



**Characterization of childhood obesity in children treated at a health center in the city of Cabo Frio: a contribution to pediatric care**

*Caracterización de la obesidad infantil en niños atendidos en un centro de salud de la ciudad de Cabo Frio: un aporte a la atención pediátrica*

*Caracterização da obesidade infantil de crianças atendidas em um centro de saúde no município de Cabo Frio: uma contribuição para assistência em pediatria*

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## Abstract

The aim was to characterize the profile of childhood obesity in children with this condition treated at a health center in the municipality of Cabo Frio. This is a descriptive, documentary study with a quantitative approach. The scenario was a Health Center, located in Cabo Frio, a reference for monitoring children diagnosed with overweight and obesity. The study was carried out by searching the medical records of obese and overweight children treated at this institution. 57.1% of the children were male and 42.9% were female. The most attended age was 10 years (25%). The highest BMI index among females is understood at the age of 9 years, and among males, at 12 years. There was only one classification of overweight in females and a classification between obesity and severe obesity in both sexes, with severe obesity being more frequent in males. Most of the children attended were classified (57%) as having severe obesity. The findings reinforce the need for the development and implementation of strategies and public policies aimed at the prevention, promotion and early treatment of childhood obesity. For this, investments are needed in health programs focused on this reality.

**Descriptors:** Pediatric Obesity; Overweight; Pediatric Nursing; Ergonomics; Child Nutrition Disorders.

### Como citar este artigo:

Costa TCG, Cerqueira LCN, Duque CS, Teixeira PC, Oliveira PP, Koeppel GBO. Characterization of childhood obesity in children treated at a health center in the city of Cabo Frio: a contribution to pediatric care. Glob Clin Res. 2022;2(1):e15.

Chief Editor: Caroliny dos Santos Guimarães da Fonseca

Executive Editor: Kátia dos Santos Armada de Oliveira

Submission: 11-03-2021

Approval: 11-29-2021



## Resumén

El objetivo fue caracterizar el perfil de obesidad infantil en niños con esta condición atendidos en un centro de salud del municipio de Cabo Frio. Se trata de un estudio descriptivo, documental, con enfoque cuantitativo. El escenario fue un Centro de Salud, ubicado en Cabo Frio, referente para el seguimiento de niños diagnosticados con sobrepeso y obesidad. El estudio se realizó a partir de la búsqueda en las historias clínicas de niños obesos y con sobrepeso atendidos en esta institución. El 57,1% de los niños eran varones y el 42,9% mujeres. La edad más atendida fue la de 10 años (25%). El mayor índice de IMC entre las mujeres se entiende a la edad de 9 años, y entre los hombres, a los 12 años. Solo hubo una clasificación de sobrepeso en el sexo femenino y una clasificación entre obesidad y obesidad severa en ambos sexos, siendo más frecuente la obesidad severa en el sexo masculino. La mayoría de los niños atendidos fueron clasificados (57%) con obesidad severa. Los hallazgos refuerzan la necesidad del desarrollo e implementación de estrategias y políticas públicas dirigidas a la prevención, promoción y tratamiento temprano de la obesidad infantil. Para ello, se necesitan inversiones en programas de salud enfocados en esta realidad.

**Descriptor:** Obesidad Pediátrica; Sobrepeso; Pediatric Nursing; Ergonomía; Trastornos de la Nutrición del Niño.

## Resumo

Objetivou-se caracterizar o perfil da obesidade infantil de crianças portadoras desta condição atendidas em um centro de saúde no município de Cabo Frio. Trata-se de um estudo descritivo, documental com abordagem quantitativa. O cenário foi um Centro de Saúde, localizado em Cabo Frio, referência para o acompanhamento de crianças com diagnóstico de sobrepeso e obesidade. O estudo se deu pela busca em prontuários de crianças com obesidade e sobrepeso atendidas nesta instituição. 57.1% das crianças eram do sexo masculino e 42.9% do sexo feminino. A idade mais atendida foi 10 anos (25%). O maior índice de IMC entre o sexo feminino está compreendido na idade de 9 anos, e entre o sexo masculino, de 12 anos. Houve apenas uma classificação de sobrepeso, no sexo feminino e a classificação entre obesidade e obesidade grave em ambos os sexos, sendo a obesidade grave mais frequente no sexo masculino. A maior parte das crianças atendidas foram classificadas (57%) com quadro de obesidade grave. Os achados reforçam a necessidade da elaboração e implementação de estratégias e políticas públicas voltadas para prevenção, promoção e tratamento precoce da obesidade infantil. Para isso, são necessários investimentos em programas de saúde com foco nesta realidade.

**Descritores:** Obesidade Pediátrica; Sobrepeso; Enfermagem Pediátrica; Ergonomia; Transtornos da Nutrição Infantil.

## Introduction

Obesity is considered a chronic non-communicable pathology of multifactorial etiology, which can be caused by intrinsic factors (genetic and hormonal) or extrinsic factors (environmental and behavioral), becoming a global epidemic<sup>1,2</sup>.

The Ministry of Health (MS) considers a child to be an individual up to 9 years of age and an adolescent to be between 10 and 19 years of age. Obesity has been growing lately among the population, including children and adolescents, impacting the morbidity rates associated with weight gain<sup>3,4</sup>.

The most recent report by the Brazilian Institute of Geographical and Statistics (IBGE) points out that 15% of the Brazilian pediatric population is overweight or obese, with the highest prevalence found in children from families with higher purchasing power. Data from the Brazilian Association for the Study of Obesity and Metabolic Syndrome (ABESO) show that the Southeast region has an estimated 38.8% of overweight children between 5 and 9 years old, representing the highest percentage of the Brazilian population. The North region has the lowest percentage, with a figure of 25.65%. For individuals between 10 and 19 years old, the South region has the highest percentage, with 24.6%, and the lowest number is found in the Northeast region with 16.6% of cases of excess weight<sup>5,6</sup>.

In Brazil, the diagnosis of obesity in children is based on the variables weight and height, calculating the body mass index (BMI). The calculation is given by weight in kilograms divided by height in meters squared related to age (0 to 19 years) and sex. This data is used in the BMI curve graph with Z score parameter or in the percentile graph.

According to the World Health Organization (WHO), which is still used as a reference for classification of nutritional status since 2006, overweight is considered to be the reference " $\geq +1$  and  $< +2$ ", obesity " $\geq +2$  and  $< +3$ " and severe obesity the value " $\geq +3$ " in the BMI Z-score. Hard technology can also be used to more accurately diagnose body composition, but its high cost does not make it accessible to all economic classes<sup>1,7</sup>.

Some predisposing factors for childhood obesity are already recognized, such as: high maternal BMI during pregnancy, women undergoing bariatric surgery and obese parents can generate children with a tendency to obesity, prematurity, large or small baby for gestational age, exclusive breastfeeding for less than 6 months, introduction of food before 6 months and after if introduced improperly; screen exposure time (cell phone, computer, electronic games, television) for more than two hours/day; sedentary lifestyle; inadequate nutrition; practice of eating quickly; obesogenic environment; cultural issues; hypothyroidism;



Down's syndrome; Turner syndrome; and use of certain medications, such as corticosteroids<sup>1,2,8-13</sup>.

Overweight and obesity can cause important comorbidities, such as: Diabetes mellitus, cholesterolemia, atherosclerosis, eating disorder, metabolic syndrome, cardiovascular, pulmonary, hepatic, dermatological, genitourinary, gastrointestinal diseases, damage to the nervous system, skeletal changes<sup>1,2,13</sup>.

The prevention of overweight and obesity in children is of paramount importance, as it is very likely that an obese child will remain obese into adulthood. Considering that today's children will be tomorrow's adults, if there is no prevention, there will be more expenses to the public coffers. In this way, it is necessary to invest in education that enables the formation of young people and adults with healthy eating habits, reducing the rate of diseases linked to obesity<sup>1</sup>.

The monitoring of child growth and development must be done carefully by the health professional, being recorded in the child's health book and in his/her medical record. There must also be health promotion strategies, providing guidelines relevant to the food process, preventable diseases and a good quality of life<sup>14,15</sup>.

The importance of knowledge about childhood obesity is indisputable and epidemiological investigations on this topic can indicate risk factors, directing health actions. As pointed out earlier, the reality about obesity is worrying, where today's obese children refer to future sick adults, leading to an increase in public spending and a decrease in their survival. In order to alleviate this condition, epidemiological studies can favor the development of interventionist strategies, which result in the reversal of the current situation experienced<sup>16</sup>.

In this context, understanding the characteristics related to childhood obesity in a given population can support directive and effective actions in the fight against overweight and childhood obesity in this reality.

Given the above, this study aimed to characterize the profile of childhood obesity in children with this condition treated at a health center in the municipality of Cabo Frio.

## Methodology

This is a descriptive, documentary study with a quantitative approach. The descriptive study tries to describe the characteristics of a certain population or phenomenon. The documentary study deals with matters that have not yet received analytical treatment, where they can be used according to the research objectives. The quantitative approach comprises collecting data to establish standards and prove theories<sup>17</sup>.

The study setting was a Health Center, located in the municipality of Cabo Frio, in the state of Rio de Janeiro, considered a reference for the follow-up of children aged 0 to 12 years with a clinical diagnosis of overweight and obesity.

The study was carried out by searching medical records for data regarding the obesity condition of children treated at this institution. The criteria for searching the medical records were: children under follow-up at the unit in the age group from 0 to 12 years old, classified as overweight or obese, according to the anthropometric data guidelines defined by the World Health Organization. The medical records of people aged  $\geq 12$  years who were not diagnosed with obesity were excluded from the search. It is worth mentioning that children diagnosed with overweight were included in the search because this condition is directly linked to obesity, according to the Ministry of Health.

The data collection stage took place between the months of September and October 2018 and took place in two moments. First, the maps of care, diary of consultations from January to August 2018, were retrospectively analyzed in order to find the record of children with a clinical diagnosis of overweight and obesity. After this analysis, the number of children found with such a diagnosis was 35.

In the second moment, there was access to the medical records of the 35 cases mentioned above and after evaluation, 7 records were excluded from the search because they did not fit the previously defined inclusion criteria. Thus, the sample for analysis consisted of a total of 28 medical records, which were evaluated using a semi-structured script prepared for this purpose. It is worth mentioning that many of the data previously planned in such an instrument were not obtained due to the lack of information in the medical records.

The collected data were tabulated in a Microsoft Excel spreadsheet that provided the construction of tables allowing a descriptive statistical analysis.

The research was approved by the Ethics and Research Committee of Veiga de Almeida University, under the substantiated opinion No. 2,898,974, of September 17, 2018.

## Results and Discussion

As already pointed out, the sample consisted of 28 medical records of children aged 0 to 12 years with overweight or childhood obesity.

Among the 28 consultations, 57.1% were male and 42.9% female. The most attended age was 10 years old (25%), followed by 11 years old (21.5%). During the period, male children aged 0 to 6 years were not attended, as well as female children aged 0,2,3,5, 7 and 12 years (Table 1).

**Table 1.** Gender distribution by age of children with overweight and childhood obesity treated at a Health Center. Cabo Frio, RJ, Brazil, 2018

Age (years)	Feminine		Masculine		Total	
	N	%	N	%	N	%
0	-	-	-	-	-	-
1	1	3.6	-	-	1	3.6
2	-	-	-	-	-	-



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3	-	-	-	-	-	-
4	2	7.1	-	-	2	7.1
5	-	-	-	-	-	-
6	2	7.1	-	-	2	7.1
7	-	-	2	7.1	2	7.1
8	1	3.6	3	10.8	4	11.2
9	1	3.6	2	7.1	3	10.8
10	2	7.1	5	17.7	7	25
11	3	10.8	3	10.8	6	21.5
12	-	-	1	3.6	1	3.6
<b>Total</b>	<b>12</b>	<b>42.9</b>	<b>16</b>	<b>57.1</b>	<b>28</b>	<b>100</b>

As verified, most of the population served was male. This data corroborates a research carried out in China, with children between 7 and 18 years of age, where a higher rate of obesity was demonstrated among boys. Regarding age, it is worth mentioning that interventions aimed at the treatment of obesity should be carried out considering the individual's pubertal stage, as this may be a causal factor in weight gain, considering that it is related to hormonal changes<sup>18</sup>.

Children aged between 10 and 11 years are classified as pre-pubertal or pre-adolescence, being verified in this study, as the ages with the highest incidence among the consultations. This finding refers to the reality that people aged between 2 and 6 years who are overweight or obese will have a 1.4 times greater risk of their high BMI remaining in adolescence compared to children with an adequate BMI. Studies emphasize that birth weight has a strong influence during growth, but that at the age of 2 years with a higher-than-expected BMI, the child will be overweight or obese at age 8, thus making this period prior to the onset of this disease, the ideal for intervention<sup>19,20</sup>.

Research carried out in Iran, which is considered a developing country like Brazil, showed that the variation in BMI in children aged 4 to 6 years is mostly male. In addition, the investigation also pointed out that such variation is related to unhealthy lifestyle habits, such as unbalanced diet and non-adherence to physical activities<sup>21</sup>.

A study carried out in Curitiba with overweight or obese adolescents aged 11 to 18 years also pointed to the male gender as the most prevalent, highlighting the lack of physical activity and sedentary lifestyle as factors associated with increased child weight. The same study pointed out that triggering factors in boys can be associated with increased waist circumference, higher levels of total cholesterol and

triglycerides, while in girls, such factors were associated only with an elevated level of total cholesterol<sup>22</sup>.

Research carried out in the cities of Campinas and São Paulo with overweight children aged 2 to 8 years indicates a predominance of males among the sample and emphasizes that most parents underestimate their children's overweight, obesity and severe obesity. No relationship was found between children's weight gain and maternal education level, but it was observed that overweight and obese and older mothers are more likely to underestimate their child's weight status<sup>23</sup>.

Research carried out based on a national survey showed that birth weight and BMI of obese mothers prove to be contributing factors to the development of overweight among the pediatric population. The same survey reported that exclusive breastfeeding for less than 6 months is more associated with overweight in boys, while socioeconomic status and maternal marital status are linked to overweight in girls<sup>24</sup>.

The data extracted from these investigations mentioned above allow an overview of the circumstances that lead to childhood overweight and obesity, especially among boys. Unhealthy lifestyle habits, family customs and insufficient breastfeeding represent such circumstances.

As for the anthropometric characteristics of the 28 children treated, it was found that the highest BMI index among females is understood at the age of 9 years, and among males, at the age of 12 years. The average BMI between ages allowed the general classification of the nutritional status of the children assisted. There was only one classification of overweight in females and a classification between obesity and severe obesity in both sexes, with severe obesity being more frequent in males (Table 2).

**Table 2.** Anthropometric characteristics and nutritional classification, according to gender and age, of children with overweight and childhood obesity treated at a Health Center. Cabo Frio, RJ, Brazil, 2018

Age (years)	Weight (Kg) average	Height (m) average	BMI (Kg/m <sup>2</sup> ) Average	Nutritional classification
<b>WOMEN</b>				
1	11.7	0.73	21.95	Overweight
4	24.3	1.07	21.26	Obesity
6	29.9	1.26	23.45	Severe obesity
8	59	1.49	26.58	Severe obesity



9	52.4	1.36	28.33	Obesity
10	47.3	1.44	23.42	Obesity
11	58.3	1.46	26.19	Obesity
<b>MEN</b>				
7	48.85	1.29	28.42	Severe obesity
8	41.96	1.14	28.93	Severe obesity
9	47.7	1.36	25.90	Severe obesity
10	59.1	1.34	29.49	Severe obesity
11	67.8	1.56	27.55	Obesity
12	86	1.61	32.97	Severe obesity

The nutritional classification of this study differs from a survey carried out with 1082 schoolchildren in Florianópolis-SC, which showed a higher prevalence of children classified as overweight, followed by obesity and only a small number with severe obesity. This information raises a concern about the childhood obesity situation in the city, since obesity in childhood and adolescence is associated with adverse consequences for health throughout life. The higher the degree of childhood obesity, the greater the risks of associated comorbidities, such as cardiometabolic diseases, dyslipidemia, and greater probability of mortality in adulthood<sup>25-28</sup>.

As previously mentioned, there are many factors that can trigger weight gain among children. Among them is the underestimation of this condition by parents and guardians, since in order for there to be adherence to some practices, such as healthy eating and physical activity, parents need to realize that their children need to lose weight.

Corroborating this, a survey showed that in a population of 161 overweight or obese children, 98.8% of parents underestimated the nutritional status of their children, showing that such an underestimation represents a significant risk factor for the development or persistence of childhood obesity<sup>29</sup>.

Still on this subject, North American studies concluded that 80.0% of parents have difficulty realizing that their child is obese. This child also has an obese parent, which is considered a contributing factor in the offspring's overweight<sup>30,31</sup>.

Considering that the number of children with obesity has grown among the population, it is common to make high weight a strophic body pattern. Therefore, many parents tend not to recognize their children's weight gain due to comparisons with other children of the same age, who are also overweight<sup>32</sup>.

The standards imposed by society that one should be thin and that it is dishonorable to be obese are also obstacles to understanding and acceptance by parents. Therefore, it is essential to clarify to families that obesity is a disease that needs to be prevented, investigated and treated, encouraging them to fight this disease in their

children<sup>33</sup>. In addition to the aspects of acceptance of obesity related to a compromised body image, economic and cultural differences also exert a strong influence on this aspect<sup>34</sup>.

Regarding dietary restrictions as a way of combating obesity, it should be made clear that it must be done under professional guidance, since it has already been pointed out that inadequate food restriction can generate some type of eating disorder and even increase preference. by ultra processed products, which are responsible for weight gain. For this reason, parents should always be instructed on the importance of professional monitoring, being informed about the risks and consequences related to overweight and obesity<sup>35,36</sup>.

Corroborating the above argument, a study carried out in Brazil with schoolchildren defined that parents' excess weight, breastfeeding for a period greater than or equal to 6 months, rapid chewing and a sedentary lifestyle are risk factors for the development of overweight and obesity. In this context, actions focused on these aspects must be thought and practiced in the most varied sectors of health care<sup>37</sup>.

In general, the 28 children assisted in the period were classified in greater number (57%) with severe obesity (Graph 1).

When considering severe obesity in this study, the percentage of children who fit this classification becomes worrying, as shown in the graph.

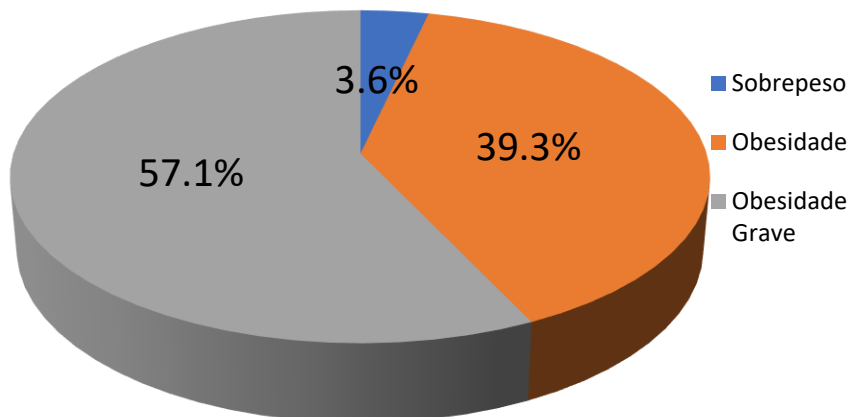
In recent years, rates of overweight, obesity, and severe obesity have increased in the population aged 2 to 19 years, making childhood obesity a focus of public health efforts for policy decisions and future research<sup>38</sup>.

There are numerous possible metabolic complications among obese children, especially cardiovascular ones. As already mentioned, the higher the level of obesity, the greater the likelihood of adverse effects. For this reason, the correct and precise classification is essential to prevent the evolution of the picture. On this subject, reflections have been raised regarding the establishment of an individualized risk stratification approach, which is based not only on simple BMI cut-off values, but also on complications presented by each child<sup>39</sup>.



It is also worth mentioning that the nurse, as a health professional who represents a strong bond between the assisted clientele and the team, has an indispensable role in risk stratification, in the approach and in the

**Graph 1.** Distribution of the nutritional classification of children with overweight and childhood obesity treated at a Health Center. Cabo Frio, RJ, Brazil, 2018



## Conclusion

The study reached the proposed objective, allowing to trace the profile of obesity among the studied clientele. It was shown that most of the children evaluated are male, between 10 and 11 years old and most of them are classified as severely obese.

In view of the results obtained, it was also possible to perceive that the condition of overweight and obesity is present in children from 1 year of age and that it remains and worsens over the years.

This finding reinforces the need for the elaboration and implementation of strategies and public policies aimed at the prevention, promotion and early treatment of childhood obesity. For this, investments are needed in health programs focused on this reality.

Nurses represent powerful contributors to actions to prevent childhood obesity, as they are at the forefront of patient care, which makes it possible to guide those

responsible for the child on the importance of combating overweight and obesity. The information provided by this professional to the child and their families must be based on knowledge about the quality of food, sleep pattern, physical activity and favoring a healthy lifestyle and environment.

In addition, it is essential that all professionals responsible for evaluating these children be trained, so that they recognize the accuracy of the techniques involved in this process. It is also important that they have scientific knowledge to carry out interventions for quality care, which is focused not only on curative but also preventive aspects.

The limitation of this study was the lack of information among the medical records, which proved to be incipient.

That this study be the promotion of an investigation that relates the anthropometric data found with the eating habits and way of life of the population studied.

## References

1. Associação Brasileira para o Estudo da Obesidade e da Síndrome Metabólica (ABESO). Diretrizes brasileiras de obesidade [Internet]. São Paulo (SP): ABESO; 2016 [acesso em 8 abr 2018]. Disponível em: <https://abeso.org.br/wp-content/uploads/2019/12/Diretrizes-Download-Diretrizes-Brasileiras-de-Obesidade-2016.pdf>
2. Sociedade Brasileira de Pediatria (SBP). Departamento científico de Nutrologia. Obesidade na infância e adolescência: manual de orientação [Internet]. Porto Alegre (RS): SBP; 2018 [acesso em 20 mar 2018]. Disponível em: <https://www.sbp.com.br/imprensa/detalhe/nid/manual-de-orientacao-sobre-obesidade-na-infancia-e-adolescencia-esta-disponivel-para-os-associados-da-sbp/>
3. Ministério da saúde (MS). Atenção Psicossocial a criança e adolescente no SUS: Tecendo redes para garantir direitos [Internet]. Brasília (DF): MS; 2013. [acesso em 20 mar 2018]. Disponível em: [https://bvsm.sau.gov.br/bvs/publicacoes/atencao\\_psicossocial\\_crianças\\_adolescentes\\_sus.pdf](https://bvsm.sau.gov.br/bvs/publicacoes/atencao_psicossocial_crianças_adolescentes_sus.pdf)
4. Victorino SVZ, Soares LG, Marcon SS, Higarashi IH. Viver com obesidade infantil: a experiência de crianças inscritas em programa de acompanhamento multidisciplinar. Rev. Rene. 2014;15(6):980-9. DOI: 10.15253/2175-6783.2014000600011



5. Instituto Brasileiro de Geografia e Estatística (IBGE). Pesquisa de Orçamentos Familiares (POF) 2008-2009. antropometria e estado nutricional de crianças, adolescentes e adultos no Brasil [Internet]. Rio de Janeiro (RJ): IBGE; 2010 [acesso em 17 mar 2018]. Disponível em: <https://biblioteca.ibge.gov.br/visualizacao/livros/liv45419.pdf>
6. Associação Brasileira para o estudo da Obesidade e da Síndrome Metabólica (ABESO). Mapa da obesidade [Internet]. Brasília (DF): ABESO; 2018 [acesso em 22 fev 2018]. Disponível em: <https://abeso.org.br/obesidade-e-sindrome-metabolica/mapa-da-obesidade/>
7. World Health Organization(WHO). Guideline Assessing and managing children at primary health-care facilities to prevent overweight and obesity in the context of the double burden of malnutrition.[Internet] Brasília (DF):WHO; 2017 [acesso em 05 mar 2018]. Disponível em: <http://apps.who.int/iris/bitstream/handle/10665/259133/9789241550123-eng.pdf;jsessionid=FD4184F84DE7CC3ECBFDABE04DFC950D?sequence=1>
8. Agência Nacional de Saúde Suplementar (ANSS). Manual de diretrizes para o enfrentamento da obesidade na saúde suplementar brasileira [Internet]. Rio de Janeiro (RJ): ANS; 2017[acesso em 05 mar 2018]. Disponível em: [http://www.ans.gov.br/images/Manual\\_de\\_Diretrizes\\_para\\_o\\_Enfrentamento\\_da\\_Obesidade\\_na\\_Sa%C3%BAde\\_Suplementar\\_Brasileira.pdf](http://www.ans.gov.br/images/Manual_de_Diretrizes_para_o_Enfrentamento_da_Obesidade_na_Sa%C3%BAde_Suplementar_Brasileira.pdf)
9. Gonzalez PS, Retondario A, Bricarello LP, González-Chica DA, Silva DS, Vasconcelos FAG. Aleitamento materno exclusivo, alimentação complementar e associação com excesso de gordura corporal em escolares de Florianópolis, SC, Brasil. Rev. Bras. Saúde Matern. Infant. 2017;17(1):127-137. DOI: 10.1590/1806-93042017000100007
10. Büşra D, Denise HMH, Olta G, Rashindra M, Berkeveld MA, Eline MVB, et al. General and abdominal fat outcomes in school-age children associated with infant breastfeeding patterns. Am J Clin Nutr. 2014;99:1351–8. DOI: 10.3945/ajcn.113.075937
11. Braude I, Stevenson RJ. Assistir televisão enquanto se come aumenta a ingestão de energia. Examinando os mecanismos em participantes do sexo feminino. Appetite. 2014;(76):9-16. DOI: 10.1016/j.appet.2014.01.005
12. Mariz LS, Enders BC, Santos VEP, Tourinho FSV, Vieira CENK. Causas de obesidade infantojuvenil: Reflexões segundo a teoria de Hannah Arendt.Texto contexto - enferm. 2015;24(3):891-7. DOI: 10.1590/0104-07072015002660014
13. Rangel HD. Ações de saúde para redução do sobrepeso e obesidade infantil na área de abrangência do programa de saúde da família Brumal, Município de Santa Bárbara [Monografia]. Curso de especialização em Atenção Básica em Saúde da Família [Internet]. Minas Gerais; 2015 acesso em 07 mar 2018]. Disponível em: [https://www.nescon.medicina.ufmg.br/biblioteca/imagem/Ações\\_de\\_saude\\_para\\_redução\\_do\\_sobrepeso\\_e\\_obesidade.pdf](https://www.nescon.medicina.ufmg.br/biblioteca/imagem/Ações_de_saude_para_redução_do_sobrepeso_e_obesidade.pdf)
14. Brevidelli MM, Coutinho RMC, Costa LFF, Costa LC. Prevalência e fatores associados ao sobrepeso e obesidade entre adolescentes de uma escola pública. Rev. Bras. Prom. Saúde. 2015;28(3). DOI: 10.5020/18061230.2015.p379
15. Ministério da Saúde (BR). Caderneta de saúde da criança [Internet]. Brasília (DF): MS; 2013 [acesso em 05 mai 2018]. Disponível em: [http://bvsmis.saude.gov.br/bvs/publicacoes/caderneta\\_saude\\_crianca\\_menino.pdf](http://bvsmis.saude.gov.br/bvs/publicacoes/caderneta_saude_crianca_menino.pdf)
16. Rodrigues LG, Pombo N, Koifman S. Prevalencia de alterações metabólicas em crianças e adolescentes com sobrepeso e obesidade: uma revisão sistemática. Rev.paul.pediatr. 2011;29(2). DOI: 10.1590/S0103-05822011000200021
17. Sampieri RH, Collado CF, Lucio M-Pilar B. Metodologia de pesquisa. 5ª Edição. Porto Alegre: Penso; 2013
18. Dong Y, Zou Z, Yang Z, Wang Z, Yang Y, Ma J, et al. Prevalence of excess body weight and underweight among 26 Chinese ethnic minority children and adolescents in 2014: a cross-sectional observational study. BMC Public Health. 2018;18:562. DOI: 10.1186/s12889-018-5352-6
19. Geserick M, Vogel M, Gausche R, Lipek T, Spielau U, Keller E. Acceleration of BMI in Early Childhood and Risk of Sustained Obesity. N Engl J Med. 2018;379:1303-1312 . DOI: 10.1056/NEJMoa1803527
20. Glavin, K, Roelants M, Strand BH, Júlíusson PB, Mentira KK, Helseth, S et al. Important periods of weight development in childhood: a population-based longitudinal study. BMC Public Health [internet]. 2014 [acesso em 02 nov 2018];14:160. Disponível em: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-14-160>
21. NejadSadeghi E, Sadeghi R, Shojaeizadeh D, Yekaninejad MS, Djazayeri A, Majlesi F. Influence of lifestyle factors on Body Mass Index in preschoolers in Behbahan city, southwest Iran, 2016. Electronic Physician. 2018;10(4):6725-6732. DOI: 10.19082/6725
22. Ulbricht L, Campos MF, Esmanhoto E, Ripka WL. Prevalence of excessive body fat among adolescents of a south Brazilian metropolitan region and State capital, associated risk factors, and consequences. BMC Public Health. 2018;18:312. DOI: 10.1186/s12889-018-5216-0
23. Warkentin S, Mais LA, Latorre MRDO, Carnell S, Taddei JAAC. Factors associated with parental underestimation of child's weight status. J Pediatr. 2018;94(2):162-169. DOI: 10.1016/j.jpeds.2017.05.010
24. Meller FO, Araújo CLP, Madruga SW. Fatores associados ao excesso de peso em crianças brasileiras menores de cinco anos. Ciênc. Saúde Colet. 2014;19(3):943-955. DOI: 10.1590/1413-81232014193.01552013
25. Cardoso LP. Pressão arterial, crescimento alcançado e estado nutricional de crianças de seis e dez anos de idade de escolas públicas de Florianópolis, Santa Catarina [Tese]. Faculdade de Saúde Pública. São Paulo; 2014. DOI: 10.11606/T.6.2014.tde-18082014-083052
26. Skinner CA, Perrin ME, Moss AL, Skelton AJ. Cardiometabolic risks and severity of obesity in children and young adults. N Engl J Med. 2015;373:1307-1317. DOI: 10.1056/NEJMoa1502821
27. Lima CCM, Romaldini CC, Romaldini HJ. Frequência de obesidade e fatores de risco relacionados em escolares e adolescentes em uma comunidade de baixa renda. Um estudo transversal. São Paulo Med. J. 2015;133(2):125-130. DOI: 10.1590/1516-3180.2014.8960412
28. Gómez LA, Abdeen AZ, Hamid AZ, Rmeileh NMA, Cazares BA, Acuin C, et al. Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. Lancet [internet]. 2017 [acesso em 10 out 2018];390:2627–42 . Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5735219/pdf/main.pdf>
29. Caraza KLC, Ita JR, Guzmán JS, Aguirre JGS, Montealvo DCA, Barrios VMM. Altered perception of the nutritional status of preschoolers by their parents: A risk factor for overweight and obesity. Arch Argent Pediatr [internet]. 2016 [acesso em 19 nov 2018];114(3):237-242. Disponível em: <https://www.sap.org.ar/docs/publicaciones/archivosarg/2016/v114n3a08e.pdf>
30. Freitas TPDA, Silva LLS, Teles GS, Peixoto MRG, Menezes IHCF. Fatores associados à subestimação materna do peso da criança: um estudo de base populacional. Rev. Nutr. 2015;28(4):397-407. DOI: 10.1590/1415-52732015000400006



31. McKee C, Long L, Southward LH, Walker B, McCown J. The Role of Parental Misperception of Child's Body Weight in Childhood Obesity. *J Pediatr Nurs*. 2016;31(2):196-203. DOI: 10.1016/j.pedn.2015.10.003
32. Duncan TD, Hansen AR, Wang W, YAN F, Zhang J. Change in Misperception of Child's Body Weight among Parents of American Preschool Children. *Child Obes*. 2015;11(4):384-393. DOI: 10.1089/chi.2014.0104
33. Hansen AR, Duncan DT, Tarasenko YN, Yan F, Zhang J. Generational Shift in Parental Perceptions of Overweight Among School-Aged Children. *Pediatrics*. 2014;134(3):481-488. DOI: 10.1542/peds.2014-0012
34. Rietmeijer-Mentink M, Paulis WD, Middelkoop MV, Bindels PJ, Wouden JCV. Difference between parental perception and actual weight status of children: A systematic review. *Matern Child Nutr*. 2013;9(1):3-22. DOI: 10.1111/j.1740-8709.2012.00462.x
35. Freitas FR, Moraes DE, Warkentin S, Mais LA, Ivers JF, Taddei JA. Maternal restrictive feeding practices for child weight control and associated characteristics. *J Pediatr*. 2018;95(2). DOI: 10.1016/j.jpeds.2017.12.009
36. Ek A, Sorjonen K, Eli K, Lindberg L, Nyman J, Marcus C, et al. Associations between Parental Concerns about Preschoolers' Weight and Eating and Parental Feeding Practices: Results from Analyses of the Child Eating Behavior Questionnaire, the Child Feeding Questionnaire, and the Lifestyle Behavior Checklist. *PLOS ONE*. 2016;11(1):e0147257. DOI: 10.1371/journal.pone.0147257
37. Honório RF, Hadler MCCM. Factors associated with obesity in Brazilian children enrolled in the School Health Program: a case-control study. *Nutr. Hosp*. 2014;30(3):526-534. DOI: 10.3305/nh.2014.30.3.7095
38. Skinner AC, Skelton JÁ. Prevalence and Trends in Obesity and Severe Obesity Among Children in the United States, 1999-2012. *JAMA Pediatr*. 2014;168(6):561-566. DOI: 10.1001/jamapediatrics.2014.21
39. Zabarsk G, Beek C, Hagman E, Pierpont B, Caprio S, Weiss R. Impact of Severe Obesity on Cardiovascular Risk Factors in Youth. *Jour. Pediatr*. 2018;192:105-114. DOI: 10.1016/j.jpeds.2017.09.066
40. Rodrigues MF, Correia TL, Duque CS, Cerqueira LCN, Oliveira PP, Koeppel GBO. Problemas de saúde de crianças de uma escola em Cabo Frio-RJ: uma contribuição para a promoção em saúde. *Glob Acad Nurs*. 2020;1(2):e22. DOI: 10.5935/2675-5602.20200022