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REVIEW ARTICLE

Association between food and nutrition insecurity with cardiometabolic risk factors in childhood and adolescence: a systematic review



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KEYWORDS

Food and nutrition security;
Diabetes mellitus;
Hypertension;
Metabolic syndrome;
Stress and dyslipidemia

Abstract

Objective: To address the association between food and nutrition insecurity and cardiometabolic risk factors in childhood and adolescence.

Data source: Articles were selected from the Medline, Lilacs and SciELO databases with no publication date limit, involving children and adolescents, using the descriptors: food and nutrition security, diabetes mellitus, hypertension, metabolic syndrome, stress and dyslipidemia. The terms were used in Portuguese, English and Spanish. The search was carried out systematically and independently by two reviewers.

Data synthesis: Exposure to food insecurity during childhood and adolescence ranged from 3.3% to 82% in the selected publications. Exposure to food insecurity was associated with stress, anxiety, greater chance of hospitalization, nutritional deficiencies, excess weight and inadequate diets with reduced intake of fruits and vegetables and increased consumption of refined carbohydrates and fats.

Conclusions: Food and nutrition insecurity was associated with the presence of cardiometabolic risk factors in the assessed publications. Childhood and adolescence constitute a period of life that is vulnerable to food insecurity consequences, making it extremely important to ensure the regular and permanent access to food. Because this is a complex association, some difficulties are found, such as the synergy between risk factors, the assessment of heterogeneous groups and extrapolation of data to other populations, in addition to the influence of environmental factors.

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PALAVRAS-CHAVE

Segurança alimentar e nutricional;
Diabetes mellitus;
 Hipertensão;
 Síndrome metabólica;
 Estresse e
 dislipidemia

Associação de insegurança alimentar e nutricional com fatores de risco cardiometabólicos na infância e adolescência: uma revisão sistemática

Resumo

Objetivo: Abordar a associação entre insegurança alimentar e nutricional e fatores de risco cardiometabólicos na infância e adolescência.

Fontes de dados: Os artigos foram selecionados pelas bases de dados Medline, Lilacs e SciELO, sem limite de data de publicação. Envolveram crianças e adolescentes e foram usados os descritores: segurança alimentar e nutricional, *diabetes mellitus*, hipertensão, síndrome metabólica, estresse e dislipidemia. Os termos foram usados em português, inglês e espanhol. A busca foi feita de forma sistemática e independente por dois revisores.

Síntese dos dados: A exposição à insegurança alimentar no período da infância e adolescência variou de 3,3% a 82% nas publicações selecionadas. A exposição à insegurança alimentar esteve associada a estresse, ansiedade, maiores chances de internações hospitalares, deficiências nutricionais, excesso de peso e consumo de dietas inadequadas com ingestão reduzida de frutas e hortaliças e aumento do consumo de carboidratos refinados e gorduras.

Conclusões: A insegurança alimentar e nutricional esteve associada à presença de fatores de risco cardiometabólicos nas publicações avaliadas. A infância e adolescência constituem uma fase da vida vulnerável às consequências da insegurança alimentar, o que torna de extrema importância a garantia do acesso regular e permanente aos alimentos. Por ser essa associação complexa, algumas dificuldades são encontradas, tais como a sinergia existente entre os próprios fatores de risco, a avaliação de grupos heterogêneos e a extrapolação dos dados para outras populações, além da influência dos fatores ambientais.

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Introduction

The approach to food and nutrition insecurity (FNI) has gained prominence in developed and developing countries. The concept of food and nutrition security (FNS) was established by the Second National Conference on Food Security held in 2004 in Brazil and consists in the right of all individuals to regular and permanent access to quality food in sufficient quantity, without compromising the access to other essential needs, based on food practices that promote health, respect cultural diversity and that are environmentally, economically and socially sustainable.¹ Situations that include the violation of any of these items constitute FNI.

One can observe the association of FNI not only in the context of low birth weight and/or presence of deficiency diseases, as widely debated by researchers, but also related to a "new" association of the topic with the presence of cardiometabolic risk factors developed as early as the childhood and adolescence periods, such as obesity, insulin resistance, type II diabetes, systemic arterial hypertension, dyslipidemia and inflammation.²⁻⁴

These risk factors can be classified into traditional (modifiable or not) and non-traditional. Traditional non-modifiable factors include age, gender and family history of premature cardiovascular disease, while the modifiable ones include dyslipidemia, arterial hypertension, type II diabetes, smoking, physical inactivity and excess weight. The so-called non-traditional factors encompass the assessment of some cardiometabolic risk markers, such as inflammatory cytokines, C-reactive protein, interleukin-6, leptin and adiponectin.⁵

Some studies have shown positive associations between the presence of FNI and poorer health status in children and adolescents.⁶⁻⁸ Among these outcomes, we emphasize behavioral, psychosocial and developmental problems, with greater prevalence of acute and chronic diseases.⁹ However, the precise mechanism by which FNI negatively affects the health status of this group is yet to be elucidated.¹⁰

Based on this perspective, after verifying the scarcity of Brazilian studies on this topic, a systematic review was performed to assess whether food and nutrition insecurity is associated with the presence of cardiometabolic risk factors in childhood and adolescence, with the aim of providing subsidies for public health interventions. The main elements to be modified regarding this issue will help plan future intervention studies for children and adolescents in a FNI situation.

Method

The search strategy included the search for articles in electronic databases. The Medline (National Library of Medicine, USA) via PubMed, Lilacs (Latin American and Caribbean Health Sciences) and SciELO (Scientific Electronic Library Online) electronic databases were used in the search. Article identification and selection in all searched databases were performed simultaneously by two researchers for a month, between August and September 2014.

The descriptors used were: food and nutrition security, diabetes mellitus, hypertension, metabolic syndrome, stress and dyslipidemia. All descriptors were used in Portuguese, according to the Health Sciences Descriptors (DeCS), and

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