

Preventing childhood obesity in Latin America: an agenda for regional research and strategic partnerships

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Summary

The increasing prevalence of childhood obesity in Latin America poses a major public health challenge to the region. In response, many countries are implementing obesity prevention programmes aimed at modifying known risk factors. However, the limited scientific evidence inhibits the development and implementation of novel, effective interventions across the region. To address these gaps, the NIH Fogarty International Center convened a workshop of researchers, policymakers, programme implementers and public health advocates who are actively engaged in the region to prevent childhood obesity. Major aims of the meeting were to define the current status of childhood obesity, identify the scientific gaps in our understanding of the epidemic, point out the barriers and opportunities for research and outline a plan for capacity building in the region in the area of childhood obesity. This series of articles reflects the key outcome of the meeting and offers an analysis of the knowledge translation needed for evidence-based policy initiatives, a review of the research agenda and an evaluation of research capacity in the region. The goal of the papers is to inform the development of multidisciplinary and multisector research collaborations, which are essential to the implementation of successful childhood obesity prevention strategies in the region.

Keywords: childhood obesity, Latin America, partnership, research.

Introduction

Childhood obesity is increasing at alarming rates across the globe. The World Health Organization has called childhood obesity 'one of the most serious public health challenges of the 21st century' (1). Progress to address this growing epidemic is slow and inconsistent, highlighting the need for evidence-based interventions that can be scaled. Childhood obesity negatively influences quality of life and educational attainment (2,3) and greatly increases the risk of becoming an obese adult (4), a condition that is frequently lifelong. When obesity affects a large proportion of the population, not even the most industrialized countries can provide the lifetime health care associated with it and its comorbidities. Across the world, although particularly in low-income and middle-income countries, the best and sometimes only option is prevention. To have the greatest impact, prevention efforts must start at an early age.

Childhood obesity rates in Latin American are among the highest in the world, with one in five children under 20 years

old either overweight or obese (5). Obesity comorbidities, such as cardiovascular disease and type-2 diabetes, are also increasing rapidly, and severe morbidity and mortality from these conditions affect a larger percentage of people and at an earlier age in Latin America than in more developed countries (6,7).

The childhood obesity epidemic in Latin America overlaps with the continuing problem of chronic undernutrition. This phenomenon, which also exists in other regions of the world, is known as the 'dual burden'. In many areas, and even within families, undernutrition and overweight coexist posing a challenge to prevention initiatives. In most countries, child healthcare systems are geared towards focused, frequently short-term interventions to prevent acute illness. In contrast, obesity prevention requires substantial, long-term changes in the food market, lifestyle and even urban planning and transportation. Thus, very few, if any, countries in Latin America are prepared to confront the rapid growth in childhood obesity prevalence, let alone implement

successful combined programmes and policies that tackle both undernutrition and overweight.

Notwithstanding current economic stagnation in the region, Latin America has experienced a significant economic development over the past 20 years. Unfortunately, this growth has led to some of the largest income disparities in the world (8). A study in Organization for Economic Cooperation and Development countries found that income inequality accounted for 35% of the variations in female obesity (9), and another study identified an association between obesity prevalence and food insecurity, a proxy of economic disparities (10). Furthermore, adoption of market economy principles and policies has favoured the rapid introduction and consumption of high-energy, low-nutrient foods, principally in large and middle-sized cities (11). These changes, along with increased and unregulated expansion of urban environments, have resulted in an ecosystem that discourages healthy eating and an active lifestyle. Because Latin America is about 80% urbanized, this environment affects the majority of the region's population. These adverse health consequences primarily impact lower-income groups, who have less resources and education to confront these inevitable health risks.

To address this growing health concern, many Latin American countries are experimenting with different interventions and public health programmes to prevent childhood obesity. Governments and non-governmental organizations have promoted regulatory initiatives to modify food and lifestyle environments. While some of these initiatives are aimed at modifying known risk factors for obesity, which are highly prevalent in the population, others lack a robust base of scientific evidence. This environment creates a living laboratory that can test novel approaches and evaluate programmatic and policy initiatives. In fact, impact evaluations for some of these risk factor exposures regulations are available or in process (12), although most initiatives have not been evaluated. Opportunities exist to conduct multi-site intervention studies as well as implementation science-oriented research to assess the generalizability of effective interventions across diverse settings within countries, across the region and along border towns in the United States. The evidence and lessons learned from this research will not only inform childhood obesity prevention efforts across the region but can also lay the groundwork for an understanding of how to prevent childhood obesity in different settings around the world.

There are ongoing efforts to capitalize on lessons already learned. In February 2017, the Caribbean Public Health Agency, the Pan American Health Organization and the Caribbean Community brought together key stakeholders, including the Ministries of Health from Mexico and Chile, to develop a roadmap to prevent childhood obesity.

Mexico and Chile presented their experiences implementing a sugar-sweetened beverage tax and food marketing legislation (respectively), each of which relied on research and evidence to support the policy's development and implementation (13).

Initiatives such as this and scientific opportunities in the region point to a need for targeted research and research training, informed by a thoughtful set of questions and priorities. In response to this need, the Center for Global Health Studies at the National Institutes of Health's Fogarty International Center convened researchers, policymakers, programme implementers and other NIH Institutes and Centres in October 2014. The workshop summarized the state of knowledge on childhood obesity prevention in Latin America and the opportunities for research to impact programmes and policies. The articles presented in this series address the multifaceted nature of childhood obesity prevention as discussed at the workshop. They include an assessment of the current status through available data and evidence, an analysis of the knowledge translation elements needed for evidence-based policy initiatives, a review of the research agenda that, if implemented, will lead to implementation of successful prevention strategies and an evaluation of research capacity needed to address obesity across Latin America. Taken together, these components (Table 1) are essential for moving the field forward.

Importance of novel partnerships and collaboration

The development and implementation of interventions that can effectively prevent childhood obesity at a population level requires the engagement of multiple disciplines and sectors. One of Latin America's strengths in addressing childhood obesity is the clusters of scholars in multidisciplinary centres and departments (14). Further encouraging multisector teams and expanding them to include disciplines such as communications, economics and policy analysis will be essential. These efforts will require expertise in designing and evaluating complex interventions (15–17), synthesizing evidence (18) and moving forward into application. Multidisciplinary approaches that examine diet and physical activity together have the best chance to improve understanding of the multiple influences on behaviours and obesity and how these may operate differently in subgroups.

Multisector collaboration is critical to identifying priority research needs, conducting certain types of research and translating this evidence into programme and practice. An immediate goal is to encourage and facilitate robust interactions among the academic sector, civil society and government institutions that are addressing childhood obesity. This increased dialogue and partnership can help to ensure that research addresses high-priority questions

Table 1 Moving the field forward: description of supplement articles

The **landscape analysis** reviews the current literature to understand the state of knowledge around childhood obesity prevention in the region (19). The article highlights critical topics, including the phenomenon of the dual burden of undernutrition and overweight and key aspects of the nutrition transition. It addresses the disparities within households, countries and region; distal and proximal causes of childhood obesity; and barriers to addressing obesity prevention in the region.

Childhood obesity is an evolving field that requires a **cohesive research agenda** to guide the scientific community, research funding agencies and national governments (20). This article presents the unique research challenges and opportunities in Latin America. Addressing these research questions will advance evidence-based policy and practice in childhood obesity prevention.

Through case studies of current **obesity prevention policies**, the article examines the key components of successful implementation and sustained food and physical activity policies (13). It explores the role that research plays in supporting this policy development and implementation and presents lessons learned about rigorous evaluation and knowledge translation.

An analysis of existing literature highlights the need to **build research capacity** for individuals, institutions and network partnerships and collaborations (14) to move this field forward. The article addresses capacity gaps and strategies to strengthen capacity, including investing in more well-trained scientists, encouraging regional collaborations and growing the proportion of work that reaches publication in respected scientific journals.

for the governments and that governments are better informed of available evidence, as well as the promises and limitations of research findings.

For a number of reasons, the historical experience of partnerships between nations (and even between institutions in the same country) in Latin America is rather limited. Competition for limited resources, a lack of strong guidance on national science policy and misplaced nationalism have all been factors. However, it is imperative that governments in the region foster cross-national learning and collaboration, so that countries do not have to reinvent the wheel and can translate lessons learned from other settings to their own unique circumstances. Multi-national studies can also yield insights related to genetic, socioeconomic and cultural variables that cross national boundaries.

In addition, the food industry contributes a considerable fraction of the daily calories consumed in many Latin American countries, particularly in urban areas. National-level partnerships between governments, academia and industry are essential to addressing childhood obesity; however, there are few examples of these entities working together. This is in part due to a lack of consistent rules and ethical principles for private-public sectors collaboration and perhaps some negative experiences of prior attempts to collaborate. Future efforts to create these partnerships should address these challenges by establishing well-defined and measurable goals and delineating clear rules of engagement.

Conclusion

Given the growing rates of childhood obesity in Latin America, we need to understand the causes underlying this epidemic and the most effective ways to address them. The following articles aim to articulate what research is needed, gaps and opportunities to build relevant, scientific capacity, lessons learned from successful efforts to utilize research in

programme and policy development and opportunities for building new partnerships and collaborations. Thorough evaluations of current initiatives will help identify what is currently working to prevent childhood obesity, while continued research seeks to understand the risk factors and methods for intervening. Supporting this research by building capacity throughout the region and encouraging partnerships and communication between researchers and policymakers and programme implementers will help to ensure that these efforts are sustained.

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References

1. Organization WH. Childhood overweight and obesity; 2016.

2. Williams J, Wake M, Hesketh K, Maher E, Waters E. Health-related quality of life of overweight and obese children. *JAMA* 2005; **293**(1): 70–76.
3. Cohen AK, Rai M, Rehkopf DH, Abrams B. Educational attainment and obesity: a systematic review. *Obes Rev* 2013; **14**(12): 989–1005.
4. Sawaya AL, Roberts S. Stunting and future risk of obesity: principal physiological mechanisms. *Cad Saude Publica* 2003; **19**(Suppl 1): S21–S28.
5. Ng M, Fleming T, Robinson M *et al.* Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 2014; **384**(9945): 766–781.
6. Enes Romero P, Cano Gutierrez B, Alvarez Gil N, Martin-Frias M, Alonso Blanco M, Barrio CR. Ethnic influence on the prevalence of metabolic syndrome in an obese pediatric population. *An Pediatr (Barc)* 2013; **78**(2): 75–80.
7. Lopez-Jaramillo P, Sanchez RA, Diaz M *et al.* Latin American consensus on hypertension in patients with diabetes type 2 and metabolic syndrome. *J Hypertens* 2013; **31**(2): 223–238.
8. Most LN. Unequal on Earth. *Finance & Development* 2015; **52**(3): 14–16.
9. Su D, Esqueda OA, Li L, Pagan JA. Income inequality and obesity prevalence among OECD countries. *J Biosoc Sci* 2012; **44**(4): 417–432.
10. Schlussek MM, Silva AA, Perez-Escamilla R, Kac G. Household food insecurity and excess weight/obesity among Brazilian women and children: a life-course approach. *Cad Saude Publica* 2013; **29**(2): 219–226.
11. WHO. P. Ultra-processed food and drink products in Latin America: trends, impact on obesity, policy implications. Washington, DC; 2015.
12. Colchero MA, Popkin BM, Rivera JA, Ng SW. Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study. *Bmj* 2016; **352**: h6704.
13. Pérez-Escamilla R, Lutter CK, Rabadan-Diehl C *et al.* Prevention of childhood obesity and food policies in Latin America: from research to practice. *Obes Rev* 2017; **18**(Suppl 2): 28–38.
14. Parra DC, Vorkoper S, Kohl III HW, *et al.* Research capacity for childhood obesity prevention in Latin America: an area for growth. *Obes Rev* 2017; **18** (Suppl. 2): 39–46.
15. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008; **337**: a1655.
16. Moore GF, Audrey S, Baker M *et al.* Process evaluation of complex interventions: Medical Research Council guidance. *BMJ* 2015; **350**(h1258). <https://doi.org/10.1136/bmj.h1258>
17. Hoffman TC, Glasziou PP, Boutron I *et al.* Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ* 2014; **348**: g1687.
18. Shepperd S, Lewin S, Straus S *et al.* Can we systematically review studies that evaluate complex interventions? *PLoS Med* 2009; **6**(8) e1000086.
19. Corvalán C, Garmendia ML, Jones-Smith J, *et al.* Nutrition status of children in Latin America. *Obes Rev* 2017; **18** (Suppl. 2): 7–18.
20. Kline L, Jones-Smith J, Jaime Miranda J, *et al.* A research agenda to guide progress on childhood obesity prevention in Latin America. *Obes Rev* 2017; **18** (Suppl. 2): 19–27.