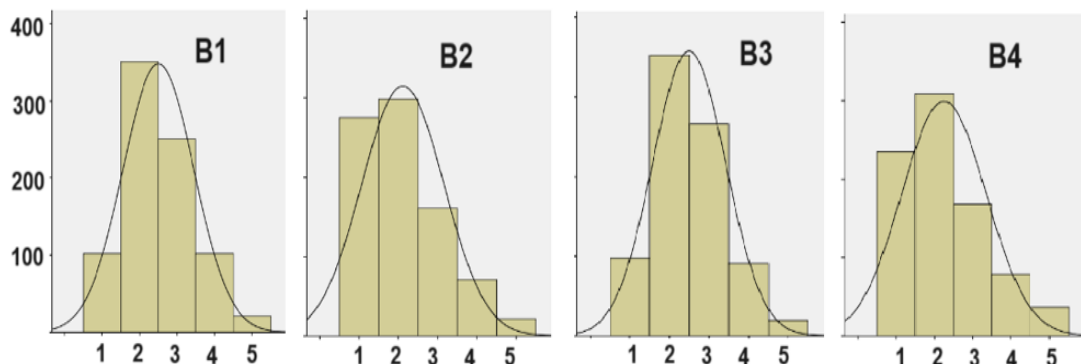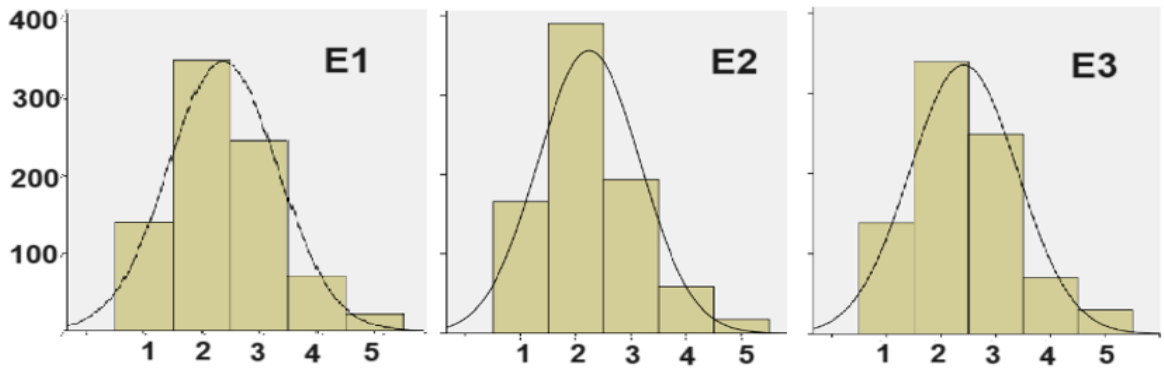

Figure 1.
Perspectives on the consumption of carbonated beverages, juices and sugar-sweetened beverages in university students.
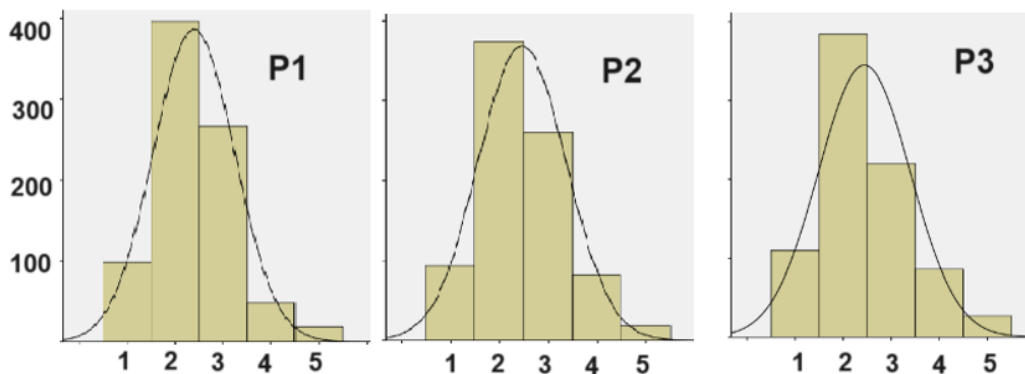
Figure 2.
Perspectives on the consumption of bakery products, cookies and chocolates among university students.
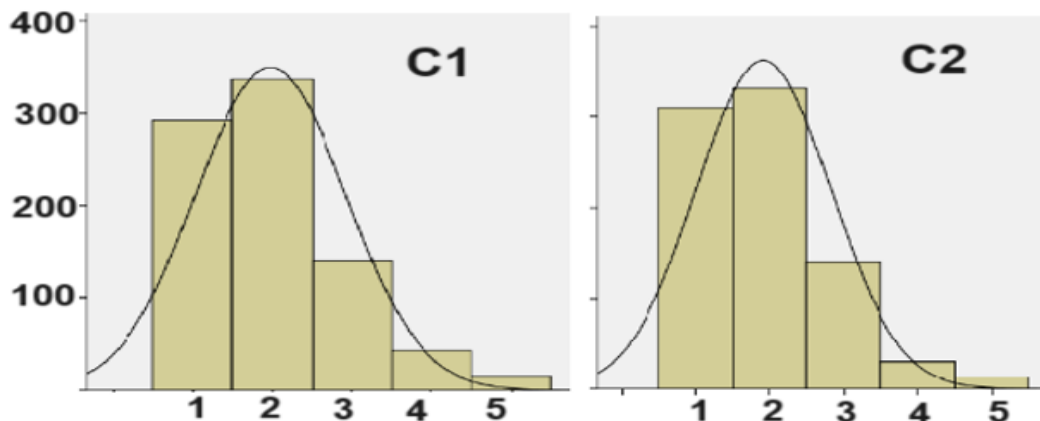
Figure 3.
Perspectives on sweetened breakfast cereals in college students.

Figure 4.
Consumption outlook for sausages and other reconstituted meat products among university students.
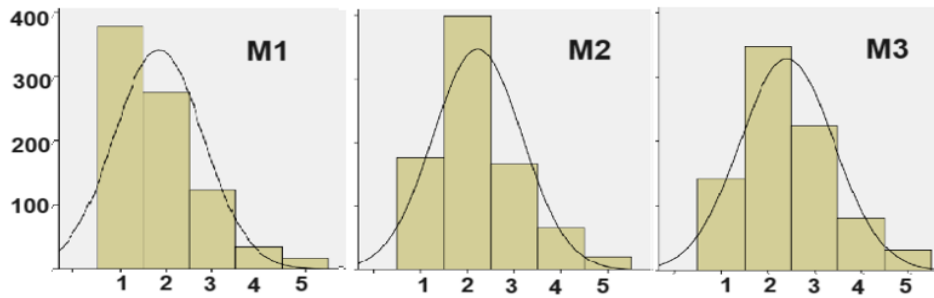
Figure 5.
Perspectives on consumption of margarine, sauces, and spreads.
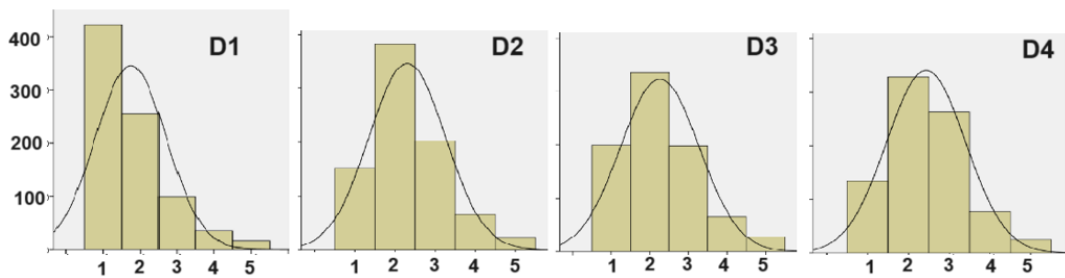
Figure 6.
Perspectives on consumption of fast food among college students.

Figure 7.
Perspectives on consumption of sweetened dairy products.

Figure 8.
Perspectives on consumption of salty snacks.

Table 3.
Correlation between items.

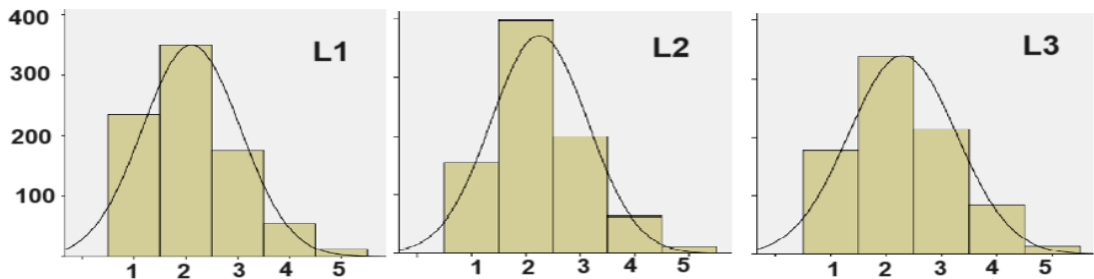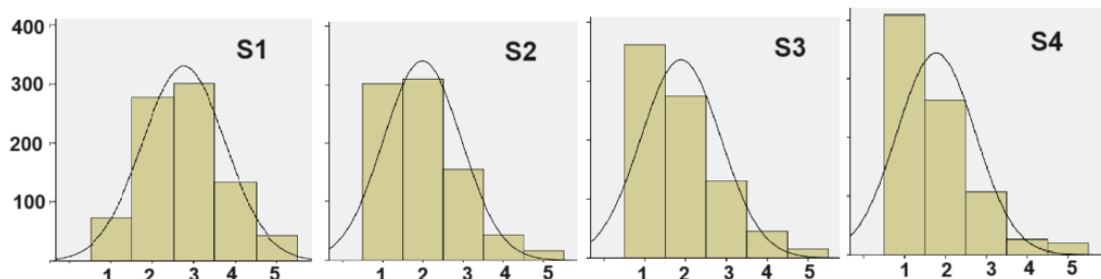| Item	B1	B2	B3	B4	P1	P2	P3	C1	C2	E1	E2	E3	M1	M2	M3	D1	D2	D3	D4	L1	L2	L3	S1	S2	S3	S4
B1		0.196	0.425	0.003	0.339	0.322	0.314	0.205	0.151	0.340	0.321	0.285	0.242	0.319	0.295	0.181	0.215	0.204	0.223	0.236	0.224	0.180	0.331	0.130	0.215	0.182
B2			0.116	0.391	0.105	0.115	0.093	0.159	0.179	0.088	0.099	0.097	0.161	0.094	0.107	0.159	0.179	0.115	0.061	0.104	0.119	0.093	0.085	0.154	0.191	0.198
B3				0.115	0.305	0.308	0.297	0.286	0.271	0.299	0.266	0.315	0.266	0.259	0.232	0.263	0.257	0.240	0.250	0.298	0.330	0.217	0.253	0.257	0.318	0.241
B4					0.118	0.070	0.067	0.170	0.190	0.132	0.116	0.066	0.103	0.062	0.090	0.132	0.154	0.100	0.104	0.049	0.097	0.155	0.085	0.205	0.159	0.208
P1						0.543	0.579	0.299	0.349	0.333	0.256	0.313	0.287	0.293	0.322	0.203	0.322	0.285	0.340	0.308	0.311	0.253	0.354	0.262	0.303	0.269
P2							0.576	0.307	0.336	0.309	0.287	0.277	0.259	0.279	0.271	0.233	0.260	0.243	0.205	0.311	0.357	0.295	0.315	0.236	0.307	0.232
P3								0.314	0.332	0.330	0.296	0.294	0.301	0.282	0.322	0.237	0.272	0.258	0.286	0.285	0.296	0.250	0.358	0.278	0.285	0.280
C1									0.607	0.287	0.278	0.238	0.336	0.266	0.231	0.324	0.320	0.322	0.246	0.305	0.322	0.190	0.270	0.336	0.380	0.396
C2										0.232	0.269	0.254	0.330	0.288	0.231	0.314	0.291	0.275	0.264	0.314	0.359	0.255	0.193	0.346	0.383	0.370
E1											0.611	0.548	0.430	0.439	0.465	0.514	0.412	0.412	0.378	0.317	0.367	0.250	0.474	0.333	0.337	0.316
E2												0.522	0.398	0.426	0.391	0.408	0.421	0.437	0.429	0.309	0.338	0.302	0.367	0.332	0.375	0.360
E3													0.395	0.375	0.457	0.406	0.452	0.408	0.428	0.325	0.391	0.284	0.450	0.291	0.287	0.329
M1														0.551	0.390	0.499	0.405	0.432	0.316	0.354	0.316	0.267	0.267	0.396	0.417	0.462
M2															0.494	0.349	0.369	0.405	0.346	0.378	0.356	0.340	0.394	0.367	0.370	0.364
M3																0.395	0.412	0.446	0.422	0.320	0.343	0.256	0.518	0.320	0.325	0.276
D1																	0.467	0.446	0.354	0.396	0.391	0.276	0.346	0.417	0.449	0.469
D2																		0.643	0.457	0.331	0.369	0.305	0.457	0.384	0.377	0.372
D3																			0.515	0.386	0.352	0.300	0.475	0.457	0.420	0.406
D4																				0.308	0.321	0.274	0.447	0.326	0.345	0.355
L1																					0.566	0.442	0.362	0.391	0.384	0.333
L2																						0.467	0.350	0.365	0.379	0.297
L3																							0.338	0.390	0.274	0.280
S1																								0.429	0.384	0.320
S2																									0.574	0.541
S3																										0.633
S4																										

Table 3 shows the correlations of the items, showing that there is a positive correlation between the items, which means that the items are significantly positively related to each other.

4. Discussion

Customers, thanks to the nutri-scores system, labeled ultra-processed foods as less healthy when compared to similar nutritional values in the same food category [2], so it is necessary to research or produce the scientific knowledge needed to create a new food rating system that fully informs consumers about processing factors that influence health [3], as these results showed a wide variety of sweeteners and multiple combinations of these within the same product, in addition to the scarcity of information about these additives in food labeling [4]. Therefore, it is suggested that regulating and providing accurate nutrition and food additive information will help consumers understand and support healthy food choices.

Generally, information based on nutrition is more common than information about the level of processing, as most of the foods that are not recommended are those with large amounts of additives, but still, consumption is in large quantities [5]. Adults who have these practices suffer from overweight and heart problems, so it is recommended for this group to consume vegetables and fruits [6]. In many countries, such as Brazil, it was necessary to implement classification systems that improve consumer understanding of ultra-processed foods [8], so there are also nutritionists who ignore that breakfast cereals or whole wheat bread are ultra-processed foods [10] and unhealthy, while home-cooked meals are effective in promoting healthy eating [11].

In the Australian market, much of the products contain very little proportion of vegetables and tend to the consumption of highly processed foods so campaigns are required to increase the consumption of vegetables and legumes [13] as there is evidence from research that people who consume these ultra-processed foods are affected in fertility (in males) [18] and the results indicate that there is a higher consumption of ultra-processed foods in male adolescents than in female adolescents, while the intake of vegetables and fruits in adolescents is very frequent in the female sex accompanied by physical activity, in addition, adolescents with higher consumption of ultra-processed foods presented psychological problems such as depression and variation in their behavior [19].

There is research that shows that the intake of ultra-processed foods during pregnancy is associated with increased body weight and is considered a risk agent for the mother's health [20]. In 7-year-old children, metabolic problems such as low intake of essential amino acids and accumulation of lipid tissue were observed, and in many countries it is associated with deficiencies in several metabolic profiles, which cooperate with the risk of developing obesity [23]. In older people, there is a risk of hypertension, despite the fact that there is currently limited and undeniable evidence to reduce the intake of these ultra-processed foods [24]. In recent years, the consumption of these foods in children has increased compared to previous years, and this consumption is directly related to their overweight [47].

There are food policies in many countries, such as fiscal and regulatory policies in Brazil, that were created with the sole purpose of reducing the intake of these ultra-processed foods because they cause diseases related to cardiovascular diseases [26]. In the same way, Chinese adults who consume these foods have elevated hypertension [27]. It is for that reason that clinics mention that the non-nutritional components and additives of these misnamed foods could negatively affect various elements of the intestinal wall and recommend a balanced diet [28]. Added flavoring agents may contribute to the surge in obesity, and more research is urgently needed to focus on the role of humans [30] because even warning labels have failed to control their high consumption [32], and these warnings have failed to raise consumer awareness [33].

Consumers of all types of food confirmed that octagons (which are labels on consumption warnings) are deficient, so other methods are needed to warn of the consequences of consumption [35], but in many countries, these labels are very important because they help to make a decision for the consumer as well as help to have nutritional policies, and these are very effective [37] because they prevent many cardiovascular diseases [38]. The consumption of these ultra-processed foods has effects on mental health, with symptoms of anxiety and depression in adults [42], and in underdeveloped countries, it was detected that schoolchildren consume these foods without any control [45], thus failing to consume quality foods rich in nutrients [46].

5. Conclusion

Analyzing the consumption of ultra-processed foods by university students shows the lack of knowledge about healthy food. It also shows that students tend to substitute healthy eating for harmful foods that harm their health, but this is done casually because they do not find healthy food in the outlets that are located at the gates of universities.

When describing the consumption of ultra-processed food among university students in the province of Sullana, it is observed that there is a high consumption of "junk" food, which is available to students, and there are no sales standards, at least in the stores near the university, as there are standards for the sale of food in educational institutions at the national level, where the sale of healthy food is required.

We identified the level of frequency of consumption of ultra-processed foods in university students in the province of Sullana, and found that the most consumed "food" during university breaks and outings are sugary sodas and ice cream, which are among the unhealthy foods. This occurrence is due to frequent and uncontrolled consumption that could eventually lead to disease and fatal consequences.

It was detected that these ultra-processed foods are bad for health, and there is no cultural policy among consumers, who are mostly university students, because despite having labels on the products themselves that communicate that they contain a high value of ingredients that affect health, they continue to consume them without measure.

In general, it is recommended that all universities in Peru establish norms and consumption products within university environments with healthy foods and at lower prices so that they are accessible to university students, as well as a call to the university welfare offices to carry out campaigns to consume healthy foods within the university and later in the community to raise awareness among the entire student population and the general public.

To call on large and small companies that sell these types of food so that they can innovate in their products and produce healthy food without the presence of chemical additives or that are harmful to health, or they can also innovate with healthy products and whose additives are natural additives, all this with the sole purpose of keeping healthy and nourished university students with food products.

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