

Occurrence of child obesity in preschool children in a São Paulo day-care center

Ocorrência da obesidade infantil em pré-escolares de uma creche de São Paulo

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ABSTRACT

Objective: To identify the occurrence of overweight and obesity in preschool children (two to five years) in a day-care center in the city of São Paulo, using the weight/height ratio. **Methods:** This is a descriptive study, with exploratory quantitative approach, conducted in a day-care center in São Paulo. The sample consisted of 29 children, aged from two to five years and the data were collected through questionnaires. **Results:** As for the nutritional assessment of children according to the Waterlow criteria, 12 (41%) were normal, 7 (24%) obese, 5 (17%) overweight, 3 (10%) had grade 1 malnutrition, 1 (4%), morbid obesity and 1 (4%), grade 3 malnutrition. **Conclusions:** It is concluded that a significant proportion of the children assessed is above the appropriate weight range, requiring the implementation of preventive actions aimed to guide habits of good nutrition, encouraging physical activity, thereby decreasing the rates of child obesity and impacting their health at adulthood.

Keywords: Obesity; Child; Preschool

RESUMO

Objetivo: Identificar a ocorrência de sobrepeso e obesidade em crianças pré-escolares (dois a cinco anos), em uma creche do município de São Paulo, por meio da relação peso/estatura. **Métodos:** Estudo descritivo, exploratório com abordagem quantitativa, realizado em uma creche do município de São Paulo. A amostra foi constituída por 29 crianças de dois a cinco anos e os dados foram coletados por meio de questionários. **Resultados:** Em relação à avaliação nutricional dessas crianças, de acordo com o critério de Waterlow, percebeu-se que 12 (41%) das crianças eram eutróficas, 7 (24%) eram obesas, 5 (17%) com sobrepeso, 3 (10%) apresentaram desnutrição de primeiro grau e, ainda, 1 (4%) tinha obesidade mórbida e 1 (4%) desnutrição de terceiro grau. **Conclusões:** Concluiu-se que das crianças avaliadas, um percentual significativo se encontra acima do peso adequado, necessitando de ações preventivas que visem orientar bons hábitos de alimentação, estimulando atividade física, diminuindo os índices de obesidade infantil, e impactando assim, na saúde dessas crianças quando adultas.

Descritores: Obesidade; Criança; Pré-escolar

INTRODUCTION

Obesity is defined, according to the World Health Organization (WHO), as the disease in which the excess of body fat has accumulated to such an extent that health may be affected⁽¹⁾.

The prevalence of obesity has been rapidly increasing and represents one of the major public health challenges in this century. It is estimated that genetic factors may cause 24 to 40% of variance in body mass index (BMI), because they determine differences in some factors, such as basal metabolic rate, response to overfeeding and others. It is believed that changes in eating behavior and sedentary life habits acting on susceptibility genes are the main determinants of growth of obesity worldwide⁽²⁾.

It has been shown that between 1975 and 1997, the prevalence of obesity in Brazil increased from 8 to 13% in women, from 3 to 7% in men and from 3 to 15% in children⁽³⁾.

In the United States, comparing the national surveys from 1965 to 1980, it was observed that obesity in children aged 6 to 11 years increased 67% among boys and 41%, among girls. Currently, 25% of American children are considered obese, most of them of social classes with less income⁽⁴⁾.

It is estimated that the treatment of obesity and of its consequences accounts for 2 to 7% of the total health expenditure in developed countries⁽⁵⁾. In Brazil, the children more affected by obesity are still from more privileged social classes⁽⁴⁾.

In Western habit societies, calorie consumption is derived predominantly from processed food of high energy density, with high proportions of lipids and carbohydrates. In the United States of America, for instance, it is estimated that in the last 100 years fat

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consumption has increased 67% and sugar, 64%. On the other hand, the consumption of vegetables has decreased 26% and fibers, 18%⁽²⁾.

Although, there are successful experiences of community intervention aiming to promote healthier eating habits, and especially during childhood the implementation is made difficult because of the strong influence of food advertisements and their influence on food preferences of children⁽²⁾.

Obesity is a problem, both in rich and poor countries. While it is fashionable now to “be healthy”, the thin and very thin models, thousands of people are distressed by an excessive weight, whether in fashionable neighborhoods of Miami, or in the slums in the outskirts of São Paulo⁽⁶⁾.

In Brazil, data from Associação Brasileira para o Estudo da Obesidade (ABESO) show that approximately 40% of the Brazilian population has excessive weight⁽⁷⁾.

It is known that the etiology of obesity is multifactorial, with genetic and environmental factors involved. Among the environmental ones, the excessive energy intake and reduced physical activity are highlighted^(3,8).

The BMI changes with age, constantly increasing, with three critical periods for the beginning of obesity: the first period is the first year of life; the second occurs between five and seven years and; the third one is adolescence⁽⁹⁾.

Weight gain in children is accompanied by gain in stature and bone age acceleration. Nonetheless, weight gain continues and height and bone age remain constant. Puberty may occur earlier, which causes lower final height, because of earlier closure of the growth cartilages⁽¹⁰⁾.

Classically, puberty should begin between 8 and 13 years in girls and between 9 and 14 years in boys. Puberty beginning earlier than the age of six years in girls and seven or eight years in boys, is considered very precocious, requiring investigation and, often, treatment. The ages, between six and eight years (girls) and seven and nine years (boys), are considered thresholds, in which the clinical assessment of pubertal development will define the need for investigation and treatment⁽¹¹⁾.

Regarding the sample studied, it focused on preschool children, that is, from three to six years old and who have specific characteristics⁽¹²⁾, because they represent the population of this institution.

Although there are exceptions, as a rule, many obese children and adolescents will also be obese in adulthood. This is so because, in addition to the genetic determinants, they tend to maintain the nutritional and socio-cultural errors that trigger and worsen the mechanisms inducing excessive weight gain. At this age, drug treatment is not necessary and educational

strategies are essential to prevent progression to adult obesity⁽¹¹⁾.

Obesity, in addition to being a disease, is an important risk factor for type 2 *diabetes mellitus*, hypertension, dyslipidemia, myocardial infarction, stroke, cancer (especially breast and intestine), sleep apnea and arthrosis⁽¹³⁾.

The increase of type 2 *diabetes mellitus* (usually a disease of adults) in children and adolescents is currently observed worldwide. This fact has been associated with weight gain and sedentary lifestyle in children and adolescents because of electronic equipment for leisure, such as computer games, as well as the increase in fast-food provision. Controlling the development of obesity is an important preventive action⁽¹¹⁾.

The food preferences of children, as well as physical activities, are directly influenced by the parents' habits, and often persist in adulthood, stressing the hypothesis that environmental factors are decisive to keep or not a healthy weight. Therefore, the genetic information is sufficient to determine overweight and obesity, but not always necessary, with likely reduction of its influence by means of changes in the micro and macro-environments in which people live⁽⁹⁾.

The influence of the micro and macro-environments in the development of excessive weight gain in children aged five to nine years was confirmed, in a study demonstrating that the prevalence of overweight was more than two-fold in children enrolled in private schools (13.4%), when compared to that of public school children (6.5%) and of obesity, almost three-fold (7.0 versus 2.7%)⁽⁹⁾.

Most studies demonstrate that the prevalence of child and adult obesity is higher in females, with no well defined causes to explain this finding. WHO suggests this is due to the fact that in women the excess energy intake is preferably stored as fat rather than protein, as it occurs in males. Studies assessing skin fold thickness reveal that girls tend to have more adipose tissue than boys, with the pubertal period being of progressive weight gain, which continues throughout adolescence.

To assess child obesity (up to ten years of age), the most used diagnostic criterion is the weight/height ratio (individuals with more than 120% ideal weight are considered obese, according to national and international anthropometric references)⁽¹⁴⁾.

OBJECTIVE

To identify the occurrence of overweight and obesity in children aged from two to four years in a day-care center, in the city of São Paulo, by means of the weight/height ratio.

METHODS

This is a descriptive, exploratory study, with quantitative approach. The study was performed in a day-care center in the city of São Paulo, in an institution in which workers leave their children during their working hours, until they are 4-year 11-month old, under the supervision of health and education professionals.

The population consisted of children attending the day-care center and the sample comprised 29 children whose guardians accepted taking part in the study, after signing the informed consent form.

Of 29 children, 15 (52%) were female and 14 (48%), male. Ten (35%) were aged 3 years to 3 years and 11 months, 9 (31%) were 2 years to 2 years and 11 months, 9 (31%) were between 4 years and 4 years and 11 months, and only one (3%) child was between 5 years and 5 years and 11 months.

The data were obtained by means of a questionnaire made up of two parts: the first one for the child identification and information given by the guardian, and the second part with the weight and stature of the child.

For height assessment, an anthropometric ruler was used and weight was measured in a digital scale (Techline®), calibrated by the clinical engineering division of the institution at the day-care center.

All 29 children were weighed and measured with the least possible amount of clothes on, that is, in their underwear and bare feet.

Data collection started after the study was approved by the Scientific Committee of Faculdade de Enfermagem do Hospital Israelita Albert Einstein and by the Research Ethics Committee of Hospital Israelita Albert Einstein. Data were gathered by researchers, and the guardians of day care children were told about the aims and the means of their participation. After their authorization, the informed consent form was handed to them. This form was prepared according to the recommendations of the resolution 196/96, regarding the ethical norms of research involving humans.

The data were quantitatively analyzed and the results shown as absolute and relative frequencies, in tables and charts.

RESULTS

Of the total children, 27 (93%) had been breastfed and 2 (7%) had not been breastfed (Figure 1). Of the 27 children who had been breastfed, 9 (33%) were weaned at six months of age, 11 (41%) at 12 months, 4 (15%) at 18 months of age, 1 (4%) past 18 months and 2 (7%) did not inform (Figure 2).

Regarding physical activity, 7 (24%) children performed regular physical activity and 22 (76%) did not. Among seven children performing regular physical

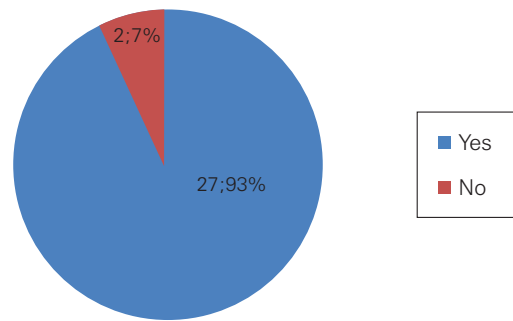


Figure 1. Distribution of children studied per breastfeeding

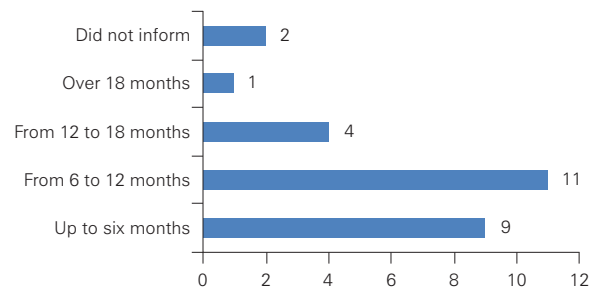


Figure 2. Distribution of the sample per duration of breastfeeding

activity, most (4;58%) have swimming classes, followed by ballet (1; 14%), walking and swimming and ballet (1; 14%), respectively (Figures 3 and 4).

It was also asked if the child had any disease demanding treatment at the time and, of 29 children, 6 (21%) had some condition or were undergoing some

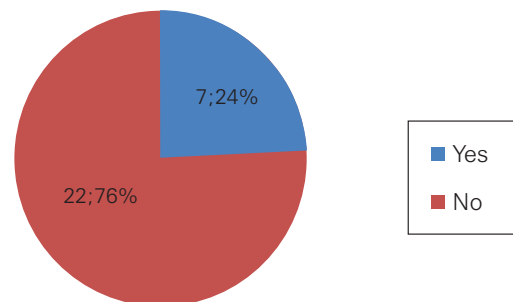


Figure 3. Child distribution per physical activities

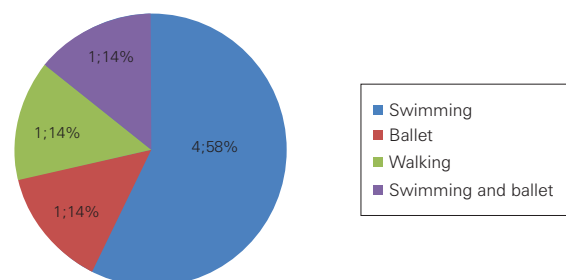


Figure 4. Child distribution per type of physical activity

type of treatment, and 23 (79%) had no illnesses. Among the diseases more often mentioned, asthma occurred in two (34%) children, followed by one (16%) with Down syndrome, bronchitis, wheezing baby and hemiparesis, respectively, as shown in Figures 5 and 6.

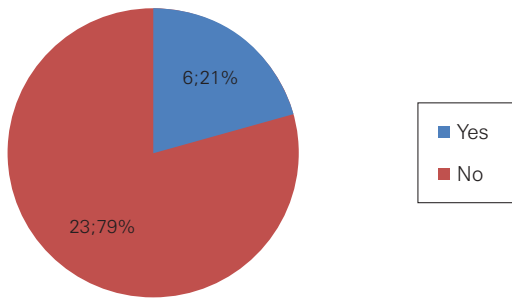


Figure 5. Child distribution per presence and treatment of some condition that presented when data was collected

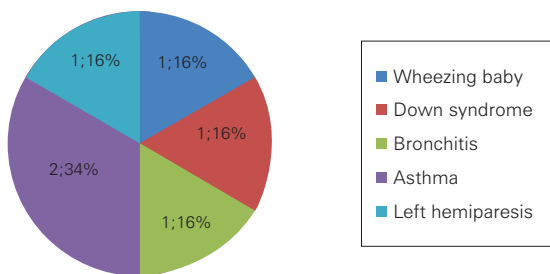


Figure 6. Child distribution per type of condition presented when data was collected

According to information provided by the guardians on the child’s daily eating, 27 (93%) children consumed carbohydrates and proteins, 26 (89%) children had processed foods, such as fast-food, 25 (86%) children consumed milk and dairy products and, 25 (86%) also ate vegetables, 23 (79%) ate fruits, 20 (69%) children ate legumes and 16 (62%) like to eat ice cream and cookies.

Regarding the nutritional assessment of these children according to Waterlow criteria, it can be seen that 12 (41%) of the children were normal, 7 (24%), obese, 5 (17%) overweight, 3 (10%) had grade 1 malnutrition, 1 (4%) had morbid obesity and 1 (4%) had grade 3 malnutrition, as shown in Figure 7.

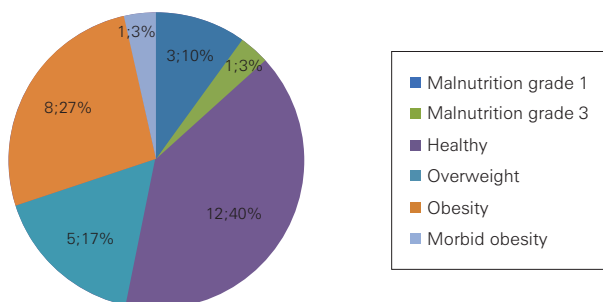


Figure 7. Distribution of children studied per nutritional assessment based on Waterlow criteria

Of 14 children with overweight (5;17%), obesity (8; 27%) and morbid obesity (1;3%), 10 (77%) were females and 3 (23%), males; 5 (38%) of these children had been breastfed up to six months of age, 7 (54%) up to 12 months and only 1 (8%), past 12 months. Regarding physical activity of 13 children, 4 (30%) had some kind of physical activity and 9 (70%) had no physical activity.

DISCUSSION

Breastfeeding has been shown to be beneficial for the child health, nutritional, immunological and psychological growth and development, promoting maturation of the stomatognathic system. Although breastfeeding is recommended, in several countries, mainly in developing ones, the duration of total and exclusive breastfeeding is less than six months, or less than two years as complement of diet, which is the minimum recommended by the WHO⁽¹⁵⁾.

Breast milk is the best food for the child in the first months of life. However, despite the excellence of breastfeeding and its revival in the past years, early weaning is still quite frequent and breastfeeding rates observed are below the official recommendation⁽¹⁶⁾.

As for child obesity, it can be said that the food preferences of children, as well as physical activities, which usually persist in adulthood, are directly influenced by the parents’ habits^(9,17). Performing physical activities is important for child growth and development. Besides preventing several diseases, such as obesity, diabetes, hypertension, exercising also serves for leisure, social integration and development of skills that improve self-esteem and confidence⁽¹⁸⁾.

According to this study, almost half of the children are above the appropriate weight, considering the weight-height ratio, and a reasonable number are obese.

Eating practices are important determinants of health conditions during childhood and are strongly associated with food availability, quantity and quality, which depend on the family income⁽¹⁹⁾.

With income increase, the actual price of industrialized foods has decreased, allowing their purchase, especially by low income brackets. In general, as the *per capita* income rises in a country, the sophistication in food consumption increases, especially of industrialized foods⁽¹⁹⁾.

In addition to economic stability, other factors, such as women working outside the household, the more practical, fast, durable and well-accepted products contribute even more for the introduction and maintenance of industrialized foods in the family and child habits⁽¹⁹⁾.

The diversity and increased delivery of industrialized food may influence the eating standards of the population, especially of children, because the first years

of life are very important for establishing habits. The inadequate, excessive and very frequent consumption of such foods may be harmful to health at this phase and in adult life. Many industrialized foods are rich in fats and refined carbohydrates, with high energy value⁽¹⁹⁾.

Regular physical training, or even, the involvement in relatively moderate daily physical activity, along with other environmental variables, influence in how the genetically determined growth pattern is reached⁽²⁰⁾.

The increased incidence of some chronic diseases, such as heart disease, diabetes, asthma, bronchitis, hypertension and obesity itself, is directly related to decreased physical activity in children and adults⁽¹⁹⁾. This will lead to higher daily calorie consumption with no energy expenditure, harming or worsening the problem of obesity in the country.

The goal of nutritional assessment is to verify growth and body proportions in an individual and, thus, should be standardized according to the age group⁽²¹⁾.

In developing countries, most of the health and nutrition problems during childhood are related to inappropriate food consumption and recurring infections, and these two conditions are associated with the living standards of the population, which include access to food, home and healthcare. As such, assessing child growth is also an indirect measure of quality of life of the population⁽²¹⁾.

Weight, stature and head circumference are the most used anthropometric measurements to assess and monitor growth during childhood⁽²²⁾. In 1977, the National Center for Health Statistics (NCHS) published the references for weight for age (W/A), weight for stature (W/S), weight for length (W/L), length for age (L/A), stature for age (S/A) and head circumference/age (HC/A) in children aged from 0 to 18 years, of both sexes, in the United States. Later, the WHO recognized the standards (NCHS/1977) as appropriate to assess different ethnic groups and recommended it for international use; it was then adopted by the Brazilian Ministry of Health⁽²²⁻²³⁾.

Regarding obesity in childhood, the following criteria may be used: W/S ratio equal or greater than 120%; weight percentile equal to or greater than 97 or Z score equal to or greater than + 2.0⁽²²⁾.

Considering the age studied group, the most appropriate criterion was that of Waterlow, which evaluate children based on stature, age and weight, in which W/S is the observed weight divided by the expected weight for height times 100; and S/A is the observed stature divided by the expected stature for age times 100. This is recommended for children aged from two to ten years⁽²¹⁾. The results of this assessment identify the child as: malnourished – below 90%; normal – between 90 and 109%; overweight – between 110 and

119%; obese – between 120 and 140%; morbid obesity – above 140%⁽²¹⁾.

According to some studies, obesity in children is higher in females than in males^(20,24). Obesity may begin at any age, triggered by some factors, such as early weaning and inappropriate introduction of foods, especially in the periods of growth acceleration⁽²⁰⁾.

Considering the results obtained in the present study, it is suggested that child obesity is more incident in girls than in boys, which agrees with the literature. Even with government programs promoting breastfeeding, explaining its importance, advantages and benefits, early weaning was observed in most cases and some children were never breastfed, a factor directly linked to child obesity.

Most of the studied children do not practice physical activity as a complement to health and fitness.

This study also showed a higher incidence of normal children, followed by children with obesity. Considering the possibility that obesity may continue in adulthood, and that it is one of the predisposing factors for most chronic non-communicable diseases, public health expenditure will increase in the future. This is because these diseases require constant treatment, and may impose future limitations. Resources must be made available for preventive practices, sensitizing parents for appropriate feeding; therefore, promoting healthy growth and development of the child, minimizing the number of obese adults and, thus, having an impact on the quality of life of the population.

The present study present limitations; however, the research was performed in only one institution and the small “n” in the sample. Other studies are necessary to identify obesity in day-care centers.

CONCLUSIONS

A significant proportion of the children assessed in this study are above the appropriate weight range, requiring the implementation of preventive actions aimed at guiding habits of good nutrition, encouraging physical activity, thereby decreasing the rates of child obesity and impacting their health in adulthood.

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