NATIONAL COLLABORATIVE ON CHILDHOOD OBESITY RESEARCH (NCCOR)

Obesity-Related Policy, Systems, and Environmental Research in the U.S.

OPUS

Workshop I Meeting Summary

June 4-5, 2024

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NCCOR
National Collaborative on Childhood Obesity Research

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Executive Summary

Background

The National Collaborative on Childhood Obesity Research (NCCOR) brings together four of the nation's leading research funders—the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), the Robert Wood Johnson Foundation (RWJF), and the U.S. Department of Agriculture (USDA)—to accelerate progress in reducing childhood obesity in America. The Collaborative addresses the determinants of childhood obesity through research, evaluation, and dissemination of research findings.

On June 4–5, 2024, NCCOR hosted the first Obesity-Related Policy, Systems, and Environmental Research in the U.S. (OPUS) virtual workshop featuring presentations from leading obesity-prevention and public health experts. The workshop included more than 25 U.S. and global presenters and had over 600 registrants across the two days.

Workshop Aims

This first installment of the two-part OPUS workshop series aimed to 1) explore lessons learned from successful policy, systems, and environmental (PSE) efforts and identify the next steps for addressing childhood obesity and 2) examine best practices in obesity prevention with specific attention to community engagement and systems change through an equity lens.

Workshop Proceedings

The workshop featured two keynote presentations and six panels over two days, each addressing aspects of obesity-related PSE research and interventions. Dr. Ross Hammond's keynote emphasized systems approaches to integrating multisector strategies and tailored, sustainable solutions. Dr. Wilma Waterlander highlighted systems thinking in community-engaged obesity prevention using the Amsterdam Healthy Weight Program as an example. She stressed the identification of strategic leverage points and the design and implementation of adaptive, context-specific interventions for sustainable PSE changes.

Subsequent panel discussions included conversations on advancing success in obesity prevention, multilevel interventions, authentic community engagement, food and physical activity environments, social determinants of obesity, and scaling approaches for equity and sustainability.

Following each speaker's presentation, panelists participated in a moderated discussion, taking questions both from the moderator and the virtual audience.

Key Learnings

The first workshop highlighted the necessity of multilevel and multisectoral approaches to obesity prevention. Key insights included the importance of developing systems approaches and systems thinking in community-engaged research. Past work shows that PSE approaches can significantly impact factors influencing obesity and suggests that high-intensity, multicomponent interventions can effectively reduce rates of childhood obesity in some contexts.

Advancing equitable progress in obesity prevention requires comprehensive PSE interventions that address community-specific leverage points, including broader social drivers. Developing, implementing, and sustaining contextually relevant PSE approaches will require authentic community engagement as well as mobilization of a range of multisector actors. Few studies have rigorously evaluated whole-of-community PSE approaches, underscoring the need for new evidence and methods to inform policy and practice.

Next Steps

The next installment of the OPUS workshop series will take place on October 9–10, 2024. It will build upon lessons from the first workshop and focus on key methodological considerations in planning, designing, and evaluating the next generation of equity-centered PSE interventions for childhood obesity.

Obesity-Related Policy, Systems, and Environmental Research in the U.S.

Workshop Day 1

Welcome

Dan Hatfield, PhD
FHI 360

Jill Reedy, PhD
Division of Cancer Control and Population Science, National Cancer Institute, National Institutes of Health

Dr. Dan Hatfield opened the Obesity-Related Policy, Systems, and Environmental Research in the US (OPUS) workshop, welcomed attendees to day one, explained webinar logistics, and provided a brief description of the National Collaborative on Childhood Obesity Research (NCCOR). NCCOR's mission is to accelerate progress in reducing childhood obesity for all children, with attention to high-risk populations and communities. NCCOR was founded in 2009 by the four largest funders of child obesity research at the time: Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), Robert Wood Johnson Foundation (RWJF), and United States Department of Agriculture (USDA). NCCOR develops tools and resources and hosts events to accelerate progress in reducing childhood obesity in America. More information can be found on the NCCOR website: https://www.nccor.org/

Dr. Jill Reedy welcomed attendees and described the impetus for the workshop. She explained that in 2012, the Institute of Medicine's (IOM) *Accelerating Progress in Obesity Prevention* report highlighted the importance of policy, systems, and environmental (PSE) changes to address obesity. However, progress toward implementing such approaches and reducing obesity rates and associated disparities has been limited.

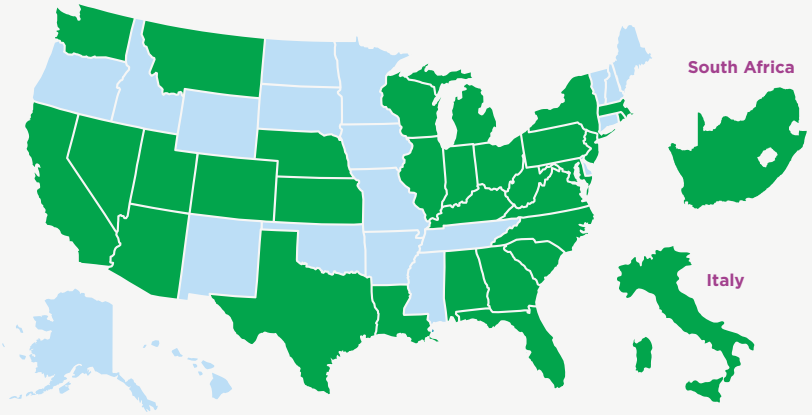
Coordinated interventions on a wide range of systemic drivers may be needed to achieve progress and advance equity. Therefore, this two-part workshop series aimed to explore ways to advance progress toward designing and rigorously evaluating PSE interventions, including those targeting both proximal (e.g., food access) and distal (e.g., housing policy) factors, with the goals to 1) explore key learnings from past research and evaluation and 2) advance childhood obesity research and inform future directions for the field.

The purpose of this first OPUS workshop was to explore lessons learned from successful PSE efforts, identify next steps for addressing childhood obesity, and examine best practices in obesity-prevention with specific attention to community engagement and systems change through an equity lens. Part two of the workshop series will be held October 9–10, 2024 and will focus on carrying forward conversations and presentations from the first workshop.

Dr. Reedy ended her remarks by introducing and acknowledging the workshop co-chairs: Jamie F. Chriqui, PhD, MHS; Tamara Dubowitz, ScD, MS, MSc; and Shiriki K. Kumanyika, PhD, MS, MPH, and the workshop planning committee: Heidi Blanck, PhD; David Berrigan, PhD, MPH; Susan Czajkowski, PhD; Audrey Goldbaum, PhD, MPH; Jill Reedy, PhD, MPH, RDN; Marissa Shams-White, PhD, MSTOM, MS, MPH; Meher Din, MPH; Rachel Grimsland; Dan Hatfield, PhD; Christy Kim; Amanda Sharfman, MS, MPH; and Melissa Van Orman, MA.

POLL QUESTION

"What state or country are you joining from?"



Opening Remarks

Katrina Goddard, PhD
Division of Cancer Control and Population Science, National Cancer Institute, National Institutes of Health

Dr. Reedy introduced Katrina Goddard to provide opening remarks. Dr. Goddard began by describing obesity as a profound public health problem that is driving health issues for a variety of health conditions, including cancer. For example, "in 2016, the aggregate medical cost due to obesity among adults in the United States was $260.6 billion" (Cawley et al. 2021). Excess weight is related to 13 different types of cancer (meningioma, thyroid, breast, liver, gallbladder, upper stomach, pancreas, colon and rectum, ovary, endometrium, kidney, multiple myeloma, adenocarcinoma of the esophagus) and was the second leading modifiable risk factor in terms of population attributable fraction in 2017; the population attributable fraction of cancer cases due to excess body weight was about 7.8 percent. [1] It is expected through 2030, that individuals with a Body Mass Index (BMI) less than 25 will decrease to below 20 percent of population, whereas all the other BMI categories (25–29, 30–34, and 35+) are increasing. At the same time, the age-adjusted incidence rates for obesity associated cancers have been rising over the past few decades. Furthermore, childhood obesity is the number one risk factor for adult obesity. As such, childhood is an important period for early intervention and to have a life-long impact on health outcomes.

Dr. Goddard explained that childhood obesity requires a coordinated and multi-level effort across multiple sectors for long-term impact and that focusing on individual behavior change is not enough to result in a meaningful impact on obesity and health outcomes. Therefore, a multi-level approach to obesity is needed that includes focusing on the layers of influence that support or deter individual behavior change. These layers of influence include societal (e.g., policy, legislation), community (e.g., culture, values), organizational (e.g., access, digital health), interpersonal (e.g., family, social network), and individual (e.g., attitudes, skills). These layers provide support to the individual to make the changes needed for healthier behaviors and outcomes. Dr. Goddard described evidence from tobacco research that has shown population and society-level interventions (e.g., tax increase, smoke-free air laws) combined with individual-level interventions (e.g., active quit lines) have resulted in major population-level impact in terms of smoking prevalence. [2] She noted that the combination of multiple levels of intervention in obesity research may also result in a similar population-level impact.

Dr. Goddard noted that, in addition to multi-level efforts, a multi-sectoral approach to childhood obesity is necessary. This includes coordinating and partnering with other actors in the U.S. government, such as the Department of Transportation, Department of Education, and Department of Energy, as well as public-private partnerships. Dr. Goddard closed her remarks by advocating for an all-of-society approach, for which NCCOR has and will continue to facilitate.

Systems Approaches to Obesity Prevention

Ross Hammond, PhD
Brown School at Washington University in St. Louis and Economic Studies, The Brookings Institution

Tamara Dubowitz introduced Ross Hammond to provide the first keynote presentation for the workshop. Dr. Hammond first described three key challenges for obesity prevention: 1) breadth and interconnectedness of the system driving obesity, 2) heterogeneity in contexts and settings, and 3) diversity across actors and across timescales. He explained the varying and multiple factors that play a role in the relationship with obesity as described by the "Foresight Obesity Systems Map. [3]" The systems map highlights how agents outside of the conventional mechanisms are both key enablers of and barriers to change. Of the underlying systems and processes that produce obesity as an outcome, there are measurable factors that play a role in obesity as an outcome, and there are evidence-based causal relationships between these distinct factors. For these reasons, the solution to obesity requires a multi-sector and multi-level approach.

Dr. Hammond explained the level of heterogeneity in context and settings in which obesity could be prevented and that context influences implementation of obesity prevention interventions. He described two types of contexts, geography and social, in which people are exposed to opportunities for eating and physical activity. Therefore, an intervention that is effective in one context may not translate to a different context without adjustment. Next, Dr. Hammond emphasized the importance of understanding diversity across the actors (e.g., food industry, government agencies, media) in the system and across the timescales. When an actor intervenes within the system, it affects the other actors; what we anticipate will happen in the short-term may differ from the long-term, as the various actors adapt to the changes. Dr. Hammond noted that the search for a single cause of obesity is often misleading as there is no single solution that fits all individuals, circumstances, and contexts. As a result, solutions need to be broad, while remaining context-specific.

Next, Dr. Hammond described three ways a systems approach might go beyond multi-sector or multi-level intervention. First, a systems approach that focuses on coordination and synergy between the intervention elements is necessary, as was done in the **Shape Up Somerville intervention**. He noted the ***Accelerating Progress in Obesity Prevention*** report, which pioneered this idea for obesity prevention by employing a novel strategy for thinking about how all the different interventions and strategies might work together in a package. Second, he explained that a deeper focus on implementation and sustainability is required to go beyond multi-sector or multi-level approaches. As highlighted in the Lancet Commission Report, ***The Global Syndemic of Obesity, Undernutrition, and Climate Change***, engagement with community structure and dynamics is needed. Lastly, he emphasized that tailoring to context will facilitate scalability.

Dr. Hammond concluded the keynote presentation with future directions for expanding systems interventions for obesity prevention: 1) new science, 2) wider use of new methods, and 3) team building and training. He explained that the scientific needs include a rigorous theory and method to project how intervention designs map onto different contexts, a scalable approach to engage and empower communities to undertake systems change, and new strategies to overcome policy resistance and barriers to change. Wider use of new methods is needed, as evidenced by three National Academies reports in **2016**, **2019**, and **2023**. that argue the need for wide-scale use of complex systems, approaches, and models to meet these scientific challenges, as well as the challenges of how to implement them.

Applying Systems Thinking in Community-Engaged, Participatory Research: Lessons Learned from the Amsterdam Healthy Weight Program

Wilma Waterlander, PhD
Amsterdam UMC, University of Amsterdam,
Department of Public and Occupational Health,
Amsterdam Public Health Research Institute

Heidi Blanck introduced the second keynote speaker, Dr. Wilma Waterlander. During the keynote presentation, Dr. Waterlander described systems thinking and provided an example of applying systems thinking to a project—the **Amsterdam Healthy Weight Program** and LIKE program. She explained the steps involved in the development of the logic model applied to the project and shared lessons learned to apply to future obesity prevention work. Dr. Waterlander reiterated that a systems thinking approach requires significant effort and time.

Dr. Waterlander described systems thinking as looking at the whole to see the entire system, not just at separate parts of the system, and then applying different methods to understand and change the system. She noted, the ***WHO European Regional Obesity Report 2022*** highlighted that "no single intervention can halt the growth in the obesity epidemic on its own, a comprehensive approach is needed." Progress in obesity prevention has not occurred for several reasons, including policy inertia fueled by food industry opposition against strategies, government reluctance to regulate, and lack of public demand for policies. Further, she explained that obesity is a complex problem related to various other complex problems like climate change, food insecurity, and health inequalities for which there is no silver bullet or linear pathway from evidence to policy.

Dr. Waterlander provided two examples of systems thinking in research: the Amsterdam Healthy Weight Program and the LIKE Program. In 2013, the city of Amsterdam introduced the Amsterdam Healthy Weight Program (2013–2033), which used a whole-of-systems approach with the goal that no child should be overweight or obese. Within the Healthy Weight Program, **the LIKE Program** focused on children 10–14 years old in areas with lower socioeconomic status (SES) in Amsterdam East (2017–2023). The purpose of the LIKE Program was to create healthier living conditions regarding diet, sleep, physical activity, and screen use through a participatory systems dynamic approach in close collaboration with the city. These programs moved away from a traditional logic model and instead developed a systems logic model. **This logic model** used an overarching theory of change to program logic for instigating systems change and assumed multi-level, integrated, and responsive action within a complex adaptive system influencing overweight and obesity. In the model, a "wave" was used to reflect continuous feedback between the program (upper wave) and the wider system of the Amsterdam context (lower wave) through the program's learning approach.

Dr. Waterlander described the four steps used to develop the logic model:

1. **UNDERSTAND THE (PRE-EXISTING) SYSTEM**
   The research team conducted community participatory action groups, used photo voice, and did group model building with the target community and relevant stakeholders in the community. They then developed causal diagrams based on the literature. [4, 5]
2. **FIND LEVERAGE POINTS IN THE SYSTEM**
   Instead of developing a single intervention, the research team identified multiple distinct levels for which to intervene in the system. [6]
3. **DEVELOP AN ADAPTIVE ACTION PROGRAM**
   The research team developed an adaptive action program and identified leverage points for change across systems levels. As a result, 12 different action groups developed roughly 60 action ideas, 22 of which were implemented. Action ideas were dynamic and either changed over time or were abandoned due to growing system insights or factors within the wider context.
4. **MEASURE THE PROGRAM OUTCOME AND IMPACT (SYSTEM CHANGES)**
   The research team used **ripple effects mapping** to identify intended and unintended consequences, as well as wider impact.

Dr. Waterlander concluded the keynote presentation with key lessons learned: 1) focus equally on the relevant context and asking the "right" questions rather than spending all the effort on mapping the system in terms of the problem (e.g., obesity), 2) be adaptive and dynamic, 3) reflect on system boundaries throughout the process, 4) strategically focus actions where there is a lot of momentum and political will), and 5) determine governance that reflects the interactive integration of context and the dynamic nature of a system dynamics.

POLL QUESTION

"In one or two words, what are you most looking forward to learning about today's panels?"

Advancing Success in Obesity Prevention: What Works Where and for Whom?

MODERATOR

Shiriki K. Kumanyika, PhD, MS, MPH
Dr. Kumanyika is professor emerita of Epidemiology at the University of Pennsylvania and research professor in the Department of Community Health and Prevention at the Drexel University Dornsife School of Public Health.

PANELIST

Steve Gortmaker, PhD
Dr. Gortmaker is professor of the Practice of Health Sociology at the Harvard Chan School of Public Health, director of the Prevention Research Center on Nutrition and Physical Activity (HPRC), and director of the Childhood Obesity Intervention Cost-Effectiveness Study (CHOICES).

Russell Pate, PhD
Dr. Pate is professor in the Department of Exercise Science in the Arnold School of Public Health at the University of South Carolina.

Christina Economos, PhD
Dr. Economos is dean, professor, and New Balance chair in Childhood Nutrition at the Friedman School of Nutrition Science and Policy at Tufts University.

Interventions that Can Cost-Effectively Prevent Obesity and Chronic Disease and Improve Health Equity

Steve Gortmaker, PhD
Harvard University T.H. Chan School of Public Health

Dr. Gortmaker explained that obesity rates and disparities in the United States have continued to increase, and this is driven by many forces. He noted, about half of the adult U.S. population will have obesity and about a quarter will have severe obesity by 2030 unless changes occur to prevent this. [7] Further, racial and ethnic, geographic, gender, and income disparities are growing. He explained, rising obesity rates and disparities are driven by many forces including social and economic determinants of health, structural racism, and commercial determinants of health that influence the neighborhoods people live, household income, racial segregation, and the foods and beverages people consume. [8, 9, 10] He noted that to change these relationships, it is important to identify cost-effective preventive strategies that can prevent excess weight gain and obesity. [11]

Dr. Gortmaker described the CHOICES model: a microsimulation model that projects the future course of the obesity epidemic by evaluating how an identified strategy will impact obesity, health care costs, and quality-adjusted life year (QALY) outcomes over 10 years. He explained, the key model inputs include reach (who will benefit?), effect (what is the impact on health?), and cost (implementation costs and health care costs savings). [12] The goal of the CHOICES model is to identify feasible and replicable strategies, with good evidence for improving nutrition and physical activity, preventing excess weight gain, improving population health, and advancing health equity.

Dr. Gortmaker shared two examples of policies the CHOICES model has evaluated: the 2009 WIC food package changes and SSB excise taxes. [13, 14] After the 2009 WIC food package changes, the CHOICES team's analysis found participants purchased and consumed fewer total calories, less juice, and more whole grains and fruits and vegetables. [15, 16, 17, 18, 19, 20] Before the policy change, the percentage of children aged 2–4 years [21] participating in WIC with obesity was increasing each year. After the policy change was implemented, the percentage of children aged 2–4 years participating in WIC with obesity was decreasing. **The CHOICES team projected** that the policy change prevented 62,800 cases of childhood obesity in the final model year, with an implementation cost per person of $1.77 per year and a $10,600 cost per QALY. All cases of obesity prevented were among children from households with low income.

The second example shared was an evaluation of a statewide SSB excise tax placed on manufacturers, bottlers, and/or distributors of SSBs based on the size of the SSB distributed to consumers. Dr. Gortmaker explained that evaluations of taxes implemented in multiple cities in the United States—including Berkeley, Oakland, San Francisco, Philadelphia, and Seattle—have indicated effectiveness in reducing SSB sales and consumption. [22, 23, 24, 25] He described **a recent CHOICES study** that projected an SSB tax statewide in California would prevent 266,000 cases of obesity in the final model year, with an implementation cost per person of $0.09 per year, and the cost per QALY would be cost-saving. The study found a greater reduction in obesity prevalence among Black or African American and Hispanic or Latino populations and populations with low household incomes. The tax was projected to raise $1.6 billion in state tax revenue annually.

Dr. Gortmaker concluded the presentation by explaining that these case studies are examples of cost-effective strategies to improve nutrition environments in the United States. While there is evidence for cost-effectiveness and impact on health equity for these two interventions, collectively, they are not projected to reduce obesity prevalence in the United States—but they will slow the increase. He concluded by reiterating that a wide range of strategies in many different settings is necessary.

Healthy Communities Study Examining How Community Policies and Programs are Related to Children's Weight Status

Russell Pate, PhD
University of South Carolina Arnold School of Public Health

Dr. Pate explained the Healthy Communities Study, which included 130 U.S. communities and 5,138 elementary and middle school students. The purpose of the study was to examine how community policies and programs (CPP) are related to children's weight status by assessing CPPs pertaining to nutrition, physical activity, weight control, and childhood obesity prevention. To this day, researchers still use data collected from the HCS to investigate obesity and the food and physical activity environments.

He explained that information about the CPPs in each of the 130 communities was collected via standardized interviews with key informants, as well as document review. CPPs were then coded for multiple attributes, including target behavior, behavior change strategy, duration, and reach. Dr. Pate explained measures at the child and parent levels were administered during home visits and included anthropometry (height, weight, BMI), the child's self- or parent-reported diet and physical activity behavior, demographic characteristics, and surveys of potentially related behavioral and

environmental constructs. For a sub-sample, height and weight were abstracted from children's medical records as far back as ten years. The dependent variables included BMI, dietary behavior indices, and physical activity index (MVPA). The independent variables included the number of CPP target behaviors and CPP intensity.

Dr. Pate shared key findings from the HCS for the BMI outcome. First, the total number of CPP diet and physical activity target behaviors were negatively associated with BMI, meaning the more policies and programs implemented, the lower the BMI. The second key finding was that the CPP intensity score was negatively associated with BMI trajectories that were estimated from the height and weight data in children's medical records. However, associations were not consistently significant across income, race and ethnicity, and geographic groups; the effects were less likely to be significant in youth from low-income families, in African American and Hispanic youth, and in communities with high proportions of African American and Hispanic families.

Dr. Pate concluded the presentation with key takeaways from the research: 1) more CPPs are better—children living in communities with a greater number of CPPs had lower BMIs; 2) higher intensity CPPs are better—children living in communities with greater intensity of CPP activity showed lower BMI trajectories; and 3) associations between CPP activity and BMI are inconsistent across demographic groups.

Catalyzing Communities to Promote Child Health and Prevent Obesity: A Systems Approach

Christina Economos, PhD
Tufts University Friedman School of Nutrition Science & Policy

Dr. Economos began the presentation by explaining the evolution of obesity prevention research over the past 35 years, which began with a focus on individual behavior change and has since shifted to developing structural interventions toward achieving equity. Next, Dr. Economos described the Shape up Somerville study—a whole-of-community intervention with multi-level and multi-sector approaches. The study included a comprehensive suite of evidence-based strategies that resulted in decreases in BMI-z scores, obesity prevalence among children and parents, sugary drink intake, and screen time, as well as increased return on investment, sports and physical activity, healthy restaurant meals, healthfulness and quality of school food and competitive foods, community-wide policy change, and food access for the community. [26, 27, 28, 29, 30, 31, 32] She explained that when the study was complete, she began mapping the dynamics of community change, including several subsystems in the community (e.g., family, school, community). [33] In this process, a task force was formed that was responsible for disseminating evidence-based strategies within the community. It put forward a portfolio of evidence-based interventions taken up by organizations and micro-systems in the community.

Dr. Economos explained that few measures were available at that time to assess the role of a coalition. She began to hypothesize that community coalitions leverage their collective knowledge and engagement to create social networks that facilitate the implementation and sustainability of evidence-based interventions. As a result, a mixed-methods review of studies was conducted to characterize the processes and dynamics of coalition engagement in community-based childhood obesity prevention interventions. The review found a relationship between the number of studies where a coalition is engaged and the outcome of the study. [34] Dr. Economos noted the study was important for understanding the vital role that groups play in the implementation of a successful intervention. The mixed-methods review results led to an NIH-funded study called COMPACT. In this study, system science methodologies were implemented to understand what occurs during whole-of-community interventions at the community level, both retrospectively and in real-time. The purpose was to understand and leverage existing systems within a community to implement an upstream approach to obesity prevention. The working hypothesis was that stakeholder groups may be a driving factor in the success of interventions through a process of "stakeholder-driven community diffusion." This led to the development of a tool to measure the knowledge and engagement of coalitions within communities.

Through these learnings, Dr. Economos designed a study called Catalyzing Communities, in which she is working with eight communities across the country to promote child health and well-being through context-specific, evidence-based strategies that center health equity and use stakeholder-driven community diffusion. Dr. Economos provided examples of causal loop diagrams developed from two of the sites: Greenville County, SC and Cuyahoga County, OH. She shared examples of underlying structures identified that prevent communities from gaining traction and making progress, such as toxic stress, trauma, poverty, poor or disconnected transportation systems, lack of political will, and inequitable resource allocation. [35]

Dr. Economos concluded that the field of obesity interventions is currently at an important inflection point. As such, we must continue to evolve our understanding of the underlying causes of obesity risk and how to address it using a systems science approach to design, implement, evaluate, and sustain effective prevention interventions. Finally, this work must be centered on equity to reach those in greatest need.

Discussion and Q&A with Panelists

We know sometimes disparities will widen if an intervention is effective for only one group and not others. Can you comment on whether, in using the CHOICES model, you found that only the targeted interventions will have the right effect on equity?

DR. GORTMAKER: Some of the targeted interventions we've looked at do have a substantial impact on health equity. For example, the 2009 WIC food package change found the same evidence for effect in every state. In the case of the sugary beverage taxes, we've seen the impact on health equity to be different. For example, the low-income population tends to consume more sugary beverages and to have higher BMIs. Therefore, this is the population with a greater impact of the intervention. In simpler interventions that we've looked at, like providing water in school lunch lines, we've seen it work in several different contexts. Also, not implementing cost-effective and health equity-focused interventions is a policy in and of itself that will drive both ongoing and new disparities. In the different cost-effective preventive interventions that we studied, we didn't see evidence for increasing disparities, perhaps because we've been looking at strategies that reach populations disproportionately affected by obesity or that reach the entire population. Some treatment interventions that people are talking a lot about lately, such as obesity drugs, could certainly produce more inequities due to lack of access and cost.

Thinking back to the HCS, can you think of any other outcomes you would measure if you were to conduct the study again?

DR. PATE: We're still working to make full use of the data that we do have. The parent study was a hypothesis-testing approach. In the current analysis, we're taking a different approach by using all the raw data in large-scale analyses using CART analysis (Classification and Regression Trees).

How do you focus on equity in the methods and development of the research?

DR. ECONOMOS: We used the checklist available in the "Getting to Equity Framework" to ask ourselves equity-focused questions at every step in the process. We realized there were many places we could make changes to ensure the whole process was truly equity-centered. Attention to the process is critical as it could otherwise unknowingly widen the disparity gap.

Is there any movement in the research space to develop tools and resources for community consumption?

DR. ECONOMOS: The NIH ComPASS funding is a signal of movement from a funder as it requires communities and academic institutions to work together. To turn the tide, we need to be academically rigorous and actionable at the community level.

In your modeling studies, are you looking at unintended consequences?

DR. GORTMAKER: In our evaluation of the Healthy, Hunger Free Kids Act, we've seen that it is a relatively low-cost strategy that has prevented hundreds of thousands of cases of obesity among low-income children. The policy saves low-income parents money by providing healthy school meals, which allows more money to be spent on healthier foods at home. We try to consider all the cost offsets or competing issues in where those dollars are spent.

Do you have any advice for public health professionals to counteract the food industry's efforts to market and sell unhealthy food in low-income communities?

DR. GORTMAKER: First Amendment issues make it difficult to limit targeted marketing to children and low-income communities. Research has shown labeling efforts, such as in restaurants, are cost saving and have had positive impacts. While labeling efforts haven't necessarily improved health equity, they have improved population health at a low cost.

DR. ECONOMOS: At the community level, people have tried to shift the distribution of funding to healthier, local foods to reclaim their communities and their health. As researchers, we need to empower and support these efforts, as well as collect data to produce evidence that these efforts work.

Closing thoughts from each panelist

DR. GORTMAKER: There are cost-effective strategies that can be implemented in communities that are simple and can improve health equity.

DR. PATE: Leadership is paramount to mobilizing resources and making change happen.

DR. ECONOMOS: If you understand the context and structural barriers in a community, then leaders can thrive and implement those cost-effective strategies.

POLL QUESTION

"In one or two words, what do you consider to be the biggest challenges in implementing systems-based obesity interventions?"

Building the Next Generation of Multilevel Interventions to Prevent Obesity

MODERATOR

Bill Dietz, MD, PhD
Dr. Dietz is director of Research and Policy of the Global Food Institute at George Washington University and chair of the Sumner M. Redstone Global Center for Prevention and Wellness and the STOP Obesity Alliance at the Milken Institute School of Public Health at George Washington University.

PANELIST

Deanna Hoelscher, PhD, RDN, LD, CNS
Dr. Hoelscher is regional dean of the UTHealth Houston School of Public Health in Austin, principal investigator of the Teaching Kitchen Multisite Trial (TK-MT), and director of the Michael & Susan Dell Center for Healthy Living.

Boyd Swinburn, MD
Dr. Swinburn is professor of Population Nutrition and Global Health at the University of Auckland, New Zealand and honorary professor, Global Centre (GLOBE), Deakin University, Australia.

Bob Vollinger, DrPH, MSPH
Dr. Vollinger is senior policy advisor in the Policy, Planning and Coordination Unit of the Office on Smoking and Health (OSH), Centers for Disease Control and Prevention.

Dr. Hatfield introduced Dr. Bill Dietz as the moderator of the panel discussion. Dr. Dietz highlighted two recent publications from the Cochrane Library on interventions to prevent obesity among children aged 5–11 and 12–18 years. He explained, the papers sought to assess the effects of interventions focused on preventing obesity in children by modifying dietary intake or activity levels, or a combination of both, on changes in BMI. The reviews reported modest positive outcomes, highlighting the importance of a systems approach to obesity prevention. Dr. Dietz also shared the Roundtable on Obesity Drivers and Solutions Systems Map, developed by the Roundtable on Obesity Solutions of the National Academies of Sciences, Engineering, and Medicine (NASEM), which iterates how complex the system is and provides insights that allow the field to focus on three major leverage points most likely to have a significant impact in addressing obesity: 1) structural racism and social justice, 2) biased mental models and social norms, and 3) effective health communications.

Texas CORD: Lessons Learned from Primary and Secondary Childhood Obesity Prevention

Deanna Hoelscher, PhD, RDN, LD, CNS
University of Texas Health Science Center at Houston School of Public Health in Austin

Dr. Hoelscher explained the Childhood Obesity Research Demonstration (CORD) study, a combination of primary and secondary prevention with the goal of preventing childhood obesity. [36] The primary intervention targeted elementary schools, early care and education (ECE) centers, and primary health care clinics. Through primary health care clinics, a referral system was developed for the secondary prevention program focused on children with overweight and obesity. In the study, families enrolled in the primary prevention at baseline, with a control and intervention (CATCH programming) community at both sites.

Dr. Hoelscher described the findings from the primary prevention in the ECE centers. [37, 38] In comparison to the control sites, the intervention sites showed a significant decrease in child BMI z-scores and percentiles after two years of implementation. While implementation of the program in intervention sites was high, some implementation occurred in control sites, resulting in contamination. In the elementary school setting, there were no differences when comparing the intervention (CATCH) schools versus the control schools by grade level. In schools that had high implementation, there was an association with better outcomes than schools with moderate or low implementation.

The focus of the primary prevention intervention in clinics was to train clinicians to implement brief counseling and then screen for overweight and obesity among kids. After a child was screened, they were allocated to either the usual care (Next Steps Program) or the CORD secondary prevention program. For the intervention, there were different programs for preschool versus children aged 6–12 years; the preschool children received the MEND program, and the elementary school children received the MEND/CATCH program. Outcomes from the primary prevention intervention in clinics included improved provider self-efficacy and counseling (resulting in resources developed for clinicians) and the development of an implementation index.

Next, Dr. Hoelscher shared the primary outcome (% BMI) findings from the CORD secondary prevention intervention. She explained, there was a significant group intervention effect among children aged 6–8 years and a near significant effect among kids aged 9–12. For the 2-year-olds, there was a time effect but not an intervention effect. She noted that the intervention dose was particularly important and that the Next Steps program had low dosage compared to the MEND/CATCH program. It was found that there was a significant decrease in the percent BMI in the 95th percentile when the 9- to 12-year-old children and their parents attended 20 percent or more of the classes.

Dr. Hoelscher concluded the presentation with key lessons learned from the primary and secondary prevention programs. First, she explained that while primary prevention programs can decrease BMI in preschool children and elementary school children over time and can address health equity and access, the effects on related behaviors are mixed. In elementary schools, the implementation of the program influences results. Further primary prevention programs required strategies to increase implementation and seem to be more effective with preschool children. Next, she explained that secondary prevention programs can decrease BMI in elementary school children (aged 6–8 years and perhaps aged 9–12 years), though the effects are greater with greater doses. She noted that secondary prevention programs require a closer tie to a medical home and require a different approach for preschool children. Finally, she explained that combining primary and secondary prevention efforts is challenging in a large urban setting, and this combination would likely work better in a smaller city or community with better connections.

Lessons from Down Under

Boyd Swinburn, MD
University of Auckland School of Population Health

Dr. Swinburn shared findings from the recent Cochrane Reviews on obesity prevention among children aged 5-11 and 12–18 years. In the review of studies among children aged 5–11 years, there

were 172 randomized controlled trials (RCT)s: 65 percent took place in schools; 85 percent in high-income countries (HIC); and 77 percent lasted less than 15 months. There were modest, short-term BMI impacts. In the review of studies among **children aged 12–18 years**, there were 74 RCTs: 77 percent in schools; 81 percent in HICs; and 95 percent lasted less than 15 months. There were little or no BMI impacts; he explained this can be considered a failing of how we think about the problem of obesity prevention.

Next, Dr. Swinburn described three community-based obesity interventions in which he utilized a capacity-building approach using the WHO building blocks framework: 1) Romp and Chomp, 2) Be Active, Eat Well, and 3) It's Your Move. The Romp and Chomp intervention, which included 12,000 children under five years of age, resulted in a 1.8 percent decrease in overweight and obesity among two-year-olds and a 2.7 percent decrease among children aged 3–5 years over three years. [39] He noted that a retrospective analysis of the process showed a systems approach, and the intervention spread from the steering group throughout networks through the transmission of knowledge. The Be Active, Eat Well intervention included children aged 4–12 years and resulted in a significant decrease of about 1 kilogram in body weight and 3 centimeters in waist circumference over three years, with a greater effect in children with lower SES. [40] Dr. Swinburn noted that there was a spread of intervention knowledge and engagement through the networks—a "prevention virus"—to the comparison groups. The It's Your Move intervention included children aged 13–18 years and resulted in a 5.8 percent decrease in the prevalence of overweight and obesity over three years. [41] This intervention was adapted in three other locations: Fiji, New Zealand, and Tonga. He explained that the intervention in Australia resulted in a significant reduction in the intervention group compared to the comparison group; however, there was no effect in the other three countries (Fiji, New Zealand, and Tonga). Dr. Swinburn explained a key lesson learned across the four study sites: cultural context is critical. Interventions must be culturally-centered, not just culturally-adapted.

Next, Dr. Swinburn described the research he conducted in Hawke's Bay called **Nourishing Hawke's Bay**. Hawke's Bay is a region of New Zealand with a high prevalence of poverty, poor nutrition, obesity, and a high Māori population. Using cognitive mapping interviews, he asked the community what should be done around childhood obesity prevention. [42] As part of the study, the team conducted systems mapping with the community and adolescents, conducted an evaluation of the new free school lunch program (quantitative, qualitative, system dynamics modeling), and adolescents developed the Rangatahi Eating and Wellbeing Guidelines. Additionally, community group model building was conducted that incorporated strong Māori concepts, with two Māori presenters translating and putting it in the Māori context. [43]

Dr. Swinburn concluded the presentation with future directions for community-based obesity prevention. First, he noted the need to bring the science methods to emerging community actions rather than forcing the interventions into RCTs and research funding models. Second, he explained the need to co-develop actions with the community using participatory research methods and Indigenous and traditional knowledge and processes. Finally, he stated that interventions must be culturally-centered, community-partnered, and systems-evaluated.

ASSIST Shifting the Paradigm for Tobacco Control in the United States: A Policy and Media Approach with Results

Bob Vollinger, DRPH, MSPH
Centers for Disease Control and Prevention

Dr. Vollinger described **the ASSIST program** as a partnership between NCI and the American Cancer Society (ACS) to implement comprehensive tobacco control programs. The partnership, which was based on proven smoking prevention methods developed within NCI's research trials and other smoking and behavioral research, aimed to demonstrate that the widespread, coordinated application of tested strategies to prevent tobacco use would significantly reduce rates of smoking. At the time of ASSIST, there was a paradigm shift in that the field was moving from an emphasis on individual interventions toward more population-based interventions. He cited a 2014 CDC ***Best Practices for Comprehensive Tobacco Control Programs*** report, which stated: "Although it is appropriate and necessary to fund and provide certain cessation treatment services (such as quit lines) to underserved populations, 'the programs' focus should remain on population-level, strategic efforts to reconfigure policies and systems in ways that normalize quitting and that institutionalize tobacco use screening and intervention within medical care."

Dr. Vollinger explained that the ASSIST program focused on three key items: policy, media, and program services. The goal of ASSIST was to change social norms of tobacco use by educating the public and the decision makers, working through the media to change policy and increase demand for program services. Extensive media training was provided with the goal of benefiting from positive news coverage and creating newsworthy stories and events to offer to the local outlets in the respective markets. Training on media advocacy—the strategic use of any form of media to help advance a social or public policy initiative—was also provided; this was an innovative tool at that time. Dr. Vollinger explained that the critical work of educating the public and decision makers was accomplished through petitions, persuasion, personal relationships, and working with the media (counter-marketing and earned media) to make the case for tobacco control and expose factual omissions or distortions by the tobacco industry. Strategic use of media included

developing hard-hitting, clear messages; identifying and preparing all spokespeople to deliver the same message; being ready to respond quickly to media requests; and being ready to counter tobacco industry arguments.

Dr. Vollinger shared key findings from the evaluation of ASSIST. First, states with higher initial outcome (policy outcomes) scores had lower cigarette consumption rates and lower tobacco use prevalence rates. The quantitative evaluation showed the following small but significant program effects on final outcomes: 1) ASSIST states had a greater decrease in adult smoking prevalence rates than non-ASSIST states, 2) states with stronger tobacco control programs had lower cigarette consumption, and 3) states with higher capacity scores had lower cigarette consumption. He noted that building capacity and using a community engagement approach was crucial to success.

Dr. Vollinger concluded that ASSIST provided evidence that comprehensive, evidence-based interventions can significantly reduce tobacco use, and it broke the tobacco industry's monopoly on the media. The ASSIST program developed a national, multi-level infrastructure with the capacity to deliver population-based tobacco use prevention and control that included developing skills and providing technical assistance and training. Further, ASSIST provided the nuts and bolts of tobacco control such as focusing on upstream indicators as goals and introducing new strategies to public health (e.g., media and policy advocacy techniques). ASSIST revealed that policy change is essential to having impact and that partnerships are key. Since its development, the ASSIST model has been widely replicated in many different forms.

Discussion and Q&A with Panelists

In your research, how did you establish trust as an outsider?

DR. SWINBURN: I started by working with the Māori leaders who had status within the community and asking what they wanted to achieve from such an intervention. It is important to engage communities on their terms and on the issues that they see as important.

What is the role of stigma and bias in obesity prevention, and how does it impact mobilization of resources?

DR. SWINBURN: White bias is very pervasive, and from what I understand from the literature, it seems to be getting worse, whereas other sorts of stigma and bias may be getting better. In New Zealand, the populations with the highest prevalence of obesity are Pacific populations and Māori populations. They have a different body size perception, and as a result, they react negatively to the word "obesity." We must respond to that and operate on their terms.

Considering that obesity is a much more complex problem than tobacco, how can we mobilize the same resources and political will that worked for ASSIST?

DR. VOLLINGER: Political will is always a challenge; however, the political climate was quite different when ASSIST was conceptualized than it is now. Also, one unique thing at the time was the funding that was available for tobacco work.

DR. HOELSCHER: We're working on a project, Research to Policy Collaboration, in which we ask state legislators about their policy priorities. From this project, we've learned that maternal and child health policies and school-based versus adult-focused policies tend to be more popular in terms of obesity prevention.

How could the Māori model be applied to communities in the United States?

DR. SWINBURN: Understanding the local context is so critical. We've tried to culturally adapt approaches that were previously effective in other places, and they didn't turn out to be successful because the approaches didn't come from within the community. Long-term relationship building and understanding priorities from within the community are crucial. Working with the Māori population is quite different from working with other Indigenous or other non-white cultures. For example, within New Zealand, there is a high proportion of native Māori speakers, whereas the Native American populations from North America have extremely low use of local language.

In designing your intervention, did you consider culturally specific interventions for Hispanic populations?

DR. HOELSCHER: Yes, we conducted a lot of formative qualitative work to understand what we needed to do to be culturally responsive. For example, we learned you can't write something in English and translate it to Spanish because you lose nuance.

In your research among preschool children, there were no effects on the targets of the intervention, yet there was a positive outcome in terms of BMI z-score. Can you comment on this?

DR. HOELSCHER: There was a decrease in percent BMI 95th percentile over time, but it wasn't enough to achieve intervention control effect for the first three months. We think asking the provider to mention to the families that the children need to seek a program for obesity prevention had an effect. We then randomized them into the provider-based or community-based program, which is consistent with the AAP clinical screening guidelines.

Do you think the community understands the systems approach more intuitively than the scientists do?

DR. HOELSCHER: Yes, they do. We've heard that communities feel frustrated that some of their environments support healthy eating and physical activity and others don't. This causes frustration because they're trying to make appropriate choices, but they don't have help from the environment.

DR. SWINBURN: Yes, the systems approach is essentially what the Māori people have been practicing for thousands of years.

Are you optimistic about reducing childhood obesity levels in your lifetime?

DR. SWINBURN: I take great optimism from almost all the countries south of the United States, especially Latin American countries. They know how to mobilize, and they're passing policies from which the rest of the world can learn.

Day 1 Closing

Dr. Hatfield introduced Jamie Chriqui to provide closing remarks for the first day.

Dr. Chriqui thanked the members of the planning committee, presenters, and audience members. She provided a recap of day one of the NCCOR OPUS workshop and previewed the agenda and topics to be presented during day two. Day one of the OPUS workshop focused on setting the stage for approaching obesity prevention from a systems perspective and provided key lessons from successful PSE efforts related to obesity prevention and tobacco control. Cross-cutting themes from day one included:

1. Multi-level or multi-sectoral approaches to obesity prevention at the national, state, and local levels are needed with rigorous theory and methods, as well as scalable approaches and strategies for overcoming barriers to change.
2. There is no single intervention that can address all individual circumstances and contexts alone, and for this reason, a systems approach to obesity prevention is necessary. While there is no silver bullet, the presenters provided insights on some key strategies that are particularly effective.
3. Moving forward, we need to focus on systems science training and how to sustain interventions beyond the research funding.

POLL QUESTION

"What is the most important lesson you are taking away from today's conversations that you can apply to your own work?"

24
responses

SYSTEMS SCIENCE APPROACH

COMMUNITY ENGAGEMENT & MOBILIZATION

Workshop Day 2

Welcome

Susan Czajkowski, PhD
National Cancer Institute, National Institutes of Health

Heidi Blanck, PhD
Centers for Disease Control and Prevention, Obesity Prevention and Control Branch

Dr. Hatfield welcomed attendees to the second day of the workshop and introduced Susan Czajkowski and Heidi Blanck, both members of the planning committee, to provide opening remarks. Dr. Czajkowski recapped key topics presented and discussed during day one of the workshop, including 1) utilizing systems approaches to advance obesity prevention, 2) applying systems thinking in community-engaged research, 3) exploring lessons learned from PSE research on obesity prevention, and 4) identifying critical next steps in multilevel research to address obesity. Next, Dr. Blanck previewed the agenda and topics to be presented during day two, including a focus on examining best practices in obesity prevention with specific attention to community engagement and systems change through an equity lens.

POLL QUESTION

"What's your favorite way to be active?"

Authentically Engaging Communities to Maximize Relevance and Impact

MODERATOR

Caree Cotwright, PhD, RDN
Dr. Cotwright is director of Nutrition Security and Heath Equity at the Food and Nutrition Service, United States Department of Agriculture.

PANELIST

Alison Brown, PhD, RDN
Dr. Brown is program director of the National Heart Lung Blood Institute, National Institutes of Health.

Denise Holston, PhD, MS, RDN
Dr. Holston is associate professor at Louisiana State University (LSU) Agricultural Center and program director of LSU Ag Center Healthy Communities.

Kelli Wilson Begay, MS, MBA, RDN
Ms. Wilson Begay is the Principal Consultant of Maven Collective. She comes from the Kickapoo, Seminole, and Muscogee Creek people; Tribal Nations now located in Oklahoma.

Dr. Hatfield introduced Caree Cotwright as the moderator of the panel discussion. Dr. Cotwright shared USDA's recent equity accomplishments in nutrition security, including improving emergency food assistance, increasing access to fresh fruits and vegetables, increasing food access for families in the summer, and strengthening food supply chain infrastructure.

Community Partnerships to Advance Science for Society (ComPASS) Program

Alison Brown, PhD, RDN
National Heart, Lung, and Blood Institute, National Institutes of Health

Dr. Brown explained the ComPASS program at NIH, supported by the NIH Common Fund. The focus of ComPASS is to support community-led structural interventions that leverage multi-sectoral partnerships with the goal of intervening in social determinants of health (SDOH) and advancing health, equity and reducing health disparities. She noted that the NIH Common Fund, which is funded by the Office of the Director, is managed in partnership with NIH Institutes and Centers across the agency. The Common Fund supports a set of NIH-wide efforts and programs with the goal of fostering innovative and transformative impact to benefit the broader biomedical and behavioral communities. She explained that Common Fund programs are meant to accelerate emerging science, remove research roadblocks, enhance the scientific workforce, and support high-risk, high-reward science.

Dr. Brown described the two goals of ComPASS: 1) catalyze, deploy, and evaluate community-led health equity structural interventions that leverage partnerships across multiple sectors to reduce health disparities, and 2) develop a new health equity research model for community-led, multisectoral structural intervention research across NIH and other federal agencies. As part of the strategic planning for ComPASS, eight listening sessions were held in October and November of 2021. Key themes that arose from the listening sessions were 1) the importance of community ownership and community-led research, 2) forging relationships and building trust, particularly for those communities that have been historically disenfranchised, 3) the importance of community capacity building, 4) the need for more innovative public and private partnerships, 5) importance of more support for navigating the NIH enterprise, and 6) data and evidence needed for structural interventions.

Dr. Brown noted, a key innovation of ComPASS is the focus on structural interventions to address SDOH. A structural intervention can be defined as "an attempt to change the social, physical, economic, or political environments that may shape or constrain health behaviors and outcomes, altering the larger social context by which health disparities emerge and persist" (Brown et al. 2019, American Journal of Public Health). The goal of these upstream interventions is to address conditions where people are born, grow, learn, work, play, live, and age and which impact a variety of different areas (human and social services, commerce, health care, economic and urban development, transportation, education, housing, and justice). A key aspect of the innovation of ComPASS is community-led research in which the funded organizations are community-based. Research has shown that community-engaged approaches are key research strategies to address health disparities and advance health equity, particularly for communities that have often been left out of the research paradigm. To achieve this goal, ComPASS is comprised of three initiatives: 1) Community-Led Health Equity Structural Interventions (CHESIs), 2) Health Equity Research Hubs (Hubs), and 3) ComPASS Coordination Center (CCC).

Dr. Brown concluded the presentation by explaining how ComPASS will improve health. She explained, ComPASS will increase our understanding of the mechanisms that produce and perpetuate health inequities and disparities, build a repository of evidence-based health equity research that could be used for future interventions, provide capacity building and training curricula for other community-based organizations that are interested in engaging in research, and create innovative models to accelerate the translation of discoveries into policy and practice. The program is currently in the intervention planning and preliminary development stage. Future stages span through fiscal year 2030–2031 and include refining interventions, implementing interventions, implementing outreach, and compiling the ComPASS assessment.

Lessons Learned from the CDC High Obesity Program

Denise Holston, PhD, MS, RDN
Louisiana State University School of Nutrition and Food Sciences

Dr. Holston described the CDC HOP program funded in Louisiana since 2015 (internally named **Healthy Access, Behaviors, and Communities, or Healthy ABCs**). The HOP program leverages Cooperative Extension Services to increase access to healthier foods and safe and accessible places for physical activity in counties that have more than 40 percent of adults with obesity. Across the state of Louisiana, 35 of 64 (55%) parishes were eligible to participate, and 12 were included in the intervention. Dr. Holston explained that the CDC HOP programs work cooperatively with the state office, local agents, and communities. The overall impact of the HOP program from 2018–2023 includes over $4 million in outside funding to support food system and physical activity enhancements; over 30,000 people with improved access to healthier foods; and nearly 25,000 people impacted by plans, policies, or improvements to routes connecting everyday destinations.

Dr. Holston's work in the communities focuses on using a community participatory approach by working directly with community leaders and residents via coalitions and workgroups. She explained that assessments and planning technical assistance (TA) are provided at no cost to communities; these tools and guidance empower communities to create the desired changes equitably. Dr. Holston utilizes a structure for nutrition and community health outreach to guide the work. This includes conducting a needs assessment, hosting community forums to guide the efforts, forming healthy community coalitions, using pooled resources to make changes according to needs identified by the community, and supporting PSE changes with education and TA.

As Dr. Holston explained, a community-based participatory research (CBPR) approach is used for both evaluation and outreach. This iterative process is built on trusting relationships between community members and researchers, including feedback checks throughout the course of a project and prioritizing long-term commitment to sustainable, equitable change. In CBPR, communities are understood as distinct, and research is approached through collaboration, with community members working alongside researchers. Dr. Holston noted that the CBPR process bolstered community support for project initiatives and provided a more authentic picture of the communities. With a focus on community engagement, community members participate in various aspects of assessment, including identifying barriers and assets in their community and identifying interventions to address identified barriers and elevate assets. She emphasized that the community members are involved in almost all aspects of project planning, development, implementation, and evaluation.

Dr. Holston shared an example of operationalizing community engagement and CBPR that resulted in a successful partnership and outcomes. She described a community that had started a farmers market; however, the vendors were not accepting SNAP benefits. Through outreach and community engagement, Dr. Holston and her team helped the vendors overcome barriers to accepting SNAP at the farmers market. She explained that the community and programs are now growing and thriving, even after her team concluded the engagement work. For example, the community now has two farmers market locations, a farmers market box sale, and a full-time farmers market manager.

Dr. Holston concluded the presentation with key lessons learned from employing community engagement in the CDC HOP program in Louisiana. She noted that authentic community engagement is critical for all aspects of obesity-related PSE outreach and evaluation and that building trust with the community through community engagement is critical. She also noted that community engagement should not be a one or two-time event and that Cooperative Extension Services or other local community champions are essential. Finally, she shared that community engagement can increase the likelihood of sustainability.

Considerations for Indigenous Communities

Kelli Wilson Begay, MS, MBA, RDN
Maven Collective Consulting

Ms. Wilson Begay provided an overview of Tribal nations and health systems in the United States serving Native people. She explained, there are 574 federally recognized Tribal nations across 37 states. Aside from the tribes recognized by the federal government, there are a few dozen more that are state-recognized. In 2020, there were 10 states with the largest percentage of American Indian/Alaska Native (AI/AN) people: Alaska (20%), Oklahoma (16%), New Mexico (12%), South Dakota (11%), Montana (9%), North Dakota (7%), Arizona (6%), Wyoming (5%), Oregon (4%), and Washington (4%). The 2020 census counted 9.7 million AI/AN people (alone or in combination with another race), with 70% living in urban areas. She noted it is common for community members to live on the reservation during the weekend and commute to a bigger city during the week for work.

Ms. Wilson Begay explained the three health systems serving Native people: Indian Health Services (IHS), Tribally Operated Health Care Services, and the Urban Indian Health Program. The first, IHS, is the agency within the Department of Health and Human Services responsible for providing federal health services to American Indians and Alaska Natives in exchange for the land and oppression experienced by Native people. Services are administered through a system of 170 IHS and tribally managed service units. The second type of health system is those that tribes operate. The Indian Self-Determination and Education Assistance Act allows tribes the option of exercising their right to self-determination by assuming control and management of programs previously administered by the federal government. The final health system is operated by the Urban Indian Health program, established in 1976 to make health care services more accessible to urban natives. There are over 40 urban Indian health organizations that provide access to culturally appropriate and quality health care services.

Ms. Wilson Begay emphasized several considerations to be aware of when working with Tribal communities and cautioned that these considerations are only starting points as they will not apply to every community. First, she stated, it is important to be aware of the differences in Indigenous and Western research assumptions and concepts, such as matriarchal versus patriarchal families, a quality-centered versus quantity-centered viewpoint, and a collective versus individual sense of well-being. In Indigenous communities, relationships matter, and it is imperative to take the time to build trust and genuinely strong relationships. For example, investing in champions is vital.

Next, Ms. Wilson Begay explained that multi-generational households are common. She noted that taking an intergenerational approach and including connections to ancestors and past generations, as well as future generations, is key. Next, she explained that there is no one-size-fits-all approach; adaptation and tribe-specific approaches based on traditional knowledge and native thought are appreciated. The act of giving back and reciprocity should be practiced, including citing elders in manuscripts and sharing results back with the community. She noted that this goes back to the importance of relationships and having a transparent line of communication and sharing. Finally, Ms. Wilson Begay stated that in Indigenous spaces, a spiritual connection and life way are often acknowledged, yet frequently avoided in Western academic practice. The spiritual connection should be considered when working with Native people.

Ms. Wilson Begay concluded the presentation by summarizing best practices for working with Indigenous communities, including 1) inviting community input from the beginning, 2) creating safe spaces for sharing and feedback, 3) being mindful of power dynamics, and 4) trusting that communities know how best to serve their people.

Discussion and Q&A with Panelists

Please share your most humbling experiences, as well as suggestions for better engaging with communities and forging strong connections.

DR. BROWN: Speaking from the funder's perspective, I think it's important to understand and be mindful of the amount of time it takes for authentic community engagement and community-led work. In the ComPASS program, we're able to use the Other Transaction Authority mechanism, a unique mechanism used within NIH that allows for more flexibility and the ability to be nimble in the time frames compared to traditional clinical trial mechanisms. With the 25 CHESI awardees, we're learning that time is needed to conduct the community assessment, to account for the timing to hire and capacity building.

MS. WILSON BEGAY: Once, I was presenting about creating a curriculum for American Indians and Alaska Natives. In the audience was an Alaska Native person who said, "This has nothing to do with Alaska Natives; why are you even saying that it is, because it's not." That was a true revelation for me that AI and AN people should not be lumped together into one group, as is typically done in government and research.

DR. HOLSTON: As a dietitian, I'd educate the community to eat fruits and vegetables and drink water. Yet, most of the communities that we're working in don't have reliable drinking water. We're expecting them to follow our recommendations when they don't even have some of their basic needs met.

Can you expand on generational or other adaptations that you are making in the communities you work in?

MS. WILSON BEGAY: Building a family approach could look a million different ways. It doesn't necessarily mean programming for every generation is offered. It could be as simple as understanding that the grandparents are taking care of the grandkids and then providing child care so that the grandparents can participate. It is important to understand the real-life situations that we're faced with in the community and be mindful of how to address the whole family.

DR. HOLSTON: In the development of a community engagement plan, you need to know who is in the community and whose voices have been underrepresented or underreported. For example, our communities are largely rural, and we have seen a greater population of older folks who are raising grandchildren. We knew we needed to capture their voices and experiences in our work.

DR. BROWN: Focusing on the family is key, particularly for racial and ethnic groups that have collective mindsets. Two funded CHESIs focus on family dynamics. One is in the Bronx, collaborating with residents in the New York City Housing Authority to develop and test the economic impacts of providing child care access to residents. They are thinking about the family and what that means for generational wealth or getting out of generational poverty. The other CHESI is in Puerto Rico, working to fight childhood poverty. They are looking at the trickle-down effect of poverty on household dynamics and mental health.

How do you see community-led and engaged approaches driving and contributing to larger-scale state and federal policy change? At USDA, we're promoting MyPlate as a household name, and I'm on a MyPlate promotional tour to hear about barriers, successes, and challenges. We want everyone to be able to use the resources, so we're making sure that it's contextually, linguistically, and culturally appropriate.

DR. BROWN: The hope for COMPASS is that the repository of evidence-based interventions can help inform policy. Engaging community members in the civic process will hopefully contribute to the political environment in their local or state communities and lead to advocacy for improved policies that address the structural and social determinants of health.

What key strategies for reducing stigma and building partnerships with communities would you share with the next generation of childhood obesity researchers?

DR. BROWN: It is important to train your mentees to be culturally humble and culturally competent. With the ComPASS program, we focus on listening. The next cadre of childhood obesity researchers should be trained in qualitative methods and the importance of focus groups and key informant interviews to inform the work.

MS. WILSON BEGAY: I think using a strength-based narrative is effective. It is also important to ask the community what is most important to them.

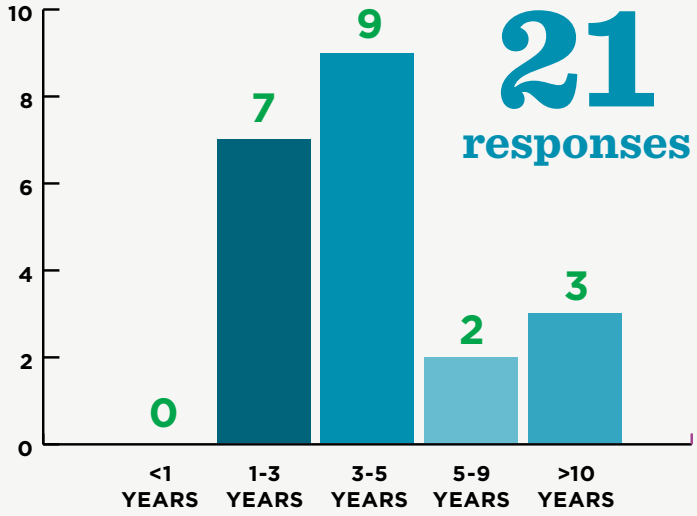
DR. HOLSTON: For our communities, there was a stigma associated with the term "obesity." We stopped using the term because everyone can benefit from being physically active, having a place to play, and having access to healthy food.

How did you determine what tools and guidance your counties and coalitions needed? How did you deliver training to the agents and then pass that along to the coalitions?

DR. HOLSTON: CDC had a whole list of evidence-based interventions, but we knew that the interventions needed to be tweaked for extremely hot, humid summers and the yearlong growing season. After we received feedback from the formative evaluation, we matched that to the interventions and offered those for consideration. It was a step-by-step process to take all the information we heard and match it to what the research shows is effective. We developed a healthy communities framework in which all our programs operate, and this helps us train our agents.

POLL QUESTION

"In your experience, how long does it take to build trust with communities you are working with?



Food and Physical Activity Environments: Thinking Beyond Food Retail and Green Space

MODERATOR

Angela Odoms-Young, PhD
Dr. Odoms-Young is the Nancy Schlegel Meinig Associate Professor of Maternal and Child Nutrition at the Cornell College of Human Ecology and director of the Food and Nutrition Education in Communities Program (FNEC) and New York State Expanded Food and Nutrition Education Program (EFNEP).

PANELIST

Vivica Kraak, PhD, MS, RDN
Dr. Kraak is associate professor of Food and Nutrition Policy in the Department of Human Nutrition, Foods, and Exercise at Virginia Tech.

Deborah Salvo, PhD
Dr. Salvo is an associate professor of Health Behavior and Health Education in the Department of Kinesiology and Health Education of the College of Education at University of Texas at Austin.

Lindsey Smith Taillie, PhD
Dr. Taillie is an associate professor at the University of North Carolina Gillings School of Global Public Health Department of Nutrition and co-director of the Global Food Research Program.

Maximizing the Influence of Choice-Architecture and Marketing Mix Strategies for Healthy Diets and Physical Activity in Diverse Settings

Vivica Kraak, PhD, MS, RDN
Virginia Tech, Department of Human Nutrition, Foods, and Exercise

Dr. Kraak described the concept of nudge and nudging, which emerged from the seminal book by Richard Thaylor and Cass Sunstein, Nudge. A nudge is an "attempt to influence people's judgment, choices, or behaviors in a predictable way by using cognitive boundaries, biases, routines and habits." In contrast, nudging is the "systematic and evidence-based development and implementation of nudges to create behavior change." [44] Dr. Kraak noted that nudge theory is rooted in behavioral economics, as well as consumer psychology and the philosophy of preserving the freedom of choice of individuals (libertarian paternalism) without the need for government interventions, legislation, regulation, or litigation.

Dr. Kraak explained that choice is quite different from agency; choice is relational, while agency is the capacity to act independently. Nudges alter choice architecture in microenvironments to influence people's judgment, choice, or behavior in predictable ways because of cognitive biases, routines, and habits through automatic processes (limited consciousness) but do not exclude reflective processes. Therefore, nudge strategies alter the properties or placement of objects or stimuli in environments and settings to change health-related behaviors and may influence peoples' default choices to encourage healthy lifestyle behaviors. She noted nudge effectiveness is based on three assumptions: 1) people will choose options that require the least amount of mental or physical effort, 2) people will align their behaviors with prevailing social norms, and 3) people will identify with peer or cultural groups that reinforce specific behaviors.

Dr. Kraak described four distinct types of nudges: blue, green, algorithmic, and dark. Blue nudges encourage diet, physical activity, and health behaviors across sectors and settings. Green nudges encourage environmentally sustainable behaviors across sectors and settings. Algorithmic nudges are AI-driven technology that influences what we buy online (i.e., groceries, products). Finally, dark nudges are marketing that is vague or provides misleading information that encourages unhealthy foods, sugary beverages, alcohol, tobacco, and gambling. She noted that researchers need to consider how to combine nudges and marketing mix strategies within and across sectors (e.g., retail environments, child care and schools) to have a measurable, meaningful impact. Dr. Kraak provided an example of a voluntary marketing mix and nudge strategy framework developed at Virginia Tech to promote healthy restaurants. [45] The strategies included in the framework are place (lighting and visual cues), profile (nutrient targets), portion (reduce and standardize), pricing (increase sales of healthy choices), healthy promotion (responsible marketing practices), picks (default choices), priming or prompting (menu labeling), and proximity (placement of products).

Dr. Kraak concluded the presentation by explaining that choice architecture nudges are most effective when 1) behaviors require small and subconscious changes; 2) behaviors are frequent and habitual for targeted populations; 3) behaviors are perceived to be positive; 4) pricing strategies (marketing mix) and policies (taxes and subsidies) are used; and 5) behaviors are socially normalized, incentivized, and reinforced by individual plus PSE change strategies, at scale, across settings and sectors, and persuasive messages reinforce healthy and sustainable diet and activity choices. She concluded that future research should focus on combining PSE change strategies and evaluating feasibility, acceptability, and effectiveness for targeted populations in real-life settings, scaled up and sustained as the social norm.

Environmental Drivers of Physical Activity: A Global Perspective

Deborah Salvo, PhD
University of Texas at Austin, Department of Kinesiology and Health Education, College of Education

Dr. Salvo explained that PA intervention research is heavily focused on high income countries, where a minority of the global population resides, such as the United States and Australia. [46] She noted more equitable research is needed in low- and middle-income countries where over 80 percent of the global population resides. Physical inactivity is considered a global pandemic; five million deaths per year are attributable to physical inactivity. While individual and targeted approaches are helpful, she stated, they won't be enough to tip the scale in favor of public health.

Dr. Salvo described the Walkability Index, a tool that assesses factors that lead to walkability (i.e., a measure of how conducive a place is for walking), including intersection density, net residential density, retail-to-floor area ratio, and land use mix. [47] The Walkability Index has been tested in American cities and is highly associated with the number of minutes of walking or PA per day, irrespective of SES. For settings like the United States, this index helps predict and understand if an area is conducive to walking. However, the index does not work as well in low- or middle-income countries. For example, she cited a study that found an inverse

relationship between the Walkability Index and moderate to vigorous PA in Mexico City. She explained that it appeared the Walkability Index was the "anti-walkability index" in Mexico. In Mexico, the circumstances in which people walk are much different than in the United States. For example, walking may be the only transportation choice and may occur under suboptimal conditions in Mexico. She described this as "choice-based" PA versus "necessity-based" PA. For these reasons, she emphasized that context matters in PA intervention development.

Dr. Salvo concluded the presentation by stating that research centered on identifying, understanding, and resolving inequities in access to activity-promoting environments requires contextually relevant approaches. She noted that it is acceptable to replicate and adapt strategies that have been effective in the past; however, researchers must develop measures that reflect the context and the population of study.

Lessons from International Food Policy

Lindsey Smith Taillie, PhD
University of North Carolina Gillings School of Global Public Health

Dr. Smith Taillie explained that poor nutrition is a top risk factor for global diet-related non-communicable diseases, with three-fourths of adults living with diabetes in low- and middle-income countries. [48] Solutions are needed to solve a systemic food environment problem due to rapid increases in sugary drinks and ultra-processed foods high in energy, added sugar, saturated fat, and sodium in the marketplace. She noted the Chilean Law of Food Labeling and Advertising is a great case study of one of the most comprehensive food environment policies in the world.

Dr. Smith Taillie explained that the Chilean Law of Food Labeling and Advertising was implemented in 2014 and required that ultra-processed foods and drinks high in added sugar, sodium, and saturated fat meet standards for labeling (i.e., a warning label). Additionally, child-directed marketing was not allowed during the daytime, and food products that carry the warning label were prohibited from the school food environment. Prior to implementation, there was a high prevalence of obesity and unhealthy diets in Chile: 51 percent of children aged 6–7 years had overweight or obesity, and 74 percent of adults over 15 years of age had overweight or obesity. Further, there was also a high intake of ultra-processed foods and sugar drinks.

Dr. Smith Taillie described changes that occurred as a result of the law. First, the packaging and the food environment in Chile changed. Compliance with the packaging requirements of the law was high at 95 percent of products. There were decreases in child-directed marketing; 43 percent of high-in cereals were used in child-directed marketing in 2015, and this was reduced to 15 percent by 2017. [49] There were also decreases in TV ads for "high-in" foods, resulting in child exposure to unhealthy TV ads dropping from 44 to 58 percent. [50] The food industry reduced sugar, sodium, saturated fat, and calories in products like beverages, cereals, and soups, leading to a 7 percent reduction in prevalence of unhealthy products (mostly in beverages). [51] Further, the law incentivized manufacturers to reformulate to avoid products having to bear the warning label. She noted that purchases of labeled products decreased, and research is ongoing to determine if this was due to changes in behaviors or reformulation.

Dr. Smith Taillie explained that people in Chile understand the warning labels, and they are indeed effective. For example, one person from a study stated, "Because of this new law, my daughter has been taught a lot about these black logos. 'No, Mom, you can't buy me that; my teacher won't accept it because it has those labels.' And she requests salads; she won't accept snacks that have black labels." A common pushback from the food industry is that such a policy will harm the economy; however, no changes in employment or wages have been identified in evaluations. [52] In focus groups with mothers in 2020 (four years after implementation), it was found that price was important to families, despite their knowing that a product was unhealthy. [53] To address this issue, Dr. Smith Taillie noted, fiscal policies may need to be considered such as healthy food incentives or taxes. Dr. Smith Taillie concluded the presentation by stating that policies can drive dietary change, but we need comprehensive packages of policy action.

Discussion and Q&A with Panelists

We've heard from prior presentations that local context matters. In your different fields, what are important aspects we need to think about next in terms of the person and environment interactions?

DR. KRAAK: There has been much attention recently on sustainable diets and climate change, and I think there's an opportunity to shape and test messages around health or healthy weight that are linked to diets that are environmentally sustainable. We need to develop messages that are compelling and that resonate with people to get them physically active, both for their own health and the health of the planet and ecosystems. In the report, *The Global Syndemic of Obesity, Undernutrition, and Climate Change: The Lancet Commission* report, we talk about those as triple duty actions to address under-nutrition, over- nutrition, as well as climate change.

DR. SALVO: We must consider context as a critical entry point. Context is not an added variable that we adjust for as an afterthought, but it should happen at the very beginning of the research process. As researchers, when we promote health behaviors, we should consider context at the very beginning of our process in terms of the measures and the research questions. For instance, in a context like Mexico, most PA is necessity-driven. If you look at the overall prevalence of PA, it looks like the population is active; however, much of this PA occurs in bad circumstances.

DR. SMITH TAILLIE: The food industry is good at perpetuating messages and reaching target populations. As public health practitioners, we are decades behind in message development and delivery. We're developing messages or strategies that may be a little tailored, whereas the folks that are promulgating the high consumption of these foods are doing it in a way that's being delivered directly to people's phones all day, every day. We could make more progress if we could develop interventions and policies that account for the nuance of where people live, what people prefer, and other factors in their lives.

How do you bring equity into your research?

DR. SMITH TAILLIE: Right now, I'm trying to understand what an effective front-of-package label design would look like in the United States and what the likely effects would be in populations that have lower English literacy. For folks who may not necessarily understand the words, could we use shapes, colors, or icons? This is important to consider when we're thinking about policy design.

DR. SALVO: My entire work is driven by the pursuit of health equity. To me, the goal of public health should be to reduce health disparities and health inequities. We have good case studies from across the world of what the ideal circumstance could be in ideal environments with ideal policies. However, the truth is that not everybody has access. Reducing that gap has been the focus of my research.

DR. KRAAK: I've been thinking a lot about food systems and governance. For example, what is it going to take to adopt more progressive radical approaches that are driven by democracy to transition and transform to healthier and more sustainable diets and food systems? We need to be explicit about understanding political ideology, paradigm, discourse, and governance.

How are the communities informing the policy changes in the research you are conducting?

DR. SMITH TAILLIE: Generally, in other countries, this work is led by grassroots coalitions comprised of folks from the health community and parents. The coalitions have done well at bringing people to the table to understand proactively what the potential unintended consequences of these policies would be. In other cases, it has been a little bit of trial and error. I do see that countries are learning from each other. Subsequent policies are becoming more comprehensive and able to address these issues more proactively.

Social Policy as Obesity Policy: The Impact of Addressing Social Determinants of Health

MODERATOR

Andrea Richardson, PhD, MPH
Dr. Richardson is a senior policy researcher at the RAND Corporation and a professor at the Pardee RAND Graduate School.

PANELIST

Caitlin Caspi, ScD
Dr. Caspi is an associate professor in the Department of Allied Health Sciences at the University of Connecticut, director of Food Security Initiatives at the Rudd Center for Food Policy and Health, and associate director of the Institute for Collaboration on Health, Intervention, and Policy.

Dolores Acevedo-Garcia, PhD
Dr. Acevedo-Garcia is the Samuel F. and Rose B. Gingold Professor of Human Development and Social Policy, and director of the Institute for Child, Youth and Family Policy at the Heller School for Social Policy and Management at Brandeis University.

Carl Gershenson, PhD
Dr. Gershenson is the director of the Eviction Lab at Princeton University

Minimum Wage as a Social Determinant of Health: The Wage$ Study

Caitlin Caspi, ScD
University of Connecticut Rudd Center for Food Policy and Health

Dr. Caspi explained that economic stability is one of five social determinants of health and is distinct from the four other social determinants due to the variety of dimensions it encompasses (i.e., food security, housing, poverty, and employment). As such, a modifiable policy action, namely, raising the minimum wage, could impact job pay and translate into better access to health-promoting resources. She noted there is evidence that raising the minimum wage can result in more favorable health outcomes. However, there are contradictory findings regarding the relationship between raising the minimum wage and the effect on weight-related outcomes.

Dr. Caspi described the Wage$ Study, an evaluation of the Minneapolis Minimum Wage Ordinance passed in June 2017 that incrementally changed the minimum wage from $10.00 to $15.00 per hour (2018–2024). The study was conducted to understand the effects of the minimum wage increase on health outcomes, with obesity as the primary outcome. Since the intervention was focused on a SDOH, the study had the potential to affect other outcomes, as well as reduce racial and ethnic disparities in health. A total of 495 low-wage workers in Minneapolis were recruited and compared with 474 low-wage workers in the comparison city of Raleigh, North Carolina. At the time the study was conducted, she noted, both the COVID-19 pandemic and the murder of George Floyd in Minneapolis had occurred (2020) and caused civic unrest that impacted food distribution and security.

Dr. Caspi described the results of the quantitative analysis, which showed that the mean hourly wage increased in both cities, and there were no difference-in-difference effects between 2018–2022. There were city-specific effects, such as year-specific increases and an overall increase in both cities. Adjusted for inflation and presented in 2022 dollars, the mean hourly rate for Minneapolis increased from a little over $12.00 to about $17.00, and the mean hourly rate for Raleigh increased from about $11.00 to almost $16.00. The change in BMI was stable between 2018–2022; however, there was an overall decrease in food insecurity in both cities. Dr. Caspi explained this was likely not due to the ordinance, considering there was an unprecedented amount of COVID-19 policy supports in place that could have affected food insecurity

directly. Key themes from the qualitative analysis included 1) the ordinance was too little too late, 2) people relied on a patchwork of supports, and 3) the COVID-19 economic supports offered relief but were temporary. Low-wage workers reported they were experiencing chronic financial hardship and chronic food insecurity much of the time, despite receiving economic relief measures during the pandemic and despite the increase in wages in both cities.

Dr. Caspi noted there has been much emphasis on safety net programs recently, as these are necessary programs. Yet, at the same time, simply having a safety net might not be enough to ensure adequate health. She explained, the next step is to look at asset-building programs that can help to promote long-term stability and reduce the racial wealth gap. Dr. Caspi concluded the presentation with lessons learned from the research perspective: 1) more precise measures of policy exposures beyond self-report are needed, 2) it is important to take opportunities to measure exposure to combinations of policies as it is hard to isolate effects, and 3) mixed-methods approaches to determine overall effects are needed.

Social Policy as Obesity Policy the Challenge of Complexity and Integration

Dolores Acevedo-Garcia, PhD
Brandeis University Institute for Child Youth and Family Policy

Dr. Acevado-Garcia noted that it has been almost fifteen years since the IOM report, ***Bridging the Evidence Gap in Obesity Prevention: A Framework to Inform Decision Making***. She explained that one of the main messages from the report was the need to conduct comprehensive and systematic reviews of the evidence on strategies for obesity prevention and to use an ambitious systems approach. Today, the question remains: are we better at integrating a systems perspective and different types of evidence into obesity prevention?

Dr. Acevado-Garcia described the Child Opportunity Index 3.0 (COI), a metric of child opportunity for all neighborhoods in the United States. The COI summarizes neighborhood features that impact children's healthy development and their future outcomes as adults in five categories of child opportunity levels: very low, low, moderate, high, and very high. She explained, nationally across the five levels, white and Asian children are concentrated in high-opportunity neighborhoods, while Native American, Black, and Hispanic children are concentrated in low-opportunity neighborhoods. When adjusting for family income and focusing only on children who live in families with lower income, these racial inequities don't disappear. Roughly 130 peer-reviewed papers have shown strong associations between the COI and child health.

Dr. Acevedo-Garcia noted that, given the recognition of the importance of SDOH in the last two decades, there has been an increased focus on research that examines the effects of social policies on health. For example, some policies are tied to work or employment, and others provide a social safety net for families, including families without any income. Many of these policies don't have an explicit goal to improve nutrition or obesity; rather, the main goals are to supplement income, reduce poverty, improve family and child wellbeing, and incentivize employment. Because of this, an evidence gap map is needed to show the direction and quality of the evidence across these social policies and the multiple types of outcomes they may affect.

Dr. Acevado-Garcia explained that she utilizes an approach called the Policy Equity Assessment to consider equity in the design and effects of social policies. She provided an example, the 2021 expansion of the Child Tax Credit (CTC), which resulted in an unprecedented and historical reduction in child poverty overall and by race and ethnicity. During the 2021 expansion of the CTC, monthly payments reduced food insecurity more than lump-sum payments, especially among low-income households with children. [54, 55] She noted that this provides evidence that programs that reduce child poverty can reduce food insecurity and that the design of policy matters. An important design feature of the CTC expansion was that it eliminated earnings requirements, meaning families without earned income could receive the credit. This design element especially helps Black, Hispanic, and Native American families who are more likely to have no or very small earnings.

Dr. Acevado-Garcia concluded that evidence is available showing that place-based SDOH, such as neighborhood factors, matter in terms of nutrition and obesity. However, we need to know the strength of the evidence, the size of the effects, and possible mechanisms. She stated that evidence maps are needed to assess multiple social policies across multiple outcomes, including nutrition and obesity, and an equity analysis of policies and interventions may help reduce obesity. While the field is not yet able to assess the effectiveness of social policies on nutrition, outcomes, and obesity, microsimulation models could be used to determine how multiple social policies interact with each other.

The Housing Crisis and the Hunger Crisis

Carl Gershenson, PhD
Princeton University Department of Sociology

Dr. Gershenson described the state of the housing crisis in the United States. He noted that rent prices continue to increase, resulting in housing expenses as the primary cost for families. In 2021, the median renter household making less than $30,000 a

year had only $380.00 left over each month after paying rent. Each year, over 2.7 million unique renter households receive an eviction filing. [56, 57]

Dr. Gershenson explained that the risk of eviction is not distributed equally across the population. Most Americans own their own homes, but most low-income Americans rent, and this is especially true for Black and Hispanic Americans. There is evidence of pervasive racism in rental markets; 18 percent of renters in the United States are Black, and over 50 percent of evictions are filed against Black renters. Dr. Gershenson noted that income does not explain this relationship; Black renter households earning $60–70,000 a year have a slightly higher eviction risk than white households earning around $20–30,000 a year. Another risk factor for eviction is having children present in the home.

Dr. Gershenson described housing and hunger as a joint crisis. Hunger and housing instability are both most common in households with children, especially households of color. These crises are linked, in large part, because families that spend an overwhelming amount of their income on rent simply have less money to spend on food. Research has shown associations between evictions and poor physical and mental health among mothers and children, eviction during pregnancy with poor birth outcomes (low weight births and premature births), and even eviction with mortality (evicted households have a 40% higher chance of dying). Further, Dr. Gershenson shared that evicted households also lose access to SNAP benefits. In the year following eviction, there is a five percentage point drop-off in SNAP receipt, and enrollment continues to deteriorate further out from the eviction.

Dr. Gershenson shared the results of a qualitative analysis that found it is difficult to use the benefits when experiencing homelessness, and participants experience trouble with recertification of benefits due to lack of a mailing address. One participant in the study shared, "I didn't know that it was time for me to recertify. So, when they sent my mail, they sent it to my address that I had got evicted out of... But by the time I got the information, my case was pretty much closed already... I told the lady that I was homeless, and I didn't have anywhere for me to receive any mail or anything like that. They were saying things about getting a PO box and stuff like that." Dr. Gershenson also noted that there are complex and confusing rules. One participant in the study stated, "I think it's a lot of the system is not a cookie-cutter system. Five people can speak with and have a DHS assigned worker...but then those five different workers will explain and follow procedure five different ways." Finally, there is overwhelming cynicism around the welfare system in general. Many people in the study reported not updating caseworkers about address changes because they feared jeopardizing their other benefits or their friends and family's benefits and feared that Child Protective Services would take away their children.

Dr. Gershenson concluded the presentation by sharing a quote from a study participant that summarizes the barriers that SNAP participants who experience housing instability face: "Once you don't have an address, you're considered non-existent as a citizen of the state you're in. And so that makes them take all of your benefits."

Discussion and Q&A with Panelists

The current SNAP application and recertification process devotes a lot of time to avoiding fraud. How much effort do you think is wasted in that process, and how many are losing benefits because there is such a strong focus on fraud?

DR. GERSHENSON: The churn rate, when a household exits SNAP and then re-enters the program within four months, is incredibly high at an estimated 40 percent. There are so many resources expended on ensuring people don't get SNAP when they don't earn it. I don't think it's a concern, because the benefits are not that large. If people are trying to get the benefits, they need it. It seems to be a counterproductive way to run the system.

From your study, do you think there is a minimum wage today that might make a difference, or is it more about asset-building strategies?

DR. CASPI: Since we conducted the first set of interviews in 2019, we've been hearing that this is just too little too late. The first step is thinking about evaluating not just the minimum wage but a living wage. Quality research has been conducted to calculate the real cost of living estimates, and it's always well above minimum wage. I don't think it's as opposed to a safety net, or as opposed to building policies, but kind of in addition to.

There was a compelling quote from your study about how the increasing cost of living wipes out the increase in minimum wage. In your study, did Minneapolis and Raleigh have comparable costs of living?

DR. CASPI: We saw cost of living increases across the board nationally. I investigated whether there were regional differences and cost of living increases. It seems like Minneapolis and Raleigh were comparable. Increases peaked around the summer of 2022 when we were still collecting our last round of data with these participants. I don't think that that accounts for it. There were some other site-specific differences in the implementation of some of the COVID-19 programs.

How do we implement successful and effective strategies without pushing residents out with gentrification?

DR. ACEVEDO-GARCIA: There are two ways that you could improve a neighborhood environment for children and families. One is by improving conditions in neighborhoods that have lower opportunity, and another is to help families move to neighborhoods that are higher opportunity. The second option is much faster, but we have a lot of barriers to doing that, such as discrimination in housing and lack of multi-family and low-income housing in areas that are higher opportunity. This is done by design because of zoning restrictions. We need affordable housing in areas that are already high opportunity, and we need to help families access them.

Schools are a critical part of neighborhoods and a key aspect of the child opportunity index. To what degree do you think inequitable school funding contributes to low education, resources, and neighborhoods?

DR. ACEVEDO-GARCIA: Inequitable funding is absolutely a factor. We continue to see in the evidence that school segregation—by income, race and ethnicity, and language—continues to be a main barrier for kids to access school resources and peer networks that can sustain their learning. We must keep thinking about fiscal issues, such as more equitable funding, but also very purposeful school desegregation strategies or integration. Housing and school issues are very closely tied. There is a book by Richard Kahlenberg that talks about economic segregation as one of the key issues that drive inequality in schooling and education in the United States. We cannot think about housing policy without thinking about education. Both happen at the neighborhood level which is why neighborhoods become so important for so many of the settings that we think about for health interventions.

There is a hot topic debate about private versus public education. Do you have any thoughts on that?

DR. ACEVEDO-GARCIA: We must be extremely careful with the issue of privatizing education. For example, using vouchers to try to resolve the issue of limitations in public education has created even more inequality.

What role do you think discrimination in the legal system and unjust incarceration might play in health disparities and the wealth gap?

DR. CASPI: I think discrimination in the legal system plays a substantial role. In our study, a disproportionate proportion of the sample reported incarceration as a hardship. It affects people's ability to apply for and maintain jobs. It can also prevent people from getting these much-needed benefits like SNAP or Temporary Assistance for Needy Families.

DR. GERSHENSON: When you're a homeowner, you can have whoever you want to stay with you. For renters, landlords can write into the lease all these restrictions on who can enter your unit. Very often, explicitly, people with involvement in the criminal justice system are restricted from being an overnight guest. From the perspective of a renter, this can put you in this awful situation when you have a friend or a family member returning from prison. They may need a place to stay to get on their feet before they get their own job, and you would have to choose between doing right by your kin and following your lease agreement. Some people do lose their housing because they tried to help friends and family returning from prison. Given the overlap in who experiences housing instability and who is likely to spend time in the justice system, these are very closely intertwined issues.

Could you speak to the interrelationship between time poverty and financial poverty?

DR. ACEVEDO-GARCIA: In the United States, we emphasize tying anti-poverty programs to employment. We also have programs that don't require people to work. We need both as part of the safety net. For those that require employment, we enter the territory of competing priorities. People cannot get the benefits if they don't work. They tend to be better off in terms of economic resources, so they can probably buy more things for their children. At the same time, time is not infinite. They will have less time to spend with their kids. Time investments in kids can be as valuable as economic investments. We need to look at the effects of these policies across a lot of different outcomes. In this country, parental time to spend with children is not valued in the same way that we value employment.

DR. CASPI: I think about the tradeoffs people make between their employment and their child care, as well as issues around transportation, and how much time it takes to maintain a vehicle or figure out public transportation. That is just another mechanism of the interaction between time poverty and financial poverty.

POLL QUESTION

"What are the most pressing social drivers of obesity in the communities you have worked?"

20
responses

POVERTY/ECONOMIC INEQUALITY

RACISM & DISCRIMINATION

Where Do We Go Next? Scaling Systems Approaches for Equitable Obesity Prevention

MODERATOR

Jamie Chriqui, PhD, MHS
Dr. Chriqui is senior associate dean and professor of Health Policy and Administration in the School of Public Health at the University of Illinois at Chicago (UIC) and director of health policy research for the Institute for Health Research and Policy at UIC.

PANELIST

Terry Huang, PhD, MPH, MBA
Dr. Huang is professor and chair in Health Policy and Management and director of the Center for Systems and Community Design at the City University of New York (CUNY) Graduate School of Public Health and Health Policy.

Stephenie Lemon, PhD, MS
Dr. Lemon is chief, Division of Preventive and Behavioral Medicine at UMass Chan and director of the Prevention Research Center and Community Engagement for the UMass Center for Clinical and Translational Science.

Nico Pronk, PhD, MA, FACSM, FAWHP
Dr. Pronk is president of the HealthPartners Institute, chief science officer at HealthPartners, Inc., and affiliate full professor of Health Policy and Management at the University of Minnesota, School of Public Health.

Critical Considerations for Next-Generation Childhood Obesity Interventions

Terry Huang, PhD, MPH, MBA
CUNY School of Public Health

Dr. Huang described three key themes of critical implementation gaps that need to be addressed to scale systems approaches for equitable obesity prevention: 1) implementation context, 2) intervention components, targets, and sequencing, and 3) delivery strategies. [58] For the first theme, implementation context, he explained that there is a mismatch between the interventions researchers want to implement and the level of readiness in the community of interest. Previous workshop speakers have emphasized how important context is and that interventions may or may not be effective in different contexts. He noted that community readiness is a facet of that context. By addressing community readiness, evidence-based interventions may be delivered more effectively.

In considering the implementation context, he emphasized that researchers need to consider both the social environment and environmental-level interventions. Rather than working in silos, researchers should consider the interaction of both the social and built environments. Further, he noted, there is a lack of attention to cultural nuance. He emphasized that these cultural nuances across cultural and transnational perspectives are increasingly important, particularly in terms of health disparities.

Next, Dr. Huang explained the second key theme: intervention components, targets, and sequencing. He noted that researchers often fail to remember that for lifestyle interventions, there are a lot of different behaviors to target. There are different stages of change for different behaviors, and interventions are not calibrated in such precise ways. Further, researchers often overlook issues related to participants' mental health, cognitive load, and executive functioning. As a result, interventions are delivered to users who may not be in the position to optimally digest or process and benefit from the lifestyle intervention. As such, he noted, researchers need to consider different intervention targets apart from obesity before addressing obesity. Finally, he commented that a knowledge gap exists on how to optimally sequence different intervention components.

Lastly, Dr Huang described the third key theme: delivery strategies. He noted, as public health interventionists, we are more accustomed to push strategies, but consumers often respond better to pull strategies. An idea he shared is to test a combination of both with an opt-out approach. In terms of intervention packaging and formats, he commented, we have issues related to dosage, delivery channel, integration with care or day-to-day life, gamification, and incentives versus disincentives.

Dr. Huang described the need to shift from a problem-centered perspective to a solution-oriented one by leveraging the integration of both systems and design thinking to improve intervention implementation. Dr. Huang proposed a model that integrates the two in the service of improving the implementation of obesity interventions. The proposed framework illustrates how the two sides can come together to fill some of the major gaps in implementation science and, very importantly, consider strategies that would sustain and scale public health innovation from the outset. [59] He noted that he has been working over the past decade to experiment with the use of systems science strategies to improve community engagement by taking advantage of system dynamics modeling to help local stakeholders identify, prioritize, and pivot their strategies as time goes on. From this work, he has learned that there are different ways of thinking about solutions to identify innovative strategies to break free of the bottleneck that the field is currently experiencing. Dr. Huang concluded the presentation by stating that we in public health need to think more entrepreneurially and tap into the talents and resources beyond the traditional public health sector.

Obesity-Related PSE Implementation Science: How Do We Build the Field?

Stephenie Lemon, PhD, MS
University of Massachusetts Chan Medical School

Dr. Lemon provided a brief background on the difference between implementation science, implementation research, and dissemination research. She explained that **implementation science** is "the study of methods to promote the adoption and integration of evidence-based practices, interventions, and policies into routine health care and public health settings to improve the impact on population health." Implementation research is the "the scientific study of the use of specific strategies to adopt and integrate evidence-based health interventions into clinical and community settings in order to improve patient/population outcomes". Dissemination research is the scientific study of targeted distribution of evidence (knowledge, interventions, practices, policies) to a specific audience (e.g., public health, clinical practice, decision-makers) with the intention of understanding how to best spread and sustain evidence-based interventions (adapted from NIH). Implementation research focuses on the use of specific strategies to adopt and integrate evidence-based health interventions. In contrast, implementation science assumes that there is an evidence base to implement and that implementation doesn't occur automatically. Effectiveness research and implementation research are related yet distinct in that effectiveness research

focuses on what we know, while implementation science is how to do it.

Next, Dr. Lemon described implementation science in the context of PSE research. She noted that there is a large body of research around implementation science that has been published in the last decade; however, most research has focused on health care rather than PSE changes. As she explained, there are three main buckets of PSE implementation science: policy making, policy strategies, and PSE implementation. [60] The policy-making bucket focuses on policy-focused dissemination research with the goal of enacting policies that are aligned with the best evidence. The policy strategies bucket focuses on non-policy implementation research, with the goal of using policy as implementation strategies to put evidence-based interventions into practice. Finally, in the PSE implementation research bucket, the goal is to identify strategies that maximize the implementation and impact of PSE interventions. Dr. Lemon explained that there are methodological issues of implementation research that need to be considered related to engaging partners or other interest holders such as using relevant frameworks, models, or theories and considering local context.

Dr. Lemon provided an example of PSE implementation research focused on the built environment and physical activity from the **Community Preventive Services Task Force**, "Built environment intervention approaches to increase physical activity create or modify environmental characteristics in a community to make physical activity easier or more accessible." Dr. Lemon is currently developing and piloting an implementation strategy that supports equitable implementation of built environment changes that promote PA and co-benefits while mitigating unintended consequences in Worcester, MA. She is in the process of testing an implementation strategy, Neighborhood Connect, which is intended to influence how decisions are made in the community around the built environment.

Dr. Lemon concluded the presentation with a list of factors for the field to consider in the pursuit of the next generation of obesity-related PSE intervention research. First, she noted, the field needs to further define and operationalize systems, including multi-sector interest holders who are the implementers. Second, the field needs to prioritize implementation, including the development of scalable implementation strategies. While there is a need for new effectiveness research, the field also needs to think about implementation and hybrid designs from the beginning so that we learn as we go, not sequentially. Third, the field needs to consider what is or isn't applicable to the current field of implementation science. Lastly, the field needs methodological advances, specifically in measurement and study design, to integrate obesity-related PSE research and implementation science.

Scalable and Sustainable Approaches to Equitable Obesity Prevention

Nico Pronk, PhD, MA, FACSM, FAWHP
HealthPartners Institute

Dr. Pronk began the presentation by describing the **Roundtable on Obesity Drivers and Solutions Systems Map**, which reiterates that all behavior by people, organizations, economies, and countries is affected by the context in which it occurs. He noted there is a need in the field to start thinking in circles rather than straight lines. During the presentation, he outlined three strategies for developing scalable and sustainable approaches to equitable obesity prevention: 1) focus upstream, 2) develop comprehensive options for prevention and treatment, and 3) disseminate and implement using a pragmatic framework.

The first strategy for developing scalable and sustainable approaches to equitable obesity prevention is to focus upstream. Dr. Pronk noted that obesity is not homogeneously distributed across the country, and there are large variations that exist throughout the United States. This heterogeneity influences the way politics show up in the local settings, to which civic engagement is closely related, and establishes the linkage to policy development. Policy development, in turn, heavily influences the social, physical, and economic environments. For example, research has shown states with more inclusive voting policies and greater levels of civic participation are healthier at the population level. [61] On the other hand, states with exclusionary voting laws have lower rates of voter participation and worse public health outcomes. Dr. Pronk emphasized that public policy needs to align with implementation efforts and practice realities.

The second strategy for developing scalable and sustainable approaches to equitable obesity prevention is ensuring comprehensive options for prevention and treatment of obesity. [62] Prevention options include community programs (school, workplace, parks), digital health programs, commercial weight loss options, lifestyle coaching and nutrition counseling access, and multi-sectoral collaborations (workplace-to-clinic or clinic-to-community programs). Treatment options include obesity medicine clinic access, anti-obesity medications, and bariatric surgery options. He explained, to provide comprehensive options and equitable access, gaps in care need to be closed, and disparities in access in both communities and health care delivery settings must be addressed. For example, care teams need to reach beyond the clinic walls to provide referrals to community resources, and the health workforce needs to be better educated about comprehensive obesity solutions.

Finally, the third strategy for developing scalable and sustainable approaches to equitable obesity prevention requires dissemination and implementation using pragmatic frameworks. Dr. Pronk noted that there are many frameworks; however, the best is the one that fits the local context. He provided an example of the 4-Ss of DESIGN and the PIPE Impact Metric Evaluation Models, which connect design of programs (size of effect, scope of services, scalability, and sustainability) to implementation of programs (penetration, implementation, participation, effectiveness). This improves an iterative learning process.

Dr. Pronk concluded the presentation by stating that scalable and sustainable approaches are required for equitable obesity prevention to be successful. He noted, the field cannot continue to look only at straight lines as if everything is organized along causal chains of events. Instead, the field must think in terms of feedback loops and use a both/and mindset rather than an either/or mindset. In other words, there is a need for culturally-centered and locally-relevant solutions and individual and population-based solutions, as well as pragmatically responsive and theoretically evidence-informed solutions.

Discussion and Q&A with Panelists

What do you see as the top challenges with multi-sectoral research and implementation science in the field of obesity prevention?

DR. LEMON: There are multiple players and multiple actors in the system, and these groups often don't speak the same language. Also, the time frames often don't align with the typical research time frame. Developing and sustaining partners who understand the community and the advocacy groups, how decisions are made, and how things work has been essential for us.

DR. HUANG: There are researchers who are doing a better job at reaching certain segments of the population; they may not be focusing on obesity or health, but they're keeping people engaged. This could be a topic for the next workshop. We need to learn how to generate the demand for obesity-related interventions and policies and how to keep people engaged over an extended period. We will not get ahead of the obesity epidemic if we're not doing both at the same time.

DR. PRONK: We need a focus on social capital, such as rebuilding social trust, social cohesion, and social connectedness. We've seen trust erode across so many different areas, including government, health care, and different industries. We need to rebuild trust so that these sectors can talk to each other and move toward solutions. It will take intentional and deliberate efforts to bring stakeholders together for that purpose. We will need strong leadership from those sectors to step forward.

DR. LEMON: We also need to be mindful of co-benefits beyond obesity, physical activity, and nutrition. In the built environment realm, there are a lot of co-benefits to community design interventions that influence PA, economic development, and safety. These are co-benefits that people in the community and the decision makers care about more than they care about physical activity. As we're designing our studies, we need to think about the framing of our messaging and about our outcomes.

Can whole-of-systems approaches to obesity work without dramatic increases in the regulation of commercial actors or addressing industry behaviors?

DR. PRONK: I think a whole-of-systems approach can work, but we need to be very intentional about bringing all the actors to the table to find a way to co-create an approach. Making decisions in a vacuum away from those actors makes everything more difficult once you implement [them].

DR. HUANG: There is a role for regulatory approaches. However, it is important that we are aware that anytime there is an action, via regulatory or otherwise, there's going to be a reaction and potentially unintended consequences. One area where regulations can be powerful is in creating an even playing field for commercial actors. If you have regulations that advantage some commercial actors but disadvantage others, that may be a problem.

Can you speak to the reality of the political environment and its influence on PSE implementation?

DR. LEMON: This is hard to answer because we've seen major shifts in the political climate over the last seven years. The reality is, we need to find ways to work within the context as best we can. This requires understanding how decisions are made, what the touch points are, and what the leverage points are, and carefully thinking about how we introduce our ideas in a way that is palatable to people who may not be on the same page.

How can those doing PSE work in practice best collaborate with research partners to elevate science?

DR. LEMON: The CDC funds research to practice networks, called PAPREN and NOPREN, which are free for anybody to join. There are a variety of researchers and practitioners who participate.

DR. HUANG: I try to design research and leverage the data to help inform the policy decisions that our policy-maker partners must make.

DR. PRONK: Utilizing mixed-method approaches to research and an iterative design allows you to improve as you go forward in time.

Closing thoughts from each panelist

DR. HUANG: I urge you to investigate design thinking [and] innovation processes and bring in the entrepreneurial toolkit to scale and sustain innovation beyond peer-reviewed papers.

DR. PRONK: I urge you to think in terms of both/and rather than either/or.

DR. LEMON: For funders, I urge you to think creatively about the next generation of research. Develop RFAs that address some of the complex, fascinating, innovative ideas that we've been talking about on this panel, even though they may not align with the status quo.

Workshop Closing

Tamara Dubowitz, ScD, MS, MSc
University of Pittsburgh, School of Public Health

Tamara Dubowitz concluded the workshop by providing a recap of the presentations and discussion during days one and two and by thanking the members of the planning committee, presenters, moderators, and the FHI 360 team who helped plan and execute the workshop. She noted, day one of the workshop considered evidence for PSE and systems science approaches to obesity prevention research and highlighted successful approaches, challenges, lessons learned and knowledge gaps that remain. Day two focused on the latest evidence around structural factors that affect obesity and the critical need to engage communities in authentic ways to build trust and tailor interventions to local contexts to ensure sustainability. Key insights included the importance of developing systems approaches and systems thinking in community-engaged research. Past work shows that PSE approaches can significantly impact factors influencing obesity and suggests that high-intensity, multi-component interventions can effectively reduce rates of childhood obesity in some contexts.

Advancing equitable progress in obesity prevention requires comprehensive PSE interventions that address community-specific leverage points, including broader social drivers. Developing, implementing, and sustaining contextually relevant PSE approaches will require authentic community engagement as well as mobilization of a range of multisector actors. Few studies have rigorously evaluated whole-of-community PSE approaches, underscoring the need for new evidence and methods to inform policy and practice. Dr. Dubowitz emphasized that, moving forward, we must think about advancing implementation science for obesity-related PSE interventions and consider upstream social determinants.

Part two of the OPUS workshop will take place on October 9–10, 2024. The purpose of part two is to explore lessons learned from successful PSE efforts, identify the next steps for addressing childhood obesity, and examine best practices in obesity prevention with specific attention to community engagement and systems change through an equity lens. The workshop goals are to explore key learnings from past research and evaluation, advance childhood obesity research, and inform future directions for the field.

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References

1. Islami F, Goding Sauer A, Miller KD, et al. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States. CA Cancer J Clin. 2018 Jan;68(1):31-54.

2. Levy DT, Tam J, Kuo C, et al. The impact of implementing tobacco control policies: the 2017 tobacco control policy scorecard. J Public Health Manag Pract. 2018 Sep/Oct;24(5):448-457

3. Government Office for Science. Tackling obesities: future choices - obesity system atlas [Internet]. London: Government Office for Science; 2007 Oct [cited 2024 Sep 23]. 42 p. Available from: **https://assets.publishing.service.gov.uk/media/5a7b8811ed915d4147620f-b2/07-1177-obesity-system-atlas.pdf**

4. Waterlander WE, Singh A, Altenburg T, et al. Understanding obesity-related behaviors in youth from a systems dynamics perspective: the use of causal loop diagrams. Obes Rev. 2021 July;22(7):e13185.

5. Luna Pinzon A, Stronks K, Emke H, et al. Understanding the system dynamics of obesity-related behaviours in 10- to 14-year-old adolescents in Amsterdam from a multi-actor perspective. Front Public Health. 2023 May 25;11:1128316

6. Luna Pinzon A, Waterlander W, de Pooter N, et al. Development of an action programme tackling obesity-related behaviours in adolescents: a participatory system dynamics approach. Health Res Policy Syst. 2024 Mar 1;22(1):30.

7. Ward ZJ, Bleich SN, Cradock AL, et al. Projected U.S. state-level prevalence of adult obesity and severe obesity. N Engl J Med. 2019 Dec 19;381(25):2440-2450.

8. Kumanyika SK. A framework for increasing equity impact in obesity prevention. Am J Public Health. 2019 Oct;109(10):1350-1357.

9. Bleich SN, Ard JD. COVID-19, Obesity, and structural racism: understanding the past and identifying solutions for the future. Cell Metab. 2021 Feb 2;33(2):234-241.

10. Swinburn BA, Sacks G, Hall KD, et al. The global obesity pandemic: shaped by global drivers and local environments. Lancet. 2011 Aug 27;378(9793):804-14.

11. Gortmaker SL, Bleich SN, Williams DR. Childhood obesity prevention - focusing on population-level interventions and equity. N Engl J Med. 2024 Feb 22;390(8):681-683. doi: 10.1056/NEJMp2313666. Epub 2024 Feb 17.

12. Dietz WH, Gortmaker SL. New strategies to prioritize nutrition, physical activity, and obesity interventions. Am J Prev Med. 2016 Nov;51(5):e145-e150.

13. Kenney EL, Lee MM, Barrett JL, et al. Cost-effectiveness of improved WIC food package for preventing childhood obesity. Pediatrics. 2024 Jan 1;153(2):e2023063182

14. Lee MM, Barrett JL, Kenney EL, et al. A sugar-sweetened beverage excise tax in California: projected benefits for population obesity and health equity. Am J Prev Med. 2024 Jan;66(1):94-103.

15. Odoms-Young AM, Kong A, Schiffer LA, et al. Evaluating the initial impact of the revised Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) food packages on dietary intake and home food availability in African-American and Hispanic families. Public Health Nutr. 2014 Jan;17(1):83-93. doi: 10.1017/S1368980013000761. Epub 2013 Apr 2. PMID: 23544992; PMCID: PMC3858404.

16. Tester JM, Leung CW, Crawford PB. Revised WIC food package and children's diet quality. Pediatrics. 2016 May;137(5):e20153557. doi: 10.1542/peds.2015-3557. Epub 2016 Apr 7. PMID: 27244804; PMCID: PMC4845874.

17. Ng SW, Hollingsworth BA, Busey EA, et al. Federal nutrition program revisions impact low-income households' food purchases. Am J Prev Med. 2018 Mar;54(3):403-412. doi: 10.1016/j.amepre.2017.12.003. PMID: 29455757; PMCID: PMC5820777.

18. Andreyeva T, Luedicke J, Tripp AS, et al. Effects of reduced juice allowances in food packages for the women, infants, and children program. Pediatrics. 2013 May;131(5):919-27. doi: 10.1542/peds.2012-3471. Epub 2013 Apr 29. PMID: 23629613; PMCID: PMC4074658

19. Andreyeva T, Tripp AS. The healthfulness of food and beverage purchases after the federal food package revisions: The case of two New England states. Prev Med. 2016 Oct;91:204-210. doi: 10.1016/j.ypmed.2016.08.018. Epub 2016 Aug 13. PMID: 27527573.

20. Schultz DJ, Byker Shanks C, Houghtaling B. The impact of the 2009 Special Supplemental Nutrition Program for Women, Infants, and Children food package revisions on participants: a systematic review. J Acad Nutr Diet. 2015 Nov;115(11):1832-46. doi: 10.1016/j.jand.2015.06.381. Epub 2015 Aug 12. Erratum in: J Acad Nutr Diet. 2015 Nov;115(11):1886. PMID: 26276067.

21. Daepp MIG, Gortmaker SL, Wang YC, et al. WIC food package changes: trends in childhood obesity prevalence. Pediatrics. 2019 May;143(5):e20182841. doi: 10.1542/peds.2018-2841. Epub 2019 Apr 1. PMID: 30936251; PMCID: PMC6565338.

22. Silver LD, Ng SW, Ryan-Ibarra S, et al. Changes in prices, sales, consumer spending, and beverage consumption one year after a tax on sugar-sweetened beverages in Berkeley, California, US: a before-and-after study. PLoS Med. 2017 Apr 18;14(4):e1002283.

23. Powell LM, Leider J. The impact of Seattle's sweetened beverage tax on beverage prices and volume sold. Econ Hum Biol. 2020 May;37:100856.

24. Roberto CA, Lawman HG, LeVasseur MT, et al. Association of a beverage tax on sugar-sweetened and artificially sweetened beverages with changes in beverage prices and sales at chain retailers in a large urban setting. JAMA. 2019 May 14;321(18):1799-1810.

25. Krieger J, Bleich SN, Scarmo S, et al. Sugar-sweetened beverage reduction policies: progress and promise. Annu Rev Public Health. 2021 Apr 1;42:439-461.

26. Economos CD, Hyatt RR, Goldberg JP, et al. A community intervention reduces BMI z-score in children: Shape Up Somerville first year results. Obesity (Silver Spring). 2007 May;15(5):1325-36.

27. Economos CD, Hyatt RR, Must A, et al. Shape Up Somerville two-year results: a community-based environmental change intervention sustains weight reduction in children. Prev Med. 2013 Oct;57(4):322-7.

28. Economos CD, Folta SC, Goldberg J, et al. A community-based restaurant initiative to increase availability of healthy menu options in Somerville, Massachusetts: Shape Up Somerville. Prev Chronic Dis. 2009 Jul;6(3):A102. Epub 2009 Jun 15. PMID: 19527574; PMCID: PMC2722387.

29. Coffield E, Nihiser A, Carlson S, et al. Shape Up Somerville's return on investment: multi-group exposure generates net-benefits in a child obesity intervention. Prev Med Rep. 2019 Jul 16;16:100954.

30. Economos CD, Curtatone JA. Shaping up Somerville: a community initiative in Massachusetts. Prev Med. 2010 Jan;50 Suppl 1:S97-8. doi: 10.1016/j.ypmed.2009.10.017. Epub 2009 Nov 6. PMID: 19897065.

31. Folta SC, Kuder JF, Goldberg JP, et al. Changes in diet and physical activity resulting from the Shape Up Somerville community intervention. BMC Pediatr. 2013 Oct 4;13:157. doi: 10.1186/1471-2431-13-157. PMID: 24093936; PMCID: PMC3852296.

32. Coffield E, Nihiser AJ, Sherry B, et al. Shape Up Somerville: change in parent body mass indexes during a child-targeted, community-based environmental change intervention. Am J Public Health. 2015 Feb;105(2):e83-9. doi: 10.2105/AJPH.2014.302361. PMID: 25521882; PMCID: PMC4318303.

33. Hennessy E, Economos CD, Hammond RA; SUS Systems Map Team and the COMPACT Team. Integrating complex systems methods to advance obesity prevention intervention research. Health Educ Behav. 2020 Apr;47(2):213-223.

34. Korn AR, Hennessy E, Tovar A, et al. Engaging coalitions in community-based childhood obesity prevention interventions: a mixed methods assessment. Child Obes. 2018 Nov/Dec;14(8):537-552.

35. Calancie L, Moore TR, Appel J, et al. Perceptions of how social determinants of health interact to influence children's health and disparities in seven communities across the United States. International Society for Behavioral Nutrition and Physical Activity (ISBNPA) Annual Meeting. (June 14-17, 2023). Uppsala, Sweden.

36. Hoelscher DM, Butte NF, Barlow S, et al. Incorporating primary and secondary prevention approaches to address childhood obesity prevention and treatment in a low-income, ethnically diverse population: study design and demographic data from the Texas Childhood Obesity Research Demonstration (TX CORD) study. Child Obes. 2015 Feb;11(1):71-91.

37. Sharma SV, Chuang RJ, Byrd-Williams C, et al. Using process evaluation for implementation success of preschool-based programs for obesity prevention: the TX Childhood Obesity Research Demonstration Study. J Sch Health. 2019 May;89(5):382-392.

38. Sharma SV, Vandewater E, Chuang RJ, et al. Impact of the coordinated approach to child health early childhood program for obesity prevention among preschool children: the Texas Childhood Obesity Research Demonstration Study. Child Obes. 2019 Jan;15(1):1-13.

39. de Silva-Sanigorski AM, Bell AC, Kremer P, et al. Reducing obesity in early childhood: results from Romp & Chomp, an Australian community-wide intervention program. Am J Clin Nutr. 2010 Apr;91(4):831-40.

40. Sanigorski AM, Bell AC, Kremer PJ, et al. Reducing unhealthy weight gain in children through community capacity-building: results of a quasi-experimental intervention program, Be Active Eat Well. Int J Obes (Lond). 2008 Jul;32(7):1060-7.

41. Millar L, Kremer P, de Silva-Sanigorski A, et al. Reduction in overweight and obesity from a 3-year community-based intervention in Australia: the 'It's Your Move!' project. Obes Rev. 2011 Nov;12 Suppl 2:20-8.

42. McKelvie-Sebileau P, Rees D, Swinburn B, et al. Combining cognitive mapping and indigenous knowledge to improve food environments in regional New Zealand. Health Promot J Austr. 2022 Jul;33(3):631-641.

43. McKelvie-Sebileau P, Rees D, Tipene-Leach D, et al. Community co-design of regional actions for children's nutritional health combining indigenous knowledge and systems thinking. Int J Environ Res Public Health. 2022 Apr 19;19(9):4936.

44. Thaler RH, Sunstein CR. Nudge: the final edition. New York: Penguin Publishing Group; 2021

45. Kraak V, Englund T, Misyak S, et al. Progress evaluation for the restaurant industry assessed by a voluntary marketing-mix and choice-architecture framework that offers strategies to nudge American customers toward healthy food environments, 2006-2017. Int J Environ Res Public Health. 2017 Jul 12;14(7):760.

46. Pratt M, Ramirez Varela A, Salvo D, et al. Attacking the pandemic of physical inactivity: what is holding us back? Br J Sports Med. 2020 Jul;54(13):760-762. doi: 10.1136/bjsports-2019-101392. Epub 2019 Nov 8. PMID: 31704698.

47. Frank LD, Sallis JF, Saelens BE, et al. The development of a walkability index: application to the Neighborhood Quality of Life Study. Br J Sports Med. 2010 Oct;44(13):924-33.

48. Khan MAB, Hashim MJ, King JK, et al. Epidemiology of type 2 diabetes - global burden of disease and forecasted trends. J Epidemiol Glob Health. 2020 Mar;10(1):107-111.

49. Mediano Stoltze F, Reyes M, Smith TL, et al. Prevalence of child-directed marketing on breakfast cereal packages before and after chile's

food marketing law: a pre- and post-quantitative content analysis. Int J Environ Res Public Health. 2019 Nov 15;16(22):4501. doi: 10.3390/ijerph16224501. PMID: 31731577; PMCID: PMC6888536.

50. Correa T, Reyes M, Taillie LS, et al. Food advertising on television before and after a national unhealthy food marketing regulation in Chile, 2016-2017. Am J Public Health. 2020 Jul;110(7):1054-1059.

51. Reyes M, Smith Taillie L, Popkin B, et al. Changes in the amount of nutrient of packaged foods and beverages after the initial implementation of the Chilean Law of Food Labelling and Advertising: a nonexperimental prospective study. PLoS Med. 2020 Jul 28;17(7):e1003220.

52. Paraje G, Colchero A, Wlasiuk JM, et al. The effects of the Chilean food policy package on aggregate employment and real wages. Food Policy. 2021 Apr 1;100:102016.

53. Simões Corrêa Galendi J, Leite RGOF, Banzato LR, et al. Effectiveness of strategies for nutritional therapy for patients with type 2 diabetes and/or hypertension in primary care: a systematic review and meta-analysis. Int J Environ Res Public Health. 2022 Apr 2;19(7):4243.

54. Parolin Z, Ananat E, Collyer S, et al. The effects of the monthly and lump-sum child tax credit payments on food and housing hardship. AEA Pap Proc. 2023 May;113:406-12.

55. Schild J, Collyer SM, Garner T, et al. Effects of the expanded child tax credit on household spending: estimates based on U.S. consumer expenditure survey data. Available as NBER Working Paper 31412. 2023 June.

56. Joint Center for Housing Studies of Harvard University. The state of the nation's housing 2021. Cambridge (MA): Harvard University; 2021.

57. Graetz N, Gershenson C, Hepburn P, et al. Who is Evicted in America. The Eviction Lab. 2023. Available from: **https://evictionlab.org/who-is-evicted-in-america/**

58. Finn EB, Whang C, Hong PH, et al. Strategies to improve the implementation of intensive lifestyle interventions for obesity. Front Public Health. 2023 Jul 25;11:1202545.

59. Huang TT, Callahan EA, Haines ER, et al. Leveraging systems science and design thinking to advance implementation science: moving toward a solution-oriented paradigm. Front Public Health. 2024 May 15;12:1368050.

60. Purtle J. Policy Implementation Science. YouTube. February 23, 2022. Accessed January 24, 2023. **https://www.youtube.com/watch?v=lK6qbppqSOQ**

61. Pronk NP, Arena RA, Ayers JF. Social injustice as a common source epidemic: the role of civic engagement in addressing inequitable population health. Lancet Reg Health Am. 2023 Mar 13;20:100471

62. Pronk NP. The physical activity paradox: implications for worksite health promotion programming and considerations for the conditions of work. ACSM's Health & Fitness Journal. 2024 May-Jun;28(3):56-59.

Appendix

Workshop Agenda

OPUS Virtual Meeting, Day 1: June 4

12:00–12:10 **Welcome**
Jill Reedy, PhD, MPH, RDN, National Cancer Institute, National Institutes of Health

12:10–12:20 **Opening Remarks**
Katrina Goddard, PhD, Division of Cancer Control and Population Science, National Cancer Institute, National Institutes of Health

12:20–12:25 **Introduction to Keynote 1**
Tamara Dubowitz, ScD, MS, MSc, University of Pittsburgh, Department of Epidemiology

12:25–12:45 **Keynote 1**
Systems Approaches to Obesity Prevention

Ross Hammond, PhD, Brown School at Washington University in St. Louis and Economic Studies, The Brookings Institution

12:45–12:50 **Introduction to Keynote 2**
Heidi Blanck, PhD, Centers for Disease Control and Prevention, Obesity Prevention and Control Branch

12:50–1:10 **Keynote 2**
Applying Systems Thinking in Community-Engaged, Participatory Research: Lessons Learned from the Amsterdam Healthy Weight Program

Wilma Waterlander, PhD, Amsterdam UMC, University of Amsterdam, Department of Public and Occupational Health, Amsterdam Public Health Research Institute

1:10–1:15 **Break**

1:15–1:20 **Introduction to Panel Discussions**
Dan Hatfield, PhD, NCCOR Coordinating Center

1:20–2:05 **Panel Discussion**
Advancing Success in Obesity Prevention:
What Works Where and for Whom?

MODERATOR: Shiriki Kumanyika, PhD, MS, MPH, Drexel University Dornsife School of Public Health

PANELISTS: Steve Gortmaker, PhD, Harvard University T.H. Chan School of Public Health • Russell Pate, PhD, University of South Carolina Arnold School of Public Health • Christina Economos, PhD, Tufts University Friedman School of Nutrition Science & Policy

2:05 –2:30 **Discussion and Q&A**

2:30 – 2:35 **Break**

2:35 – 3:20 **Panel Discussion**

Building the Next Generation of Multilevel Interventions to Prevent Obesity

MODERATOR: Bill Dietz, MD, PhD, George Washington University Milken Institute School of Public Health

PANELISTS: Deanna Hoelscher, PhD, RDN, LD, CNS, University of Texas Health Science Center at Houston School of Public Health in Austin • Boyd Swinburn, MD, University of Auckland School of Population Health • Bob Vollinger, DrPH, MSPH, Centers for Disease Control and Prevention

3:20 – 3:45 **Discussion and Q&A**

3:45 –4:00 **Closing**

Jamie Chriqui, PhD, MHS, University of Chicago Illinois School of Public Health

OPUS Virtual Meeting, Day 2: June 5

12:00–12:10 **Welcome and Recap**

Susan Czajkowski, PhD, National Cancer Institute, National Institutes of Health

Heidi Blanck, PhD, Centers for Disease Control and Prevention, Obesity Prevention and Control Branch

12:10–12:50 **Panel Discussion**

Authentically Engaging Communities to Maximize Relevance and Impact

MODERATOR: Caree Cotwright, PhD, RDN, USDA

PANELISTS: Alison Brown, PhD, RDN, National Heart, Lung, and Blood Institute, National Institutes of Health • Denise Holston, PhD, MS, RDN, Louisiana State University School of Nutrition and Food Sciences • Kelli Wilson Begay, MS, MBA, RDN, Maven Collective Consulting

12:50–1:15 **Discussion and Q&A**

1:15–1:20 **Break**

1:20–2:00 **Panel Discussion**

Food and Physical Activity Environments: Thinking Beyond Food Retail and Green Space

MODERATOR: Angela Odoms-Young, PhD, Cornell University, College of Human Ecology

PANELISTS: Vivica Kraak, PhD, MS, RDN, Virginia Tech, Department of Human Nutrition, Foods, and Exercise • Deborah Salvo, PhD, University of Texas at Austin, Department of Kinesiology and Health Education, College of Education • Lindsey Smith Taillie, PhD, University of North Carolina Gillings School of Global Public Health

2:00–2:25 **Discussion and Q&A**

2:25–2:30 **Break**

2:30–3:10 **Panel Discussion**

Social Policy as Obesity Policy: The Impact of Addressing Social Determinants of Health

MODERATOR: Andrea Richardson, PhD, MPH, RAND Corporation

PANELISTS: Caitlin Caspi, ScD, University of Connecticut Rudd Center for Food Policy and Health • Dolores Acevedo-Garcia, PhD, Brandeis University Institute for Child Youth and Family Policy • Carl Gershenson, PhD, Princeton University Department of Sociology

3:10–3:35 **Discussion and Q&A**

3:35–3:40 **Break**

3:40–4:20 **Panel Discussion**

Where Do We Go Next? Scaling Systems Approaches for Equitable Obesity Prevention

MODERATOR: Jamie Chriqui, PhD, MHS, University of Chicago Illinois School of Public Health

PANELISTS: Terry Huang, PhD, MPH, MBA, CUNY School of Public Health • Stephenie Lemon, PhD, MS University of Massachusetts Chan Medical School • Nico Pronk, PhD, MA, FACSM, FAWHP, HealthPartners Institute

4:20–4:45 **Discussion and Q&A**

4:45–4:55 **Closing**

Tamara Dubowitz, ScD, MS, MSc, University of Pittsburgh