Analysis of the nutritional status of adolescents in the state of Pará, Brazil

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Summary

Objective: *to analyze the nutritional status of adolescents in the state of Pará, Brazil, in order to observe the trends in the Height x Age and BMI x Age indexes.* **Material and Methods:** *it was a quantitative, retrospective, and cross-sectional study from 2010 to 2019. The female and male sex were evaluated in each nutritional status index "Height x Age" and "BMI x Age". The collected data were organized in Microsoft Excel 2010 software and statistics was performed in the Action Stat 3.7 program. The ethics and investigation committee's assessment was not necessary.* **Results:** *in "Height x Age", a total of 132,114 adolescents, age ≥ 10 and < 20 years, were registered and the female gender prevailed (65.8%), normality in the distribution of data was observed and no difference was noted in this category. In the "BMI x Age", 132,204 were reported, a normal distribution was found, but there was a statistical difference between sexes in the categories: "overweight", "obesity", "severe obesity" and "eutrophy", which represented the largest percentage (73.4%).* **Conclusion:** *the population is mostly female, and the distribution of records is heterogeneous. Both sexes were shown to be of adequate height for their age and eutrophic. However, it was noticed the nutritional scenario is changing, which may lead, in the future, to public health problems, such as the increase in the number of patients with chronic non-communicable diseases.*

Keywords: *public health; food consumption; anthropometry; nutritional transition.*

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Análisis del estado nutricional de adolescentes en el estado de Pará, Brasil

Resumen

Objetivo: *analizar el estado nutricional de los adolescentes en el estado de Pará, Brasil, con el fin de observar las tendencias en los índices Talla x Edad e IMC x Edad.* **Material y Métodos:** *fue un estudio cuantitativo, retrospectivo y transversal de 2010 a 2019. Se evaluó el sexo femenino y masculino en cada índice de estado nutricional "Altura x Edad" e "IMC x Edad". Los datos recopilados se organizaron en el software Microsoft Excel 2010 y las estadísticas se realizaron en el programa Action Stat 3.7. No fue necesaria la evaluación del comité de ética e investigación.* **Resultados:** *en "Talla x Edad" se registró un total de 132.114 adolescentes, edad ≥ 10 y <20 años y predominó el género femenino (65,8%), se observó normalidad en la distribución de los datos y no se notó diferencia en esta categoría. En el "IMC x Edad" se reportaron 132.204, se encontró una distribución normal, pero hubo diferencia estadística entre los sexos en las categorías: "sobrepeso", "obesidad", "obesidad severa" y "eutrofia", que representaron el mayor porcentaje (73,4%).* **Conclusión:** *la población es mayoritariamente femenina y la distribución de registros es heterogénea. Se demostró que ambos sexos tenían una estatura adecuada para su edad y eran eutróficos. Sin embargo, se advirtió que el escenario nutricional está cambiando, lo que puede generar, en el futuro, problemas de salud pública, como el aumento del número de pacientes con enfermedades crónicas no transmisibles.*

Palabras clave: *salud pública; consumo de alimentos; antropometría; transición nutricional.*

Introduction

In view of the idea of economic development adopted by Brazil, which has urbanization as a priority, changes in the Amazonian community's life style have emerged, bringing with it the "nutritional transition" phenomenon, which consists in a new dietary pattern adoption, by means of the inclusion of consumption of industrialized products, rich in carbohydrates and fat, replacing those of natural origin [1].

This new model, which is consolidated through cultural and physical transformations, and strongly impact the behavioral aspects of individuals, sets precedents for instability in the nutritional situation of the population, exposing them to greater epidemiological risks, such as overweight, diabetes and cardiovascular diseases [2].

In this sense, it is observed that changes resulting from modernity, brought a new meaning of "eating" through the distancing of individuals from the food production process, keeping the consumer in a secondary role to their habits, which become defined based on what is offered by the market, replacing the use of organic products for processed products [3].

At the same time, adolescents tend to be the most impacted and influenced by these transformations, with this life stage being in the greatest risk for the installation of dietary problems, due to significant physical and psychological changes, with increased caloric, protein

and vitamin needs, which present singularities according to sex, therefore, the relevance of monitoring and implementing preventive actions [4,5].

In addition, the transition of habits and nutritional needs associated with decreased physical activity and other behaviors linked to sedentarism, exposes adolescents to the possibility of also acquiring chronic non-communicable diseases [6], that can be associated with psychological disorders originating from dissatisfaction with their own body, leading to the idea of impaired self-image, in both sexes, besides eating disorders [7-9].

Therefore, there are public policies that present as some of its objectives, assistance to adolescent nutritional condition, such as the School Health Program and the National School Health Survey (PeNSE), although, even so, overweight persists as a growing public health problem among this population, with a tendency to remain throughout adulthood, since it is at this stage that eating patterns are consolidated [10]. However, the maintenance of the vulnerability scenario is perpetuated, since health suffers interference from socioeconomic contexts and ineffective public policies in the national territory [11].

In this perspective, as a way of monitoring the nutritional situation of the Brazilian population, the Food and Nutritional Surveillance System (SISVAN), through notifications, aims to identify nutritional risks and tries to carry out actions in advance, in addition to having the objective of standardizing the diagnostic indicators for eating disorders [12]. Theoretically, the system must receive data on anthropometric assessment and food consumption by filling out forms, and the collection, for each individual registered in SISVAN, aged two years and over, should be performed at least once a year [13].

Therefore, in view of the risk situation faced by the adolescent population, the changes occurring in the Amazon scenario and the role played by SISVAN, the objective of the present research was to analyze the nutritional status of adolescents, both female and male, in the state of Pará, Brazil, in order to observe the trends of the categories of the Height x Age and Body Mass Index (BMI) x Age indexes, in a decade.

Material and methods

This study consisted of a quantitative, retrospective and cross-sectional approach. The research was carried out in Pará state, Brazil (Figure 1), a federative unit with 1,245,870.798 Km², located in the Brazilian northern region [14]. Data were extracted from the Food and Nutrition Surveillance System (SISVAN), administered by the Ministry of Health, in line with the Secretariat of Primary Health Care, which allows public access to reports on nutritional status, food consumption and nutritional monitoring.

Figure 1: Map of Brazil with emphasis on the state of Pará
Source: Brazilian Institute of Geography and Statistics (IBGE) (2020). Adapted by the authors.

The used data comprised the range from 2010 to 2019, for all thirteen health regions

presented on the platform citing: Araguaia, Baixo Amazonas, Carajás, Lago de Tucuruí, Marajó I, Marajó II, Metropolitana I, Metropolitana II, Metropolitana III, Rio Caetés, Tapajós, Tocantins, Xingu. Life stage chosen for the analysis was adolescence, comprising age ≥ 10 and < 20 years. In this sense, regardless of race/color, education, people and community, both female and male were assessed in each nutritional status index: "Height x Age" and "BMI x Age". At the same time, registered follow-ups were adopted, using only the data from SISVAN - Web, in absolute numbers.

All categories, for each index, were included. They are for "Height x Age": very low height for age (VLHA), low height for age (LHA) and appropriate height for age (AHA); and for the "BMI x Age": marked thinness (MT), thinness (T), eutrophy (E), overweight (OW), obesity (O) and severe obesity (SO). The collected data were organized with the aid of Microsoft Excel 2010 software, which allowed the production of graphs and tables for the explanation of the records.

In the statistical processing, the Action Stat 3.7 software was used. Shapiro-Wilk test was calculated at 5% probability for normality, arithmetic mean, standard deviation and the T test at 5%, with a normal distribution. These procedures were adopted, in an attempt to avoid data duplication and incorrect interpretations of the categories referring to the indexes, which configured, together with the tabulation of the numbers, the risks of the analysis.

Furthermore, as this is data present on a public access platform, the research was not sent to the ethics and investigation committee for evaluation, following the determination of law 12,527/2011, which regulates access to public data throughout the national territory in accordance with the Brazilian Federal Constitution [15]. No participant was interviewed, who are identified in the database just as numbers, therefore, maintaining confidentiality.

No data related to the indexes and their respective categories observed was excluded, and any complications were described, when identified.

Results

Data were collected from the 13 health regions, which comprise the 144 municipalities that make up the state of Pará. Of these, Metropolitana III concentrated the largest number of cities, 22, while Metropolitana I, has only 5 locations.

Analysis of the "Height x Age" Index:

A total of 132,114 adolescents were registered in this index, with females representing approximately 65.8%, and males 34.2% of the total notifications. The health regions that most reported to SISVAN were Baixo Amazonas and Carajás, with 17.8% and 16.7%, respectively. However, the regions of Marajó II and Tapajós had the lowest records, 0.18% and 0.17%, respectively, in ten years (Table 1).

When analyzing the categories "VLHA", "LHA" and "AHA" per year, across the state and for each sex, normality was observed in the distribution of data for both females (p-value = 0.1198; 0.1159; 0.7838), and for males (p-value = 0.1731; 0.0993; 0.5738), respectively. Furthermore, there were no statistical differences between the means of the sexes for the following categories: "VLHA" (p-value = 0.9224), "LHA" (p-value = 0.2646) and "AHA" (p-value = 0.0648).

The category that registered the most notifications was "AHA", with approximately 80.9% (106,852) of the total number of registered individuals, regardless of gender. Here, for females and males, the averages were 7,243 and 3,442.2 individuals reported per year on the platform and the standard deviations were 2,308.07 and 1,650.98, respectively, showing that in both sexes, data dispersion over the evaluated decade is quite heterogeneous, sometimes with highs, sometimes with casualties.

Table 1. Summary of the absolute data of the "Height x Age" index, for each sex in the thirteen health regions of the state of Pará, Brazil, from 2010 to 2019

| Health Reagion | Height x Age index categories | | | | | | | |
| | VLHA | | LHA | | AHA | | | |
	F (n)	M (n)	F (n)	M (n)	F (n)	M (n)	Total F	Total M
Araguaia	312	418	950	801	10979	5436	12241	6655
Baixo Amazonas	868	895	2514	1727	11818	5733	15200	8355
Carajás	328	321	1210	861	12321	7062	13859	8244
Lago de Tucuruí	283	97	1418	288	9408	1921	11109	2306
Metropolitana I	103	40	321	66	2593	511	3017	617
Metropolitana II	95	183	252	275	1456	1107	1803	1565
Metropolitana III	404	522	818	740	3992	2371	5214	3633
Rio Caetés	180	292	460	601	2513	1947	3153	2840
Tapajós	0	1	21	11	132	60	153	72
Tocantins	503	398	2088	801	10701	3514	13292	4713
Xingu	357	360	839	870	5834	4246	7030	5476
Marajó I	31	58	98	117	564	467	693	642
Marajó II	4	8	34	20	119	47	157	75
TOTAL	3468	3593	11023	7178	72430	34422	86921	45193
MEAN	266.8	276.4	847.9	552.2	5571.5	2647.8	-	-

Where: VLHA = Very Low Height for Age; LHA= Low Height for Age; AHA = Appropriate Height for Age; F = Female; M = Male.
Source: Ministry of Health/Secretariat of Primary Health Care - Food and Nutritional Surveillance System (SISVAN).

This pattern was perceived in the graphic explanation of the records (Figure 2 - AHA), in which the female sex was also noticeable, representing 67.8% (72,430) of the total of this category, exceeding in all years the number of notifications in comparison to the male portion, which comprised 32.2% (34,422). In addition, 2012 had the highest records, equivalent to 16.7% (17,887). However, comparing this year to 2019, in both sexes, which was 8.6% (9,192), there was a decrease of approximately 51.4%. Although, timidly, the number of new adolescents has increased since 2016.

Then, the "LHA" category represented 13.8% (18,201) of the total records, with females also prevailing in this category with 60.6% (11,023),

Figure 2. Distribution of records per year across the state of Pará, in the "AHA", "LHA" and "VLHA" categories, for each sex, from 2010-2019

Where: AHA = Appropriate Height for Age; LHA = Low Height for Age; VLHA = Very Low Height for Age.
Source: Ministry of Health/Secretariat of Primary Health Care - Food and Nutritional Surveillance System (SISVAN).
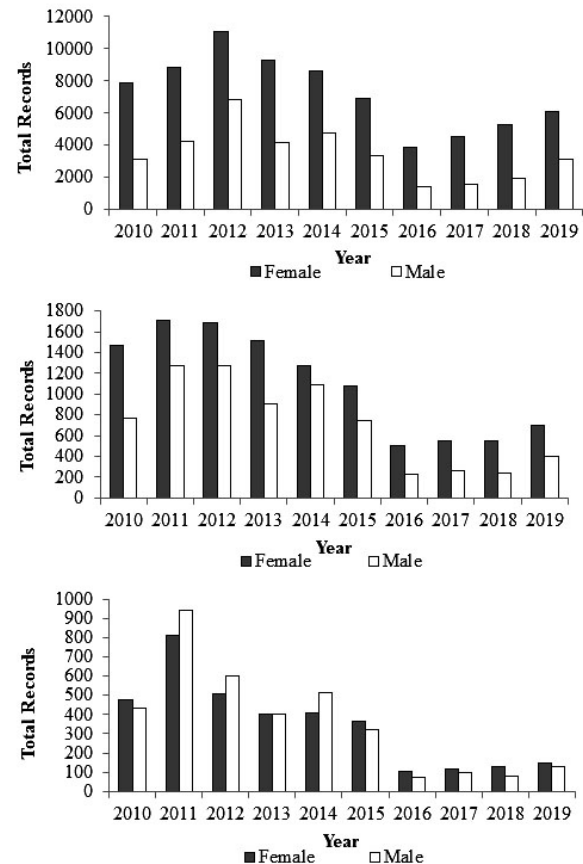
an average of 1,102.3 and a standard deviation of 491.4. The male gender was equivalent to 39.4% (7,178) of the records, average of 717.8 and standard deviation of 419.3 (Figure 2 - LHA). Finally, the category that registered the least number of adolescents in ten years in the state of Pará, was "VLHA", representing 5.3% (7,061) of the total number of notifications, but here the male gender surpassed the female gender, denoting 50.9% (3,593) at the expense of 49.1% (3,468). The graphic distribution showed a downward trend in records in this category (Figure 2 - VLHA).

Analysis of the "BMI x Age" Index:

132,204 adolescents were reported in this index (Table 2). However, the 90 more individuals who appeared in this nutritional status assessment index, but who were not reported in the "Height x Age" index, did not significantly interfere in the survey dynamics of the studied decade, although the equality of the totals, in both indexes, presumably, had to be perceived. These new measured adolescents showed a close distribution between sexes, since there were 44 new girls and 46 boys, being the Baixo

Amazonas health region, the one that most concentrated these records, with 38 new girls and 39 boys.

Regarding the analysis of the evolution of the index across the state, a normal distribution of data was noted in both sexes and in each category, but there was a statistical difference in the mean between sexes in the categories: "eutrophy" (p-value = 0.0080), "overweight" (p-value = 0.000029), "obesity" (p-value = 0.0000015) and "severe obesity" (p-value = 0.0050). Furthermore, the "eutrophy" category represented the highest percentage in relation to the total number of notifications from the state for this index, approximately 73.4%, with girls being 64.5% (62,591) and boys 35.5% (34,384), of the total records identified in this category (Table 2). When observing the graphic distribution, the period from 2010 to 2015 concentrated the largest records, followed by an increasing trend, but which did not exceed the previous numbers (Figure 3 - E).

However, it was noted that the categories "overweight" and "obesity", presented higher percentages when compared to the condition

Table 2. Synthesis of the absolute data of the "BMI x Age" index, in each category and region of health in the state of Pará, Brazil, from 2010 to 2019

Health Region	Total in the categories of the BMI x Age index						TOTAL
	MT (n)	T (n)	E (n)	OW (n)	O (n)	SO (n)	
Araguaia	304	695	13889	2878	936	196	18898
Baixo Amazonas	561	824	17743	3559	841	104	23632
Carajás	387	913	16540	3103	1005	156	22104
Lago de Tucuruí	143	313	8998	2877	948	136	13415
Metropolitana I	65	96	2538	692	208	42	3641
Metropolitana II	69	142	2578	433	114	32	3368
Metropolitana III	250	420	6619	1191	316	52	8848
Rio Caetés	114	262	4724	721	153	19	5993
Tapajós	8	10	166	32	8	1	225
Tocantins	248	422	12588	3432	1106	210	18006
Xingu	218	502	9481	1677	523	105	12506
Marajó I	43	55	955	203	67	13	1336
Marajó II	4	6	156	41	23	2	232
TOTAL	2414	4660	96975	20839	6248	1068	132204
MEAN	185.7	358.5	7459.6	1603.0	480.6	82.2	-

Where: MT = Marked Thinness; T = Thinness; E = Eutrophy; OW = Overweight; O = Obesity; SO = Severe Obesity.
Source: Ministry of Health/Secretariat of Primary Health Care - Food and Nutritional Surveillance System (SISVAN).

of "marked thinness" and "thinness", about 15.8% and 4.7%, to the detriment of 1.8% and 3.5%, respectively, in relation to the state total, for the index. When analyzing the percentage of "overweight" and "obesity", considering the total number of notifications in these categories (Table 2), the female gender, also, surpassed in all years, 74.7% (15,560) and 72.7 % (4,543), respectively, male, who registered 25.3% (5,279) and 27.3% (1,705).

Regarding the graphic distribution of "overweight", "obesity", as well as "severe obesity", which among all categories was the one that represented the lowest percentage (equivalent to 0.8% of the entire state), it was observed the variations between years, in each sex, were few, being noticeable in the analyzed interval, the beginning of an increasing curve in the records, from the year 2016 (Figure 3 - OW, O, SO). On the contrary, the categories "marked thinness" and "thinness", denoted a negative exponential, where data from 2010 to 2019 showed a reduction, even with some annual increases, but not significantly (Figure 3 - MT, T), in face of the trend seen in the overweight charts.

Discussion

Taking into account the discrepancy regarding the availability of data by region, this issue can be associated with the fact that SISVAN, despite theoretically encompassing the entire Brazilian territory, suffers interference to the detriment of the availability of resources and po-
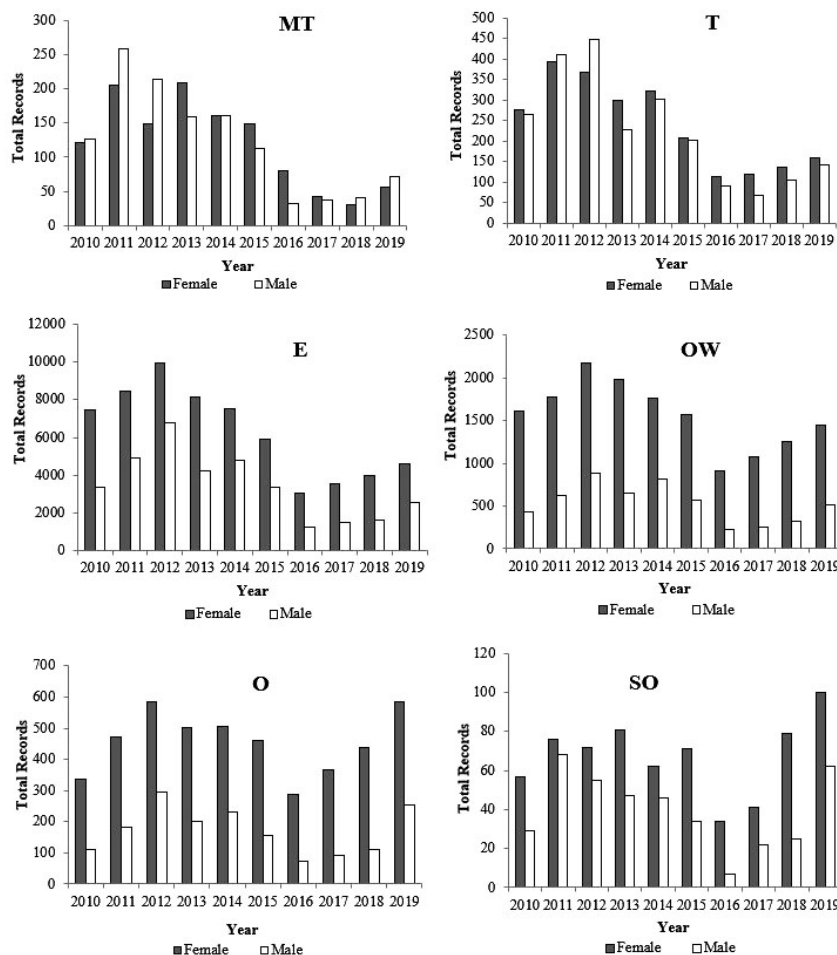
Figure 3: Distribution of records per year across the state of Pará, in the categories "MT", "T", "E", "OW", "O" and "SO", for each sex, from 2010 - 2019

Where: MT = Marked Thinness; T = thinness; E = Eutrophy; OW = Overweight; O = Obesity; SO = Severe Obesity.

Source: Ministry of Health/Secretariat of Primary Health Care - Food and Nutritional Surveillance System (SISVAN).

litical issues, such as coverage by Community Health Agents (CHA) and commitment by health managers to apply nutritional surveillance [16].

The consequences of such logistical deficiencies were perceived in Metropolitana III, since, although it has the largest number of locations among the rest and a population contingent of 937,643 individuals, it is not at least among the three with the highest records in both indexes ("Height x Age" and "BMI x Age"), which may have as one of its reasons the availability of CHA in the region, consisting of 1,661, while, in comparison, the Baixo Amazonas, even with a smaller population, 448,357 inhabitants, has a greater number of agents (1,932) and records in the system [17,18].

Likewise, it should be considered the population contingent in the state of Pará, while divided into health regions, presents great numerical variability, which can impact the number of notifications, as it is the case of the Carajás region, with seventeen municipalities and an estimated population of 875,232 inhabitants, compared to Tapajós, which encompasses 6 cities in Pará state and has only 212,896 inhabitants [17].

At the same time, access to primary care in the Brazilian Amazon presents numerous barriers due to organizational problems, which impede completeness of care, with no actual monitoring of the system user's health [19]. Therefore, even though there are government programs that direct medical professionals to the region, aiming to provide medical assistance to the most remote locations, the lack of resources and professionals in rural and/or riverine areas still represents a challenge in the provision and establishment of health services for the entire Amazon region [20].

In this sense, the impacts of this reality experienced for decades, especially by the most vulnerable populations, are decisive for the underreporting present in the Food and Nutrition Surveillance (VAN) platform, since the system essentially depends on data collected from actions promoted by the Unified Health System (SUS) [21]. However, despite the aforementioned facts, the Situational Report on Food and Nutrition and Health Promotion Programs in Primary Care pointed to a timid increase, in the coverage of SISVAN in Pará, from 20.2% in 2014, to 22.2% in 2017 [22].

This expansion, in turn, was partly due to the efforts of the Ministry of Health, through the publication of the Food and Nutrition Surveillance Framework of Reference in Primary Care, the greater implementation of Family Health Strategies and the association of VAN with public policies, such as "Bolsa Família", an income transfer policy, and the School Health Program [21,23]. However, due to VAN's involvement with such policies, the target audience for feeding the system, which aims to have data for the implementation of future actions, ends up being pregnant women and children, under the logic of presenting themselves as more vulnerable to malnutrition and obesity [23].

In contrast, Brazil's nutritional transition brings a new perspective on this reality and, regardless of social class and age, there was an increase in the consumption of processed foods, gradually replacing the problem of malnutrition with obesity [24], which was also possible to observe in the results of a decade of this research. In this context of transition, the Brazilian adolescent is inserted by the tendency to have a traditional food consumption, with rice and beans, but associated with the unhealthy, with high intake of sodium, sugar and fats and absence of micronutrients, culminating in excess of weight [25].

This condition was confirmed by the 2015 National School Health Survey (PeNSE), which stated that approximately a quarter of Brazilian adolescents were overweight [26]. However, although the Northern region of Brazil is also impacted by the transition phenomenon, Alves *et al.* [27], identified that its adolescent portion is the one that most maintains the traditional

dietary pattern which, due to the geographical and environmental characteristics of the region, tends to have a higher consumption of fruits, vegetables, tubers and fish.

In this regard, if, on the one hand, analyzing populations distant from large centers provides scientific support for the general model of nutritional transition, on the other, this observation denotes numerous regional peculiarities of the country. Thus, from the bioanthropological point of view, documenting this phenomenon and its diversity of configurations, at both regional and local scales, is of significant relevance for understanding populations in different age groups, because when addressing biocultural perspectives it is possible to reveal the spatial and temporal plurality of human behavior [28].

However, it is also worth noting the best socioeconomic level is not a predictor of better nutrition among adolescents, which is reflected in dietary differences between public and private schools. While in private institutions, soft drinks and foods classified by PeNSE as "treats" (sweets, chocolates, among others) obtained higher rates, the public ones showed a greater tendency only for the intake of "industrialized snacks", which can be attributed to the offer of meals through the National School Feeding Program (PNAE) in public institutions, while private ones have greater availability of unhealthy options through sale in canteens and alternative points [26].

With regard to BMI, the results showed a greater proportion of individuals with eutrophic profile, but those with overweight or obesity stood out, with the female sex predominating. However, these results diverge from a survey carried out among students aged 14 to 19 years from private schools in urban areas of the Amazon, in which higher numbers of overweight prevalence (29.5%) and a predominance of males were identified [29]. In dissonance, a study carried out in the same location, but involving only public schools, observed a prevalence of 17.6% of overweight, with the majority being female [30].

As for the height of adolescents in Pará, it was possible to observe, over the years, a tendency to reduce LHA and VLHA, which can also be perceived at the national level, as shown by Jaime and Santos [24] and the Family Budget Survey (POF), conducted by the Brazilian Institute of Geography and Statistics (IBGE) [31], which identified the same trend as the present study for both sexes, but more accentuated among female adolescents compared to male adolescents. Accordingly, studies carried out in Paraná reaffirm the reduction of the deficit, as well as its lower proportion among females [32, 33].

In this sense, it should be considered that growth is intrinsically related to nutritional conditions, therefore, considerable responsibility for the short stature problem lies on dietary deficiencies, and what has occurred since the late 1990s is a gradual change in the social context and access to quality food, which was possible due to the economic transformations that occurred in Brazil, that brought an improvement in the purchasing power associated with the expansion of access to health services, in addition to the implementation of income transfer programs, such as the "Bolsa Família" Program (BFP) [34].

From all these factors, there was a reduction in food insecurity and, consequently, in height deficit [33], however, in a study carried out with adolescents in the urban area of municipalities in the Amazon, on the situation of food and nutritional insecurity from direct and indirect indicators, it was concluded that the households surveyed were in a situation of food and nutritional insecurity and the consumption of unhealthy foods by adolescents could trigger nutritional and body impairment [35].

Nevertheless, it is necessary to point out that although the BFP contributes to the access to a greater quantity and variety of foods, it does not necessarily indicate nutritional quality, because an income that is destined in favor of food and health can also be directed towards the purchase of consumer goods, such as elec-

tronics, which may enable the increasing of the consumption of foods with higher caloric value and, therefore, the increase of malnutrition, overweight and implantation of chronic non-communicable diseases [36-38].

In this bias, a study by Freitas *et al*. [39] in relation to adolescents indicated that income transfer is not sufficient for nutritional security, and broader strategies are needed, which also involve health education for BFP users, since among the program's beneficiaries the overweight problem is juxtaposed to malnutrition. A similar result, addressing00 families participating in the program, was found in a survey conducted in the Territory of Marajó, in the state of Pará [40].

At the same time, analyzing the quality of life of populations based on econometric intervention programs is considered by some critics to be unsatisfactory and unrealistic, and they should be replaced by methods that more clearly denote material and social well-being, as nutritional status or food consumption of individuals. However, in the Amazon, the panorama of interventions in the food and nutritional sphere is quite complex, since there is no consensus on the reference populations for the nutritional diagnosis, therefore, those of the first world with different genetics and adaptive past have been adopted, which makes the parameters incoherent [41]

In this way, a new approach has been developed in the Amazon to analyze health and nutrition conditions, the so-called nutritional ecology, which is characterized by its interdisciplinary theoretical aspect and deals with the investigation of the problems that touch the nutritional theme, from the perspective of the context, associating theories and methods of the social sciences and nutrition. In the Amazon region, this new approach shows great impact on the validation of evaluation models of nutritional status and food security of the population, respecting the socioeconomic, environmental, political and historical variants [42].

Conclusion

The adolescent population notified from 2010 to 2019 is mostly female, but there was an expressive number of males, with the distribution of records being quite heterogeneous among the thirteen health regions. Regarding nutritional status, both sexes showed to be of adequate height for their age and eutrophic, but numbers alert to a contrast between the decrease in underweight and the increase in numbers in the categories of overweight, deals with the "BMI x Age" index, in ten years in the state of Pará.

Furthermore, it is difficult to accurately predict the factors that may be affecting these citizens, given the unfeasibility generated by SISVAN, but it was considered that the social and economic changes in Brazil, which have occurred in recent years, may be impacting the nutritional status of these adolescents. However, it is important to point out that many gaps both in the sphere of health care and in the scope of public policies aimed at sustaining health maintenance and advances in the state of Pará, trigger numbers that do not represent the real nutritional condition of these individuals, but that although not representative, they raise several questions for the trends reported here.

Thus, this study, by extracting data from SISVAN, referring to the state of Pará, a federative unit of the Brazilian Amazon, made it possible to perceive a nutritional scenario that has been changing in the last ten years. From this, it can be concluded that if measures are not taken that lead to education in health, medical and nutritional assistance effectively through SUS, the state will experience increases in the number of patients with so-called chronic non-communicable diseases. Therefore, it is essential new research with variables that surround food choices be applied in new methodologies, in order to understand the factors behind these curious trends.

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