

# Nutritional State of Pre-Poveries of Public and Private Education Networks in Jequié, Ba, Brazil

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**Abstract:** ***Introduction:** It is observed that excess body fat in childhood can lead to cardiovascular and metabolic diseases in adult life. **Objective:** In view of this problem, it is imperative not to analyze the nutritional status of prepubescent children in public and private schools in the city of Jequié / BA, Brazil. **Methods:** Cross-sectional, descriptive, uncontrolled study. For this, a primary school of the public (municipal) network and one of the private schools of the urban area of the municipality of Jequié were chosen, being classified separately by sex, age, series and according to the school in which they were enrolled in the school year of 2014. **Results:** A total of 212 students were evaluated, of which 111 were from private schools (52.4%) and 101 from public schools (47.6%). It is noted that overweight and obesity had (51.8%) public and private education networks. The boys obtained (47.3%) overweight and obesity and the girls (59.1%). Regarding the public school system, 38.9% were overweight and obese in the private school system (63.9%). **Conclusions:** In the study, we observed greater overweight among boys and obesity in girls, with ages varying from 8 to 10 years. When compared to public and private education networks, there is greater overweight and obesity in private education networks.*

**Keywords:** obesity; children; body mass index

## 1. Introduction

Excess body fat in childhood can lead to cardiovascular and metabolic diseases in adult life<sup>1</sup>. Being one of the aggravating causes to this public generating overweight and obesity, caused by caloric imbalances in relation to consumption and energy expenditure, result of inadequate eating patterns, such as the intake of high energy foods rich in fat and sedentary lifestyle<sup>2</sup>.

Most chronic diseases are associated with sedentarism, which are manifested in adulthood, as studies have shown that the development of these diseases begins in childhood and adolescence. Authors further point out that the prevalence of sedentary lifestyle is very high, both in developed countries and in middle and low income countries<sup>3</sup>.

According to data on the nutritional status of the Brazilian children population, overweight in the North region ranges from 25% to 30%, and children aged 5 to 9 years in the south, southeast and center-west regions show a difference of 32% to 40% . In the population aged 10 to 19 years, there was a greater discrepancy from 3.7% to 21.7% in boys, and from 7.5% to 19.4% in girls between 1974-1975 and 2008-2009 ).

Overweight and obesity are present in the different economic ranges in Brazil, predominantly in the higher classes. It can be observed that socioeconomic classes influence the occurrence of overweight and obesity, through education, income and occupation, resulting in different behavioral patterns that interfere with caloric intake, energy expenditure and basal metabolic rate<sup>6,7</sup>.

Second<sup>8</sup> compared the prevalence of obesity according to family income among several countries in the 1970s and 1990s. In comparison to this aspect between Brazil and the United States, it observed that in Brazil, as in the United States and Europe, obesity, and one of the associated factors is changes in lifestyle, such as other types of play, which

take more time in front of television and computers, greater difficulty in playing in the street due to lack of safety and inadequate eating habits<sup>8</sup>.

It is noticed that the prevalence of overweight and obesity among schoolchildren in the public and private education network occurs in Brazil. Studies<sup>9</sup> show an analysis of the School Brazil project important and significant data regarding overweight and childhood obesity: there is a prevalence of 15.4% overweight and 7.8% obesity in Brazilian schoolchildren aged 7 to 9 years. However, other studies<sup>10,11</sup> demonstrate a high prevalence of overweight and obesity among students aged 6 to 10 years of public schools in the southern region of Brazil.

According to<sup>12</sup> overweight and obesity in childhood may be indicated by body mass index by age (BMI / age above the 85th percentile and obesity above the 95th percentile, compared to the standard of the National Health and Nutrition Examination Survey (NHANES II- For other authors, it is possible to adopt BMI limits in absolute values by age groups during the growth period, without a considerable impairment of the specificity and sensitivity of the diagnosis.<sup>13</sup> Adoption of regional BMI patterns also has been proposed<sup>14</sup>.

In addition, consequences of overweight and obesity in childhood may be noted acute and chronic changes. Acute changes can be observed through orthopedic disorders, respiratory disorders, diabetes, hypertension and dyslipidemias, in addition to psychosocial disorders. In relation to chronic alterations, mortality related to coronary diseases is reported in adults who were obese during childhood and adolescence<sup>15</sup>.

In view of this problem, the objective of this study was to analyze and compare the nutritional status of prepubescent children in public and private schools in the city of Jequié / BA, Brazil.

## 2. Methods

The present study verified the body mass index (BMI) of schoolchildren of different age groups and genders of the city of Jequié-BA. The sample was divided into two groups, one of public schools and the other of private schools.

The subjects were selected in the public and private education network of Jequié / BA, for a total of 212 students.

A descriptive, uncontrolled cross-sectional study was performed. The adopted procedure follows the norms of ethics in research with human according to resolution nº 251, of 07/08/1997 of the National Council of Health and the resolution nº. 196, dated 10/10/1996, which are the directives and norms regulating research involving human beings, in accordance with the ethical principles contained in the Declaration of Helsinki (1964, reformulated in 1975, 1983, 1989, 1996 and 2000), of the " World Medical Association.

## 3. Participants

The participants were schoolchildren of both genders, aged 8 (eight) to 10 (ten) years, with reference to the Gallahue and Ozmu model, in the transitory stage of the specialized motor phase, prepubescent children <sup>11</sup>. The parents or guardians were clarified about the study and signed the Term of Free Consent and Clarified. For the development of the study the procedures of selection of the sample obeyed a sequence of steps, the intentional non-probabilistic sampling, that could effectively represent the considerable school population.

For this, a (01) primary school of the public (municipal) network and one (01) of the private network school of the urban region of the municipality of Jequié were chosen, being classified separately by sex, age, series and according to the school in which they were enrolled in the 2014 school year.

Among the criteria adopted for the exclusion of some schoolchildren were: (a) refusal to participate in the study; (b) not have parental or guardian authorization; (c) absence to classes on the day scheduled for data collection; and (d) a physical problem that would temporarily or permanently prevent him from achieving weight and height (BMI).

### Body Mass Index Imc and Height.

The measurement of body mass and pre-pubertal height in the public and private schools was carried out using the portable scale, digital lithium scale of the brand Plenna sport model (Plenna, Brazil), with a capacity of 150 kg and a graduation of 100 g and the stadiometer , fixed to the wall, of the compact type of 2 meters of the mark WISO (Wiso, China), with precision of 1 mm.

### Statistical analysis

The collected data were analyzed through descriptive statistics, with a cross - tabulation of Pearson 's chi - square considering gender, BMI, age, public and private education networks as variables. The 5% confidence intervals (p <0.05) were considered statistically significant. Statistical information was obtained with the aid of the statistical software SPSS® Base 22.0 (SPSS Inc., Chicago, IL).

## 4. Results

A total of 212 students were evaluated, of which 111 were from private schools (52.4%) and 101 from public schools (47.6%). A total of 129 male students (60.8%) and 83 female students (39.2%) from both educational systems, aged 8 to 10 years, were evaluated (22.2%), with age of 8 years, (42%) with 9 years and (35.8%) 10 years. Table 1 shows the nutritional status of children (pre-pubescent) of both educational networks. It is noteworthy that overweight and obesity had (51.8%) along the public and private education networks. To which the boys obtained (47.3%) of overweight and obesity and the girls (59.1%). Table 2 compares the nutritional status of prepubescent children in public and private education networks. Compared to the public education network, 38.9% were more overweight and obese in the private school system (63.9%).

**Table 1:** Frequencies and percentages of nutritional status of prepubescent children in public and private schools

Nutritional Status (BMI)	Boys (129) N	%	Girls (83)N	%	All(212) N	%
Lowweight	3	2,3	1	1,2	4	1,9
Eutrophic	65	50,4	33	39,8	98	46,2
Overweight	31	24,0	17	20,5	48	22,6
Obesity	30	23,3	32	38,6	62	29,2

The values in parentheses refer to the number of schoolchildren in public and private education networks.

**Table 2:** Comparison of nutritional status of prepubescent children in public and private education networks

Nutritional Status (BMI)	Public (101) N	%	Toilet(111) N	%	All (212) N	%
Lowweight	2	2,0	2	1,8	4	1,9
Eutrophic	60	50,4	38	34,2	98	46,2
Overweight	22	21,8	26	23,4	48	22,6
Obesity	17	16,8	45	40,5	62	29,2

The values in parentheses refer to the number of pre-pubescent children in public and private education networks

## 5. Discussion

The main results of this study demonstrate that the nutritional status of prepubescent children in the private school system in relation to overweight and obesity is higher when compared to the public education network. The socioeconomic factors that interfere in education, income and occupation are considered in the difference of these results obtained.

A study published in February 2014 in the New England Journal of Medicine, show that obesity in children in the United States begins since kindergarten. At the age of 14, almost half of the people who became obese were already five. This study revealed that more than 12.4% of American children entering kindergarten were obese and 14.9% overweight. Children in the 20% of the richest families had the lowest incidence of obesity in preschool compared to all other socioeconomic groups, the study says.

However,<sup>16</sup> published by IBGE (Brazilian Institute of Statistical Geography), stated that within the Brazilian population, the poorest part of the population maintains a healthier diet compared to the other classes, due to the fact that the higher classes have greater access to healthy foods, but have a poorer diet, consuming larger amounts of processed foods, increasing the chances of disease.

It is noteworthy that studies in developed countries show that socioeconomic status is inversely associated with obesity in adult women<sup>17,18</sup> and directly associated with obesity in children<sup>19,20,21</sup> concluded that American children share similar socioenvironmental conditions, with eating habits associated with the cultural aspects of each social group, favoring a direct relationship in their nutritional status.

In addition, the educational level showed a strong negative correlation for obesity (more important than income) in the study of<sup>22</sup>, when analyzing the American nutritional surveys of the 1960s and 1980s.

According to<sup>23</sup>, some factors contribute to overweight and obesity. As the availability of technology, increased insecurity and the progressive reduction of free spaces in urban centers (where most Brazilian children live) reduce opportunities for leisure and a physically active life, favoring sedentary activities such as watching television, play video games and use computers,<sup>12,13</sup> however, the limits or cut-off points of the BMI of international application for the diagnosis of overweight and obesity in children have been challenged due to racial variations, according to some authors<sup>14,15</sup> In our environment, considering the multiracial aspect of the Brazilian people, the proposed limits appear to have good agreement with adiposity, at least in schoolchildren. In the present study, despite the use of a double indirect method for estimates of body fat, we observed that the rates of overweight and obesity were relatively higher in the prepubescent of the private school system.

This result can be explained by extrinsic factors that interfere in the predominance of overweight and obesity,

among them the socioeconomic classes that will influence income, education and occupation. To which these aspects are directly associated as one of the determinants of overweight and obesity in society.

In addition, it is noteworthy to note that the higher classes have the highest purchasing power compared to the lower classes, enabling greater access to technology, which will reduce leisure opportunities and a physically active life, providing greater sedentary activities such as watching television, play video games and use computers.

## 6. Conclusions

In the exposed study, greater overweight was observed among boys and obesity in girls, with ages between 08 and 10 years. When compared to the public and private education networks it is noticed greater overweight and obesity in the private education networks.

It considers that the socioeconomic factors, interfere in the greater prevalence of overweight and obesity in the prepubescent of the public and private education network in the city of Jequié / BA, Brazil. Therefore, it is suggested that new studies be carried out, since research on this theme becomes relevant for contributions to Nutrition, Physical Education and Physiology professionals, to develop better routine activities of these children in and out of school spaces. Better programming of these activities will promote normalization of body composition and prevention of chronic diseases previously associated with excess body fat.

## 7. Thanks

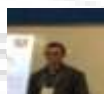
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