Sedentary behavior and consumption of ultra-processed foods by Brazilian adolescents: *Brazilian National School Health Survey* (PeNSE), 2015

Comportamento sedentário e consumo de alimentos ultraprocessados entre adolescentes brasileiros: *Pesquisa Nacional de Saúde do Escolar* (PeNSE), 2015

Comportamiento sedentario y consumo de alimentos ultraprocesados entre adolescentes brasileños: *Encuesta Nacional de Salud del Escolar* (PeNSE), 2015

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Abstract

The aim of this cross-sectional study was to investigate the association between sedentary behavior and consumption of ultra-processed foods (UPF) among Brazilian adolescents. The study used data from the 2015 edition of the Brazilian National School Health Survey *(PeNSE). Daily consumption of at least one group of UPF was the outcome, and the principal exposure was daily time spent in sedentary behavior (hours spent sitting, except for time sitting at school). We calculated prevalence rates, prevalence ratios, and 95% confidence intervals (95%CI). The analyses were adjusted for gender, age, skin color, maternal schooling, household assets index, major geographic region, and school's administrative jurisdiction (public versus private). Forty percent of the schoolchildren reported daily consumption of at least one group of UPF (39.7%; 95%CI: 39.2-40.3), while 68.1% (95%CI: 67.7-68.7) reported > 2 hours/day of sedentary behavior. Among schoolchildren with sedentary behavior > 2 hours/day, prevalence of daily consumption of UPF was 42.8% (95%CI: 42.1-43.6%), higher than among those without sedentary behavior (29.8%; 95%CI: 29.0-30.5%). Longer time spent in sedentary behavior was associated with higher prevalence of consumption of UPF (p-value for linear trend < 0.001). Strategies to promote healthy eating and decrease sedentary behavior, as well as regulation of advertising for UPF, are necessary to prevent unhealthy lifestyles from persisting into adulthood.*

Sedentary Lifestyle; Industrialized Foods; Feeding Behavior; Adolescent

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Introduction

The epidemiological and nutritional scenario in recent decades has proven dynamic, resulting from global changes in lifestyles [1]. Urbanization and industrialization have contributed to changes in eating patterns [2] and the emergence of sedentary behaviors [3]. With the food transition, the dietary profile of populations has been characterized by high energy density, while high-fiber and nutritionally balanced foods have been replaced by heavily-processed high-fat and high-sugar products [2,4].

According to the NOVA classification proposed by Monteiro et al. [5], ultra-processed foods (UPF) differ from less processed foods in that they fail to maintain their basic identity, undergoing various processing stages and techniques and including substances used exclusively in industries. UPF are nutritionally unbalanced and heavily consumed in high-income countries, but their consumption is also growing rapidly in medium-income countries like Brazil [6]. Examples of these products include cream-filled cookies, "packaged" salty snacks, sodas, and "instant" noodles, among others [5]. The low nutritional quality of these foods has a negative impact on individuals' health, and the consumption of UPF has been related to altered lipid profile in children [7], metabolic syndrome in adolescents [8], and obesity in adolescents and adults [9].

Meanwhile, among adolescents, the time spent at sedentary behaviors like watching TV and using videogames and computers has increased over time [10]. The habit of spending more time sitting is associated with several unfavorable health outcomes [10,11,12], including obesity [3], and can lead to greater consumption of UPF [13,14] due to the ease in ingesting these products, since they are purchased in packaged form, ready to eat or heat [5]. Adolescence is an important phase for health promotion and the prevention of risk factors, since eating habits are acquired during this phase, as well as in child-hood, and tend to persist throughout life [15].

The literature on consumption of UPF using the NOVA classification [5] is still limited in Brazil, especially in children and adolescents [7,8,9,16]. At the international level, the existing data are related to trends in the sales of these products in 79 lower-middle, upper-middle, and upper-income countries [6] and in Latin America [17]. The relationship with sedentary behavior was studied previously in Brazil with data from the 2009 edition of the *Brazilian National School Health Survey* (PeNSE) [18]. However, the authors assessed regular consumption ($\geq$ 5 days/week) of sodas, candy, cookies, and cold cuts, separately, one by one. The study's results showed higher prevalence rates of regular consumption of these foods by individuals that reported more than two hours/day watching TV [18].

Given the above, the aim of the current study was to investigate the association between sedentary behavior and daily consumption of at least one group of UFP by adolescents enrolled in public and private schools in Brazil. The study can contribute to the literature on food consumption, using a classification that considers not only food's nutrients, but the nature, extent, and degree of its processing. The study can also add to knowledge on the relationship between sedentary behavior and consumption of UFP, two important and harmful behaviors for adolescents' health.

Methodology

This cross-sectional study used data from the 2015 edition of the PeNSE, with adolescents enrolled in the 9th grade (formally the 8th grade in the Brazilian school system) during the 2015 school year, with regular attendance at public and private schools in urban and rural areas all across Brazil. This was the third edition of the survey (the first two were in 2009 and 2012), conducted by the Brazilian Institute of Geography and Statistics (IBGE) in collaboration with the Brazilian Ministry of Health [19].

The sample was sized to estimate the parameters for each of the 26 state capitals and the Federal District, which comprised the strata, consisting of the country's five major geographic regions (North, Northeast, Southeast, South, and Central), in addition to non-state capital municipalities in each region. To represent the interior of Brazil, some municipalities outside the state capitals were grouped as a stratum for each of the states, totalizing 26 strata. For municipalities, state capitals, and the Federal District, the schools were the primary sampling units, classes were the secondary sampling units, and the students comprised the sample in each stratum [19].

Just as in the geographic strata formed by the state capitals, in the municipalities the sample was random and equiprobable, selecting one class in schools with two 9th grade classes and two classes in schools with three or more classes. All the students in the sampled classes were invited to answer the study questionnaire. Data were collected from April to September 2015, using smartphones on which a self-administered questionnaire was downloaded. Further details on the sampling process and study topics are available in the PeNSE 2015 publication [19].

The outcome was daily consumption of at least one group of ultra-processed food, defined according to the NOVA classification [5]. The variable was operationalized with the following question: "In the last 7 days, on how many days did you eat...?" for each of the following foods/food groups: sweets or candy (candy, chocolate, chewing gum, bonbons, or lollipops); sodas and industrialized/ultra-processed salty foods like hamburgers, ham, baloney, salami, sausage, hot dogs, instant noodles, packaged salty snacks, and crackers. Daily consumption of at least one group of UPF was defined as an affirmative answer to the consumption of at least one of the groups on all seven days of the study week.

The principal exposure was sedentary behavior, in hours per day, measured with the following question: "On an ordinary week day, how long do you spend sitting, watching TV, using the computer, playing videogames, talking with friends, or doing other activities? (not including Saturdays, Sundays, holidays, and time sitting at school)". The answers were: "up to 1 hour a day; more than 1 hour and up to 2 hours a day; more than 2, up to 3; more than 3, up to 4; more than 4, up to 5; more than 5, up to 6; more than 6, up to 7; more than 7, up to 8; more than 8 hours a day".

The following variables were included in the analyses as possible confounders: gender (male, female), age ($\leq$ 13, 14, 15, and $\geq$ 16 years), self-reported skin color/race (white, black, Asian-descendent/indigenous, brown), maternal schooling (none, incomplete primary, incomplete secondary, incomplete university, complete university), household assets (in quintiles), geographic region (North, Northeast, Southeast, South, Central), and school's administrative jurisdiction (public, private). The household assets index consisted of hardline telephone, computer (desktop, notebook, laptop, etc.), car and/or motorcycle, number of bathrooms with shower/bath, and home internet access. Students were also asked whether they had their own cellphone and if the household had a housekeeper (at least three days a week). The household assets index was built using the first component obtained, based on a principal components analysis [20].

Initially, the sample was described according to demographic and socioeconomic characteristics, as well as prevalence rates and respective 95% confidence intervals (95%CI) [19] for the outcome weighted for these variables. Adjusted prevalence rates and 95%CI for daily consumption of each group of UPF were analyzed according to daily time of sedentary behavior, dichotomized as $\leq$ 2 hours versus > 2 hours. This cutoff point was based on the American Academy of Pediatrics [21], which recommends two hours as the maximum screen time for children over two years of age and adolescents. Finally, we performed an adjusted analysis of the number of hours of sedentary behavior per day in ordinal form ($\leq$ 1 hour and > 8 hours/day) and the outcome by means of Poisson regression [22], producing prevalence ratios (PR) and 95%CI. All the adjustment variables were included, regardless of p-value in the crude analysis. All the analyses were performed with the svy command in order to account for the sample design effect, using Stata, version 12.1 (StataCorp LP, College Station, USA).

PeNSE 2015 was approved by the National Commission on Research Ethics (CONEP), of the National Health Council, which regulates and rules on health studies involving human subjects (CONEP case review n. 1.006.467, March 30, 2015).

Results

The sample totaled 102,072 students, 101,755 of whom furnished information on their consumption of the target foods. The majority of the subjects were female (51.3%), 50.9% were 14 years old, and 43% reported brown skin color. As for maternal schooling, 30.9% said their mothers had incomplete higher education. The Southeast region of Brazil provided the largest proportion of students in the sample (43.3%). The vast majority were enrolled in public schools (85.5%) (Table 1). Daily consumption of at least one group of UPF was reported by 39.7% (95%CI: 39.2-40.3) of the subjects. As for

sedentary behavior, 68.1% (95%CI: 67.7-68.7) of the schoolchildren reported spending more than two hours a day at sitting activities.

The highest prevalence rates of daily consumption of at least one UPF were in girls, among adolescents living in the Southeast and Central regions and enrolled in private schools. Prevalence rates of daily consumption of UPF were higher in the quintiles with the highest household assets indices and maternal schooling, reported by the adolescents (p-value < 0.001). Age and skin color were not associated with daily consumption of UPF (Table 1).

Figure 1 shows the adjusted prevalence rates and 95%CI for daily consumption of each group of UPF separately, according to time spent in sedentary behavior. Adolescents with more than two hours a day of sedentary behavior showed higher prevalence rates of daily consumption of UPF compared to those with two hours or less, for the three foods analyzed separately. Daily consumption of sweets was the most prevalent, exceeding 28% among students with greater sedentary behavior (Figure 1).

Besides the differences for each group of UPF separately, the consumption of at least one group of UPF was directly associated with time spent at sedentary behavior. For the dichotomous exposure, 42.8% of adolescents with more than two hours a day of sedentary behavior consumed at least one UPF daily, versus 29.8% for sedentary behavior less than or equal to two hours (Figure 1). Considering the ordinal form of exposure, after adjusting for the other variables, more hours of sedentary behavior were associated with higher prevalence rates of daily consumption of UPF (p-value for linear trend < 0.001), with a dose-response effect in the associations (Figure 2).

Discussion

The study showed high prevalence rates for daily consumption of at least one group of UFP and more than two hours a day of sedentary behavior; four out of ten and seven out of ten Brazilian adolescents, respectively, displayed such behaviors. Even after adjustment, the study showed a positive association between time spent at sedentary behavior and daily consumption of at least one group of UPF, with a dose-response effect; longer sedentary behavior was associated with higher prevalence of daily consumption of UPF.

Levy et al. [16] investigated regular consumption (≥ 5 days/week) of four groups of UFP by adolescents in the 2009 edition of the PeNSE survey, with high proportions of adolescents that consumed sweets, sodas, cookies, and cold cuts (50.9%, 37.2%, 33.6%, and 18%, respectively). Data from the second edition of PeNSE (2012) showed prevalence rates of regular consumption (≥ 5 days/week) of sweets, sodas, cookies, fried salty snacks, and packaged salty snacks among adolescents: 41.3%, 33.3%, 32.5%, 15.8%, and 13%, respectively [23]. The current study assessed daily consumption of at least one UPF, and although the servings (in grams or mL) of these foods consumed are not known, it is troublesome that four out of ten Brazilian adolescents reported consuming these foods on a daily basis.

In relation to sedentary behavior, a study of adolescents in Santa Catarina State, Brazil, found that more than 70% watched TV or used the computer or played videogames for more than two hours a day [24], a similar figure to our finding. Gordon-Larsen et al. [25], evaluating longitudinal trends in sedentary behavior, found that one-fourth of adolescents in the study reported more than two hours a day of sedentary behavior and that the habit persisted into adulthood. Camelo et al. [18] showed that 65% of the students in PeNSE 2009 reported spending more than two hours a day watching TV, and Malta et al. [26] found that approximately 80% of this same population reported this habit for at least two hours a day. Neither study reported data on the use of computers and videogames. Although the latter devices were not included in the study, the hours were greater than in our study. Such differences may be due to the fact that PeNSE 2009 only included state capitals and the Federal District, while PeNSE 2015 also included municipalities from the interior of the states.

The analysis of the association between sedentary behavior and consumption of UFP, adjusted for confounding, showed that the longer the time spent at sedentary behavior, the higher the prevalence of daily consumption of at least one UPF. These findings are consistent with the literature. A systematic review found that sedentary behavior in children and adolescents was directly associated with the consumption of high-energy snacks and beverages, fast food, and total energy intake [27]. Camelo et al. [18] found that students in PeNSE 2009 who reported regular consumption (≥ 5 days/week) of

Table 1

Description of the sample of 9th-graders in the *Brazilian National School Health Survey* (PeNSE), Brazil, 2015 (N = 102,072).

Variables	Sample	Daily consumption of at least one ultra-processed food *		
	%	%	95%CI	p-value **
Gender [n = 101,754]				< 0.001
Male	48.7	36.0	35.2-36.8	
Female	51.3	43.2	42.4-44.0	
Age (years) [n = 101,755]				0.060
≤ 13	18.3	40.5	39.1-42.0	
14	50.9	39.2	38.4-39.9	
15	19.8	40.8	39.6-41.9	
≥ 16	11.0	38.8	37.4-40.3	
Skin color/Race [n = 101,656]				0.150
White	36.2	39.7	38.7-40.6	
Black	13.4	41.2	39.6-42.7	
Asian-descendant/Indigenous	7.4	40.0	38.1-41.9	
Brown	43.0	39.2	38.4-40.0	
Maternal schooling [n = 76,477]				< 0.001
None	7.4	36.4	34.3-38.5	
Incomplete primary	26.5	36.3	35.0-37.5	
Incomplete secondary	17.1	40.1	38.6-41.7	
Incomplete university	30.9	40.6	39.4-41.8	
Complete university	18.1	40.3	38.9-41.7	
Household assets [n = 101,598]				< 0.001
1st quintile (lowest)	18.7	32.7	31.6-33.8	
2nd quintile	21.6	38.8	37.7-39.9	
3rd quintile	19.5	39.9	38.7-41.3	
4th quintile	23.8	43.4	42.2-44.6	
5th quintile (highest)	16.4	43.2	41.7-44.6	
Major geographic region [n = 101,755]				< 0.001
North	9.6	33.1	32.1-34.0	
Northeast	27.7	36.9	36.2-37.6	
Southeast	43.3	42.3	41.2-43.4	
South	11.9	39.3	38.0-40.5	
Central	7.5	44.0	43.1-45.0	
School's administrative jurisdiction [n = 101,755]				0.005
Public	85.5	39.4	38.8-40.0	
Private	14.5	41.4	40.1-42.7	

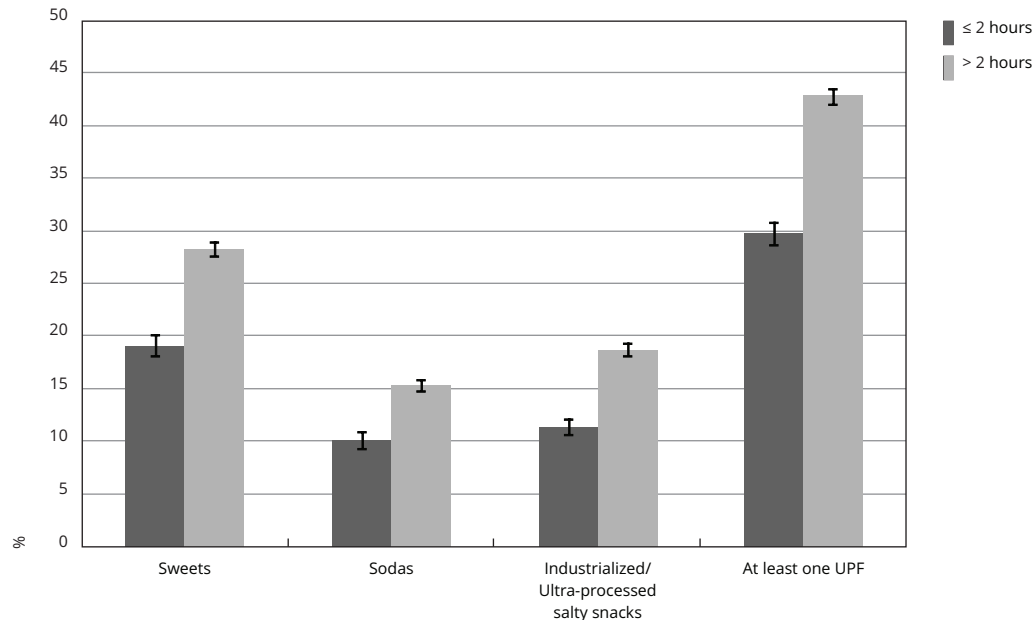* Sweets, sodas, and industrialized/ultra-processed salty snacks;

** Chi-square test.

sweets, sodas, cookies, and cold cuts showed higher odds of more than two hours of TV time a day. A study of schoolchildren in New Zealand found that kids who watch more than two hours of TV a day had higher odds of consuming foods commonly advertised on television (sodas and artificial juices, sweets, snacks, and fast food) [28].

There are two possible explanations for this association. The first is the greater inherent practicality of UFP, allowing consumption anywhere without the need for preparation, cooking, or dishes or tableware, favoring the consumption of this type of food while the adolescent watches TV or uses the computer or plays videogames [5]. Besides, kids who spend more time at sedentary behavior are

Figure 1

Prevalence rates (PR) and 95% confidence intervals (95%CI) for daily consumption of each group of ultra-processed foods (UPF) according to daily time spent in sedentary behavior (≤ 2 hours versus > 2 hours) among Brazilian adolescents, adjusted for gender, age, skin color, maternal schooling, household assets index, major geographic region, and school's administrative jurisdiction. *Brazilian National School Health Survey* (PeNSE), Brazil, 2015 (N = 102,072).

Note: loss of information – sodas = 174, candy = 182, industrialized/ultra-processed snacks = 246, and at least one UPF = 627.

probably more exposed to advertising of UFP. Advertising campaigns exploit kids' vulnerability in order to encourage them to consume unhealthy products, heavily influencing their eating preferences [29]. Pearson & Biddle [27] reported in a systematic review that in children and adolescents, sedentary behavior in general was inversely associated with the consumption of fruits and vegetables and directly associated with the consumption of high energy-dense snacks, fast food, and high energy-dense beverages. The lack of specific regulation of advertising for ready-to-eat or UFP poses a major obstacle to healthy eating [30,31].

Some study limitations should be addressed, such as the possibility of reverse causality in studies that collect data on outcome and exposure at the same time, where it is not possible to determine whether the sedentary behavior causes greater consumption of UPF or if it represents an effect of the latter. Despite the possibility of this bias, the direction of the target association gains greater relevance if one considers that lifestyle-related behaviors like diet, physical activity, and sedentary behavior generally tend to converge in harmful paths for health [32]. Studies have shown that increased prevalence rates of excess weight are seen in children and adolescents that display clusters of behaviors, including the combination of less physical activity and more sedentary behavior [33], plus more screen time and less nighttime sleep, less average dinner time duration, and fewer outdoor games [34]. Another possible limitation to the study is the lack of information on cellphone use in the 2015 edition of the PeNSE survey. Despite the possible underestimation of prevalence of sedentary behavior, the literature shows that the direction of the association between cellphone use and consumption of unhealthy foods is the same as in the current study [35]. Thus, this association may not have been greatly influenced by the lack of information on cellphone use.

Although the data on eating that is available in the PeNSE 2015 survey includes a large share of UPF, information is obviously lacking on other foods belonging to this group, which were not asked

Figure 2

Prevalence ratios (PR) for consumption of ultra-processed foods (UPF) according to sedentary behavior (hours per day) in Brazilian adolescents, adjusted for gender, age, skin color, maternal schooling, household assets index, major geographic region, and school's administrative jurisdiction. *Brazilian National School Health Survey* (PeNSE), Brazil, 2015 (n = 76,134).
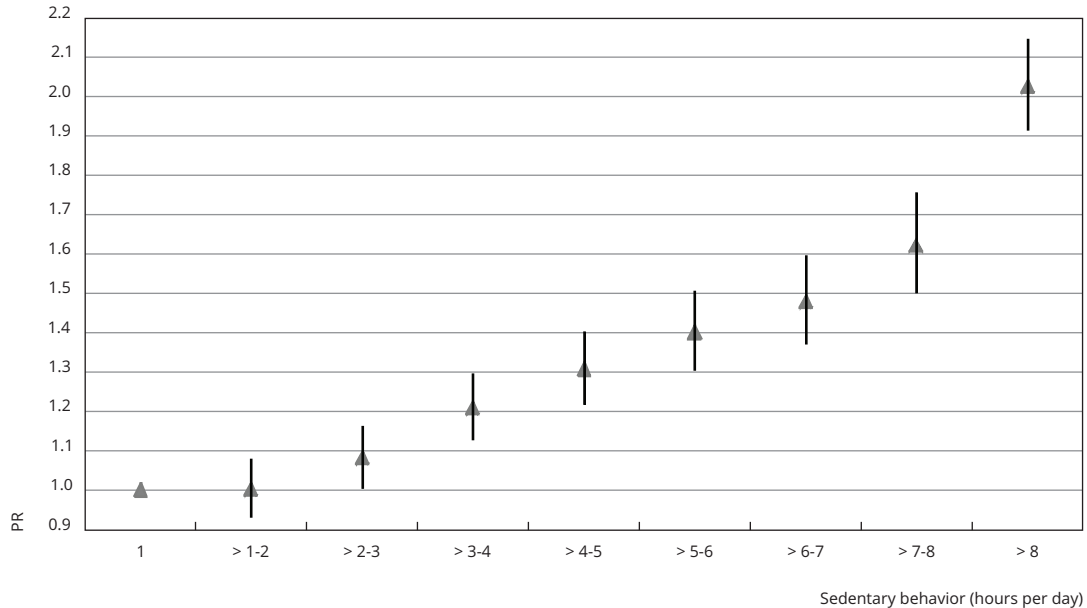
Note: p-value for linear trend < 0.001.

about in the questionnaire. Therefore, it was not possible to include the adolescents' eating environment among the adjustment variables. Considering the high prevalence of consumption of cookies in the PeNSE 2009 survey (33.6%) [16] and that cookies were not included in the 2015 edition, consumption of UFP may be underestimated in the current study. The association may also have been underestimated considering that prevalence in the exposed individuals (longer time spent at sedentary behavior) tends to be underestimated. The consumption of high-sugar beverages besides sodas was also not included in the 2015 edition of PeNSE. Tavares et al. [36] found regular consumption ($\geq$ 5 days/week) of high-sugar beverages in 55.2% of adolescents interviewed in Rio de Janeiro, which may contribute to the underestimation of both the prevalence and the association. In addition, the questionnaires were completed by the adolescents themselves, with the possibility of information bias [36,37]. However, the questions used in this study are easy to grasp, so the risk of information bias is small. The lack of information on urban/rural residence allows the existence of bias in the associations, considering that ready-to-eat meals, industrialized mixtures, and sodas are less available in rural areas when compared to urban [38]. Thus, adolescents in rural areas may report lower consumption simply due to lower household availability. Finally, the sampling loss in the adjusted analysis (25.4% of all the study subjects), resulting basically from the maternal schooling variable, could mean overestimation of the prevalence of consumption of UFP, considering that those who did not furnish data on maternal schooling are those in the lowest household assets quintiles and consequently those with the lowest consumption of these foods. This association may be overestimated, since the respondents are found in the highest quintiles of household assets, and the prevalence of both the exposure and the outcome is higher among these students (data not shown).

PeNSE 2015 is a school-based survey with a nationwide scope, an advantage for studies that use its database. In addition, despite the lack of information on daily servings and the calorie contribution of

the target foods, the analyses allowed assessing the consumption of a set of UPF, and not only of single items like sodas or fast food. Compared to studies using data from the first two editions of PeNSE (2009 and 2012) [3,18], the current study adds information, since it expands the exposure variable and shows an alternative approach to the outcome variable (the combination of UFP) in the attempt to depict adolescents' eating habits rather than the consumption of single foods. The 2015 edition also has a broader scope than PeNSE 2009, since it includes data on students from municipalities in the interior of the states, in addition to data on students from the state capitals and the Federal District.

Consumption of UFP has increased in Brazil [4], and prevalence among adolescents was high in the current study. Efforts are thus needed to reduce the consumption of these foods. There is a need for widespread awareness-raising on diet and the resulting health/disease process, focusing on food choices and encouragement for fresh or minimally processed foods, based on disclosure of information.

Awareness-raising of parents and guardians on food choices and their consequences for health is essential for decreasing the consumption of UFP. The school is also a prime setting for nutritional education, not only as a sporadic measure, but incorporated into the school curriculum as a whole. Since schools set examples for students, the regulation of sale and advertising of foods in school canteens and the supply of healthy foods are necessary throughout the school system. Finally, population-wide policies are necessary, including regulation of advertising for UPF in the media in general and fiscal policies aimed at increasing access to healthier foods, which should enjoy lower tax rates. Likewise, higher taxation on unhealthy food products can help decrease the consumption of ultra-processed products.

A decrease in the prevalence of sedentary behavior can contribute positively to various health outcomes, since it is associated with several factors, including consumption of UPF. It is thus important to reduce prolonged sitting time and to increase the level of regular physical activity [3]. Longer time spent at sedentary behavior (not including time sitting at school) can occur in the family setting, and the American Academy of Pediatrics [21] recommends that parents limit their children's screen time to no more than two hours a day, encouraging more physical activity by adolescents. This kind of information should also be widely publicized in order for parents to be able to follow such guidance. Opportunities for physical activities offered by schools outside of classroom hours can also be a good strategy to reduce time spent in sedentary behavior. Broader approaches like improving public spaces for physical exercise and policies to increase users' perception of safety, especially in underprivileged neighborhoods, can encourage outdoor activities and active commuting, thus reducing the time spent in sedentary activities [39].

Conclusions

This study evidenced the association between two behaviors that are harmful to adolescents' health. Strategies to reduce the prevalence of both factors are important, like regulation of the supply of UFP in schools and advertising for such foods, policies to improve the built (and perceived) environment for physical activity, and health promotion measures engaging parents and teachers, targeting to adolescents' awareness-raising on healthy eating, sedentary behaviors, and the health-disease process. Such strategies are essential for avoiding unhealthy lifestyles that last into adulthood and thus further foment the growing prevalence of chronic non-communicable diseases.

Contributors

C. S. Costa, T. R. Flores, A. Wendt and R. G. Neves participated in all the study's phases, including conception and planning, data analysis and interpretation, writing of the article, and approval of the final version for publication. M. C. F. Assunção and I. S. Santos contributed substantially to the study's conception and planning, data analysis and interpretation, writing of the article, and approval of the final version for publication.

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Resumo

Estudo transversal com o objetivo de investigar a associação entre comportamento sedentário e consumo de alimentos ultraprocessados (AUP) em adolescentes brasileiros. Foram utilizados dados da Pesquisa Nacional de Saúde do Escolar *(PeNSE) realizada em 2015. O consumo diário de pelo menos um grupo de AUP representou o desfecho, e a exposição principal foi o tempo diário de comportamento sedentário (horas em atividades sentado, excluído o tempo dispendido na escola). Foram calculadas prevalências, razões de prevalências e intervalos de 95% de confiança (IC95%). As análises foram ajustadas para sexo, idade, cor da pele, escolaridade materna, índice de bens, região geográfica e dependência administrativa da escola. Cerca de 40% dos escolares reportaram consumo diário de pelo menos um grupo de AUP (39,7%; IC95%: 39,2-40,3) e 68,1% (IC95%: 67,7-68,7) referiram > 2 horas/dia de comportamento sedentário. Entre os escolares com comportamento sedentário > 2 horas/dia, a prevalência de consumo diário de AUP foi de 42,8% (IC95%: 42,1-43,6%), maior do que entre os sem comportamento sedentário (29,8%; IC95%: 29,0-30,5%). Quanto maior o tempo de comportamento sedentário, maior a prevalência de consumo de AUP (valor de p para tendência linear < 0,001). Estratégias que promovam a alimentação saudável e a diminuição de comportamentos sedentários, bem como regulamentações da publicidade de AUP, tornam-se necessárias a fim de evitar que estilos de vida não saudáveis perdurem à idade adulta.*

Estilo de Vida Sedentário; Alimentos Industrializados; Comportamento Alimentar; Adolescente

Resumen

Estudio transversal con el objetivo de investigar la asociación entre el comportamiento sedentario y el consumo de alimentos ultraprocesados (AUP) en adolescentes brasileños. Se utilizaron datos de la Encuesta Nacional de Salud del Escolar *(PeNSE), realizada en 2015. El consumo diario de por lo menos un grupo de AUP representó el resultado, y la exposición principal fue el tiempo diario de comportamiento sedentario (horas en actividades sentado, excluido el tiempo transcurrido en la escuela). Se calcularon las prevalencias, razones de prevalencias e intervalos de 95% de confianza (IC95%). Los análisis se ajustaron por sexo, edad, color de la piel, escolaridad materna, índice de bienes, región geográfica y dependencia administrativa de la escuela. Cerca de un 40% de los escolares informaron un consumo diario de por lo menos un grupo de AUP (39,7%; IC95%: 39,2-40,3) y 68,1% (IC95%: 67,7-68,7) informaron > 2 horas/día de comportamiento sedentario. Entre los escolares con un comportamiento sedentario > 2 horas/día, la prevalencia de consumo diario de AUP fue de un 42,8% (IC95%: 42,1-43,6%), mayor que entre quienes no tenían comportamiento sedentario (29,8%; IC95%: 29,0-30,5%). Cuanto mayor es el tiempo de comportamiento sedentario, mayor la prevalencia de consumo de AUP (valor de p para tendencia lineal < 0,001). Estrategias que promuevan la alimentación saludable y la disminución de comportamientos sedentarios, así como una regulación de la publicidad de AUP, fueron necesarias, a fin de evitar que estilos de vida no saludables perduren en la edad adulta.*

Estilo de Vida Sedentario; Alimentos Industrializados; Conducta Alimentaria; Adolescente