



ORIGINAL ARTICLE

School environment, sedentary behavior and physical activity in preschool children



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Abstract

Objective: To analyze physical activity and sedentary behavior in preschool children during their stay at school and the associated factors.

Methods: 370 preschoolers, aged 4–6 years, stratified according to gender, age and school region in the city of Londrina, PR, participated in the study. A questionnaire was applied to principals of preschools to analyze the school infrastructure and environment. Physical activity and sedentary behavior were estimated using accelerometers for five consecutive days during the children's stay at school. The odds ratio (OR) was estimated through binary logistic regression.

Results: At school, regardless of age, preschoolers spend relatively more time in sedentary behaviors (89.6–90.9%), followed by light (4.6–7.6%), moderate (1.3–3.0%) and vigorous (0.5–2.3%) physical activity. The indoor recreation room (OR 0.20, 95%CI 0.05–0.83) and the playground (OR 0.08, 95%CI 0.00–0.80) protect four-year-old schoolchildren from highly sedentary behavior. An inverse association was found between the indoor recreation room and physical activity (OR 0.20, 95%CI 0.00–0.93) in five-year-old children. The indoor recreation room (OR 1.54, 95%CI 1.35–1.77), the playground (OR 2.82, 95%CI 1.14–6.96) and the recess (OR 1.54, 95%CI 1.35–1.77) are factors that increase the chance of six-year-old schoolchildren to be active.

Conclusions: The school infrastructure and environment should be seen as strategies to promote physical activity and reduce sedentary behavior in preschool children.

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PALAVRAS-CHAVE

Ambiente;
Atividade motora;
Creche;
Criança;
Infraestrutura

Ambiente escolar, comportamento sedentário e atividade física em pré-escolares**Resumo**

Objetivo: Analisar a atividade física e o comportamento sedentário de pré-escolares durante a permanência na escola e os fatores associados.

Métodos: Participaram do estudo 370 pré-escolares de 4 a 6 anos, estratificados de acordo com sexo, idade e região da escola em Londrina (PR). Foi aplicado um questionário às diretoras das pré-escolas para analisar a infraestrutura e o ambiente escolar. A atividade física e o comportamento sedentário foram estimados com acelerômetros por cinco dias consecutivos durante a permanência na escola. A razão de chances (RC) foi estimada por meio da regressão logística binária.

Resultados: Na escola, independentemente da idade, os pré-escolares permanecem relativamente mais tempo em comportamento sedentário (89,6%-90,9%), seguido de atividade física leve (4,6%-7,6%), moderada (1,3%-3%) e vigorosa (0,5%-2,3%). A sala de recreação interna (RC=0,20; IC95% 0,05-0,83) e o parque (RC=0,08; IC95% 0,00-0,80) protegem os alunos de 4 anos do comportamento sedentário elevado. Associação inversa foi encontrada entre sala de recreação interna e atividade física (RC=0,20; IC95% 0,00-0,93) nos escolares de 5 anos. Sala de recreação interna (RC=1,54; IC95% 1,35-1,77), parque (RC=2,82; IC95% 1,14-6,96) e recreio (RC=1,54; IC95% 1,35-1,77) são fatores que aumentam a chance dos escolares de 6 anos de serem ativos.

Conclusões: A infraestrutura e o ambiente da escola devem ser considerados como estratégias para promover a atividade física e reduzir o comportamento sedentário em pré-escolares.

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Introduction

Sedentary lifestyle and physical activity are two health-related behaviors of preschool children. In children up to 4 years of age, sedentary behavior is an important factor for weight gain, increased LDL-cholesterol and decreased HDL-cholesterol levels.¹ Similarly, there is a positive relationship between increased physical activity and increased bone density, better cardiometabolic profile and lower adiposity.² It is recommended that children should spend a maximum of 2h per day being sedentary³ and achieve 180min/day of physical activity at any intensity.⁴

Children under 6 years of age attend preschools, with a daily average stay of 9h. For this reason, child care centers are no longer paternalistic and are committed to educating children, having as one of its actions the promotion of health⁵ through physical activity.⁶

Several studies describe the factors that increase the likelihood of preschoolers to engage in physical activity at school: playing in open spaces⁷ and playgrounds,⁸ engage in individual or in pairs activities,⁸ without the presence of adults,⁷ have toys and stuff to play with,^{8,9} promote opportunities for physical activity and instruct teachers in relation to physical activity.⁹ Environment Room with appliances such as TVs and video games,⁹ higher teacher-student relationship score, and no use of internal spaces for motor activities¹⁰ are associate with sedentary behavior.

In Brazil only one study investigated the association between the school environment and the weekly physical activity of preschoolers,¹¹ and the only variable showing protection against low levels of physical activity was to have at least one recess time per day.¹¹ There is no

information related to sedentary behavior at school in Brazilian preschoolers. Furthermore, no study was conducted in Brazil assessing physical activity and sedentary behavior using accelerometry, an instrument that enables more precise measurement.

Due to the longer time that preschool children remain in school, lack of national studies, and inability to generalize the results of foreign studies, it is relevant to investigate the amount of physical activity and sedentary behavior during the school period and the environmental aspects in Brazilian preschoolers. Such information can guide intervention programs in order to increase physical activity, reduce sedentary behavior during their stay at school, and contribute to the fulfillment of the daily recommendations of these behaviors.

Thus, the aim of this study was to assess the amount of physical activity and sedentary behavior of preschoolers during their stay in the Municipal Centers of Early Childhood Education of Londrina (PR), as well as the associated factors.

Method

Cross-sectional study performed in Municipal Centers of Early Childhood Education (Centros Municipais de Educação Infantil – CMEIs) of Londrina (PR). The Londrina municipal school system had 20 CMEIs with 1562 students enrolled in 2013, according to the City Department of Education. The CMEIs serve children up to 6 years of age, comprising nursery classes (Early Children Education 1: ECE1) pre-school (4–6 years old: ECE4 and ECE6). Children up to ECE5 study full-time and up to ECE6 only in a period of the day. The study

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