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# From ToyBox Study to eToyBox: Advancing Childhood Obesity Reduction in Malaysian Kindergartens

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**Abstract:** Prevention and treatment of childhood obesity is a global concern, and in Malaysia, it is considered a national public health priority. Determinants of childhood obesity are multifactorial and include factors that directly and indirectly influence energy balance-related behaviours, including energy intake and energy expenditure. Interventions to address childhood obesity that have multiple components at different levels have been shown to be the most influential. The ToyBox-study is a childhood obesity intervention aimed at preschool-aged children and their families that had been shown to be effective in several European countries and so was chosen for adaption for the Malaysian setting. Materials were translated and adjusted for the Malaysian context and audience and implemented in kindergartens in Peninsular Malaysia and Sarawak. However, during the COVID-19 pandemic and lockdown, teaching transitioned to being online. This brought an opportunity to reach a wider audience and consider the long-term sustainability of the intervention, and thus eToybox was born. eToybox aims to bring support for healthy energy balance behaviours directly to the teachers, into kindergartens and homes, to encourage families to be active and eat healthily, and prevent or reduce obesity. Through online innovation, the Toybox Study Malaysia programme has been expanded to enhance its potential to impact the promotion of healthy lifestyles among preschoolers and their families, highlighting the importance of a holistic approach to preventing and treating childhood obesity in Malaysia.

**Keywords:** childhood; obesity; intervention; nutrition; energy balance; preschool; online

## 1. Introduction

The World Health Organisation [1] has stated that the prevention and treatment of childhood obesity is a global concern because of the direct impact on child health and wellbeing. Since the consequences of childhood obesity can be lifelong and result in greater risk of developing non-communicable diseases (NCDs) in adulthood [2,3], this emphasises the importance of taking an early life-course approach [2].