

## Foreword

# The 'ToyBox-study' obesity prevention programme in early childhood: an introduction

Y. Manios

Department of Nutrition and Dietetics,  
Harokopio University, Athens, Greece

Address for correspondence: Dr. Y Manios,  
Department of Nutrition-Dietetics, Harokopio  
University, 70 El. Venizelou Ave., 17671,  
Kallithea, Greece. E-mail: manios@hua.gr

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The rates of overweight and obesity among adults and children remain high (1), even though in some countries the speed of increase seems to be levelling off (2). Targeting preschool-aged children is central to preventing obesity because development at this life stage is more malleable than it is in later childhood and adolescence (3,4), and risk factors for overweight can be more easily modified (5). In addition, early food- or physical activity-related experiences may influence the acquisition of diverse eating habits and engagement in physical activity in later life (6–10). This early development and adoption of desired eating and physical activity habits may help prevent physiological and hormonal dys-regulations. This emphasizes early childhood as the ideal window in time to intervene. Several studies have highlighted the importance of integrated approaches to physical activity and healthy eating in preventing childhood overweight (11). Although different legislation applies regarding pre-primary education in different countries in Europe, the majority of children of preschool age (95–100%) attend kindergartens (<http://www.eurydice.org>). As such, the kindergarten seems to be the ideal setting to implement concerted health promoting actions.

The ToyBox-study (short for 'Multifactorial evidence based approach using behavioural models in understanding and promoting fun, healthy food, play and policy for the prevention of obesity in early childhood' <http://www.toybox-study.eu>) is a European Union (EU)-funded study

(2010–2013) aiming to develop and test an innovative and evidence-based obesity prevention programme for children aged 4–6 years. ToyBox comprises a multidisciplinary team of 15 partners across the EU: a variety of experts are involved in this project such as public health experts, epidemiologists, nutritionists, physical activity experts, educational scientists, psychologists, behavioural scientists, paediatricians, early childhood psychologists, political scientists and health economists. The consortium consists of 11 universities, 1 research institute, 1 health promotion institute, 1 advocacy group, and a small-medium enterprise representing all regions of Europe, and all of them have ample experience in conducting and coordinating multi-centre international research as well as undertaking dissemination activities to all relevant stakeholders.

ToyBox-study will:

Step 1. Identify young children's key behaviours and their determinants related to early childhood obesity; evaluate existing behavioural models and educational strategies that best support behavioural change in this age group; assess environments, policies and legislation affecting the implementation of kindergarten-based health promotion activities;

Step 2. Develop a kindergarten-based, family-involved intervention to influence obesity-related behaviours in 4–6-year-olds, adjusting for cultural, legislative and infrastructural diversities in the participating countries;

Step 3. Implement the intervention programme in six European countries; assess its process, impact and outcomes; and estimate its cost effectiveness;  
 Step 4. Disseminate the results and make recommendations for European public health policy.

As described by Manios *et al.* (12), the ToyBox-study follows a combined framework of PRECEDE-PROCEED Model and Intervention Mapping to develop its kindergarten-based intervention. The first steps of this framework suggest a thorough assessment of the problem (obesity in early childhood); children's energy balance-related behaviours; determinants of these behaviours (such as children's preferences; parental and teachers' behaviours, beliefs and attitudes, accessibility or rules); and educational strategies and contextual factors (such as school system, existing health promotion activities, etc.). Therefore, the first year of ToyBox-study was devoted to the execution of 'Step 1' as described above. The ToyBox-study has conducted systematic and narrative reviews, secondary data analyses, focus group research and societal assessment to guide the development of the intervention material and the tools for the outcome, impact, process and cost-effectiveness evaluations. **The results of this work are presented in this current supplement issue of Obesity Reviews through a series of papers.**

Following this work and taking into consideration the cultural, legislative and infrastructural diversities in the participating countries, as identified above, a kindergarten-based intervention programme will be developed to promote healthy food, fun and active play in preschool settings throughout Europe. Currently, the group is working on the development of this kindergarten intervention programme ('Step 2') and also on the development of the tools to be used in the evaluation of its implementation in six European countries 'Step 3'.

At the final 'Step 4', the results of ToyBox-study will be disseminated among key stakeholders including scientists, policy makers and the general population. In that sense, ToyBox-study will support decision-making for public health policy by providing all necessary information for policy makers and health promotion planners while the material and/or the intervention plan could potentially be adapted on a pan-European scale.

## Conflict of Interest Statement

No conflict of interest was declared.

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