

<b>Institution:</b> Durham University		
<b>Unit of Assessment:</b> UoA 24: Sport and Exercise Sciences, Leisure and Tourism		
<b>Title of case study:</b> Changing global policy and practice to promote the reach and effectiveness of interventions to prevent childhood obesity.		
<b>Period when the underpinning research was undertaken:</b> Between May 2011 and July 2019		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>  Carolyn Summerbell	<b>Role(s) (e.g. job title):</b>  Professor	<b>Period(s) employed by submitting HEI:</b> Oct 2008 to present
<b>Period when the claimed impact occurred:</b> Between December 2013 and December 2020		
<b>Is this case study continued from a case study submitted in 2014? N</b>		
<p><b>1. Summary of the impact</b> Research from Durham University has made a positive impact on policy and practice addressing the global problem of childhood obesity. This research recommends that interventions should take a 'whole systems approach'. These recommendations have been adopted as international (by the WHO), national and regional (e.g. Ontario, Canada; Hunter New England and Victoria, Australia; North East, England) public health policy. Using these recommendations, two interventions (ToyBox, EPODE) were developed and tested by Summerbell. These have been translated and rolled out across the world (ToyBox, 17 countries; EPODE, 31 countries) and experienced by an estimated 20,000,000 European children and 70,000,000 children globally.</p>		
<p><b>2. Underpinning research</b> The Cochrane database is the leading journal and database of systematic reviews in healthcare. With support from the World Health Organisation (WHO), Summerbell co-led a Cochrane review of interventions to prevent childhood obesity (published 2011) with Professor Elizabeth Waters, University of Melbourne (R1), and subsequently a number of updates of the review, including the 2019 update (R2). The review was designed to determine the effectiveness of a range of interventions that included physical activity and diet components. This research was distinctive in synthesising the findings from decades of individual trial studies to derive a comprehensive, coherent and reliable understanding of 'what works' and 'for whom'.</p> <p>One of the key findings of Summerbell's 2011 Cochrane review (R1) was that interventions which used a whole systems approach to tackle childhood obesity were more likely to reach children from low income families and less likely to generate inequalities. A whole systems approach includes a combination of intervention components targeted at different levels. These levels can simply be described as people, products, places and policy. The most common interventions at the time of the 2011 review targeted only the individual child level and aimed to make healthier choices easier by providing information or enabling choice. The review also found that the most promising strategies involved transformative co-ordinated action across all levels, and capacity building activities.</p> <p>The 2019 update to the review (R2) included 98 additional studies compared with the 2011 version, and it confirmed that the most effective interventions used a whole systems approach. The review was able to go further in its recommendations and stated that interventions which intervened at all levels of the system, rather than just targeting up stream (e.g. policy) or downstream (e.g. educating children), were more successful.</p> <p>Building on the findings of the 2011 Cochrane review, Summerbell et al. were partners on a major European study called ToyBox that was funded by the European Commission. The ToyBox intervention aimed to prevent obesity in pre-school children. Summerbell led a systematic review which identified effective behaviour change strategies which informed the development of the intervention (R3). The ToyBox intervention was tested, using a cluster</p>		

randomised trial design, in a total of 6,290 preschoolers and their families across six European countries in 2012–2013. Summerbell led on the sampling strategy and analysis strategy for the trial, which allowed for the testing of intervention-generated inequalities (R4). Summerbell et al. summarised the findings from the ToyBox study into evidence-based recommendations for Local Authorities and non-governmental organisations (R5). These recommendations included areas such as encouraging parental engagement and role modelling, use of rewards, normalising physical activity in schools, and limiting screen time.

Ensemble Prévenons l'Obésité Des Enfants' (EPODE) (translated to English 'Together Let's Prevent Childhood Obesity') was a large-scale, coordinated, capacity-building approach for communities to implement effective and sustainable strategies to prevent childhood obesity. Using the findings of the 2011 Cochrane review, and working alongside academics from across Europe, Summerbell's unique contribution to the EPODE methodology was to provide methodological expertise for the design features (e.g. a whole systems approach) and implementation factors (e.g. ensuring the child perceived the intervention as 'fun') to increase the reach of the intervention to low income families (R6). This approach supported the effective and sustainable impact of the intervention.

### 3. References to the research

- R1.** Waters E, de Silva-Sanigorski A, Hall BJ, Brown T, Campbell KJ, Gao Y, Armstrong R, Prosser L, Summerbell CD. Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews* 2011, Issue 12. Art. No.: CD001871. DOI: 10.1002/14651858.CD001871.pub3
- R2.** Brown T, Moore THM, Hooper L, Gao Y, Zayegh A, Ijaz S, Elwenspoek M, Foxen SC, Magee L, O'Malley C, Waters E, Summerbell CD. Interventions for preventing obesity in children. *Cochrane Database of Systematic Reviews* 2019, Issue 7. Art. No.: CD001871. DOI: 10.1002/14651858.CD001871.pub4
- R3.** C.A. Nixon, H.J. Moore, W. Dothwaite, E.L. Gibson, C. Vogege, S. Kerichauf, A. Wildgruber, Y. Manios, C.D. Summerbell, ToyBox-Study Group. Identifying effective behavioural models and behaviour change strategies underpinning preschool- and school-based obesity prevention interventions aimed at 4–6-year-olds: a systematic review. *Obesity Reviews* 2012; 13 (S1): 106–117. DOI: 10.1111/j.1467-789X.2011.00962.x
- R4.** ToyBox final study report: <https://cordis.europa.eu/project/rcn/95217/reporting/en>
- R5.** Summerbell CD, Moore HJ, Vögele C, Kreichauf S, Wildgruber A, Manios Y, Douthwaite W, Nixon CA and Gibson EL on behalf of the ToyBox-study group. Evidence-based recommendations for the development of obesity prevention programs targeted at preschool children. *Obesity Reviews* 2012; 13 (S1): 129–132. DOI: 10.1111/j.1467-789X.2011.00940.x
- R6.** Borys J-M, Le Bodo Y, Jebb SA, Seidell JC, Summerbell C, Richard D, De Henauw S, Moreno LA, Romon M, Visscher TLS, Raffin S, Swinburn B and the EEN Study Group. EPODE approach for childhood obesity prevention: methods, progress and international development. *Obesity Reviews* 2012; 13 (4), 299–315. DOI: 10.1111/j.1467-789X.2011.00950.x

### Quality of Research

The research contained in [R1, R2] received funding from the World Health Organisation and the Cochrane Collaboration, and was published in the Cochrane Library. Citations (date: 22/04/20; source: Google Scholar): R1 3,851, R2 43. All Cochrane Reviews are peer-reviewed systematic reviews that are scrutinised for rigour by a Cochrane Review Group and published in the Cochrane Library. The research contained in [R3, R4, R5] was funded through the Framework Programme 7, European Commission (EUR3,906,904 in 02-2010) and published in *Obesity Reviews*. The research contained in [R6] was also published in *Obesity Reviews* (206 citations) and provides the methodological basis for all community based initiatives that are based on EPODE.

### 4. Details of the impact

According to the World Health Organisation (WHO) childhood obesity is reaching an alarming proportion posing serious challenges. It is estimated that approximately 40,000,000 children under the age of 5 were overweight or obese in 2018 and over 340,000,000 children and

adolescents aged 5-19 were overweight or obese in 2016. Durham University's research and development of the 'Whole System Approach', as advocated by Summerbell et al. through a Cochrane review (R1), and subsequently the ToyBox Intervention and EPODE, positively impacted global health policy, public health policy and the health of communities.

### **Impact on global health policy relating to childhood obesity**

Summerbell's Cochrane Review of Interventions for reducing childhood obesity (R1) has underpinned four key global health policies and strategies within the World Health Organisation (WHO) aimed at reducing childhood obesity.

The WHO final report of the Commission on Ending Childhood Obesity (2016) (E1p2) calls on governments, leadership and stakeholders to recognise their moral responsibility in acting on behalf of children to reduce obesity. The report draws heavily on Summerbell et al.'s whole systems approach (R1) in its recommendations to 'Provide guidance on and support for healthy diet, sleep and physical activity in early childhood to ensure children grow appropriately and develop healthy habits' (E1 p28). Specifically, Summerbell's et al.'s research (R1) is referenced as underpinning evidence for recommendations around selection of healthy foods, promoting physical activity within the daily routine, incorporating food education into the curriculum and providing clear guidance and support to caregivers. Dr Chizuru Nishida, Head of the Safe, Healthy and Sustainable Diet Unit within the Department of Nutrition and Food Safety of the WHO reiterated the importance of a whole system approach for interventions in the prevention of childhood obesity, and that the Cochrane Review provided important input into the WHO's final report of the Commission on Ending Childhood Obesity. Dr Nishida stated that as of February 2020 *"Among the 172 WHO Member States ... 122 have included strategies to address nutrition in schools and improve school food environment while 134 have included actions to promote healthy diet and prevent obesity"* (E1 p70,71).

Summerbell's ToyBox intervention research (R6) was used by the WHO Regional Committee of Europe when producing the WHO European Food and Nutrition Action Plan 2015 -2020 (E2). This Action Plan was produced after the Regional Committee of Europe adopted to take decisive steps to promote healthy diets to help address the alarming rates of obesity across the WHO European Region (which consists of 53 European countries). The Action Plan was overwhelmingly supported by health ministers and representatives of the 53 European Countries (E2). Joao Breda, Head of the WHO European Office for Prevention and Control of Noncommunicable Diseases and Programme Manager, Nutrition, Physical Activity and Obesity within the WHO Regional Office for Europe, states *"These findings [ToyBox systematic Review] were fundamental to achieve one of the main pillars of the Action Plan which aims to Promote the gains of a healthy diet throughout the life-course, especially for the most vulnerable groups. The Action Plan encouraged the Member States to include these recommendations in their country-level food and nutrition policies, and explore mechanisms to ensure longer-term sustainability and generalizability of interventions and initiatives"* (E2 p42). The action plan calls for policies to be adopted to maintain a healthy bodyweight and as a result member states are able to tailor policy advice, develop practical tools and build a healthier Europe.

In 2017 the WHO produced 'WHO Guideline: assessing and managing children at primary health-care facilities to prevent overweight and obesity in the context of the double burden of malnutrition' (E3). Summerbell et al.'s Cochrane Review (R1) is an underpinning output used in the 'summary of evidence' section and contributes to the strength of evidence ratings for the guideline's recommended interventions throughout. The guidance is intended to help all 194 Member States and their partners in their efforts to make evidence-informed decisions on assessing and managing children at primary health-care facilities, to prevent overweight and obesity in the context of the double burden of malnutrition. The guideline was created to offer support for a full spectrum of health care providers with, for example, over 4,100 downloads between March 2020 and August 2020 (E3 p90).

### Public health policy in the United Kingdom

As part of the government's health and social reform, Local Authorities were given the responsibility for public health as they are best placed to understand the needs of the community at a local level (E4). The whole systems approach advocated by Summerbell et al. through her Cochrane review (R1), which was used in the EPODE model (R6), was formalised through the Whole Systems Obesity Programme outlined in the 2017 report from the Local Government Association, with Public Health England and the Association of Directors of Public Health: 'Making Obesity Everyone's business: A Whole system approach to obesity', quoting the Director of Public Health from Essex County Council "*the best option is a whole system approach based on the EPODE model*" (E5). Specifically with regard to the North East region of England, Peter Kelly, Centre Director for Public Health England North East, stated that "*The recommendations from Professor Summerbell's Cochrane Review on the prevention of childhood obesity are now embedded in the plans to tackle childhood obesity in my own team in Public Health England and in many of the North East local authorities. Working in a whole system approach and promoting a healthy environment are now common place approaches in the North East public health system – approaches that are based firmly and directly on Professor Summerbell's work and recommendations.*" (E5 p30)

**ToyBox**, funded by the European Commission, aimed to prevent obesity in pre-school (aged 4-6) children using Summerbell's research findings from her Cochrane review (R1). The ToyBox intervention focusses on changing the physical activity, sedentary, and dietary behaviours of young children. ToyBox was implemented in six European countries (Belgium, Bulgaria, Germany, Greece, Spain and Poland). In these countries, 309 kindergartens/children's nurseries and 7,056 pre-school children and their families participated in the interventions (R4) (E6 p3). The results recognised that a whole system approach was a successful intervention which did not increase inequalities and, for some outcomes, worked better for children from low income families compared with children from less disadvantaged families.

Following completion of the research study, the ToyBox programme has remained popular and a website now provides free resources for parents and teachers. Requests for these resources and general information about the ToyBox intervention has been requested by public health officials in a number of countries across the world including Austria, Belgium, Estonia, Germany and Poland. In 2018, the ToyBox intervention was voted by the European Commissions, Joint Action CHRODIS, as one of the good practices in the health promotion and primary prevention of chronic diseases across Europe (E6). The ToyBox initiative was also promoted in The Parliament Magazine (EU), which is used to inform policy makers across the EU landscape with over 80,000 European subscribers, in an article titled 'Urgent Need for EU action to tackle Childhood Obesity' (E6 p8).

### Health of communities

The **EPODE programme** (R6) uses the whole of community approach to promote healthy eating and physical activity behaviours and prevent childhood obesity. EPODE has been translated (and renamed) and rolled out across 28 countries throughout the world (E7). The impact of EPODE is demonstrated with some examples below:

- The Ajyal Salima Programme was initially rolled out in Lebanese schools where it reached around 40,000 public and private school-children and continues to be popular. The programme has reached over 300 schools across the country so far, with more schools taking part in the program as time goes on. The programme has been rolled out in United Arab Emirates, Kingdom of Saudi Arabia, Jordan, Palestine and Bahrain over the past eight years and has reached so far more than 90,000 children in the region (E7).
- Dr Tommy Visscher, the co-chair of the EIN (*EPODE International Network*) Scientific Advisory Board, and chair of the Scientific Advisory Board Chair of JOGG (the Dutch EPODE approach), stated "*Lessons learned by Prof. Summerbell's work have led to healthier children and healthier environments and systems across our international community-based childhood obesity prevention platform reaching of 20,000,000 Europeans and over 70,000,000 people globally. Lessons learned are presented at the*

*EU Platform for nutrition and physical activity, and health policy has changed at national levels, impacting schools, day-care centres, sports clubs, social welfare and health management institutions impacting babies, toddlers, children, teenagers, and their parents.” (E8)*

- Luke Wolfenden, the Program Manager of Hunter New England Population Health (which is a government funded health service in Australia that provides a provision for obesity prevention services to 900,000 residents) stated *‘The findings in Prof Summerbell’s Cochrane Review which describe and recommend a whole of community approach to the prevention of childhood obesity and decreasing inequalities has directly informed an obesity prevention service model in the Hunter New England Region that our surveillance data indicates is reducing the population prevalence of obesity in our community, benefiting over 150,000 children each year’* (E8)
- In 7 European countries children from low income families improved their healthy behaviours more than children from middle and high-income families through tailored interventions decreasing health inequities, as part of the EPHE project (EPODE for the Promotion of Health Equity) (E9).

### **5. Sources to corroborate the impact**

**E1.** WHO Report of the Commission on Ending Childhood Obesity (2016) and testimony from Chizuru Nishida, WHO Geneva (February 2020).

**E2.** WHO European Food and Nutrition Action Plan 2015–2020 (2015) and testimony from Joao Breda, the Head, WHO European Office for Prevention and Control of Non-communicable Diseases and Programme Manager Nutrition (February 2020).

**E3.** WHO Guideline: assessing and managing children at primary health-care facilities to prevent overweight and obesity in the context of the double burden of malnutrition (2017): License: CC BY-NC-SA 3.0 IGO and evidence of downloads.

**E4.** The King’s Fund report ‘Improving the public’s health’: A resource for local authorities (2013).

**E5.** Local Government Association (LGA) and Public Health England (PHE) report 2017 and testimony from PHE (December 2019).

**E6.** ToyBox final study report 2014, The Parliament Magazine: ‘Urgent need’ for EU action to tackle childhood obesity (2014), Joint Action on Chronic Diseases & Promoting Healthy Ageing across the Life Cycle report, and email from Dr Femke De Meester about Boogie Woogie (March 2020).

**E7.** EPODE evidence (2020) and Healthier Kids: The Ajyal Salima Programme (2019)

**E8.** Testimonies from Dr Tommy Visscher, Co-chair of EIN’s scientific advisory board and Scientific Advisory Board’s chair for JOGG (December 2019) and Luke Wolfenden, Program Manager at Hunter New England Population Health (February 2020).

**E9.** Article ‘Tackling Health Inequities and Reducing Obesity Prevalence: The EPODE Community-Based Approach’ (2016), Borys JM et al., Ann. Nutr. Metab. 68 (S2): 35-38. DOI: 10.1159/000446223