

**ORIGINAL ARTICLE** 

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### Association between physical activity level and consumption of fruit and vegetables among adolescents in northeast Brazil

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KEYWORDS

Motor activity; Physical fitness; Adolescent health; Food consumption

#### Abstract

*Objective:* To determine the association between low levels of physical activity and consumption of fruits and vegetables among adolescents.

*Methods:* This cross-sectional study included 2,057 adolescents aged 13 to 18 years from the city of Aracaju, Northeastern Brazil. We analyzed the level of physical activity, consumption of fruits and vegetables by standardized and validated questionnaires. The control variables were sex, age, socioeconomic status, maternal education, alcohol consumption and smoking. For data analysis, univariate and multivariate logistic regression were used, with a significance level of 5%.

*Results:* The prevalence of low levels of physical activity was 81.9%; the inadequate consumption of fruits ocurred in 79.1% and the inadequate consumption of vegetables in 90.6%. Adolescents who consumed few fruits daily had an increase in 40% of chance of being insufficiently active and, for those who consumed few vegetable's the likelihood of being insufficiently active was 50% higher, compared to those who had adequate intake of these foods.

*Conclusions:* Low levels of physical activity were associated with inadequate fruit and vegetable intake among adolescents in a city in northeastern Brazil. These findings suggest that insufficiently active adolescents have other unhealthy behaviors that may increase the risk of chronic diseases in adulthood.

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#### PALAVRAS-CHAVE

Atividade motora; Aptidão física; Saúde do adolescente; Consumo alimentar

### Associação entre prática de atividade física com consumo de frutas, verduras e legumes em adolescentes do Nordeste do Brasil

#### Resumo

*Objetivo*: Verificar se há associação entre baixos níveis de atividade física e consumo de frutas, verduras e legumes em adolescentes.

*Métodos*: Estudo transversal, com 2.057 adolescentes na faixa de 13 a 18 anos, estudantes de escolas públicas de Aracaju (SE) e região metropolitana. Analisou-se o nível de atividade física e o consumo de frutas, verduras e legumes por meio de questionários padronizados e validados. As variáveis de controle foram: sexo, idade, nível econômico, escolaridade materna, consumo de álcool e tabagismo. Para a análise dos dados usou-se a regressão logística uni e multivariável, com nível de significância de 5%.

*Resultados:* A prevalência de baixo nível de atividade física foi de 81,9%, a de consumo inadequado de frutas foi de 79,1% e a de consumo inadequado de verduras e legumes foi de 90,6%. Adolescentes que consumiam poucas porções de frutas no dia apresentaram 40% mais chances de ser pouco ativos fisicamente e aqueles que consumiam poucas porções de verduras e legumes apresentaram 50% mais chances de ser pouco ativos fisicamente, comparados aos que apresentavam consumo adequado.

*Conclusões:* Baixos níveis de atividade física se associaram com o consumo inadequado de frutas, verduras e legumes em adolescentes de uma cidade do Nordeste do Brasil. Esses achados sugerem que adolescentes pouco ativos apresentam outros comportamentos não saudáveis que podem aumentar o risco na vida adulta de doenças crônicas não transmissíveis.

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### Introduction

The epidemiology of physical activity, as it is known the epidemiology branch that focus on issues related to physical activity, is a new area in the field of Public Health and started to gain importance after the epidemiological transition. The studies of this epidemiology area seek to find factors associated with low levels of physical activity, aiming to prevent and/or modify them, so that physical activity interventions are successful.<sup>1</sup>

Physical activity (PA) is associated with several health benefits. Insufficient levels of PA can result in damage to the individual's health and well-being, increasing the risk of cardiovascular disease, hypertension, diabetes, some types of cancer, obesity and early mortality.<sup>2</sup> Physical inactivity is also associated with mental disorders. Clinical and epidemiological studies have reported that individuals with insufficient levels of physical activity are more affected by depression and anxiety.<sup>3</sup>

In spite of the current evidence that physical activity can play a role in disease prevention and quality of life promotion, a large population group remains exposed to insufficient levels of physical activity. In Brazil, for instance, the most recent data from the Risk and Protective Factor Surveillance System for Chronic Diseases by telephone survey - VIGITEL<sup>4</sup> reported that 15.0% of men and 13.6% of women older than 18 years living in Brazilian capitals are physically inactive. Regarding younger individuals, data from the National Research on Schoolchildren's Health (PeNSE), a partnership between the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística - IBGE) and the Ministry of Health of Brazil found that 56.9% of Brazilian students on the 9<sup>th</sup> grade of Elementary School did not meet the recommendations for physical activity ( $\geq$ 300 minutes a week of physical activity).<sup>5</sup> A recent study showed that >70% of adolescents from different countries do not meet the recommendations for physical activity.<sup>6</sup>

Several studies indicate that, in adolescence and adulthood, the individual does not acquire only one unhealthy behavior.<sup>7,8</sup> Most people have many simultaneous unhealthy behaviors and the most distinctive ones are physical inactivity and inadequate fruit and vegetables consumption.<sup>7,8</sup> Thus, it is important to study these behaviors in adolescence, as habits acquired at this phase of life tend to be continue into adulthood.<sup>9</sup>

Insufficient fruit and vegetables consumption is one of the ten most important risk factors for the global burden of diseases.<sup>10</sup> Millions of deaths are attributed to an unhealthy diet with a deficit in these components.<sup>11</sup> However, despite this evidence, fruit and vegetables consumption is still insufficient, both in developed and in developing countries, such as Brazil.<sup>11</sup>

Therefore, the objective of this study is to verify whether there is an association between low levels of physical activity and fruit and vegetables consumption among adolescents from a city in Northeast Brazil.

### Method

This epidemiological analytical study with a cross-sectional design was carried out in the metropolitan area of Aracaju

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