

Childhood obesity prevention across borders: The promise of U.S.–Latin American research collaboration

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KEYWORDS: childhood obesity, Latin America, Latino, United States

1 | INTRODUCTION

Childhood obesity is increasing at alarming rates across the world, highlighting the need for evidence-based interventions. Research on innovative new strategies to tackle childhood obesity is taking place in the United States (US) and in countries across the Americas. However, studies and programs are too often siloed, resulting in a fractured response to a highly interconnected region-wide issue. Sharing research strategies and proven methods among researchers from Latin America and the United States, especially those working with U.S. Latino populations, can help identify common ground and lessons learned for the adaptation and implementation of evidence-informed childhood obesity prevention interventions. By catalyzing research networks across the region and developing collaborative strategies, we have the potential to address what the World Health Organization calls “one of the most serious public health challenges of the 21st century.”¹

The prevalence of childhood obesity is at an all-time high in the United States, particularly among Latino populations where more than a quarter of children 2–19 years are obese.² This rising trend is

mirrored across the entire Latin American region, and research shows that it is accelerating faster in low- and middle-income countries.³ Childhood obesity negatively impacts quality of life and significantly increases the risk of becoming obese as an adult, with increased morbidity and mortality.^{4–8} When obesity and its associated comorbidities affect a large proportion of the population, countries are unable to provide the health care required, calling for greater primary prevention efforts.

At both national and local levels, Latin America and the United States have been active in the implementation of innovative policy interventions to tackle obesity and noncommunicable diseases, including taxes on unhealthy beverages, warning labels, and other policy actions.⁹ The opportunity for mutual learning, though currently limited in scope, is already happening. *Ciclovía* (also known as Open Streets), a program that promotes physical activity by closing streets to cars on the weekends, was institutionalized at a national level in Colombia and has been implemented in cities across the United States, including Los Angeles, San Francisco, and the District of Columbia.¹⁰ The investigators that initiated *Ciclovía* credit a small street closure program in Harlem for this idea. In addition, Chile was one of the first countries around the world to introduce health warnings and mandate front-of-package labels indicating foods high in sugar, fats, salt, or calories, which directly influenced Ecuador's front-of-package labeling and, more recently, México's implementation of a novel front-of-package

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warning label system.¹¹ The U.S. and Latin America also have a great deal to learn from each other with regard to healthy maternal, infant, and child feeding and physical activity programs.

To capitalize on current successes and optimize the impacts of future research, eight Institutes, Centers, and Offices (ICOs) at the U.S. National Institutes of Health (NIH), led by the Center for Global Health Studies (CGHS) at the Fogarty International Center, convened a workshop in November 2019 that brought together researchers from the U.S. and Latin America to catalyze new relationships and identify common research questions and strategies. The *Childhood Obesity Prevention Across Borders: The Promise of U.S.-Latin American Research Collaboration* (COPAB) project highlighted synergies between research conducted in Latin America and among Latino populations in the United States, focusing on six cross-cutting areas: the social environment, built environment, migration, implementation science, measurement, and capacity building. These areas serve as the basis for this journal supplement that articulates a shared research agenda to address childhood obesity prevention in Latin America and among Latino populations in the United States.

2 | SUPPLEMENT AREAS

The Community-Energy Balance Framework (CEBF) provides a valuable model for identifying areas needed to address childhood obesity prevention.¹² Based on the social ecological framework, which nests individual behaviors (e.g., diet and physical activity) in various environments,¹³ CEBF highlights the additional influences of social injustice, culture, and migration processes on each environment. Many of the articles throughout this special series, including built environment,¹⁴ food environment,¹⁵ social environment,¹⁶ and migration¹⁷ dive into a particular layer of the CEBF to understand the contextual influences that define the problem, the current research landscape, and the opportunities for cross border learning.

Other articles cut across these layers to address a pressing underlying need. Berrigan et al.¹⁸ present the *measurement challenges* across different age groups and countries that, if addressed, could accelerate cross border collaboration and learning. Perez-Escamilla et al.¹⁹ outline the role of *implementation science* to understand how U.S. and Latin American countries achieved success in implementing obesity prevention policies and programs. Salvo et al.²⁰ conducted a scoping review and stakeholder survey to assess and build *research capacity* needs in childhood obesity and address capacity gaps and strategies to strengthen capacity. Garcia et al.²¹ introduce the application of *systems sciences* and an action-oriented framework based on its theory and methods to address whole-of-community systems changes for childhood obesity prevention in U.S. Latino and Latin American populations. Perng et al.²² conducted a narrative review on the role of *obesogenic endocrine disrupting chemicals* in the etiology of childhood obesity among Latin youth in the United States and Latin America. Finally, Vorkoper et al.²³ highlight *NIH's interest and priorities* in childhood obesity prevention and areas for future direction.

3 | SUPPLEMENT THEMES

A number of themes cut across the articles in this supplement. Many of these, including health equity, the first 1000 days, and the silos between nutrition and physical activity research, were discussed at the COPAB workshop and were underlying considerations for the articles in the supplement. Others, such as innovative methods and tools and evaluation of evidence-informed policies, naturally emerged as the articles were developed. Regardless of their origin, these cross-cutting themes should be considered when developing new interventions and strategies to address childhood obesity across the regions.

3.1 | Silos between nutrition and physical activity research

Divisions between nutrition and physical activity research often exist in the context of obesity prevention research. Some of this separation is the result of academic training that has historically occurred in each field, which at times has not emphasized the importance of health and behavioral synergies when both nutrition and physical activity are considered in tandem. While U.S. academic training programs have increasingly emphasized the value of focusing on both determinants, in many Latin American countries, formal training in intervention strategies in the physical activity promotion arena have lagged behind those in the nutrition area as described by Salvo et al.²⁰

One of the goals of the COPAB workshop was to bring nutrition and physical activity researchers from both regions together to develop a set of research directions that integrate both key determinants. From workshop discussions and those occurring in developing this supplement, it is clear that there is much to learn from exploring synergies between physical activity and dietary change in building the most effective and sustainable interventions that optimize both behaviors.²⁴ Furthermore, as illustrated in this supplement, much can be learned by the groundbreaking nutrition policy research that has been conducted successfully in Latin America that could be explored further in physical activity research occurring both in Latin America and the United States.^{15,19} Similarly, the behavioral science-informed physical activity intervention research that has flourished in the United States could be more directly incorporated into dietary intervention programs occurring in both regions.¹⁴

3.2 | Equity and social determinants of health focus

Consistent evidence shows that childhood obesity is increasingly concentrated among the poor.²⁵ This is not surprising as socioeconomically vulnerable communities have very limited access to healthy diets and often lack opportunities for regular physical activity. Hence, papers included in this supplement strongly highlight the need to

understand risk factors for unhealthy diets and physical inactivity risk factors, taking into account the social determinants of health when designing policies.^{16,26,27} As the CEBF emphasizes, this approach is needed to develop effective and equitable policies and programs that consider social injustice, historical trauma, and structural racism.¹² The articles in this supplement collectively show that even though there is an increasing recognition of the need to improve equity in policies and interventions to address childhood obesity, this is still the exception rather than the rule in both Latin American countries and among Latino and other ethnic/racial communities in the United States.²⁶ An equity lens should be intentionally integrated beginning with program conception, to ensure that equity indicators are tracked throughout the implementation, scale-up, and maintenance phases of programs.

3.3 | Migration

The effect of migration on the risk of childhood obesity is explicitly addressed in-depth in one article,²⁷ though the implications related to acculturation were included in others.¹⁸ The migration article clearly shows the importance of interdisciplinary mixed methods research in the context of complex systems frameworks.¹⁷ The massive number of migrants within and across countries is unparalleled in human history and, as a result of huge economic inequities, climate change, civil conflicts, and other humanitarian emergencies, will continue to grow. As the migration paper shows, to improve acculturation frameworks and methods, a better understanding of how the process of exposure to new cultures affects dietary and physical activity behaviors, and at the end of the day the risk of childhood obesity, is critical. Likewise, improved prospective studies are needed to understand how migrants bring new lifestyle habits to their countries of origin when they visit or return to them permanently.

3.4 | The first years of life

The first 1000 days of life (i.e., gestation and the first 2 years of life) represent a highly important window of opportunity for the prevention of the dysregulation in the metabolism of sugars and fats that can lead to childhood obesity and noncommunicable diseases such as type 2 diabetes later in life.^{28,29} Hence, to be effective, national childhood obesity programs need to have robust maternal, infant, and young children nutrition and physical activity components. In this supplement, one of the articles compared the implementation of the Baby Friendly Hospital Initiative in Brazil and the United States²⁶ that has been proven to be effective at improving breastfeeding outcomes globally.⁹ The inclusion of breastfeeding offers a constellation of long-lasting health benefits to children, including protection against the risk of childhood obesity.⁹ Additionally, the article on chemical exposures presents findings on endocrine disrupting chemicals exposure during sensitive periods of interest across the life course, including the prenatal and perinatal periods.²²

Collectively, the articles in this supplement suggest that it is important to acknowledge that childhood obesity is not only a biomedical phenomenon but is also deeply rooted in social and environmental determinants of health and has enormous implications for the psycho-emotional development and wellbeing of children. For this reason, it is important that future studies address the first 1000 days of life and beyond through the lens of the nurturing care framework following equity principles.³⁰

3.5 | Innovative methods and scientific tools (systems science and participatory action models)

This supplement also shines a spotlight on innovative methods and scientific tools that could substantively advance insights relevant to the development and delivery of more potent interventions in this field and that encourage collaborations with and learning from numerous countries. One such opportunity, described in the implementation science paper,¹⁹ is the application of the reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) framework that was successfully applied in comparing the implementation of diet and physical activity policies, including front of package warning labels, the Baby Friendly Hospital Initiative, *cicloviás recreativas* (open streets) and play streets, across countries. This analysis highlighted how reach, effectiveness, adoption, implementation, and maintenance, the framework components, are instrumental and interdependent, and thus, policies and programs to address childhood obesity should work to collect data on all dimensions to help achieve the greatest impact.

The factors influencing childhood obesity operate in multiple systems (e.g., food, transportation, and education), which together comprise a dynamic network of interactions. Embracing the inherent complexity of the multilevel factors and stakeholders impacting this field through the lens of systems science theory and methods could help in formulating a collection of actions and solutions that together could advance the field.²¹ However, most of the literature regarding systems science is oriented towards the description of the theory rather than presenting models for its application. An article in this series introduces an action-oriented framework that addresses the need for a practical roadmap on how to incorporate and use systems thinking theory and methods to design, implement, evaluate, and sustain systems changes for childhood obesity prevention.²¹ The findings from the implementation science article²⁶ further illustrate the need for utilizing systems analysis methods to better understand the complex implementation dynamics of childhood obesity policies.²¹

Another method, the International Network for Food and Obesity Research, Monitoring, and Action Support (INFORMAS) provides a useful framework for identifying and monitoring key elements of the food environment and how they interact to produce effects on children's diet and health.¹⁵ This standardized method produces measures used to evaluate important food and nutrition policies related to food labeling and advertising and pricing.

Similarly, the childhood obesity prevention research field could benefit from increased applications of participatory action models that directly engage community members themselves in the research process. Such participatory action models, including the “by the people” citizen science research model described in Sarmiento et al.¹⁴ and Ayala et al.,¹⁶ represent a “bottom-up” approach to local environmental and policy changes that can complement “top-down” policy approaches or provide an alternative method in those circumstances in which higher-level policy approaches are difficult to enact.

3.6 | Design and evaluation of evidence-informed policies

Programs and policies aimed at the prevention of obesity should be based on the best available scientific evidence.^{31,32} Too often, scientific evidence is totally ignored or sidelined in the design of policy actions. This can happen for several reasons such as policymakers' poor understanding or awareness of the evidence; limited interaction and collaboration between policymakers and scientists; lack of consensus among experts about interventions; and the influence of economic, commercial, or other interests that oppose certain policies.³³ Most articles in this supplement address issues related to the generation of policy-relevant evidence for the design and evaluation of childhood obesity prevention interventions across borders. Some articles describe the social, food, and physical activity environments, which are key drivers of obesity and should be understood to design sound policy actions.¹⁴⁻¹⁶ Other articles describe the state of research related to childhood obesity prevention in the U.S. and Latin American countries and indicators as well as methodology that have been useful for the design of interventions to improve the food and built environments.^{21,34} Of particular interest is an article aimed at understanding the elements that led to success in the implementation at scale of obesity policies and programs in U.S. and Latin American countries using implementation science.²⁶ This article presents lessons learned from case studies that can inform future interventions across borders. These include the importance of mobilization of public support and coalition building among academia, civil society, and other actors for achieving successful policy regulations that are opposed by commercial and political interests.^{35,36}

The papers in this supplement collectively describe policy actions occurring at different levels of impact from local through national levels. While national policies have a range of benefits (e.g., population-wide impact across an entire geographic area, which provides continuity, may enhance policy enforcement and diminishes confusion at more local levels), they often can be difficult to enact in large and extremely diverse nations like the United States. In such cases, enacting health-promoting policy changes at local levels can provide useful data and create positive “ripple effects” leading to increased receptivity and subsequent uptake across a nation. The food environment¹⁵ is ripe for a multifaceted approach that considers both scope of the policy as well as its implementation and enforcement.

The supplement as a whole provides information, frameworks, and evidence that can contribute to the design and monitoring of policy actions for the prevention of obesity in children and adolescents in Latin America and the Caribbean (LAC) and in Latino populations in the United States.

4 | CONCLUSION

With the growing rates of childhood obesity in Latin America and across the United States, we need to understand the most effective ways to address this complex and challenging problem. Through cross-cultural dialog and learnings from other countries, the scientific community along with research funding agencies and national and local governments can invest in new areas that move the field forward. Articles throughout this series highlight the research questions that will advance evidence-based policy and practice in childhood obesity prevention in the United States and across Latin America. To encourage cross border research partners that address these questions, CGHS developed the COPAB Collaboration Awards,³⁷ which support the expansion of existing research projects to include new multinational partners or the development of a new research project in collaboration with a new international partner, and encourage multinational capacity building supporting the cost of research training in an identified area of need. Continuing support for sustainable capacity building aimed at research, policy, and practice activities within and across countries will help to ensure that evidence-based childhood obesity prevention efforts become synergistic and more impactful across borders in the Americas through innovative multidisciplinary team science approaches. This supplement provides a scientific roadmap, built on collaboration across borders, to help guide researchers and research funding agencies in combating this public health challenge and bringing this ambitious vision to fruition.

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest.

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How to cite this article: King AC, Perez-Escamilla R, Vorkoper S, Anand N, Rivera J. Childhood obesity prevention across borders: The promise of U.S.-Latin American research collaboration. *Obesity Reviews*. 2021;22(S3):e13238. <https://doi.org/10.1111/obr.13238>