

## Methods

A systematic literature review was conducted using the main electronic databases for health sciences and health economic evaluations, including PubMed, Cochrane Library, the British National Health Service Economic Evaluation Databases and EconLit. Peer-reviewed full economic evaluations published in English or German between January 2004 and November 2015 were considered for review. Eligible were studies including either a trial-based cost-effectiveness analysis or a simulation-based cost-effectiveness analysis of an obesity prevention targeting preschool children and/or their parents.

## Results

Of the 728 studies identified in the initial search, 717 were excluded after scrutiny of the abstracts. The remaining 11 articles were retained for subsequent detailed assessment; among those, six were in line with our eligibility criteria and were included for analysis. They included five intervention studies, of which four were (cluster-) randomised trials and one a quasi-experimental intervention study. The sixth study was based on a simulation study conducted on secondary data. The descriptive quality assessment of the included economic evaluations presented varying degrees of integrity and completion.

## Conclusions

While the need for cost-effectiveness studies on obesity prevention programmes in early childhood is immense, only a few studies of varying quality have been conducted. Moreover, due to methodological weaknesses, they have provided only limited information for policy makers. We elaborate reasons for the limitations of these studies and offer guidance for designing better economic evaluations of early obesity prevention.

## Cost-benefit analysis of the 'Planning Health in School' programme to prevent children's obesity

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## Background

This study evaluates the cost-benefits of the 'Planning Health in School' programme (PHS-pro), which was implemented for one-year in a follow-up non-randomized parallel-group trial that promoted healthy eating and active living in Portuguese children of 10-14 years.

## Methods

Anthropometric outcomes (height, weight, waist circumference- WC, BMI and waist-height-ratio- WHtR) and behaviour changes in 219 intervention children (IC) were compared to 230 controls children (CC). A standard economic evaluation was used to determine the cost-benefits of the intervention, following the societal perspective approach. PHS-pro intervention costs were estimated and compared to the direct costs of treating obese adults in Portugal based on a Portuguese study (Ribeiro V. 2010). The net benefit was measured by subtracting the delivery costs of the intervention per child from the total averted medical costs associated to treat an adult obese in Portugal.

## Results

After PHS-pro, the IC grew significantly more than the CC ( $p < 0.001$ ), the WC was significantly lower in the IC (-0.4 cm) whereas CC increased (+0.3 cm;  $p = 0.015$ ), and the WHtR of IC showed a significant reduction ( $p = 0.002$ ) compared with CC.

PHS-pro costs were estimated in €8123.38 with an average intervention cost of €37.09/child to attend to the programme. This is much lower than the average direct costs for treating an adult obese in Portugal which was calculated in €3849.15/year. These costs are equivalent to implementing the PHS-pro in

104 children. The PHS-pro net benefit was positive in €3812.06 as the monetary benefits clearly overcame the monetary costs.

## Conclusions

The findings provided evidence that the PHS-pro cost-benefits were economically feasible. The PHS-pro can be of beneficial investment to prevent overweight over in childhood and adolescence, developmental stages that determine adulthood free of chronic diseases.

## Economic evaluation of an early childhood intervention to prevent obesity: the Primrose study

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## Background

Childhood obesity is a major public health concern. Given the individual and societal consequences of childhood obesity, decision-makers are in need of cost-effective prevention strategies. The aim was to assess the costs and cost-effectiveness of a novel primary prevention program targeting pre-school children attending child health centers in Sweden.

## Methods

The economic evaluation is based on the PRIMROSE cluster-randomized controlled trial aiming to establish healthy eating and physical activity among preschool children (9-48 months of age) through motivational interviewing applied by trained nurses at child health centers. The cost-effectiveness is assessed over the trial period taking a societal perspective. The primary outcome of this trial is BMI at age 4. Cost data was prospectively collected alongside the trial. To account for uncertainty, bootstrapping techniques and sensitivity analyses were carried out.

## Results

The mean total costs of the PRIMROSE intervention was 4067 SEK per child. During preschool years direct costs mainly consist of training costs and costs for the additional time used by child health center nurses to implement the intervention compared to usual care. Early indirect costs mainly consist of parents' absence from work due to their participation in the intervention. Based the trial-based economic evaluation the incremental cost-effectiveness ratio was 1981 SEK per 0.1 BMI unit avoided.

## Conclusions

This health economic evaluation is among the first European economic evaluations of an early childhood obesity prevention intervention. A simulation study incorporating the life time societal impact is planned to capture all relevant costs and effect.

## Cost-effectiveness analyses as a facilitating tool for decision making: An illustration with vaccine preventable diseases in early childhood

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## Background

There have been a number of epidemics affecting infants and young children across Europe these past years (measles, polio, rubella, etc.). Most of the new infections in the population could have been avoided if the existing vaccines were administered in the communities. The information provided by public health experts doesn't seem to be convincing enough for authorities to implement the vaccination recommendations in the population. Since the mid-20th century, economic evaluations have been used to determine the optimal allocation

of resources in different fields (education, road traffic safety, etc.), the use of economic evaluations have also been extended to the health sector. This presentation will focus on how economic evaluation can complement traditional epidemiological studies and contribute to facilitate the decision making process.

#### **Methods**

There are different methodologies for economic evaluations, there is a growing literature that successfully addresses the monetary quantification of the overall impacts of adverse health risk factors and public health interventions. The focus here is on cost-effectiveness analyses of vaccine preventable diseases in early childhood. A systematic literature review has

been performed using the main electronic data bases for health sciences and health economic evaluations including PubMed, Cochrane Library and EconLit.

#### **Results and Conclusions**

Economic evaluations may contribute to enhance the effectiveness of decision making by providing information on optimal allocation of resources. In times of austerity, economic evaluations help to determine the most effective strategies and as such set priorities. However, it is essential to adopt a multidisciplinary approach in order to develop a more robust and comprehensive framework for health assessment in the decision making process.