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REVIEW ARTICLE

Effect of intervention programs in schools to reduce screen time: a meta-analysis☆

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KEYWORDS
Child;
Adolescent;
School health;
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Abstract
Objective: to evaluate the effects of intervention program strategies on the time spent on activities such as watching television, playing videogames, and using the computer among schoolchildren.
Sources: a search for randomized controlled trials available in the literature was performed in the following electronic databases: PubMed, Lilacs, Embase, Scopus, Web of Science, and Cochrane Library using the following Keywords randomized controlled trial, intervention studies, sedentary lifestyle, screen time, and school. A summary measure based on the standardized mean difference was used with a 95% confidence interval.
Data synthesis: a total of 1,552 studies were identified, of which 16 were included in the meta-analysis. The interventions in the randomized controlled trials (n = 8,785) showed a significant effect in reducing screen time, with a standardized mean difference (random effect) of: −0.25 (−0.37, −0.13), $p < 0.01$.
Conclusion: interventions have demonstrated the positive effects of the decrease of screen time among schoolchildren.

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PALAVRAS-CHAVE
Criança;
Adolescente;
Saúde escolar;
Estilo de vida sedentário

Efeito dos programas de intervenção no âmbito escolar para reduzir o tempo gasto em frente a telas: uma meta-análise

Resumo
Objetivo: avaliar os efeitos das estratégias dos programas de intervenção sobre o tempo dedicado a atividades como assistir à televisão, jogar videogame e usar computador em escolares.
Fonte dos dados: foi realizada busca de estudos controlados randomizados, disponíveis nas bases de dados eletrônicas PubMed, Lilacs, Embase, Scopus, *Web of Science* e *Cochrane Library*, com os descritores: *randomized controlled trial, intervention studies, sedentary lifestyle, screen time* e *school*. Medida de sumário baseada na diferença das médias padronizadas foi usada com intervalo de confiança de 95%.
Síntese dos dados: foram identificados 1.552 estudos, dos quais 16 foram incluídos na meta-análise. As intervenções nos estudos controlados randomizados (n = 8.785) apresentaram efeito significativo na redução do tempo em frente à tela, com diferença das médias padronizadas (efeito randômico): −0,25 (−0,37; −0,13), p < 0,01.
Conclusão: as intervenções mostraram efeitos positivos na redução do tempo em frente à tela em escolares.

Introduction

Although the World Health Organization recommends that children and adolescents should not spend more than two hours a day in front of the television, computers, or video games, a population-based study performed in Brazil, the National Survey of Schoolchild's Health (Pesquisa Nacional de Saúde do Escolar - PeNSE) demonstrated that 78% of eight-graders watched television for two or more hours daily. This indicator ranged from 71% to 82.3% in the Brazilian capitals.[1,2]

The longer periods of time during which children and adolescents engage in activities such as watching television, playing video games, and using the computer are associated with several health problems, including arterial hypertension,[3] metabolic syndrome,[4] and overweight, as reported in several international[5–9] and Brazilian studies.[10–15] They are also associated with negative behavioral changes, such as changes in sleep,[16–18] in interpersonal relationships and attention,[19] and increased aggression.[20,21]

Excessive time in front of the screen is also associated with food, especially with low intake of fruits and vegetables,[22] and with excessive intake of high-calorie foods and those with high content of fats, sugars, and sodium. Additionally, it influences the choice of foods, as the children are exposed to unhealthy food advertisements.[23,24] Some studies have also indicated an association with eating disorders.[25–27]

Therefore, several strategies have focused on changing the sedentary lifestyle with a decrease in daily screen time through intervention programs, especially in the prevention of obesity.[28–30]

Children and adolescents constitute the primary target of these strategies, which represent the possibility of health promotion and protection against obesity and future chronic diseases.[31,32] Therefore, the school is an important scenario to promote educational practices and to motivate individuals to adopt healthy lifestyle habits and maintain them throughout adulthood.[33]

This study presents the main results of a meta-analysis aimed to evaluate the effects of interventions, conducted in the school environment, on the time dedicated to activities such as watching television, playing video games, and using a computer.

Methods

This was a meta-analysis based on search performed in Lilacs, PubMed, Web of Science, Scopus, Embase, and Cochrane Library electronic databases, between 1998 and August of 2012, using the following Keywords

Randomized Controlled Trial, Intervention Study, Sedentary Lifestyle, Media, Screen Time, Television, Computer, Video Games, Children, Adolescents, Overweight, Obesity, Food and Nutrition Education, Physical Education, Physical Activity, Schools.

A search was also performed using the references of relevant studies and systematic reviews that addressed the topic of interest. The following inclusion criteria were used for study selection: randomized controlled trials; publications since 1998 (including that year); schoolchildren aged 4 to 19 years; pre- and post-measurement of time spent watching television, playing video games, or using the computer; and interventions and programs that focused on changes in sedentary behavior aiming to reduce screen time, with a minimum duration of three months, conducted in the school environment. Since the present review included studies with pre- and post- measurement of screen time, the following were also used as eligibility criteria: interventions that focused on obesity prevention and changes in lifestyle through nutrition education and physical activity. In these studies, reduction of screen time was a secondary outcome.

The internal quality of the studies was assessed using the allocation concealment criteria proposed by the Cochrane Collaboration[34] and complemented by the Jadad et al.[35] scale. When assessing the allocation concealment criteria, the studies were classified into four categories: Category A or Adequate, meaning that the process of allocation was