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ORIGINAL ARTICLE

Maternal breastfeeding, early introduction of non-breast milk, and excess weight in preschoolers

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KEYWORDS

Breastfeeding;
Complementary
feeding;
Excess weight;
Preschooler;
Obesity

Abstract

Objective: Investigate associations between excess weight in preschool children, breastfeeding duration and age of non-breast milk introduction.

Methods: Cross-sectional study of a representative sample of 817 preschool children, aged 2–4 years, attending municipal day care centers in the city of Taubaté. The weight and height of children were measured in the day care centers in 2009, 2010 and 2011. The body mass index z-score (BMIz) was calculated and children were classified as risk of overweight (BMIz \geq 1 to $<$ 2) or excess weight (BMIz \geq 2). Data analysis was carried out by comparison of proportions, coefficient of correlation and multivariate linear regression.

Results: The prevalence of risk of overweight was 18.9% and of excess weight (overweight or obesity) was 9.3%. The median duration of breastfeeding and age of introduction of non-breast milk was 6 months. The child's BMIz showed direct correlation with birth weight ($r=0.154$; $p<0.001$) and maternal body mass index (BMI) ($r=0.113$; $p=0.002$). The correlation was inverse with the total duration of breastfeeding ($r=-0.099$; $p=0.006$) and age at non-breast milk introduction ($r=-0.112$; $p=0.002$). There was no correlation between the child's BMIz with birth length, duration of exclusive breastfeeding and mother's age.

Conclusions: The earlier the introduction of non-breast milk, the higher the correlation with excess weight at preschool age.

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PALAVRAS-CHAVE

Aleitamento materno;
Alimentação
complementar;
Sobrepeso;
Pré-escolar;
Obesidade

Aleitamento materno, introdução precoce de leite não materno e excesso de peso na idade pré-escolar

Resumo

Objetivo: Investigar relações existentes entre excesso de peso em pré-escolares, duração do aleitamento materno e a idade de introdução de leite não materno.

Métodos: Estudo transversal de amostra representativa de 817 pré-escolares, 2-4 anos de idade, de creches municipais de Taubaté. O peso e a altura das crianças foram mensurados nas creches em 2009, 2010 e 2011. Calculado o escore z de Índice de Massa Corporal (zIMC), as crianças foram classificadas como risco de sobrepeso ($zIMC \geq 1$ a < 2) ou como excesso de peso ($zIMC \geq 2$). A análise dos dados foi feita por comparação de proporções, coeficiente de correlação e regressão linear multivariada.

Resultados: A prevalência de risco de sobrepeso foi 18,9% e de excesso de peso (sobrepeso ou obesidade) de 9,3%. A mediana de duração do aleitamento materno e a idade de introdução do leite não materno foi de 6 meses. O zIMC da criança evidenciou correlação direta com o peso ao nascer ($r=0,154$; $p<0,001$) e com o Índice de Massa Corporal (IMC) materno ($r=0,113$; $p=0,002$). A correlação foi inversa com a duração total do aleitamento materno ($r=-0,099$; $p=0,006$) e a idade de introdução de leite não materno ($r=-0,112$; $p=0,002$). Não houve correlação entre o zIMC da criança com o comprimento ao nascer, duração do aleitamento exclusivo e idade da mãe.

Conclusões: Quanto mais precoce a introdução de leite não materno, maior a correlação com excesso de peso na idade pré-escolar.

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Introduction

Maternal breastfeeding is a natural and appropriate way to feed a child in the first months of life, promoting adequate growth and development.¹ In this sense, the World Health Organization recommends that exclusive breastfeeding is maintained up to six months and that its complementation with other foods is required only after that age.²

Several studies have shown that breastfeeding is a protective factor for both malnutrition and obesity.³⁻⁵ The moment when other foods are introduced, including solid foods, during childhood has also been considered an important aspect of child care, even due to its possible effects on health throughout life.⁶ The moment of introduction and the amount of solid foods^{7,8} introduced into children's diet in early life can lead to an increased risk of developing obesity early in life and the comorbidities associated with it.^{9,10}

Obesity is currently one of the major public health problems, including in the Pediatric population, from infancy to adolescence. In this context, it is known that the first months of life are identified as crucial for the development of obesity.^{11,12} Early introduction of solid foods, particularly before 4 months of life, is associated with increased weight gain and even of body fat during childhood,^{13,14} with these factors being considered as predisposing to obesity in the future.¹⁵

There is also a controversy regarding the protective effect of breast milk in the development of obesity. While some studies suggest that breastfeeding can protect children against the development of overweight or obesity, others suggest that the fact of starting the introduction of

complementary foods as close as possible to the recommended age is the protective factor against excess weight.^{3,5}

In this context, the aim of this study is to investigate the possible association between excess weight at preschool age and duration of breastfeeding and age of non-breast milk introduction, with birth weight and length control, in addition to some maternal risk characteristics for early development of excess weight.

Method

This was a cross-sectional study carried out in municipal day care centers in the municipality of Taubaté, state of São Paulo, Brazil, with children of preschool age, originally planned to evaluate the growth and nutritional status of children starting day care during the school years of 2009, 2010 and 2011.

To calculate the sample, a difference of 1/3 of the standard deviation in the z-score for body mass index (BMIz) was considered, with an assumption of standard deviation of 1.2BMIz, for a 90% test power and an alpha of 5%. The minimum number estimated as necessary was 248 children, plus 10% to replace possible losses or refusals, resulting in an initial sample of 273 preschoolers required for each school year evaluation.

Sampling was carried out using probabilistic and random cluster sampling methods, using the day care centers as the sample unit, based on the city's Education Secretariat listing. Of the 59 existing day care centers in that list, nine municipal ones were selected and a total of 288, 246 and 283

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