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REVIEW ARTICLE

Association between dietary pattern and cardiometabolic risk in children and adolescents: a systematic review[☆]

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KEYWORDS

Dietary;
Patterns;
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Abstract

Objective: To evaluate the association between dietary patterns and cardiometabolic risk factors in children and adolescents.

Data source: This article followed the recommendations of PRISMA, which aims to guide review publications in the health area. The article search strategy included searches in the electronic databases MEDLINE via PubMed, Scopus, and LILACS. There was no date limitation for publications. The descriptors were used in English according to MeSH and in Portuguese according to DeCS. Only articles on dietary patterns extracted by the *a posteriori* methodology were included. The question to be answered was: how much can an "unhealthy" dietary pattern influence biochemical and inflammatory markers in this population?

Data synthesis: The studies showed an association between dietary patterns and cardiometabolic alterations. The patterns were characterized as unhealthy when associated to the consumption of ultraprocessed products, poor in fiber and rich in sodium, fat, and refined carbohydrates. Despite the associations, in several studies, the strength of this association for some risk markers was reduced or lost after adjusting for confounding variables.

Conclusion: There was a positive association between "unhealthy" dietary patterns and cardiometabolic alterations in children and adolescents. Some unconfirmed associations may be related to the difficulty of assessing food consumption. Nevertheless, studies involving dietary patterns and their association with risk factors should be performed in children and adolescents, aiming at interventions and early changes in dietary habits considered to be inadequate.

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PALAVRAS-CHAVE

Alimentação;
Padrões;
Cardiovascular;
Crianças;
Adolescente

Associação entre padrão alimentar e risco cardiometabólico em crianças e adolescentes: uma revisão sistemática

Resumo

Objetivo: Avaliar a associação encontrada nos estudos entre padrão alimentar e fatores de risco cardiometabólicos em crianças e adolescentes.

Fonte dos dados: Este artigo seguiu as recomendações do PRISMA, que objetiva orientar as publicações de revisão na área da saúde. A estratégia de busca dos artigos incluiu pesquisas nas bases eletrônicas Medline via PubMed, Scopus e Lilacs. Não houve data limite de publicação. Os descritores foram usados em inglês de acordo com MeSH e em português segundo os DeCS. Apenas artigos de padrão alimentar extraídos pela metodologia *a posteriori* foram incluídos. A pergunta a ser respondida foi: quanto um padrão alimentar “não saudável” pode influenciar nos marcadores bioquímicos e inflamatórios dessa população.

Síntese dos dados: Os estudos demonstraram haver associação entre os padrões alimentares e alterações cardiometabólicas. Os padrões eram caracterizados como não saudáveis marcados pelo consumo de produtos ultraprocessados, pobres em fibras e ricos em sódio, gordura e carboidratos refinados. Apesar das associações, em vários estudos, a força dessa associação para alguns marcadores de risco era reduzida ou perdida após os ajustes para as variáveis de confusão.

Conclusão: Houve associação positiva entre os padrões alimentares “não saudáveis” e as alterações cardiometabólicas em crianças e adolescentes. Algumas associações não confirmadas podem estar relacionadas à própria dificuldade de avaliar o consumo alimentar. Apesar disso, estudos envolvendo a padrões alimentares e sua associação a fatores de risco devem ser realizados em crianças e adolescentes objetivando intervenções e modificações precoces nos hábitos alimentares tidos como não adequados.

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Introduction

Overweight in childhood and adolescence is a major concern worldwide.^{1,2} Little is known about the complications that early-onset obesity can cause in the long term.^{3,4} Given the uncertainties, many associations have been made to better understand the consequences of overweight and obesity for the onset of cardiometabolic complications in early life.^{1,5}

Some established associations between the genesis of obesity and alterations in cardiovascular risk markers – such as inflammatory cytokines, C-reactive protein, traditional biochemical parameters (total cholesterol, triglycerides, glucose, insulin), diet, and physical activity – have been evaluated in studies with adults and much is already known about the direction of these relations.^{4,6} However, it can be observed that these studies are not very common in children and adolescents, and more consistent information is still necessary about the behavior of cardiometabolic and inflammatory risk factors in this period.^{3,5}

Diet is an important, modifiable risk factor in the etiology of diseases, given the increasing number of epidemiological studies that address its relation with the onset of chronic diseases.^{7–9} The methodology of identification of the dietary pattern of specific populations has been widely used in observational studies, and has been useful to identify the association between diet and cardiometabolic risk factors.^{8,10,11}

Dietary patterns can better inform about diet-disease associations than the assessment of isolated foods or

nutrients, because they consider the total dietary intake and the interrelationships between many foods and nutrients, as well as their synergistic effects.^{7,9} They have been widely used due to the understanding that nutrients are rarely consumed in isolation, and that nutrient-only investigations underestimate the possible interactions between nutrients or between foods and other diet components.⁸

The identification of dietary patterns considered to be unhealthy may be related to changes in body composition and biochemical and inflammatory parameters in children and adolescents.^{7,10} Considering that childhood is a phase during which eating habits are formed, the adoption of healthy eating practices in this period can have favorable consequences for the rest of life.

In this sense, the aim of this systematic review article was to evaluate the association found between dietary patterns and cardiometabolic risk factors in studies of children and adolescents. The hypothesis was that unhealthy dietary patterns are associated with alterations in these risk markers in the assessed group.

Methods

The systematic review was carried out according to the recommendations of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which aims to guide systematic reviews and meta-analyses in the health area.¹² The article search strategy included searches in the

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