

RELATION OF PARENTAL PRACTICES OVERWEIGHT AND OBESITY IN SCHOOL ADOLESCENTS: CASE-CONTROL STUDY

RELAÇÃO DAS PRÁTICAS PARENTAIS COM SOBREPESO E OBESIDADE EM ADOLESCENTES ESCOLARES: ESTUDO DE CASO-CONTROLE

RELACIÓN DE LAS PRÁCTICAS PARENTALES SOBREPESO Y OBESIDAD EN ADOLESCENTES ESCOLARES: ESTUDIO DE CASOS Y CONTROLES

Pollyanna Jorge Canuto¹
Carla Campos Muniz Medeiros²
Rodrigo Pinheiro de Toledo Viana³
Poliana de Araújo Palmeira⁴
Danielle Franklin de Carvalho⁵

How to cite this article: Canuto PJ, Medeiros CCM, Viana RPT, Palmeira PA, Carvalho DF. Relation of parental practices overweight and obesity in school adolescents: case-control study. Rev baiana enferm. 2022;36:e46433.

Objective: to evaluate the educational parental practices related to food and its relationship with overweight/obesity in school adolescents. **Method:** case-control study with adolescents from public schools, through investigation of the restrictive dimensions-in relation to the consumption of sweets and caloric foods, pressure to eat, eating according to determination and monitoring-control on consumption of sweets and caloric foods. Chi-square test was applied with a 95% confidence interval. **Results:** the participants were 148 adolescents (80 cases-overweight/obesity and 68 controls-eutrophic). There was an association between nutritional status of the caregiver and adolescents (OR=5.688; $p<0.01$), a higher percentage of overweight/obesity among adolescents submitted to restrictive practices of sweet consumption; pressure to eat, a higher proportion of overweight/obese adolescents among caregivers who disagreed; higher percentage of overweight/obese adolescents among mothers/caregivers who reported monitoring caloric food consumption most of the time. **Conclusion:** educational parenting practices were related to overweight/obesity in school adolescents.

Descriptors: Parenting. Feeding Behavior. Obesity. Overweight. Adolescent.

Objetivo: avaliar as práticas parentais educativas relativas à alimentação e sua relação com sobrepeso/obesidade em adolescentes escolares. Método: estudo de caso-controle com adolescentes de escolas públicas, mediante investigação das dimensões restritivas em relação ao consumo de doces e alimentos calóricos, pressão para comer,

¹ Nurse. MSc in Public Health. Universidade Federal da Bahia. Salvador, Bahia, Brazil. pollyannacanuto@hotmail.com. <https://orcid.org/0000-0003-0617-9008>.

² Doctor. PhD in Child and Adolescent Health. Professor at the Universidade Estadual da Paraíba. Campina Grande, Paraíba, Brazil. <https://orcid.org/0000-0002-7994-7277>.

³ Food Engineer. PhD in Collective Health. Professor at the Universidade Federal da Paraíba. João Pessoa, Paraíba, Brazil. <https://orcid.org/0000-0002-5358-1967>.

⁴ Nutritionist. PhD in Nutritional Sciences. Professor at the Universidade Federal de Campina Grande. Cuité, Paraíba, Brazil. <https://orcid.org/0000-0002-3503-3414>.

⁵ Pharmacist. PhD in Child and Adolescent Health. Professor at the Universidade Estadual da Paraíba. Campina Grande, Paraíba, Brazil. <https://orcid.org/0000-0003-4835-082X>.

comer de acordo com a determinação e monitoramento-controle sobre consumo de doces e alimentos calóricos. Aplicou-se teste qui-quadrado com intervalo de confiança de 95%. Resultados: participaram 148 adolescentes (80 casos-sobrepeso/obesidade e 68 controles-eutróficos). Houve associação entre estado nutricional do cuidador e do adolescente (OR=5,688; $p<0,01$), maior percentual de sobrepeso/obesidade entre adolescentes submetidos a práticas restritivas de consumo de doces; em pressão para comer, proporção maior de adolescentes com sobrepeso/obesidade entre os cuidadores que discordaram; maior percentual de adolescentes com sobrepeso/obesidade entre as mães/cuidadores que relataram monitorar o consumo de alimentos calóricos na maior parte do tempo. Conclusão: as práticas parentais educativas relacionaram-se com o sobrepeso/obesidade em adolescentes escolares.

Descritores: Poder Familiar. Comportamento Alimentar. Obesidade. Sobrepeso. Adolescente.

Objetivo: evaluar las prácticas educativas parentales relacionadas con la alimentación y su relación con el sobrepeso/obesidad en adolescentes escolares. Método: estudio de casos y controles con adolescentes de escuelas públicas, a través de la investigación de las dimensiones restrictivas -en relación con el consumo de dulces y alimentos calóricos, presión para comer, alimentación según determinación y monitoreo-control sobre el consumo de dulces y alimentos calóricos. Se aplicó la prueba de Chi cuadrado con un intervalo de confianza del 95%. Resultados: participaron 148 adolescentes (80 casos-sobrepeso/obesidad y 68 controles-eutróficos). Hubo asociación entre el estado nutricional del cuidador y los adolescentes (OR=5.688; $p<0,01$), un mayor porcentaje de sobrepeso/obesidad entre los adolescentes sometidos a prácticas restrictivas de consumo dulce; presión para comer, una mayor proporción de adolescentes con sobrepeso / obesidad entre los cuidadores que no estaban de acuerdo; mayor porcentaje de adolescentes con sobrepeso / obesidad entre las madres / cuidadores que informaron monitorear el consumo de alimentos calóricos la mayor parte del tiempo. Conclusión: las prácticas educativas de crianza se relacionaron con el sobrepeso/obesidad en adolescentes escolares.

Descriptorios: Responsabilidad Parental. Conducta Alimentaria. Obesidad. Sobrepeso. Adolescente.

Introduction

As a growing nutritional disorder, obesity has different determinants, resulting from a complex behavioral/biological/environmental interaction. Many factors are capable of influencing food consumption, from biological factors, pertinent to the individual, to aspects of the family environment. Especially concerning food consumption of adolescents, family environment plays a decisive role in the adoption of healthy habits related to eating⁽¹⁾.

In the formation of eating habits, several factors act, including cultural, economic, demographic, physiological and psychological. They are usually developed in childhood and consolidated in early adulthood, with the family having an important influencing role⁽²⁾. Thus, the juvenile phase is of great relevance in this process. In general, the influence of parents on their children's eating habits is a major factor for the onset of childhood obesity, so that inadequate eating habits practiced by parents can not only interfere in the quality of life of children in childhood but also in adulthood⁽³⁾.

Parents are the first and greatest responsible for the formation of their children's lifestyle, whether healthy or not. One of the ways in which these guardians influence the feeding of their progeny is using certain dietary practices, known as parental practices. These are characterized by the behaviors of parents in the process of socialization, control or development of values and attitudes of their children⁽⁴⁾. In the absence of parents, these practices can be developed by the main caregivers of adolescents⁽⁵⁾.

Parental practices around adolescent seating are attitudes towards meals that can influence consumption decisions and, thus, compromise weight development. Examples of these practices include the restriction of some foods, the pressure to eat, the reward with food after positive actions and, also, the availability of food at home⁽⁶⁾.

Understanding these behavioral factors, of an environmental-family nature, allows evaluating parental practices and relating them to overweight in adolescents, in order to measure

how much these factors interfere in nutritional status. In view of this, this study aims to evaluate the educational parental practices related to diet and its relationship with overweight/obesity in school adolescents.

Method

This is a case-control study conducted from July to October 2018, with a final sample composed of 148 adolescents between 10 and under 17 years of age, from public day schools in the municipality of Campina Grande, Paraíba, Brazil.

The municipal schools that adhered to the *Programa de Saúde na Escola* (PSE) were organized by number of students duly matriculated. Among the five schools that constituted the upper quartile of number of matriculated, two were drawn to make up the sample of this study. All students from 5th to 9th grades were evaluated for nutritional status, being classified as overweight or obese, totaling 80 adolescents who comprised the group of “cases”. For each case identified, it was matched by age, gender and class, defining a specified adolescent as eutrophic. These constituted the so-called “control” group.

The following exclusion criteria were: students with some motor, cognitive and/or pulmonary limitation; some genetic syndrome; in weight loss treatment; using medications that alter metabolism; and in postpartum condition or pregnancy or lactation status.

Thus, the eligible adolescents participated in the study in a total of 148 individuals studied, 80 cases and 68 controls. In addition to the adolescents, their respective guardians (parents/caregivers) were also evaluated, one for each adolescent, representing 148 families studied. In addition to the educational practices related to feeding, in relation to adolescents, the following were evaluated: gender, age, with whom they reside, the main caregiver and nutritional status (NS). For the caregivers, in addition to the NS, age, degree of kinship with the adolescent and schooling were evaluated. Age was calculated by the difference between

the date of birth and the date of the interview. The caregiver's schooling was defined based on the last year, with approval. Sex, with whom he/she resides, the main caregiver and degree of kinship were self-reported.

To assess the nutritional status of the parents, the weight measurement was verified, in kilograms. Welmy[®] digital scale was used, with an accuracy of 0.1 kg; for height, Avanutri[®] stameter was used, with an accuracy of 0.1 cm. For the measurement, the procedures recommended by the World Health Organization (WHO) were followed⁽⁷⁾. The body mass index (BMI) was constructed from the weight (in kilograms) divided by the square of height (in meters). For adolescents, it was used to classify nutritional status according to the z score, adjusted for age and gender: eutrophy ($-2 \geq z \text{ score} < +1$), overweight ($\geq +1 z \text{ score} < +2$), obesity ($+2 \geq z \text{ score} < +3$) and marked obesity ($z \geq +3 \text{ score}$). For caregivers, BMI cutoff points (in kg/m^2) were: underweight (< 17.5), eutrophy ($\geq 17.5 \text{ BMI} < 25.0$), overweight ($\geq 25.0 \text{ BMI} < 30.0$) and obesity (≥ 30.0)⁽⁸⁾.

The educational practices related to food were investigated through the Child Eating Behavior Questionnaire (CEBQ), adjusted for this study. It is an instrument developed in the United States, which aims to evaluate the beliefs, attitudes and practices of parents in relation to the feeding of their children from the perspective of childhood obesity⁽⁹⁾. This instrument was validated for the Brazilian population and presented good reliability⁽¹⁰⁾. The original version of this questionnaire consists of 31 questions and analyzes 7 factor models; each factor includes a block of questions. The 4 initial factors assess the report of parents' beliefs regarding the diet of children with a tendency to obesity, such as perception of responsibility, perception of parents' weight, perception and concern with the adolescent's weight. The last 3 factors measure the control practices and attitudes of parents about their children's diet⁽⁹⁾.

In view of the objective of this study, only these last three factors were used, related to the control and attitudes of parents/caregivers about the adolescents' diet. Each factor is equivalent

to a set of practices that are characterized as “restrictive” (restriction of parents/guardians on the consumption of sweets and caloric foods, for example), “pressure to eat” (pressure to eat more or less, according to the determination of parents/guardians) and “monitoring” (control over the consumption of sweets, snacks and caloric foods).

For each of the questions of each factor there were five answer options. In the case of factors called “restriction” and “pressure to eat”, the options were: (1) disagree; (2) I disagree lightly; (3) neutral; (4) I agree lightly; and (5) agree. For the “monitoring” factor, the answer options were: (1) never; (2) rarely; (3) sometimes; (4) often; and (5) always.

For statistical analysis purposes, the answers related to the factors “restriction” and “pressure to eat” were categorized into slightly disagree/disagree and I agree/agree slightly. In the “restriction” factor, the “neutral” cases were included in the lowest risk category; in the “pressure to eat” factor, there were no neutral responses. On the other, the responses related to “monitoring” were categorized as “Never/Rarely/Sometimes” and “Often/Always”, in order to create dichotomous variables.

The database was double-typed in Excel 2010 spreadsheets and validated in Epi Info software version 3.5.4, used to verify the consistency of the data entered. Statistical Package for the Social Sciences (SPSS) software was performed in version 22.0. As a measure of association between socioeconomic, demographic, biological and parental practice variables in feeding between cases and controls, the Odds Ratio (OR) was calculated, adopting as a reference category the lowest risk. Pearson’s chi-square test was used to verify the statistical significance of the association between categorical variables, with Fisher correction, when necessary. For all analyses, the 95% confidence interval was considered. For all analyses, the 95% confidence interval was considered.

This study was approved by the Ethics Committee on Research with Human Beings

of the *Universidade Estadual da Paraíba*, with *Certificado de Apresentação para Apreciação Ética* (CAAE) n. 84019518.3.0000.5187. All ethical aspects were fulfilled, according to Resolution n. 466/2012 of the *Conselho Nacional de Saúde*.

This study comes from a research for master’s thesis purposes, whose main objective was the relationship between the obesogenic environment and negative educational practices with overweight (overweight and obesity) in school adolescents. Therefore, there are similarities in the methods and results in relation to the characterization of the sample, addressed in another manuscript⁽¹¹⁾ about the obesogenic environment. However, there is no similarity to the theoretical framework, objectives and outcomes, because only in this study parental practices are addressed.

Results

The participants were 80 cases and 68 controls, totaling 148 adolescents. Of this total, most were female (55.4%), over 12 years of age (59.5%), living with their father and/or mother (91.9%), who were also the main caregivers (88.5%). Regarding the nutritional status of the participating adolescents, 48 (32.4%) were overweight, 32 (21.6%) were obese and 68 (46.0%) were eutrophic.

Among the caregivers, most were below 40 years of age (55.4%), with less than 8 years of schooling (57.4%) and nutritional status classified as overweight/obesity (79.1%). Regarding the nutritional status of the caregiver, it was associated with the nutritional status of the adolescent (OR=5.688, $p<0.01$). However, having an overweight or obese caregiver carries a 5.7 times higher risk of having a teenager with the same nutritional status.

Parental educational practices were analyzed using three factors: restriction, pressure to eat and monitoring (Tables 1 to 3). There was a higher chance of overweight or obesity in adolescents submitted to practices that involved restriction of consumption of many sweets (Table 1).

Table 1 – Comparison between cases (Body Mass Index z-score $\geq +1$) and controls (Body Mass Index-z-score $< +1$) regarding “restrictive educational parenting practices in eating”, according to the respondents’ belief. Campina Grande, Paraíba, Brazil – 2018 (N=148)

Variables	Total		Cases (Body Mass Index score $z \geq +1$)		Control (Body Mass Index score $z < +1$)		p-value
	n	%	n	%	n	%	
Teenager does not eat a lot of sweets							
Disagree	67	45.3	43	64.2	24	38.8	0.025
Agree/Neutral	81	54.7	37	45.7	44	54.3	
Teenager does not eat a lot of calorie foods							
Disagree	87	58.8	49	56.3	38	43.7	0.509
Agree/Neutral	61	41.2	31	50.8	30	49.2	
Teenager does not eat many favorite foods							
Disagree	74	50.0	40	54.1	34	45.9	1.000
Agree/Neutral	74	50.0	40	54.1	34	45.9	
You hide food							
Disagree	108	73.0	56	51.9	52	48.1	0.377
Agree/Neutral	40	27.0	24	60.0	16	40.0	
You give candy as a reward							
Disagree	135	91.2	73	54.1	62	45.9	0.987
Agree/Neutral	13	8.8	7	53.8	6	46.2	
You give favorite foods in exchange for good behavior							
Disagree	119	80.4	65	54.6	54	45.4	0.779
Agree/Neutral	29	19.6	15	51.7	14	48.3	
If you don't guide, the teenager eats a lot of "crap"							
Disagree	27	18.2	15	55.6	12	44.4	0.863
Agree/Neutral	121	81.8	65	53.7	56	46.3	
If you do not guide, the teenager eats his/her favorite food a lot							
Disagree	20	13.5	10	50.0	10	50.0	0.696
Agree/Neutral	128	86.5	70	54.7	58	45.3	

Source: Created by the authors.

When educational practice is related to “pressure to eat”, a significantly higher proportion of overweight or obese adolescents are observed

among caregivers who disagreed with this condition (Table 2).

Table 2 – Comparison between cases (Body Mass Index z-score $\geq +1$) and controls (Body Mass Index-z-score $< +1$) regarding parenting practices related to “pressure to eat”, according to the respondent’s belief. Campina Grande, Paraíba, Brazil – 2018 (N=148)

(continued)

Variables	Total		Cases (Body Mass Index score $z \geq +1$)		Control (Body Mass Index score $z < +1$)		p-value
	n	%	n	%	n	%	
Your teenager should always eat all the food on the plate							
Disagree	28	18.9	16	57.1	12	42.9	0.716
Agree/Neutral	120	81.1	64	53.3	56	46.7	

Table 2 – Comparison between cases (Body Mass Index z-score $\geq +1$) and controls (Body Mass Index-z-score $< +1$) regarding parenting practices related to “pressure to eat”, according to the respondent’s belief. Campina Grande, Paraíba, Brazil – 2018 (N=148)

(conclusion)

Variables	Total		Cases (Body Mass Index score $z \geq +1$)		Control (Body Mass Index score $z < +1$)		p-value
	n	%	n	%	n	%	
You have to be very careful to see if your teenager is eating enough							
Disagree	55	37.2	37	67.3	18	32.7	0.013
Agree/Neutral	93	62.8	43	46.2	50	53.8	
If your teen says, “I’m not hungry”, you try to get him/her to eat anyway							
Disagree	90	60.8	50	55.6	40	44.4	0.648
Agree/Neutral	58	39.2	30	51.7	28	48.3	
If you do not guide what the teenager eats, he/she would eat much less than necessary							
Disagree	82	55.4	51	62.2	31	37.8	0.027
Agree/Neutral	66	44.6	29	43.9	37	56.1	

Source: Created by the authors.

Table 3 shows a higher percentage of overweight adolescents among caregivers who often monitor caloric food consumption.

Table 3 – Comparison between cases (Body Mass Index z-score $\geq +1$) and controls (Body Mass Index-z-score $< +1$) in relation to educational parenting practices related to the “monitoring” of food, according to the respondent’s belief. Campina Grande, Paraíba, Brazil – 2018 (N=148)

Variables	Total		Cases (Body Mass Index score $z \geq +1$)		Control (Body Mass Index score $z < +1$)		p-value
	n	%	n	%	n	%	
Control over sweets consumption							
Often/always	69	46.6	37	53.6	32	46.4	0.922
Never/rarely/sometimes	79	53.4	43	54.4	36	45.6	
Control over snack consumption							
Often/always	61	41.2	34	55.7	27	44.3	0.731
Never/rarely/sometimes	87	58.8	46	52.9	41	47.1	
Control over the consumption of caloric foods							
Often/always	67	45.3	42	62.7	25	37.3	0.050
Never/rarely/sometimes	81	54.7	38	46.9	43	53.1	

Source: Created by the authors.

Discussion

Control over the diet of adolescents, or lack thereof, can condition their eating habits. When inadequate and associated with an obesogenic environment, quite common

nowadays, it can contribute to the development of overweight⁽¹²⁾. In general, parents are the first and greatest responsible for structuring eating patterns and maintaining the pubertal state in the family environment. They are the ones who “take care” of the quantity and quality of

food available at home, in addition to modeling the emotions related to food⁽¹³⁾. Therefore, this study was developed in order to evaluate the educational parental practices related to food and its relationship with the occurrence of overweight/obesity among school adolescents.

In the results, when comparing the cases with the controls, no statistically significant differences were identified regarding the people with whom the adolescent resides or his main caregiver, in the same way as referring to his age and schooling. However, the low schooling observed in many follows the trend pointed out in the *Pesquisa Nacional de Saúde do Escolar* (PeNSE)⁽¹⁴⁾ and in a study that sought to identify and analyze eating patterns among Brazilian adolescents⁽¹⁵⁾, in which almost half of the mothers did not have schooling or only had incomplete elementary school (48.7%). It has been observed that the low schooling of parents represents an important factor in the perceived body weight and influences the knowledge about childhood obesity⁽¹⁶⁾, which ends up interfering in lifestyle-related behaviors.

When assessing nutritional status, it was found that obese or overweight people were predominantly cared for by those responsible for being overweight or obese, making a risk 5.7 times higher. In a study in the public network of Florianópolis (SC)⁽¹⁷⁾, it was observed that the prevalence of overweight/obesity in schoolchildren whose mothers had the same NS was 1.5 times higher than in adolescents with mothers without EW (excess weight), a much lower risk than in this study, but which corroborates the association. In another study, in which the mother's nutritional status was associated with the ep of the students, similar results also endorse those of this study⁽¹⁸⁾. These findings may be related to the fact that the mother is an example or reference for adolescents, and influences the formation of their children's life habits, including eating habits⁽¹⁹⁾. Since she is usually the main caregiver, she can influence the acquisition of healthy eating habits – or not – by her children⁽²⁰⁾.

Regarding parental practices, it was observed that overweight or obesity were more frequent

among adolescents submitted to “restrictive” practices regarding sweet consumption. The findings refer to the understanding of these practices as “negative”; however, most caregivers of adolescents with EW disagree. The same is in “hiding food”, in which the dissenting were dominant in the cases. Inadequate diets and high sugar consumption are associated with higher prevalence of obesity in adolescence. In addition, a study conducted in the South of the country found that 8 out of 10 adolescents consumed soft drinks (84%)⁽²¹⁾.

The literature suggests that there is a positive association between restrictive practice and adolescent BMI⁽²²⁾. A population-based cohort study of fetal life onwards, developed in the Netherlands, known as Generation R Study⁽²⁰⁾ showed that the highest BMI-z and fat mass of children aged 4 to 6 years prospectively predicted greater use of restrictive feeding by mothers when children were 10 years old. Thus, the importance of parents' concern about their children's diet ends up expressing themselves in constant limitation/restriction of the consumption of certain foods⁽²³⁾.

When the educational practice was related to “pressure to eat”, it was found in “not guiding, he/she would eat much less than necessary”, among caregivers who disagreed with this condition, a higher proportion of adolescents with EW, when compared to eutrophic ones. In a similar study, some caregivers referred to this subject, claiming that adolescents would eat much more than they should, as a way to justify their disagreement in guiding or guiding⁽²⁴⁾. It is important to pay attention to the statistical associations found in some variables, such as “be careful to see if he/she is eating enough”, since the vast majority agreed with this practice, being more than half in the controls, which led to inference of “good praxis” in the influence of NS, that is, in eutrophy.

The variables “should eat all the food on the plate” and “is not hungry, but have to eat anyway”, did not present statistical association with NS. However, one should draw attention to discordant caregivers (with most cases), since it can send some pressure to overeat, thus

implying the EW. It has been observed that food surveillance of the nutritional ideal reinforces a significant and negative association between the pressure to eat and the body mass index of adolescents⁽²⁵⁾. However, the relationship between the pressure to eat and the decrease in BMI can be understood as an effect obtained due to the child's response to his/her internal sign of satiety⁽⁵⁾.

Another finding of this study showed a higher percentage of overweight adolescents, when caregivers, often/always, "monitored" the consumption of caloric foods. It is considered the possibility of parents practicing this practice only when the child was already overweight, not performing it preventively⁽⁶⁾. A systematic literature review study on parenting styles, eating styles, feeding practices and weight status concluded that mothers of overweight children considered that they would need to constantly monitor what they consumed, believing that this is the only way to avoid inadequate feeding⁽⁶⁾.

Another point of view of this practice, in this study, would focus on controls, since, when there was never/rarely/sometimes monitoring regarding caloric foods, over half were practiced by the caregivers of the eutrophic, referring to little control and vigilance for this group of foods. Parental control/monitoring practices can influence the child's diet and weight status and can also be exercised in response to diet and weight⁽²²⁾.

Moreover, in the other two variables studied of control – consumption of sweets and snacks – most caregivers reported never/rarely/sometimes as a prevalent response in EW, denoting possible lack of surveillance or little monitoring, which allowed inferring a link with the previous statistical association in the consumption of sweets, in which EW were also predominant.

Parents should control the type and time of food supply, in order to give the opportunity to choose, in order to develop, in adolescents, the judgment and discernment of satiety. It is emphasized the importance of parents maintaining a healthy and diversified diet, to

enable the development of similar habits in their children and, consequently, to help prevent child and adolescent overweight and obesity.

Therefore, that overweight and obesity among adolescents are directly related to the educational eating practices experienced and have repercussions on their relationship with food during adulthood. Parents influence the decision about the food consumed, the amount and frequency of consumption, so that their attitudes can compromise eating habits and, consequently, the weight development of their children⁽¹³⁾.

Hence, the repercussion, or even persistence, in adult life, of health problems acquired during childhood that persisted in adolescence, emphasizing the concern with the current nutritional status. Thus, the need for early actions is reinforced to prevent the incidence of overweight and promote healthy practices that may have repercussions in adulthood⁽²⁶⁾.

It is worth highlighting as an important limitation of the study, the fact that the use of the chosen CEBQ resulted from the fact that there was no validated questionnaire for the adolescent public in the literature, which justified the occurrence of non-statistical associations of some variables. Another point of limitation was the fact that it is a case-control study, which does not allow the measurement of time between the evaluation of nutritional status and the behavior of parents, and there may be a reverse causality, that is, parents find or do certain things because of their child's obesity. However, it is likely that the current behavior of parents is the same as in the past. Therefore, it is quite possible that the direction of causality is that this behavior increases the risk of adolescents being overweight or obese.

The results of the present study were important to point out possible ways of understanding about parental influences on adolescents' eating habits, from the point of view of practices inherent to the family context, including guiding professional practices of health promotion and disease prevention.

Conclusion

This study demonstrated a positive association between overweight in young people and the habits/practices of parents/caregivers, since it showed a positive relationship in the three factors evaluated, in addition to the statistically significant relationship between the nutritional status of those involved. Thus, it was concluded that the educational parental practices were related to overweight/obesity in school adolescents.

New studies should be developed, especially with a prospective design, in order to confirm the relationship identified here and expand the investigation to other criteria of parental practices, since overweight among adolescents in Brazil is today a public health misfortune, given the high prevalence and the global growth trend.

Collaborations:

1 – conception, design, analysis and interpretation of data: Pollyanna Jorge Canuto and Danielle Franklin de Carvalho;

2 – writing of the article and relevant critical review of the intellectual content: Pollyanna Jorge Canuto, Carla Campos Muniz Medeiros, Rodrigo Pinheiro de Toledo Viana, Poliana de Araújo Palmeira and Danielle Franklin de Carvalho;

3 – final approval of the version to be published: Pollyanna Jorge Canuto, Carla Campos Muniz Medeiros, Rodrigo Pinheiro de Toledo Viana, Poliana de Araújo Palmeira and Danielle Franklin de Carvalho.

References

1. Yee AZH, Lwin MO, Ho SS. The influence of parental practices on child promotive and preventive food consumption behaviors: a systematic review and meta-analysis. *Int J Behav Nutr Phys Act.* 2017;14(1):47. DOI: 10.1186/s12966-017-0501-3
2. Macari C, Valim ARM, Sá CA, Silva PT, Barbian CD, Burgos MS, et al. Obesidade, perfil lipídico e hábitos alimentares de escolares: comparação entre municípios de dois estados da região Sul do Brasil. *Saúde Pesq.* 2017;10(3):451-61. DOI: <https://doi.org/10.17765/1983-1870.2017v10n3p451-461>
3. Linhares FMM, Sousa KMO, Martins ENX, Barreto CCM. Obesidade infantil: influência dos pais sobre a alimentação e estilo de vida dos filhos. *Temas em Saúde.* 2016 [cited 2020 Apr 8];16(2):460-81. Available from: <https://temas.emsaude.com/wp-content/uploads/2016/08/16226.pdf>
4. Mayer APF, Weber LND. Relações entre a obesidade na infância e adolescência e a percepção de práticas de alimentação e estilos educativos parentais. *Psicol Argum.* 2017 Nov;32(79):143-53. DOI: 10.7213/psicol.argum.32.S01.AO13
5. Coelho C, Afonso L, Oliveira A. Práticas parentais de controlo alimentar: relação com o peso da criança. *Acta Port Nutr.* 2017;9:6-11. DOI: <http://dx.doi.org/10.21011/apn.2017.0902>
6. Shloim N, Edelson LR, Martin N, Hetherington MM. Parenting Styles, Feeding Styles, Feeding Practices, and Weight Status in 4-12 Year-Old Children: A Systematic Review of the Literature. *Front Psychol.* 2015 Dec;6:1849. DOI: 10.3389/fpsyg.2015.01849
7. World Health Organization. Physical Status: the study and interpretation of anthropometry. WHO Technical Report Series n. 854 [Internet]. Geneva (CHE); 1995 [cited 2020 Apr 8]. Available from: http://www.who.int/childgrowth/publications/physical_status/en/
8. World Health Organization. Child growth standards 2006, 2007 [Internet]. Geneva (CHE); 2007 [cited 2013 Nov 1]. Available from: <http://www.who.int/childgrowth/en/>
9. Birch LL, Fischer JO, Grimm-Thomas K, Markey CN, Sawyer R, Johnson SL. Confirmatory factor analysis of the Child Feeding Questionnaire: a measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite.* 2001 Jun;36(3):201-10. DOI: 10.1006/appe.2001.0398
10. Cruz ISM. O uso de um questionário de alimentação para o estudo de atitudes, crenças e práticas dos pais em relação a alimentação e propensão a obesidade [dissertação]. Ribeirão Preto (SP): Universidade de São Paulo; 2009.

11. Canuto PJ, Medeiros CCM, Vianna RPT, Olinda RA, Palmeira PA, Carvalho DF. Associação entre o ambiente obesogênico e a ocorrência de sobrepeso/obesidade em adolescentes escolares. *RSD [Internet]*. 2020 [cited 2022 Mar 7];9(9):e229996984. Available from: <https://rsdjournal.org/index.php/rsd/article/view/6984>
12. Melo KM, Cruz ACP, Brito MFSF, Pinho L. Influência do comportamento dos pais durante a refeição e sobrepeso na infância. *Esc Anna Nery*. 2017;21(4):e20170102. DOI: <https://doi.org/10.1590/2177-9465-ean-2017-0102>
13. Moreira I, Severo M, Oliveira A, Durão C, Moreira P, Barros H, et al. Social and health behavioural determinants of maternal child-feeding patterns in preschool-aged children. *Matern Child Nutr*. 2016;12(2):314-25. DOI: 10.1111/mcn.12132
14. Instituto Brasileiro de Geografia e Estatística. Coordenação de População e Indicadores Sociais. PeNSE – Pesquisa Nacional de Saúde do Escolar [Internet]. Rio de Janeiro; 2016 [cited 2018 Nov 19]. Available from: <https://www.ibge.gov.br/estatisticas/sociais/educacao/9134-pesquisa-nacional-de-saude-do-escolar.html?=&t=o-que-e>
15. Maia EG, Silva LES, Santos MAS, Barufaldi LA, Silva SU, Claro RM. Padrões alimentares, características sociodemográficas e comportamentais entre adolescentes brasileiros. *Rev Bras Epidemiol*. 2018;21(Suppl 1):e180009. DOI: <https://doi.org/10.1590/1980-549720180009.supl.1>
16. Silva RCR, Fiaccone RL, Machado MEPC, Ruiz AS, Barreto ML, Santana MLP. Body image dissatisfaction and dietary patterns according to nutritional status in adolescents. *J Pediatr*. 2018;94(2):155-61. DOI: <https://doi.org/10.1016/j.jped.2017.05.005>
17. D'Avila GL, Müller RL, Gonzalez PS, Vasconcelos FAG. The association between nutritional status of the mother and the frequency and location of and company during meals and overweight/obesity among adolescents in the city of Florianópolis, Brazil. *Rev Bras Saúde Mater Infant*. 2015;15(3):289-99. DOI: 10.1590/S1519-38292015000300004
18. Shafaghi K, Shariff ZM, Taib MN, Rahman HA, Mobarhan MG, Jabbari H. Parental body mass index is associated with adolescent overweight and obesity in Mashhad, Iran. *Asia Pac J Clin Nutr*. 2014;23(2):225-31. DOI: 10.6133/apjcn.2014.23.2.11
19. Fernandes RA, Christofaro DGD, Cardoso JR, Ronque ERV, Freitas Júnior IF, Kawaguti SS, et al. Socioeconomic status as determinant of risk factors for overweight in adolescents. *Ciênc saúde coletiva*. 2011;16(10):4051-7. DOI: <https://doi.org/10.1590/S1413-81232011001100010>
20. Derks IP, Tiemeier H, Sijbrands EJ, Nicholson JM, Voortman T, Verhulst FC, et al. Testing the direction of effects between child body composition and restrictive feeding practices: results from a population-based cohort. *Am J Clin Nutr*. 2017;106(3):783-90. DOI: 10.3945/ajcn.117.156448
21. Castro JAC, Nunes HEG, Silva DAS. Prevalence of abdominal obesity in adolescents: association between sociodemographic factors and lifestyle. *Rev Paul Pediatr*. 2016;34(3):343-51. DOI: 10.1016/j.rpped.2016.01.003
22. Afonso L, Lopes C, Severo M, Santos S, Real H, Durão C, et al. Bidirectional association between parental child-feeding practices and body mass index at 4 and 7 y of age. *Am J Clin Nutr*. 2016;103(3):861-7. DOI: 10.3945/ajcn.115.120824
23. Antunes NJ. Obesidade infantil: vivências familiares relativas ao processo de aconselhamento nutricional [dissertação]. São Paulo: Universidade de São Paulo; 2018.
24. Rodrigues HCA. Influência da prática educativa parental na alimentação e do ambiente obesogênico no excesso de peso na infância [dissertação]. Recife: Universidade Federal de Pernambuco; 2016.
25. Tschann JM, Martinez SM, Penilla C, Gregorich SE, Pasch LA, Groat CL, et al. Parental feeding practices and child weight status in Mexican American families: a longitudinal analysis. *Int J Behav Nutr Phys Act*. 2015;12:66. DOI: 10.1186/s12966-015-0224-2
26. Conde WL, Mazzeti CMS, Silva JC, Santos IKS, Santos AMR. Estado nutricional de escolares

adolescentes no Brasil: a Pesquisa Nacional
de Saúde dos Escolares 2015. Rev bras
epidemiol. 2018;21(Supl 1):e180008. DOI: [https://
doi.org/10.1590/1980-549720180008.supl.1](https://doi.org/10.1590/1980-549720180008.supl.1)

Received: September 19, 2021

Approved: February 15, 2022

Published: April 4, 2022



The *Revista Baiana de Enfermagem* use the Creative Commons license – Attribution -NonComercial 4.0 International.
<https://creativecommons.org/licenses/by-nc/4.0/>

This article is an Open Access distributed under the terms of the Creative Commons (CC BY-NC).
This license lets others remix, adapt and create upon your work to non-commercial use, and although new works
must give its due credit and can not be for comercial purposes, the users do not have to license such derivative
works under the same terms.