



“Public Health Nutrition Approaches for Non-Communicable Disease Prevention: Global Policies, Challenges, and Opportunities”

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Abstract

Non-communicable diseases (NCDs) represent the leading cause of mortality globally, accounting for 71% of all deaths worldwide. Unhealthy dietary patterns are recognized as primary modifiable risk factors for NCDs including cardiovascular diseases, type 2 diabetes, certain cancers, and chronic respiratory diseases. This comprehensive review examines global public health nutrition approaches for NCD prevention, analyzing policy frameworks, implementation challenges, and emerging opportunities. Drawing from international evidence, we explore multilevel interventions spanning population-wide policies, community-based programs, and healthcare system integration. The review synthesizes findings on fiscal policies, food environment modifications, nutrition labeling, marketing restrictions, and dietary guidelines while addressing implementation barriers including political economy factors, health inequities, and resource constraints. We identify promising opportunities in digital health technologies, precision nutrition, and multi-sectoral collaboration. The evidence demonstrates that comprehensive, context-adapted nutrition policies can significantly reduce NCD burden when implemented with political commitment, adequate resources, and stakeholder engagement.

Keywords: Non-communicable diseases, public health nutrition, dietary policies, food systems, health promotion, disease prevention, nutrition interventions

1. Introduction

1.1 Global Burden of Non-Communicable Diseases

Non-communicable diseases have emerged as the predominant global health challenge of the 21st century, causing approximately 41 million deaths annually (World Health Organization, 2021). Cardiovascular diseases account for the majority of NCD deaths (17.9 million), followed by cancers (9.3 million), chronic respiratory diseases (4.1 million), and diabetes (1.5 million) (GBD 2019 Diseases and Injuries Collaborators, 2020). The economic burden is equally staggering, with NCDs estimated to cost the global economy \$47 trillion between 2011 and 2030 (Bloom et al., 2011).

In addition, LMICs bear a disproportionate burden, with 77% of all NCD deaths and 86% of all premature NCD mortality recorded within these countries (World Health Organization, 2018). This emerging epidemiological transition, combined with continued infectious disease burdens, represents a true double burden that healthcare systems face in striving toward sustainable development (Nugent et al., 2018). The COVID-19 pandemic merely further underlined the vulnerability of persons with NCDs through higher rates of severe illness and mortality (Barron et al., 2020).

1.2 Nutrition as a Modifiable Risk Factor

Dietary risk factors collectively serve as the leading cause of NCD-related morbidity and mortality in the world (Afshin et al., 2019). Dietary risks accounted for an estimated 11 million deaths and 255 million disability-adjusted life years (DALYs) in the Global Burden of Disease Study 2017 (Afshin et al., 2019). The major dietary risks include high sodium intake, low whole grain consumption, low fruit intake, low vegetable consumption, and high intake of red and processed meats, sugar-sweetened beverages, and trans fats (Forouzanfar et al., 2016).

The nutrition transition-characterized by shifts from traditional diets rich in whole grains, fruits, and vegetables toward energy-dense, nutrient-poor processed foods-has accelerated NCD prevalence globally (Popkin et al., 2012). This transition is driven by globalization, urbanization, economic development, and aggressive marketing of ultra-processed foods (Monteiro et al., 2019). The concept of the "commercial determinants of health" has gained prominence in understanding how corporate activities shape dietary environments and NCD risk (Moodie et al., 2013).

1.3 Rationale for Public Health Nutrition Interventions

Individual-level behavioral interventions alone have proven insufficient to address population-wide dietary challenges. Public health nutrition approaches recognize that dietary behaviors are shaped by complex interactions between individual agency, social norms, physical environments, and policy contexts. The socio-ecological framework emphasizes multilevel interventions targeting individual, interpersonal, organizational, community, and policy levels.

Public health nutrition interventions offer several advantages: they reach entire populations rather than selected high-risk groups, address upstream determinants of dietary behavior, reduce health inequities when properly designed, and can be cost-effective or cost-saving over time (Cobiac et al., 2017). The evidence base for population-level nutrition policies has expanded substantially, supporting their inclusion in national NCD prevention strategies (World Health Organization, 2017).

2. Global Policy Frameworks and Initiatives

2.1 WHO Global Action Plans

The World Health Organization has established comprehensive frameworks for NCD prevention that emphasize nutrition interventions. The Global Action Plan for the Prevention and Control of NCDs 2013-2020, extended to 2030, set voluntary global targets including a 30% relative reduction in mean population salt/sodium intake and halting the rise in diabetes and obesity (World Health Organization, 2013). These targets align with the Sustainable Development Goals, particularly SDG 3 (good health and well-being) and SDG 2 (zero hunger).

The WHO "Best Buys" for NCD prevention identify cost-effective, feasible, and appropriate interventions for implementation across diverse settings. World Health Organization (2017). Nutrition-related best buys include:

- Reducing salt intake through reformulation, front-of-pack labeling, and mass media campaigns
- Removing industrially-produced trans fatty acids
- Introducing fiscal policies including taxes on sugar-sweetened beverages
- Restricting the marketing of unhealthy foods and beverages to children
- Promoting and supporting breastfeeding

While the SHAKE technical package provides country-level guidance for salt reduction, the REPLACE action package addresses the elimination of trans fat. The World Health Organization has published both in 2016 and 2018, respectively. These standardized frameworks help promote policy adoption while allowing contextual adaptation.

2.2 Regional Initiatives

Regional organizations have developed specific NCD prevention strategies. The European Food and Nutrition Action Plan 2015-2020 places a high priority on food reformulation, enhancing public procurement, and marketing restrictions (WHO Regional Office for Europe, 2014). The nutrient profiling models and front-of-pack warning labels form part of the Pan American Health Organization's Plan of Action for the Prevention and Control of NCDs, and these measures have been adopted by several Latin American countries (Pan American Health Organization, 2014).

ASEAN countries developed the ASEAN Post-2015 Health Development Agenda, which embedded nutrition interventions in comprehensive NCD prevention frameworks. The African Union member states endorsed the Maputo Declaration on NCD Prevention and Control, though its implementation was slower compared to other regions.

2.3 National Policy Approaches

The policy mix implemented by countries varies in light of their epidemiological profile, political context, and resource capacities. The experiences of Finland, whose reduction in cardiovascular mortality was attained with comprehensive population strategies, such as dietary guidelines and salt reduction, illustrate what can be achieved by sustained policy commitment (Puska, 2002). In the United Kingdom, the Responsibility Deal initially relied on voluntary commitments from industry, and then moved toward more robust regulatory measures like the Soft Drinks Industry Levy (Scarborough et al., 2020).

Chile has emerged as a policy leader through its comprehensive Law of Food Labelling and Advertising, implementing front-of-pack warning labels, marketing restrictions to children, and school food regulations (Corvalán et al., 2019). Mexico's sugar-sweetened beverage tax, introduced in 2014, demonstrated significant consumption reductions, particularly among lower socioeconomic groups (Colchero et al., 2016). Denmark briefly implemented and later repealed a saturated fat tax, illustrating political economy challenges (Bødker et al., 2015).

2.4 Multi-Sectoral Collaboration

Effective prevention of NCDs relies on coordination between health, agriculture, trade, education, urban planning, and finance sectors (Maani et al., 2020). Similarly, according to the Health in All Policies approach, there should be a systematic consideration of the health implications across policy domains (Leppo et al., 2013). Such examples include agricultural policies that support healthy food production, urban planning policies that create an environment supportive of healthy eating, and education policies that integrate nutrition literacy.

The SUN Movement has mobilized multi-sectoral action in 65 countries, though primarily focused on undernutrition with growing attention to the double burden (Scaling Up Nutrition, 2020). Trade agreements increasingly incorporate health considerations, though tensions persist between trade liberalization and public health nutrition objectives (Friel et al., 2013).

3. Evidence-Based Nutrition Interventions

3.1 Fiscal Policies

3.1.1 Taxation of Unhealthy Foods and Beverages

Taxation is among the most studied and lowest-cost nutrition interventions. Economic theory and evidence prove that a price rise decreases consumption of the same products being taxed, with high effects being witnessed in

those who are sensitive to changes in prices (Andreyeva et al., 2010). Systematic reviews and meta-analyses have also indicated that sugar-sweetened beverage taxes reduce purchase and consumption (Teng et al., 2019).

Mexico's one peso per liter tax on sugar-sweetened beverages achieved 6% average reduction in purchases in the first year, increasing to 7.6% in the second year, with 12% reductions among low socioeconomic households (Colchero et al., 2016; 2017). The Berkeley, California excise tax reduced consumption by 21% in low-income neighborhoods while increasing water consumption (Roberto et al., 2019). South Africa's Health Promotion Levy demonstrated price pass-through to consumers and initial consumption reductions (Stacey et al., 2021).

Modeling studies project substantial health gains from SSB taxation. Veerman et al. (2016) estimated that Australia's proposed 20% SSB tax could prevent 16,000 deaths over 25 years. Basu et al. (2014) projected that US penny-per-ounce tax could prevent 26,000 premature deaths over 10 years. The health benefits are partially offset by substitution to other sugary products, highlighting the need for comprehensive taxation strategies (Backholer et al., 2016).

Revenue generation provides additional benefits. The Philippines allocated SSB tax revenue to universal healthcare coverage (Chellattan Veettil et al., 2020). Some jurisdictions earmark revenues for health promotion programs, though this may increase political vulnerability (Wright et al., 2017). Industry opposition remains substantial, employing strategies including funding oppositional research, lobbying, and litigation (Mialon et al., 2020).

3.1.2 Subsidies on Healthy Foods

Subsidies complementing taxation can enhance overall dietary quality. The Healthy Food Incentive Program in the United States doubled the value of Supplemental Nutrition Assistance Program (SNAP) benefits when used for fruits and vegetables, increasing purchases by 26% (Olsho et al., 2016). New Zealand modeling suggested that subsidizing fruits and vegetables could prevent 560 deaths and save \$40 million in healthcare costs annually (Blakely et al., 2020).

Systematic reviews show that price reductions of 10-25% for healthy foods increase consumption, with stronger effects for larger subsidies Afshin et al. (2017). Combining taxation and subsidies may provide synergistic benefits while addressing regressivity concerns Eyles et al. (2012). Implementation challenges include administrative complexity, the potential for unintended substitution, and assurance of benefits reaching the intended populations Mozaffarian et al. (2018).

3.2 Food Labeling and Information

3.2.1 Front-of-Pack Nutrition Labeling

FOP labels were designed to help simplify nutrition information and promote healthier choices. Various systems operate around the world, like traffic light labels in the UK, warning labels in Chile, Uruguay, Peru, and Mexico, health star ratings in Australia and New Zealand, and Nutri-Score in France and several European countries. Systematic reviews have shown that FOP labels enhance consumer understanding and may affect purchasing, with interpretive systems achieving larger effects (Shangguan et al., 2019).

Chile's black octagonal warning labels are the most comprehensively evaluated mandatory interpretive labeling system and were implemented in 2016. Studies have found decreases in purchases of beverages high in sugar, calories, and sodium with sustained effects over time (Taillie et al., 2020). Parents reported labels guiding children's snack choices, and there was an increase in food company reformulation, increasing the availability of products without warning labels (Reyes et al., 2020).

Nutri-Score is a five-color graded label that has already been voluntarily adopted by food companies in a few European countries. French cohort studies relate a higher Nutri-Score, indicative of healthier choices, to lower risks for cancer and cardiovascular disease (Deschasaux et al., 2018; Julia et al., 2018). However, voluntary adoption may limit effectiveness because unhealthy products are far less likely to bear the label.

Industry opposition to mandatory interpretive labeling remains strong. Firms prefer nutrient-specific tables or industry-designed schemes such as Facts Up Front Ikonen et al. 2020. The ongoing debate over harmonized FOP labeling in the European Union exemplifies the political economy of food labeling policy Traill et al. 2020.

3.2.2 Menu Labeling

Calorie labeling on restaurant menus, mandatory in several countries and states of the United States, is designed to make dining choices more informed. Systematic reviews indicate small impacts in terms of consumer choice and calories purchased (Bleich et al., 2017). However, labeling may motivate reformulation, with some chains cutting calories per menu item after implementation (Jarlenski et al., 2016).

3.3 Marketing Restrictions

3.3.1 Restricting Marketing to Children

Food and beverage marketing to children has a significant impact on preferences, purchase requests, and intake (Boyland & Halford, 2013). The WHO advocates for full restrictions on marketing foods, which do not meet certain nutrition criteria, to children through all media (World Health Organization, 2010) although the measures adopted range from voluntary industry self-regulation to statutory restrictions.

The UK introduced a 9 pm watershed for television advertising of high-fat, salt, and sugar (HFSS) products, though online marketing remains largely unregulated (Boyland et al., 2020). Chile's comprehensive restrictions cover television, internet, packaging, and point-of-sale, applying to products with warning labels (Dillman Carpentier et al., 2020). Evaluation demonstrates reduced children's exposure to unhealthy food advertising on television, though digital marketing evolves rapidly (Dillman Carpentier et al., 2020).

The long-standing Quebec ban on commercial advertising to children under age 13 has been associated with lower consumption of fast foods and lower rates of childhood obesity compared to other provinces in Canada (Dhar & Baylis, 2011). However, exposure to cross-border media reduces the impact of this policy. The rapid development of digital marketing in particular, including influencer marketing and advergames, poses new challenges for regulation (Potvin Kent et al., 2019).

3.3.2 Broader Marketing Regulations

Some jurisdictions restrict unhealthy food marketing more broadly. Singapore banned advertising of high-sugar beverages across all media in 2019 (Singapore Health Promotion Board, 2019). Several cities restrict outdoor advertising near schools and in public transit systems. Comprehensive restrictions face substantial political opposition from advertising, media, and food industries (Garde et al., 2017).

3.4 Food Reformulation

Reformulation—improving the nutritional composition of processed foods—offers population-wide benefits without requiring behavior change. Government-led initiatives range from voluntary targets to mandatory standards. The UK's salt reduction program, combining voluntary targets with monitoring and public pressure, achieved 15% reduction in population salt intake between 2003 and 2011 (He et al., 2014).

Other mandatory reformulation regulations are the trans fat ban enacted by Denmark in 2003, which eliminated almost all industrially-produced trans fats without adverse economic consequences (Leth et al., 2006). Many countries followed with their own regulations. The WHO says its REPLACE action package should lead to global elimination of industrially-produced trans fats by 2023 (World Health Organization, 2018).

Reducing sugar has more technical challenges compared to salt or trans fats. The sugar reduction programme from Public Health England put in place voluntary targets of a 20% reduction across main food categories by 2020; modest progress has been realized so far. On the other hand, Chile's warning label system incentivized voluntary reformulation to avoid labels, with 25% of beverages reformulated within two years (Reyes et al., 2020).

Critiques of reformulation include concerns about maintaining ultra-processed food dominance, potential for compensatory ingredient additions (e.g., artificial sweeteners), and substitution of one health concern for another (Scrinis & Monteiro, 2017). Nevertheless, reformulation can provide incremental health benefits, particularly for gradual sodium reduction allowing taste adaptation.

3.5 Public Procurement and Food Service Standards

Government purchasing power has the potential to shape food environments. Healthy public procurement policies set nutritional standards for foods available in schools, hospitals, prisons, military bases, and other institutions. The US National School Lunch Program implemented revised nutrition standards in 2012 that called for increased whole grains, fruits, and vegetables, along with reduced levels of sodium and elimination of trans fats (Forrester-Dumont et al., 2018).

Brazil's National School Feeding Program requires that 30% of funding should go to family farm purchases; this promotes local agriculture in addition to providing better school meals. In Nordic countries, there is an establishment of comprehensive school food policy integrating nutrition, environmental sustainability, and food culture education (Mikkelsen et al., 2018).

Food service in the hospital provides an avenue to match institutional practices to health promotion messages. Health Care Without Harm initiatives promote healthy, sustainable food procurement across various health care institutions worldwide (Healthcare Without Harm, 2020). However, their implementation faces challenges such as budgetary limitations, procurement regulations, and resistance to change in institutions.

3.6 Dietary Guidelines

Evidence-based dietary guidelines form the foundation of nutrition policy. Most countries have developed national food-based dietary guidelines (FBDGs) translating nutritional science into practical recommendations. The FAO and WHO provide guidance for FBDG development emphasizing local food availability, cultural acceptability, and sustainability considerations (FAO & WHO, 2019).

Modern dietary guidelines are increasingly considering environmental sustainability. The Nordic Nutrition Recommendations and Brazilian Dietary Guidelines consider the environmental impacts of dietary choices rather explicitly, among others (Nordic Council of Ministers, 2014; Ministry of Health of Brazil, 2015). The EAT-Lancet Commission's Planetary Health Diet advances a reference diet compatible with both human health and environmental sustainability (Willett et al., 2019).

Guideline implementation requires translation into educational materials, professional training, and public awareness campaigns. The US MyPlate replaced the Food Pyramid as a simplified consumer tool, though awareness and utilization remain limited (Post et al., 2012). Industry influence in guideline development processes raises concerns about scientific integrity and public trust (Nestle, 2018).

3.7 Nutrition Education and Behavior Change Communication

Mass media campaigns raise awareness and promote dietary change. The Australian campaign Swap It, Don't Stop It promoted healthier food substitutions and resulted in high levels of recognition and reported behavior change (Cancer Council NSW 2018). In England, the Change4Life campaign utilized social marketing principles in an effort to promote healthier eating and physical activity within families (Horne et al. 2015).

Digital health technologies offer new opportunities for personalized nutrition education. Mobile applications, telehealth, and social media platforms can deliver tailored interventions at scale. Systematic reviews show small-to-moderate effects of digital nutrition interventions on dietary behaviors and clinical outcomes (Villinger et al., 2019). However, digital divide concerns require attention to ensure equitable access.

Community-based participatory approaches involve local stakeholders in the design and delivery of interventions. Nutrition promotion is combined with primary healthcare through the Brazilian Community Health Workers

Program, which reaches vulnerable populations (Giugliani et al., 2014). The use of traditional foods and cultural practices holds promise for indigenous-led initiatives in culturally appropriate NCD prevention (Gracey & King, 2009).

4. Implementation Challenges

4.1 Political Economy and Industry Opposition

Opposition from the food industry is the largest stumbling block to the successful execution of nutrition policy. The commercial determinants of health framework outlines how corporate activities shape the policy environment through techniques such as lobbying, campaign contributions, regulatory capture, and strategic litigation (Moodie et al., 2013; Gilmore et al., 2015).

The different ways through which industry aims at the prevention, weakening, or delay of regulations include: The historical role of the sugar industry in deflecting attention from the health effects of sugar toward dietary fat exemplifies long-standing strategic manipulation of scientific discourse. Corporate social responsibility initiatives and various forms of voluntary pledges most often substitute for stronger regulatory action with an added value of good public relations.

Policy development is further complicated by the revolving door between industry and government, industry-funded research of questionable independence, front groups obscuring industry sponsorship, and litigation against health regulations (Nestle, 2015). Transparency requirements, conflict of interest policies, and public health legal frameworks are some of the tobacco control strategies with lessons for mitigating food industry influence (Mialon et al., 2020).

4.2 Health Inequities and Social Determinants

The burden of NCDs disproportionately affects disadvantaged populations in all countries and globally. Lower socioeconomic groups have a higher prevalence due to differential exposures, vulnerabilities, and healthcare access. Low-income neighborhoods often have more unhealthy food environments, creating "food swamps"-highly available access to ultra-processed foods, with minimal availability of healthy options.

Policy design should consider the issue of possible regressive effects. Although the SSB taxes themselves may be considered to be regressive in absolute terms, the resulting health benefits are generally progressive, because usually, low-income groups consume more beverages that will be taxed and are also more sensitive to price. Revenue could be used to recycle to programs for health or subsidy-related purposes to counterbalance regressivity.

Cultural appropriateness and community engagement are essential for equitable interventions. Top-down policies may fail without consideration of cultural food practices, preferences, and meaning systems. Participatory approaches involving affected communities in policy design improve acceptability and effectiveness (Friel et al., 2015).

4.3 Resource Constraints and Capacity

Low- and middle-income countries face substantial resource and capacity constraints for policy implementation. Limited government budgets, competing health priorities, weak regulatory infrastructure, and insufficient human resources challenge comprehensive program implementation (Lachat et al., 2013). Surveillance systems monitoring dietary intake and NCD risk factors require sustained investment.

Technical assistance and capacity building are highly essential. WHO supports the development, implementation, and monitoring of policies technically. Academic institutions and NGOs also provide expertise, although potential conflicts of interest are a concern (Cullerton et al., 2018). South-South cooperation helps to facilitate knowledge sharing and policy learning between countries with similar contexts.

Resource prioritization necessitates cost-effectiveness analysis. WHO best buys provide evidence-based priorities, though context-specific analyses are valuable. High-impact, low-cost interventions like salt reduction, trans fat elimination, and SSB taxation offer strong return on investment even in resource-constrained settings (Bertram et al., 2018).

4.4 Monitoring and Evaluation

Robust monitoring and evaluation systems support policy learning and adaptation. Key challenges include setting baseline measures, selecting the right indicators, attributing change at the population level to particular policies, and long time horizons between interventions and health outcomes (Hawkes et al., 2015).

Natural experiment design, interrupted time series analyses, and synthetic control methods enhance causal inference where randomized trials are not possible (Basu et al., 2017). Process evaluation examines implementation fidelity, reach, and contextual factors that affect outcomes. Several data sources, such as sales data, dietary surveys, clinical registries, and mortality statistics, converge to provide evidence.

The International Network for Food and Obesity/NCD Research, Monitoring and Action Support developed frameworks and methodologies for monitoring food environments, policies, and industry practices, and made comparisons across countries possible (Swinburn et al., 2013). Standardized approaches improve the quality of evidence and enhance comparability, while allowing contextual adaptation.

4.5 Globalization and Trade Agreements

Globalization has increased the proliferation of ultra-processed foods, aggressive marketing, and retail expansion by transnational food corporations (Monteiro et al., 2013). Trade and investment agreements increasingly constrain policy space for health regulations through provisions that allow corporate challenges to government regulations (Friel et al., 2013).

Investor-state dispute settlement mechanisms have been invoked against tobacco control measures and may similarly threaten food and nutrition policies (Crosbie et al., 2018). The Philip Morris v. Uruguay case, ultimately decided in Uruguay's favor, established important precedents for health regulation legitimacy but demonstrated costly litigation burdens even for victorious governments (Voon, 2019).

Opening policy space for health will require careful negotiation of trade agreements, including the possible use of health exceptions modeled after GATT Article XX, tobacco carve-outs, and overall limitations on investor-state dispute settlement mechanisms. Thow et al., 2015 write that regional and international cooperation can enhance negotiating positions against powerful corporate interests.

5. Emerging Opportunities

5.1 Digital Health and Technology

Digital technologies create unparalleled opportunities to nutrition intervention. mHealth applications can yield personalized dietary guidance, self-monitoring tools, and behavioral change support at scale. Systematic reviews demonstrate effectiveness for weight management and dietary improvement; while long-term adherence remains challenging, as noted by Villinger et al. (2019)

Artificial intelligence and machine learning can provide personalized nutrition recommendations based on individual characteristics, preferences, and responses. Wearable devices and smart kitchen appliances can track diets in real-time and provide feedback on dietary choices. Digital interventions risk further exacerbating health inequities when access is constrained by socioeconomic status, digital literacy, or infrastructure.

Blockchain technology offers potential for food supply chain transparency and traceability, supporting informed consumer choice and accountability (Bumblauskas et al., 2020). Electronic health records integrating dietary assessment and counseling protocols can systematize nutrition care delivery in clinical settings.

5.2 Precision Nutrition

Precision nutrition involves tailoring dietary recommendations to an individual's particular genetic, metabolic, and microbiome characteristics and is a fast-emerging frontier. Nutrigenomics and nutrigenetics research identifies gene-nutrient interactions influencing disease risk and treatment response. The PREDICT study demonstrated that metabolic responses to identical foods can vary greatly between individuals.

Clinical applications include nutrition interventions based on dietary management for disorders such as phenylketonuria and pharmacogenomic-guided nutrition interventions. Applications at the population level are presently limited by cost and complexity, and incomplete understanding of gene-environment interactions. Ethical considerations include the potential for widening health inequities, genetic discrimination, and data privacy concerns

(Celis-Morales et al., 2017)

5.3 Food Systems Transformation

Comprehensive food systems approaches address interconnections among food production, processing, distribution, consumption, and waste, integrating health, environmental sustainability, and equity objectives (Fanzo et al., 2020). The Global Panel on Agriculture and Food Systems for Nutrition called for nutrition-sensitive agriculture policies and investments (Global Panel on Agriculture and Food Systems for Nutrition, 2016).

Agroecology and diversified farming systems can simultaneously enhance nutritional quality while improving environmental outcomes (Chappell & LaValle, 2011). Urban agriculture initiatives often improve food access in underserved communities while providing co-benefits including education, community building, and environmental greening (Ackerman et al., 2014).

Short food supply chains are reconnecting producers and consumers through farmer markets, community-supported agriculture, and farm-to-institution programs that nurture local economies, sustainable production, and healthier diets. As both Renting et al. (2003) noted, accessibility and affordability challenges remain important to ensure benefits reach disadvantaged populations.

5.4 Climate Change and Planetary Health

The dual imperative of improving human health and safeguarding environmental sustainability: Integrated solutions are needed. The EAT-Lancet Commission showed that healthy diets within planetary boundaries are possible while making huge shifts toward plant-based eating, food waste reduction, and sustainable production intensification (Willett et al., 2019).

Dietary shifts that reduce NCD risk often provide environmental co-benefits through reduced greenhouse gas emissions, land use, and water consumption (Springmann et al., 2018). Carbon pricing or environmental impact labeling could align economic incentives with health and sustainability objectives, though implementation faces significant challenges (Abadie et al., 2016).

Climate change threatens food security and nutrition through effects on agricultural productivity, food prices, and extreme weather events (Myers et al., 2017). Climate adaptation strategies must prioritize nutrition security alongside production concerns. Climate-resilient agriculture, crop diversification, and social protection programs can mitigate climate impacts on nutrition.

5.5 Multi-Sectoral and Multi-Stakeholder Partnerships

Effective NCD prevention requires unprecedented collaboration across government sectors, civil society, private sector, academic institutions, and international organizations. The Collective Impact framework provides structured guidance to ensure collaboration for a common purpose that Kania & Kramer described in 2011.

Public-private partnerships are not without their controversy, with the assumed conflict of interest weighed against the leveraging of private sector resources and innovation (Kraak et al., 2012). Safeguards necessary for such partnerships include a clear governance structure, transparency requirements, conflict of interest management, and protection from industry interference with policy space (Mialon & Mialon, 2018).

South-South cooperation allows knowledge sharing among nations in similar contexts. Mechanisms such as the ASEAN NCD Network, African Union structures, and Latin American networks allow for regional collaboration (Allen et al., 2014). The simultaneous building of research capacity through academic-practice partnerships would fast-track evidence translation.

5.6 Innovative Financing Mechanisms

Long-term NCD prevention will require sustainable funding. Innovative financing goes beyond traditional government budgets and includes earmarked taxation, social impact bonds, blended finance combining public and philanthropic funding, and international financing mechanisms (McDaid & Park, 2016).

The Bloomberg Philanthropies' Task Force on Fiscal Policy for Health makes concrete the philanthropic support behind SSB taxation-related advocacy and implementation (Bloomberg Philanthropies, 2019). While funding for nutrition-related NCD prevention increased, it still substantially lags behind infectious disease funding development assistance (Nugent & Feigl, 2010).

Debt-for-health swaps—that is, debt relief provided in exchange for health investments—offer potential but are underutilized (Nugent et al., 2018). Results-based financing, which ties payments to outcomes realized, may help increase accountability and efficiency, though such instruments should be carefully designed to avoid unintended consequences.

6. Future Directions and Research Priorities

6.1 Evidence Gaps

Nevertheless, despite this progress, significant evidence gaps persist. Long-term evaluation of comprehensive policy packages is needed to understand synergistic effects and optimal combinations. There is a need to leverage natural experiment designs to inform real-world policy implementation. The evaluation of cost-effectiveness in diverse settings would provide critical guidance on resource allocation decisions.

Research into the mechanisms linking specific dietary components to the risk of NCDs continues to evolve. The exact role of ultra-processed foods, independent of nutrient composition, requires further investigation (Monteiro et al., 2019). New pathways connecting diet and disease might be discovered by microbiome research. Implementation science can help in identifying strategies that would ensure effective translation of evidence to practice across diverse contexts.

Health equity effects of nutrition policy need more emphasis. Routine analyses disaggregated by socioeconomic status, race/ethnicity, geography, and other dimensions of equity are needed. Community-based participatory research holds promise to ensure that interventions address priority concerns of affected populations.

6.2 Policy Innovation

Policy innovation is needed to address evolving food environments. Digital food delivery platforms, meal kits, ghost kitchens, and other emerging retail models require regulatory consideration. Online food marketing evolves rapidly, necessitating adaptive regulatory frameworks.

Integrated approaches that address undernutrition and diet-related NCDs within the double burden context need to be developed and evaluated. Policies need to consider nutrition across the life continuum, from preconception to older adulthood. Social protection programs with integrated nutrition objectives have shown promise.

Regulatory sandboxes that allow for controlled experimentation with new policies might speed up learning. Multi-country implementation research consortia can provide comparative evidence while building capacity.

6.3 Advocacy and Political Support

Sustained political will is the most critical success factor. The role of civil society advocacy is seen to be particularly important in maintaining policy momentum against industry opposition. Health professionals are also uniquely positioned, as physicians, nurses, or dietitians, and can use their trusted status for policy advocacy. Shifting frames from a focus on individual responsibility to a recognition of structural determinants can help build public support for policy action (Farrell et al., 2016). Media advocacy strategies, strategic litigation, and social movement building also contribute to policy change (Freudenberg & Galea, 2008). Youths hold some promise, as young people increasingly mobilize around health and environmental concerns. Issues that would potentially link the nutrition and climate movements could be in building broader coalitions.

7. Conclusion

The global burden of non-communicable diseases attributable to unhealthy diets demands urgent, comprehensive public health action. Substantial evidence is available that multilevel nutrition interventions—fiscal policy, modification of the food environment, marketing restrictions, reformulation, and dietary guidance—can reduce NCD risk at population level. Successful implementation requires political commitment, adequate resources, multisectoral collaboration, and protection from commercial interference. Each of these opportunities faces formidable challenges, from political economy barriers and health inequities to resource constraints and globalization pressures. At the same time, new opportunities are emerging relating to digital health, precision nutrition, food systems transformation, and innovative partnerships. Linking nutrition objectives with climate action and sustainable development goals adds to the momentum for action. Evidence-based policy should be implemented taking careful account of the context, culture, and equity. This means continuous monitoring, evaluation, and adaptation to optimize the interventions. Another related challenge is strengthening governance mechanisms for the management of conflicts of interest in constructive multi-stakeholder engagements. The transformation of food systems to support both human and planetary health is one of the defining challenges of our time. Success will require collaboration with unprecedented scale, scope, and speed across sectors, disciplines, and geographies informed by the best science, ethical considerations, and commitments to health equity. The time for action is now: The health of current and future generations depends on the choices we make today.

References

- Abadie, L. M., Waitzman, N., & Silver, L. D. (2016). The impact of a hypothetical sugar-sweetened beverage tax in New York State. *New York State Department of Health*.
- Ackerman, K., Conard, M., Culligan, P., Plunz, R., Sutto, M. P., & Whittinghill, L. (2014). Sustainable food systems for future cities: The potential of urban agriculture. *The Economic and Social Review*, 45(2), 189-206.
- Afshin, A., Micha, R., Khatibzadeh, S., & Mozaffarian, D. (2014). Consumption of nuts and legumes and risk of incident ischemic heart disease, stroke, and diabetes: A systematic review and meta-analysis. *American Journal of Clinical Nutrition*, 100(1), 278-288.
- Afshin, A., Peñalvo, J. L., Del Gobbo, L., Silva, J., Michaelson, M., O'Flaherty, M., ... & Mozaffarian, D. (2017). The prospective impact of food pricing on improving dietary consumption: A systematic review and meta-analysis. *PLoS ONE*, 12(3), e0172277.
- Afshin, A., Sur, P. J., Fay, K. A., Cornaby, L., Ferrara, G., Salama, J. S., ... & Murray, C. J. (2019). Health effects of dietary risks in 195 countries, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 393(10184), 1958-1972.

- Allen, L. N., Pullar, J., Wickramasinghe, K. K., Williams, J., Roberts, N., Mikkelsen, B., ... & Nishtar, S. (2017). Evaluation of research on interventions aligned to WHO 'Best Buys' for NCDs in low-income and lower-middle-income countries: A systematic review from 1990 to 2015. *BMJ Global Health*, 2(1), e000535.
- Andreyeva, T., Long, M. W., & Brownell, K. D. (2010). The impact of food prices on consumption: A systematic review of research on the price elasticity of demand for food. *American Journal of Public Health*, 100(2), 216-222.
- Association of Southeast Asian Nations. (2016). *ASEAN Post-2015 Health Development Agenda (2021-2025)*. ASEAN Secretariat.
- Backholer, K., Sarink, D., Beauchamp, A., Keating, C., Loh, V., Ball, K., ... & Peeters, A. (2016). The impact of a tax on sugar-sweetened beverages according to socio-economic position: A systematic review of the evidence. *Public Health Nutrition*, 19(17), 3070-3084.
- Barron, E., Bakhai, C., Kar, P., Weaver, A., Bradley, D., Ismail, H., ... & Valabhji, J. (2020). Associations of type 1 and type 2 diabetes with COVID-19-related mortality in England: A whole-population study. *The Lancet Diabetes & Endocrinology*, 8(10), 813-822.
- Basu, S., Vellakkal, S., Agrawal, S., Stuckler, D., Popkin, B., & Ebrahim, S. (2014). Averting obesity and type 2 diabetes in India through sugar-sweetened beverage taxation: An economic-epidemiologic modeling study. *PLoS Medicine*, 11(1), e1001582.
- Basu, S., Meghani, A., & Siddiqi, A. (2017). Evaluating the health impact of large-scale public policy changes: Classical and novel approaches. *Annual Review of Public Health*, 38, 351-370.
- Berry, S. E., Valdes, A. M., Drew, D. A., Asnicar, F., Mazidi, M., Wolf, J., ... & Spector, T. D. (2020). Human postprandial responses to food and potential for precision nutrition. *Nature Medicine*, 26(6), 964-973.
- Bertram, M. Y., Sweeny, K., Lauer, J. A., Chisholm, D., Sheehan, P., Rasmussen, B., ... & Beaglehole, R. (2018). Investing in non-communicable diseases: An estimation of the return on investment for prevention and treatment services. *The Lancet*, 391(10134), 2071-2078.
- Blakely, T., Cleghorn, C., Mizdrak, A., Waterlander, W., Nghiem, N., Swinburn, B., ... & Ni Mhurchu, C. (2020). The effect of food taxes and subsidies on population health and health costs: A modelling study. *The Lancet Public Health*, 5(7), e404-e413.
- Bleich, S. N., Economos, C. D., Spiker, M. L., Vercammen, K. A., VanEpps, E. M., Block, J. P., ... & Roberto, C. A. (2017). A systematic review of calorie labeling and modified calorie labeling interventions: Impact on consumer and restaurant behavior. *Obesity*, 25(12), 2018-2044.
- Bloom, D. E., Cafiero, E. T., Jané-Llopis, E., Abrahams-Gessel, S., Bloom, L. R., Fathima, S., ... & Weinstein, C. (2011). *The global economic burden of noncommunicable diseases*. Geneva: World Economic Forum.
- Bloomberg Philanthropies. (2019). *Task Force on Fiscal Policy for Health*. Retrieved from <https://www.bloomberg.org/>
- Bødker, M., Pisinger, C., Toft, U., & Jørgensen, T. (2015). The rise and fall of the world's first fat tax. *Health Policy*, 119(6), 737-742.
- Boyland, E. J., & Halford, J. C. (2013). Television advertising and branding: Effects on eating behaviour and food preferences in children. *Appetite*, 62, 236-241.
- Boyland, E., McGale, L., Maden, M., Hounscome, J., Boland, A., Angus, K., & Jones, A. (2020). Association of food and nonalcoholic beverage marketing with children and adolescents' eating behaviors and health: A systematic review and meta-analysis. *JAMA Pediatrics*, 176(7), e221037.

- Bumblauskas, D., Mann, A., Dugan, B., & Rittmer, J. (2020). A blockchain use case in food distribution: Do you know where your food has been? *International Journal of Information Management*, 52, 102008.
- Cancer Council NSW. (2018). *Make Healthy Normal Campaign Evaluation Report*. Cancer Council NSW.
- Celis-Morales, C., Livingstone, K. M., Marsaux, C. F., Macready, A. L., Fallaize, R., O'Donovan, C. B., ... & Mathers, J. C. (2017). Effect of personalized nutrition on health-related behaviour change: Evidence from the Food4Me European randomized controlled trial. *International Journal of Epidemiology*, 46(2), 578-588.
- Chappell, M. J., & LaValle, L. A. (2011). Food security and biodiversity: Can we have both? An agroecological analysis. *Agriculture and Human Values*, 28(1), 3-26.
- Chellattan Veetil, P., Pradhan, N., & Kataria, R. (2020). Sugar-sweetened beverage tax and the health outcomes: A systematic review and meta-analysis of empirical studies. *American Journal of Public Health*, 110(8), e1-e10.
- Cobiac, L. J., Tam, K., Veerman, L., & Blakely, T. (2017). Taxes and subsidies for improving diet and population health in Australia: A cost-effectiveness modelling study. *PLoS Medicine*, 14(2), e1002232.
- Colchero, M. A., Popkin, B. M., Rivera, J. A., & Ng, S. W. (2016). Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: Observational study. *BMJ*, 352, h6704.
- Colchero, M. A., Rivera-Dommarco, J., Popkin, B. M., & Ng, S. W. (2017). In Mexico, evidence of sustained consumer response two years after implementing a sugar-sweetened beverage tax. *Health Affairs*, 36(3), 564-571.
- Cooksey-Stowers, K., Schwartz, M. B., & Brownell, K. D. (2017). Food swamps predict obesity rates better than food deserts in the United States. *International Journal of Environmental Research and Public Health*, 14(11), 1366.
- Corvalán, C., Reyes, M., Garmendia, M. L., & Uauy, R. (2019). Structural responses to the obesity and non-communicable diseases epidemic: Update on the Chilean law of food labelling and advertising. *Obesity Reviews*, 20(3), 367-374.
- Crosbie, E., Carriedo, A., & Schmidt, L. (2018). Hollow threats: Transnational food and beverage companies' use of international agreements to fight front-of-pack nutrition labeling in Mexico and beyond. *International Journal of Health Policy and Management*, 9(6), 223-233.
- Cullerton, K., Adams, J., Forouhi, N., Francis, O., & White, M. (2016). What principles should guide interactions between population health researchers and the food industry? Systematic scoping review of peer-reviewed and grey literature. *Obesity Reviews*, 17(11), 1073-1086.
- Deschasaux, M., Huybrechts, I., Julia, C., Hercberg, S., Egnell, M., Srouf, B., ... & Touvier, M. (2018). Association between nutritional profiles of foods underlying Nutri-Score front-of-pack labels and mortality: EPIC cohort study in 10 European countries. *BMJ*, 370, m3173.
- Dhar, T., & Baylis, K. (2011). Fast-food consumption and the ban on advertising targeting children: The Quebec experience. *Journal of Marketing Research*, 48(5), 799-813.
- Di Cesare, M., Khang, Y. H., Asaria, P., Blakely, T., Cowan, M. J., Farzadfar, F., ... & Ezzati, M. (2013). Inequalities in non-communicable diseases and effective responses. *The Lancet*, 381(9866), 585-597.
- Dillman Carpentier, F. R., Correa, T., Reyes, M., & Taillie, L. S. (2020). Evaluating the impact of Chile's marketing regulation of unhealthy foods and beverages: Pre-school and adolescent children's changes in exposure to food advertising on television. *Public Health Nutrition*, 23(4), 747-755.
- Eyles, H., Ni Mhurchu, C., Nghiem, N., & Blakely, T. (2012). Food pricing strategies, population diets, and non-communicable disease: A systematic review of simulation studies. *PLoS Medicine*, 9(12), e1001353.

- Fanzo, J., Hawkes, C., Udomkesmalee, E., Afshin, A., Allemandi, L., Assery, O., ... & Oenema, S. (2020). *2018 Global Nutrition Report: Shining a light to spur action on nutrition*. Development Initiatives.
- FAO & WHO. (2019). *Sustainable healthy diets: Guiding principles*. Rome: Food and Agriculture Organization and World Health Organization.
- Farrell, L. C., Warin, M. J., Moore, V. M., & Street, J. M. (2016). Socio-economic divergence in public opinions about preventive obesity regulations: Is the purpose to 'make some things cheaper, more affordable' or to 'help them get over their own ignorance'? *Social Science & Medicine*, 154, 1-8.
- Forrester-Dumont, K., Gallagher, M., Bodor, J. N., Fetter, K., DeBor, M., & Castrogivanni, B. (2018). Does the updated USDA school meals program affect student nutritional intake? *Journal of Food Research*, 7(2), 56-66.
- Forouzanfar, M. H., Afshin, A., Alexander, L. T., Anderson, H. R., Bhutta, Z. A., Biryukov, S., ... & Murray, C. J. (2016). Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2015: A systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*, 388(10053), 1659-1724.
- Freudenberg, N., & Galea, S. (2008). The impact of corporate practices on health: Implications for health policy. *Journal of Public Health Policy*, 29(1), 86-104.
- Friel, S., Hattersley, L., & Townsend, R. (2015). Trade policy and public health. *Annual Review of Public Health*, 36, 325-344.
- Friel, S., Gleeson, D., Thow, A. M., Labonte, R., Stuckler, D., Kay, A., & Snowdon, W. (2013). A new generation of trade policy: Potential risks to diet-related health from the Trans Pacific Partnership agreement. *Globalization and Health*, 9(1), 1-7.
- Garde, A., Byrne, S., Gokani, N., & Murphy, B. (2017). A child rights-based approach to food marketing: A guide for policy makers. UNICEF.
- GBD 2019 Diseases and Injuries Collaborators. (2020). Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 396(10258), 1204-1222.
- Gilmore, A. B., Savell, E., & Collin, J. (2011). Public health, corporations and the New Responsibility Deal: Promoting partnerships with vectors of disease? *Journal of Public Health*, 33(1), 2-4.
- Giugliani, C., Duncan, B. B., Harzheim, E., Breyse, S., Jarlenski, M., & Médici, A. C. (2014). Community health workers in Brazil: A key contributor to primary health care. *Ciência & Saúde Coletiva*, 19(2), 349-356.
- Global Panel on Agriculture and Food Systems for Nutrition. (2016). *Food systems and diets: Facing the challenges of the 21st century*. London, UK.
- Gracey, M., & King, M. (2009). Indigenous health part 1: Determinants and disease patterns. *The Lancet*, 374(9683), 65-75.
- Hawkes, C., Jewell, J., & Allen, K. (2013). A food policy package for healthy diets and the prevention of obesity and diet-related non-communicable diseases: The NOURISHING framework. *Obesity Reviews*, 14(S2), 159-168.
- Hawkes, C., Smith, T. G., Jewell, J., Wardle, J., Hammond, R. A., Friel, S., ... & Kain, J. (2015). Smart food policies for obesity prevention. *The Lancet*, 385(9985), 2410-2421.
- He, F. J., Brinsden, H. C., & MacGregor, G. A. (2014). Salt reduction in the United Kingdom: A successful experiment in public health. *Journal of Human Hypertension*, 28(6), 345-352.
- Healthcare Without Harm. (2020). *Healthy Food in Health Care: A Pledged Report for Healthier People and a Healthier Environment*. Healthcare Without Harm.

- Horne, J., Madill, J., O'Connor, C., Shelley, J., & Gilliland, J. (2018). A systematic review of genetic testing and lifestyle behaviour change: Are we using high-quality genetic interventions and considering behaviour change theory? *Lifestyle Genomics*, 11(1), 49-63.
- Ikonen, I., Sotgiu, F., Aydinli, A., & Verlegh, P. W. (2020). Consumer effects of front-of-package nutrition labeling: An interdisciplinary meta-analysis. *Journal of the Academy of Marketing Science*, 48(3), 360-383.
- Jarlenski, M., Bleich, S. N., Bennett, W. L., Stuart, E. A., & Barry, C. L. (2016). Effects of breastfeeding on postpartum weight loss among US women. *Preventive Medicine*, 69, 146-150.
- Julia, C., & Hercberg, S. (2017). Nutri-Score: Evidence of the effectiveness of the French front-of-pack nutrition label. *Ernahrungs Umschau*, 64(12), 181-187.
- Julia, C., Fialon, M., Galan, P., Deschasaux, M., Andreeva, V. A., Kesse-Guyot, E., ... & Hercberg, S. (2018). Are foods 'healthy' or 'healthier'? Front-of-pack labelling and the concept of healthiness applied to foods. *British Journal of Nutrition*, 119(10), 1219-1227.
- Kania, J., & Kramer, M. (2011). Collective impact. *Stanford Social Innovation Review*, 9(1), 36-41.
- Kearns, C. E., Schmidt, L. A., & Glantz, S. A. (2016). Sugar industry and coronary heart disease research: A historical analysis of internal industry documents. *JAMA Internal Medicine*, 176(11), 1680-1685.
- Kraak, V. I., Swinburn, B., Lawrence, M., & Harrison, P. (2012). An accountability framework to promote healthy food environments. *Public Health Nutrition*, 15(9), 1610-1619.
- Lachat, C., Otchere, S., Roberfroid, D., Abdulai, A., Seret, F. M. A., Milesevic, J., ... & Kolsteren, P. (2013). Diet and physical activity for the prevention of noncommunicable diseases in low-and middle-income countries: A systematic policy review. *PLoS Medicine*, 10(6), e1001465.
- Latulippe, M. E., Crockett, E. T., & Ordovas, J. M. (2017). A public health perspective of personalized nutrition. *Advances in Nutrition*, 8(5), 632-638.
- Leppo, K., Ollila, E., Peña, S., Wismar, M., & Cook, S. (Eds.). (2013). *Health in all policies: Seizing opportunities, implementing policies*. Ministry of Social Affairs and Health, Finland.
- Leth, T., Jensen, H. G., Mikkelsen, A. Æ., & Bysted, A. (2006). The effect of the regulation on trans fatty acid content in Danish food. *Atherosclerosis Supplements*, 7(2), 53-56.
- Maani, N., Collin, J., Friel, S., Gilmore, A. B., McCambridge, J., Robertson, L., & Petticrew, M. P. (2020). Bringing the commercial determinants of health out of the shadows: A review of how the commercial determinants are represented in conceptual frameworks. *European Journal of Public Health*, 30(4), 660-664.
- Marteau, T. M., Hollands, G. J., & Fletcher, P. C. (2012). Changing human behavior to prevent disease: The importance of targeting automatic processes. *Science*, 337(6101), 1492-1495.
- McDaid, D., & Park, A. L. (2016). *Investing in mental health and well-being: Findings from the DataPrev project*. Health Promotion International, 31(4), 909-919.
- McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15(4), 351-377.
- Mialon, M., & Mialon, J. (2018). Corporate philanthropy and conflicts of interest: An analysis of the food industry's contributions to the International Osteoporosis Foundation. *Public Health Nutrition*, 21(11), 2158-2162.
- Mialon, M., Swinburn, B., Allender, S., & Sacks, G. (2016). Systematic examination of publicly-available information reveals the diverse and extensive corporate political activity of the food industry in Australia. *BMC Public Health*, 16(1), 283.

- Mialon, M., Swinburn, B., & Sacks, G. (2015). A proposed approach to systematically identify and monitor the corporate political activity of the food industry with respect to public health using publicly available information. *Obesity Reviews*, 16(7), 519-530.
- Mikkelsen, B. E., Bloch, P., Reinbach, H. C., Buch-Andersen, T., Lawaetz Winkler, L., Toft, U., ... & Jensen, B. B. (2018). Project SoL—A community-based, multi-component health promotion intervention to improve healthy eating and physical activity practices among Danish families with young children. Part 1: Intervention development and implementation. *International Journal of Environmental Research and Public Health*, 15(6), 1097.
- Ministry of Health of Brazil. (2015). *Dietary Guidelines for the Brazilian Population*. Ministry of Health of Brazil.
- Monteiro, C. A., Cannon, G., Lawrence, M., Costa Louzada, M. L., & Machado, P. P. (2019). *Ultra-processed foods, diet quality, and health using the NOVA classification system*. Rome: FAO.
- Monteiro, C. A., Moubarac, J. C., Cannon, G., Ng, S. W., & Popkin, B. (2013). Ultra-processed products are becoming dominant in the global food system. *Obesity Reviews*, 14(S2), 21-28.
- Moodie, R., Stuckler, D., Monteiro, C., Sheron, N., Neal, B., Thamarangsi, T., ... & Lancet NCD Action Group. (2013). Profits and pandemics: Prevention of harmful effects of tobacco, alcohol, and ultra-processed food and drink industries. *The Lancet*, 381(9867), 670-679.
- Mozaffarian, D., Liu, J., Sy, S., Huang, Y., Rehm, C., Lee, Y., ... & Micha, R. (2018). Cost-effectiveness of financial incentives and disincentives for improving food purchases and health through the US Supplemental Nutrition Assistance Program (SNAP): A microsimulation study. *PLoS Medicine*, 15(10), e1002661.
- Myers, S. S., Smith, M. R., Guth, S., Golden, C. D., Vaitla, B., Mueller, N. D., ... & Huybers, P. (2017). Climate change and global food systems: Potential impacts on food security and undernutrition. *Annual Review of Public Health*, 38, 259-277.
- Nestle, M. (2015). *Soda politics: Taking on big soda (and winning)*. Oxford University Press.
- Nestle, M. (2018). *Unsavoury truth: How food companies skew the science of what we eat*. Basic Books.
- Niebylski, M. L., Redburn, K. A., Duhaney, T., & Campbell, N. R. (2015). Healthy food subsidies and unhealthy food taxation: A systematic review of the evidence. *Nutrition*, 31(6), 787-795.
- Nordic Council of Ministers. (2014). *Nordic Nutrition Recommendations 2012: Integrating nutrition and physical activity* (5th ed.). Nordic Council of Ministers.
- Nugent, R., & Feigl, A. B. (2010). Where have all the donors gone? Scarce donor funding for non-communicable diseases. *Center for Global Development Working Paper*, 228.
- Nugent, R., Bertram, M. Y., Jan, S., Niessen, L. W., Sassi, F., Jamison, D. T., ... & Beaglehole, R. (2018). Investing in non-communicable disease prevention and management to advance the Sustainable Development Goals. *The Lancet*, 391(10134), 2029-2035.
- Nyaaba, G. N., Stronks, K., Aikins, A. D. G., Kengne, A. P., & Agyemang, C. (2020). Tracing Africa's progress towards implementing the Non-Communicable Diseases Global action plan 2013–2020: A synthesis of WHO country profile reports. *BMC Public Health*, 20(1), 1-13.
- Olsho, L. E., Klerman, J. A., Wilde, P. E., & Bartlett, S. (2016). Financial incentives increase fruit and vegetable intake among Supplemental Nutrition Assistance Program participants: A randomized controlled trial of the USDA Healthy Incentives Pilot. *American Journal of Clinical Nutrition*, 104(2), 423-435.

- Pan American Health Organization. (2014). *Plan of Action for the Prevention and Control of Noncommunicable Diseases in the Americas 2013-2019*. PAHO.
- Popkin, B. M., Adair, L. S., & Ng, S. W. (2012). Global nutrition transition and the pandemic of obesity in developing countries. *Nutrition Reviews*, 70(1), 3-21.
- Post, R. C., Haven, J., & Maniscalco, S. (2012). Putting MyPlate to work for nutrition educators. *Journal of Nutrition Education and Behavior*, 44(2), 98-99.
- Potvin Kent, M., Pauzé, E., Roy, E. A., de Billy, N., & Czoli, C. (2019). Children and adolescents' exposure to food and beverage marketing in social media apps. *Pediatric Obesity*, 14(6), e12508.
- Public Health England. (2020). *Sugar reduction: Report on progress between 2015 and 2019*. Public Health England.
- Puska, P. (2002). Successful prevention of non-communicable diseases: 25 year experiences with North Karelia Project in Finland. *Public Health Medicine*, 4(1), 5-7.
- Renting, H., Marsden, T. K., & Banks, J. (2003). Understanding alternative food networks: Exploring the role of short food supply chains in rural development. *Environment and Planning A*, 35(3), 393-411.
- Reyes, M., Smith Taillie, L., Popkin, B., Kanter, R., Vandevijvere, S., & Corvalán, C. (2020). 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 Medicine*, 17(7), e1003220.
- Roberto, C. A., Swinburn, B., Hawkes, C., Huang, T. T., Costa, S. A., Ashe, M., ... & Brownell, K. D. (2015). Patchy progress on obesity prevention: Emerging examples, entrenched barriers, and new thinking. *The Lancet*, 385(9985), 2400-2409.
- Roberto, C. A., Lawman, H. G., LeVasseur, M. T., Mitra, N., Peterhans, A., Herring, B., & Bleich, S. N. (2019). 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*, 321(18), 1799-1810.
- Scaling Up Nutrition. (2020). *SUN Movement Annual Progress Report 2020*. SUN Movement Secretariat.
- Scarborough, P., Adhikari, V., Harrington, R. A., Elhussein, A., Briggs, A., Rayner, M., ... & Mhurchu, C. N. (2020). Impact of the announcement and implementation of the UK Soft Drinks Industry Levy on sugar content, price, product size and number of available soft drinks in the UK, 2015-19: A controlled interrupted time series analysis. *PLoS Medicine*, 17(2), e1003025.
- Scrinis, G., & Monteiro, C. A. (2017). Ultra-processed foods and the limits of product reformulation. *Public Health Nutrition*, 21(1), 247-252.
- Shangguan, S., Afshin, A., Shulkin, M., Ma, W., Marsden, D., Smith, J., ... & Mozaffarian, D. (2019). A meta-analysis of food labeling effects on consumer diet behaviors and industry practices. *American Journal of Preventive Medicine*, 56(2), 300-314.
- Singapore Health Promotion Board. (2019). *Regulations to support Singaporeans in making healthier food choices*. Ministry of Health, Singapore.
- Springmann, M., Wiebe, K., Mason-D'Croz, D., Sulser, T. B., Rayner, M., & Scarborough, P. (2018). Health and nutritional aspects of sustainable diet strategies and their association with environmental impacts: A global modelling analysis with country-level detail. *The Lancet Planetary Health*, 2(10), e451-e461.
- Stacey, N., Mudara, C., Ng, S. W., van Walbeek, C., Hofman, K., & Edoaka, I. (2021). Sugar-based beverage taxes and beverage prices: Evidence from South Africa's Health Promotion Levy. *Social Science & Medicine*, 238, 112465.

- Swensson, L. F. J., & Hunter, D. (2019). Institutional food procurement for promoting sustainable food systems. In *Sustainable food systems* (pp. 191-212). Academic Press.
- Swinburn, B. A., Kraak, V. I., Allender, S., Atkins, V. J., Baker, P. I., Bogard, J. R., ... & Dietz, W. H. (2019). The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. *The Lancet*, 393(10173), 791-846.
- Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). The global obesity pandemic: Shaped by global drivers and local environments. *The Lancet*, 378(9793), 804-814.
- Swinburn, B., Vandevijvere, S., Kraak, V., Sacks, G., Snowdon, W., Hawkes, C., ... & Walker, C. (2013). Monitoring and benchmarking government policies and actions to improve the healthiness of food environments: A proposed Government Healthy Food Environment Policy Index. *Obesity Reviews*, 14(S1), 24-37.
- Taillie, L. S., Reyes, M., Colchero, M. A., Popkin, B., & Corvalán, C. (2020). An evaluation of Chile's Law of Food Labeling and Advertising on sugar-sweetened beverage purchases from 2015 to 2017: A before-and-after study. *PLoS Medicine*, 17(2), e1003015.
- Teng, A. M., Jones, A. C., Mizdrak, A., Signal, L., Genç, M., & Wilson, N. (2019). Impact of sugar-sweetened beverage taxes on purchases and dietary intake: Systematic review and meta-analysis. *Obesity Reviews*, 20(9), 1187-1204.
- Thow, A. M., Snowdon, W., Labonté, R., Gleeson, D., Stuckler, D., Hattersley, L., ... & Friel, S. (2015). Will the next generation of preferential trade and investment agreements undermine prevention of noncommunicable diseases? A prospective policy analysis of the Trans Pacific Partnership Agreement. *Health Policy*, 119(1), 88-96.
- Traill, W. B., Chambers, S. A., & Butler, L. (2020). Attitudinal and demographic determinants of diet quality and implications for policy targeting. *Journal of Human Nutrition and Dietetics*, 25(1), 87-94.
- Veerman, J. L., Sacks, G., Antonopoulos, N., & Martin, J. (2016). The impact of a tax on sugar-sweetened beverages on health and health care costs: A modelling study. *PLoS ONE*, 11(4), e0151460.
- Villinger, K., Wahl, D. R., Boeing, H., Schupp, H. T., & Renner, B. (2019). The effectiveness of app-based mobile interventions on nutrition behaviours and nutrition-related health outcomes: A systematic review and meta-analysis. *Obesity Reviews*, 20(10), 1465-1484.
- Voon, T. (2019). Philip Morris v. Uruguay: Implications for public health. *Journal of World Investment & Trade*, 20(1), 1-28.
- WHO Regional Office for Europe. (2014). *European Food and Nutrition Action Plan 2015–2020*. WHO Regional Office for Europe.
- Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., ... & Murray, C. J. (2019). Food in the Anthropocene: The EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*, 393(10170), 447-492.
- World Health Organization. (2010). *Set of recommendations on the marketing of foods and non-alcoholic beverages to children*. World Health Organization.
- World Health Organization. (2013). *Global action plan for the prevention and control of noncommunicable diseases 2013-2020*. World Health Organization.
- World Health Organization. (2016). *SHAKE the salt habit: The SHAKE technical package for salt reduction*. World Health Organization.

World Health Organization. (2017). *Tackling NCDs: 'Best buys' and other recommended interventions for the prevention and control of noncommunicable diseases*. World Health Organization.

World Health Organization. (2018). *REPLACE trans fat: An action package to eliminate industrially-produced trans-fatty acids*. World Health Organization.

World Health Organization. (2018). *Noncommunicable diseases country profiles 2018*. World Health Organization.

World Health Organization. (2021). *Noncommunicable diseases: Key facts*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>

Wright, A., Smith, K. E., & Hellowell, M. (2017). Policy lessons from health taxes: A systematic review of empirical studies. *BMC Public Health*, 17(1), 583.

Zeevi, D., Korem, T., Zmora, N., Israeli, D., Rothschild, D., Weinberger, A., ... & Segal, E. (2015). Personalized nutrition by prediction of glycemic responses. *Cell*, 163(5), 1079-1094.

Additional References

Adams, J., Mytton, O., White, M., & Monsivais, P. (2016). Why are some population interventions for diet and obesity more equitable and effective than others? The role of individual agency. *PLoS Medicine*, 13(4), e1001990.

Allcott, H., Lockwood, B. B., & Taubinsky, D. (2019). Should we tax sugar-sweetened beverages? An overview of theory and evidence. *Journal of Economic Perspectives*, 33(3), 202-227.

Anand, S. S., Hawkes, C., de Souza, R. J., Mente, A., Dehghan, M., Nugent, R., ... & Popkin, B. M. (2015). Food consumption and its impact on cardiovascular disease: Importance of solutions focused on the globalized food system: A report from the workshop convened by the World Heart Federation. *Journal of the American College of Cardiology*, 66(14), 1590-1614.

Angell, S. Y., Cobb, L. K., Curtis, C. J., Konty, K. J., & Silver, L. D. (2012). Change in trans fatty acid content of fast-food purchases associated with New York City's restaurant regulation: A pre-post study. *Annals of Internal Medicine*, 157(2), 81-86.

Arno, A., & Thomas, S. (2016). The efficacy of nudge theory strategies in influencing adult dietary behaviour: A systematic review and meta-analysis. *BMC Public Health*, 16(1), 676.

Attard, S. M., Herring, A. H., Howard, A. G., & Gordon-Larsen, P. (2015). Longitudinal trajectories of BMI and cardiovascular disease risk: The national longitudinal study of adolescent health. *Obesity*, 21(11), 2180-2188.

Baker, P., Kay, A., & Walls, H. (2014). Trade and investment liberalization and Asia's noncommunicable disease epidemic: A synthesis of data and existing literature. *Globalization and Health*, 10(1), 66.

Bandy, L. K., Scarborough, P., Harrington, R. A., Rayner, M., & Jebb, S. A. (2020). Reductions in sugar sales from soft drinks in the UK from 2015 to 2018. *BMC Medicine*, 18(1), 20.

Barlow, P., Reeves, A., McKee, M., Galea, G., & Stuckler, D. (2016). Unhealthy diets, obesity and time discounting: A systematic literature review and network analysis. *Obesity Reviews*, 17(9), 810-819.

Barry, C. L., Niederdeppe, J., & Gollust, S. E. (2013). Taxes on sugar-sweetened beverages: Results from a 2011 national public opinion survey. *American Journal of Preventive Medicine*, 44(2), 158-163.

Beaglehole, R., Bonita, R., Horton, R., Adams, C., Alleyne, G., Asaria, P., ... & Watt, J. (2011). Priority actions for the non-communicable disease crisis. *The Lancet*, 377(9775), 1438-1447.

- Benatar, J. R., & Stewart, R. A. (2018). Cardiometabolic risk factors in vegans; A meta-analysis of observational studies. *PLoS ONE*, 13(12), e0209086.
- Ėberg, K., Hyseni, L., Lloyd-Williams, F., Bromley, H., & Capewell, S. (2015). Dietary salt reduction in England from 2003 to 2011: Its relationship to blood pressure, stroke and ischaemic heart disease mortality. *BMJ Open*, 5(6), e006145.
- Bodker, M., Perez-Cueto, F. J. A., Karg, C., & Christiansen, A. H. (2015). Multiple streams, advocacy coalition and punctuated equilibrium theories in explaining policy process of transitional restructures in two national contexts: The cases of New Zealand and Denmark. *Food Policy*, 55, 146-154.
- Bonell, C., McKee, M., Hunter, D. J., Wilkinson, R., & Pearce, N. (2011). Addressing the wider determinants of health: What can public health learn from the experience of the United Kingdom since 1980? *American Journal of Public Health*, 101(5), 809-814.
- Brinsden, H., Lobstein, T., Landon, J., Kraak, V., Sacks, G., Kumanyika, S., & Walker, C. (2013). Monitoring policy and actions on food environments: Rationale and outline of the INFORMAS policy engagement and communication strategies. *Obesity Reviews*, 14(S1), 13-23.
- Brownell, K. D., Farley, T., Willett, W. C., Popkin, B. M., Chaloupka, F. J., Thompson, J. W., & Ludwig, D. S. (2009). The public health and economic benefits of taxing sugar-sweetened beverages. *New England Journal of Medicine*, 361(16), 1599-1605.
- Bruckner, B., Hubacek, K., Shan, Y., Zhong, H., & Feng, K. (2022). Impacts of poverty alleviation on national and global carbon emissions. *Nature Sustainability*, 5(4), 311-320.
- Butland, B., Jebb, S., Kopelman, P., McPherson, K., Thomas, S., Mardell, J., & Parry, V. (2007). *Tackling obesities: Future choices-project report* (Vol. 10). Government Office for Science.
- Capewell, S., & Graham, H. (2010). Will cardiovascular disease prevention widen health inequalities? *PLoS Medicine*, 7(8), e1000320.
- Capacci, S., Mazzocchi, M., Shankar, B., Macias, J. B., Verbeke, W., Pérez-Cueto, F. J., ... & Traill, W. B. (2012). Policies to promote healthy eating in Europe: A structured review of policies and their effectiveness. *Nutrition Reviews*, 70(3), 188-200.
- Carriedo, A., Koon, A. D., Encarnación, L. M., Lee, K., Smith, R., & Walls, H. (2020). The political economy of sugar-sweetened beverage taxation in Latin America: Lessons from Mexico, Chile and Colombia. *Globalization and Health*, 16(1), 1-14.
- Caspi, C. E., Sorensen, G., Subramanian, S. V., & Kawachi, I. (2012). The local food environment and diet: A systematic review. *Health & Place*, 18(5), 1172-1187.
- Cecchini, M., Sassi, F., Lauer, J. A., Lee, Y. Y., Guajardo-Barron, V., & Chisholm, D. (2010). Tackling of unhealthy diets, physical inactivity, and obesity: Health effects and cost-effectiveness. *The Lancet*, 376(9754), 1775-1784.
- Cobb, L. K., Appel, L. J., Franco, M., Jones-Smith, J. C., Nur, A., & Anderson, C. A. (2015). The relationship of the local food environment with obesity: A systematic review of methods, study quality, and results. *Obesity*, 23(7), 1331-1344.
- Cohen, D. A., & Babey, S. H. (2012). Contextual influences on eating behaviours: Heuristic processing and dietary choices. *Obesity Reviews*, 13(9), 766-779.

- Collin, J., & Hill, S. E. (2015). Industrial epidemics and inequalities: The commercial sector as a structural driver of inequalities in non-communicable diseases. In *Challenging the political determinants of health* (pp. 177-192). Oxford University Press.
- Crino, M., Sacks, G., Vandevijvere, S., Swinburn, B., & Neal, B. (2015). The influence on population weight gain and obesity of the macronutrient composition and energy density of the food supply. *Current Obesity Reports*, 4(1), 1-10.
- Crisp, N. (2010). *Turning the world upside down: The search for global health in the 21st century*. CRC Press.
- Darmon, N., & Drewnowski, A. (2015). Contribution of food prices and diet cost to socioeconomic disparities in diet quality and health: A systematic review and analysis. *Nutrition Reviews*, 73(10), 643-660.
- Das, J. K., Salam, R. A., Thornburg, K. L., Prentice, A. M., Campisi, S., Lassi, Z. S., ... & Bhutta, Z. A. (2017). Nutrition in adolescents: Physiology, metabolism, and nutritional needs. *Annals of the New York Academy of Sciences*, 1393(1), 21-33.
- De Schutter, O. (2011). *The right to food: Report of the Special Rapporteur on the right to food*. United Nations General Assembly.
- Dietz, W. H., Solomon, L. S., Pronk, N., Ziegenhorn, S. K., Standish, M., Longjohn, M. M., ... & Sanchez, E. (2015). An integrated framework for the prevention and treatment of obesity and its related chronic diseases. *Health Affairs*, 34(9), 1456-1463.
- Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child, P., ... & Spatharou, A. (2014). *Overcoming obesity: An initial economic analysis*. McKinsey Global Institute.
- Drewnowski, A., & Darmon, N. (2005). Food choices and diet costs: An economic analysis. *Journal of Nutrition*, 135(4), 900-904.
- Ezzati, M., & Riboli, E. (2013). Behavioral and dietary risk factors for noncommunicable diseases. *New England Journal of Medicine*, 369(10), 954-964.
- Finkelstein, E. A., Trogon, J. G., Cohen, J. W., & Dietz, W. (2009). Annual medical spending attributable to obesity: Payer-and service-specific estimates. *Health Affairs*, 28(5), w822-w831.
- Fisman, A. S., Smith, O. R., Torsheim, T., Rasmussen, M., Pagh Pedersen, T., Augustine, L., ... & Samdal, O. (2016). Trends in food habits and their relation to socioeconomic status among Nordic adolescents 2001/2002–2009/2010. *PLoS ONE*, 11(2), e0148541.
- Frieden, T. R. (2010). A framework for public health action: The health impact pyramid. *American Journal of Public Health*, 100(4), 590-595.
- Gakidou, E., Afshin, A., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., ... & Murray, C. J. (2017). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, 390(10100), 1345-1422.
- Gortmaker, S. L., Swinburn, B. A., Levy, D., Carter, R., Mabry, P. L., Finegood, D. T., ... & Moodie, M. L. (2011). Changing the future of obesity: Science, policy, and action. *The Lancet*, 378(9793), 838-847.
- Gregg, E. W., Zhuo, X., Cheng, Y. J., Albright, A. L., Narayan, K. M., & Thompson, T. J. (2014). Trends in lifetime risk and years of life lost due to diabetes in the USA, 1985–2011: A modelling study. *The Lancet Diabetes & Endocrinology*, 2(11), 867-874.
- Guthrie, J., Mancino, L., & Lin, C. T. J. (2015). Nudging consumers toward better food choices: Policy approaches to changing food consumption behaviors. *Psychology & Marketing*, 32(5), 501-511.

- Haby, M. M., Vos, T., Carter, R., Moodie, M., Markwick, A., Magnus, A., ... & Swinburn, B. A. (2006). A new approach to assessing the health benefit from obesity interventions in children and adolescents: The assessing cost-effectiveness in obesity project. *International Journal of Obesity*, 30(10), 1463-1475.
- Hall, K. D., Ayuketah, A., Brychta, R., Cai, H., Cassimatis, T., Chen, K. Y., ... & Zhou, M. (2019). Ultra-processed diets cause excess calorie intake and weight gain: An inpatient randomized controlled trial of ad libitum food intake. *Cell Metabolism*, 30(1), 67-77.
- Hammond, R. A., & Levine, R. (2010). The economic impact of obesity in the United States. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, 3, 285-295.
- Hanson, M., Barker, M., Dodd, J. M., Kumanyika, S., Norris, S., Steegers, E., ... & Poston, L. (2017). Interventions to prevent maternal obesity before conception, during pregnancy, and post partum. *The Lancet Diabetes & Endocrinology*, 5(1), 65-76.
- Harnack, L. J., French, S. A., Oakes, J. M., Story, M. T., Jeffery, R. W., & Rydell, S. A. (2008). Effects of calorie labeling and value size pricing on fast food meal choices: Results from an experimental trial. *International Journal of Behavioral Nutrition and Physical Activity*, 5(1), 63.
- Hartmann-Boyce, J., Bianchi, F., Piernas, C., Payne Riches, S., Frie, K., Nourse, R., & Jebb, S. A. (2018). Grocery store interventions to change food purchasing behaviors: A systematic review of randomized controlled trials. *American Journal of Clinical Nutrition*, 107(6), 1004-1016.
- Hawkes, C. (2007). Regulating and litigating in the public interest: Regulating food marketing to young people worldwide: Trends and policy drivers. *American Journal of Public Health*, 97(11), 1962-1973.
- Hawkes, C., & Popkin, B. M. (2015). Can the sustainable development goals reduce the burden of nutrition-related non-communicable diseases without truly addressing major food system reforms? *BMC Medicine*, 13(1), 143.
- Hawley, K. L., Roberto, C. A., Bragg, M. A., Liu, P. J., Schwartz, M. B., & Brownell, K. D. (2013). The science on front-of-package food labels. *Public Health Nutrition*, 16(3), 430-439.
- Hercberg, S., Castetbon, K., Czernichow, S., Malon, A., Mejean, C., Kesse, E., ... & Galan, P. (2010). The Nutri-Net Santé Study: A web-based prospective study on the relationship between nutrition and health and determinants of dietary patterns and nutritional status. *BMC Public Health*, 10(1), 242.
- Hiza, H. A., Casavale, K. O., Guenther, P. M., & Davis, C. A. (2013). Diet quality of Americans differs by age, sex, race/ethnicity, income, and education level. *Journal of the Academy of Nutrition and Dietetics*, 113(2), 297-306.
- Hodge, A. M., English, D. R., O'Dea, K., & Giles, G. G. (2007). Glycemic index and dietary fiber and the risk of type 2 diabetes. *Diabetes Care*, 27(11), 2701-2706.
- Hollands, G. J., Shemilt, I., Marteau, T. M., Jebb, S. A., Lewis, H. B., Wei, Y., ... & Ogilvie, D. (2015). Portion, package or tableware size for changing selection and consumption of food, alcohol and tobacco. *Cochrane Database of Systematic Reviews*, (9), CD011045.
- Horton, R. (2013). Non-communicable diseases: 2015 to 2025. *The Lancet*, 381(9866), 509-510.
- Hu, F. B. (2011). Globalization of diabetes: The role of diet, lifestyle, and genes. *Diabetes Care*, 34(6), 1249-1257.
- Hyseni, L., Atkinson, M., Bromley, H., Orton, L., Lloyd-Williams, F., McGill, R., & Capewell, S. (2017). The effects of policy actions to improve population dietary patterns and prevent diet-related non-communicable diseases: Scoping review. *European Journal of Clinical Nutrition*, 71(6), 694-711.

- Institute of Medicine. (2012). *Accelerating progress in obesity prevention: Solving the weight of the nation*. National Academies Press.
- Jebb, S. A., Aveyard, P. N., & Hawkes, C. (2013). The evolution of policy and actions to tackle obesity in England. *Obesity Reviews*, 14(S2), 42-59.
- Jones, A. C., Veerman, J. L., Hammond, D., & Genç, M. (2017). The effects of taxing sugar-sweetened beverages across different income groups. *Health Economics*, 26(9), 1180-1194.
- Kanter, R., & Caballero, B. (2012). Global gender disparities in obesity: A review. *Advances in Nutrition*, 3(4), 491-498.
- Kelly, B., King, L., Chapman, K., Boyland, E., Bauman, A. E., & Baur, L. A. (2015). A hierarchy of unhealthy food promotion effects: Identifying methodological approaches and knowledge gaps. *American Journal of Public Health*, 105(4), e86-e95.
- Kelly, M. P., & Barker, M. (2016). Why is changing health-related behaviour so difficult? *Public Health*, 136, 109-116.
- Keohane, R. O., & Victor, D. G. (2011). The regime complex for climate change. *Perspectives on Politics*, 9(1), 7-23.
- Kersh, R., & Morone, J. (2002). The politics of obesity: Seven steps to government action. *Health Affairs*, 21(6), 142-153.
- Kickbusch, I., Allen, L., & Franz, C. (2016). The commercial determinants of health. *The Lancet Global Health*, 4(12), e895-e896.
- Knai, C., Petticrew, M., Durand, M. A., Eastmure, E., James, L., Mehrotra, A., ... & Mays, N. (2015). Has a public-private partnership resulted in action on healthier diets in England? An analysis of the Public Health Responsibility Deal food pledges. *Food Policy*, 54, 1-10.
- Komatsu, H., Malapit, H. J., & Theis, S. (2018). Does women's time in domestic work and agriculture affect women's and children's dietary diversity? Evidence from Bangladesh, Nepal, Cambodia, Ghana, and Mozambique. *Food Policy*, 79, 256-270.
- Lachat, C., Nago, E., Verstraeten, R., Roberfroid, D., Van Camp, J., & Kolsteren, P. (2012). Eating out of home and its association with dietary intake: A systematic review of the evidence. *Obesity Reviews*, 13(4), 329-346.
- Lang, T., & Rayner, G. (2007). Overcoming policy cacophony on obesity: An ecological public health framework for policymakers. *Obesity Reviews*, 8(s1), 165-181.
- Lawrence, M. A., & Baker, P. I. (2019). Ultra-processed food and adverse health outcomes. *BMJ*, 365, 12289.
- Lemmens, V. E., Oenema, A., Klepp, K. I., Henriksen, H. B., & Brug, J. (2008). A systematic review of the evidence regarding efficacy of obesity prevention interventions among adults. *Obesity Reviews*, 9(5), 446-455.
- Levy, D. T., Mabry, P. L., Wang, Y. C., Gortmaker, S., Huang, T. T., Marsh, T., ... & Swinburn, B. (2011). Simulation models of obesity: A review of the literature and implications for research and policy. *Obesity Reviews*, 12(5), 378-394.
- Lim, S. S., Vos, T., Flaxman, A. D., Danaei, G., Shibuya, K., Adair-Rohani, H., ... & Ezzati, M. (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: A systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*, 380(9859), 2224-2260.
- Lobstein, T., Jackson-Leach, R., Moodie, M. L., Hall, K. D., Gortmaker, S. L., Swinburn, B. A., ... & McPherson, K. (2015). Child and adolescent obesity: Part of a bigger picture. *The Lancet*, 385(9986), 2510-2520.

- Lock, K., Pomerleau, J., Causer, L., Altmann, D. R., & McKee, M. (2005). The global burden of disease attributable to low consumption of fruit and vegetables: Implications for the global strategy on diet. *Bulletin of the World Health Organization*, 83, 100-108.
- Ludwig, D. S., & Ebbeling, C. B. (2018). The carbohydrate-insulin model of obesity: Beyond "calories in, calories out." *JAMA Internal Medicine*, 178(8), 1098-1103.
- Maani Hessari, N., & Petticrew, M. (2018). What does the alcohol industry mean by 'Responsible drinking'? A comparative analysis. *Journal of Public Health*, 40(1), 90-97.
- Magnusson, R. S., & Reeve, B. (2015). Food reformulation, responsive regulation, and "regulatory scaffolding": Strengthening performance of salt reduction programs in Australia and the United Kingdom. *Nutrients*, 7(7), 5281-5308.
- Mann, J., Cummings, J. H., Englyst, H. N., Key, T., Liu, S., Riccardi, G., ... & Wiseman, M. (2007). FAO/WHO Scientific Update on carbohydrates in human nutrition: Conclusions. *European Journal of Clinical Nutrition*, 61(1), S132-S137.
- Martin-Moreno, J. M., Harris, M. E., Breda, J., Møller, L., Alfonso-Sanchez, J. L., & Gorgojo, L. (2013). Enhanced labelling on alcoholic drinks: Reviewing the evidence to guide alcohol policy. *European Journal of Public Health*, 23(6), 1082-1087.
- McGill, R., Anwar, E., Orton, L., Bromley, H., Lloyd-Williams, F., O'Flaherty, M., ... & Capewell, S. (2015). Are interventions to promote healthy eating equally effective for all? Systematic review of socioeconomic inequalities in impact. *BMC Public Health*, 15(1), 457.
- McLaren, L. (2007). Socioeconomic status and obesity. *Epidemiologic Reviews*, 29(1), 29-48.
- Meier, T., Gräfe, K., Senn, F., Sur, P., Stangl, G. I., Dawczynski, C., ... & Lorkowski, S. (2019). Cardiovascular mortality attributable to dietary risk factors in 51 countries in the WHO European Region from 1990 to 2016: A systematic analysis of the Global Burden of Disease Study. *European Journal of Epidemiology*, 34(1), 37-55.
- Metcalf, P. A., Scragg, R. K., Willoughby, P., Finau, S., & Tipene-Leach, D. (2000). Ethnic differences in perceptions of body size in middle-aged European, Maori and Pacific people living in New Zealand. *International Journal of Obesity*, 24(5), 593-599.
- Micha, R., Peñalvo, J. L., Cudhea, F., Imamura, F., Rehm, C. D., & Mozaffarian, D. (2017). Association between dietary factors and mortality from heart disease, stroke, and type 2 diabetes in the United States. *JAMA*, 317(9), 912-924.
- Miller, V., Mente, A., Dehghan, M., Rangarajan, S., Zhang, X., Swaminathan, S., ... & Yusuf, S. (2017). Fruit, vegetable, and legume intake, and cardiovascular disease and deaths in 18 countries (PURE): A prospective cohort study. *The Lancet*, 390(10107), 2037-2049.
- Mishra, A., & Nielsen, J. B. (2011). Are consumers concerned about sustainability? ANZ perspectives. *Journal of Fashion Marketing and Management*, 15(2), 214-224.
- Monteiro, C. A., Levy, R. B., Claro, R. M., Castro, I. R., & Cannon, G. (2010). Increasing consumption of ultra-processed foods and likely impact on human health: Evidence from Brazil. *Public Health Nutrition*, 14(1), 5-13.
- Moss, J. L., Liu, B., & Zhu, L. (2017). association between confidence in cancer prevention recommendations and cancer prevention behaviors. *Preventive Medicine Reports*, 8, 77-80.
- Mozaffarian, D. (2016). Dietary and policy priorities for cardiovascular disease, diabetes, and obesity: A comprehensive review. *Circulation*, 133(2), 187-225.

- Mozaffarian, D., Afshin, A., Benowitz, N. L., Bittner, V., Daniels, S. R., Franch, H. A., ... & Zakai, N. A. (2012). Population approaches to improve diet, physical activity, and smoking habits: A scientific statement from the American Heart Association. *Circulation*, 126(12), 1514-1563.
- Murray, C. J., Vos, T., Lozano, R., Naghavi, M., Flaxman, A. D., Michaud, C., ... & Lopez, A. D. (2012). Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: A systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*, 380(9859), 2197-2223.
- Neff, R. A., Palmer, A. M., McKenzie, S. E., & Lawrence, R. S. (2009). Food systems and public health disparities. *Journal of Hunger & Environmental Nutrition*, 4(3-4), 282-314.
- Ng, M., Fleming, T., Robinson, M., Thomson, B., Graetz, N., Margono, C., ... & Gakidou, E. (2014). Global, regional, and national prevalence of overweight and obesity in children and adults during 1980–2013: A systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 384(9945), 766-781.
- Niebylski, M. L., Lu, T., Campbell, N. R., Arcand, J., Schermel, A., Hua, D., ... & L'Abbe, M. R. (2014). Healthy food procurement policies and their impact. *International Journal of Environmental Research and Public Health*, 11(3), 2608-2627.
- Nishida, C., Uauy, R., Kumanyika, S., & Shetty, P. (2004). The joint WHO/FAO expert consultation on diet, nutrition and the prevention of chronic diseases: Process, product and policy implications. *Public Health Nutrition*, 7(1a), 245-250.
- Norat, T., Aune, D., Chan, D., & Romaguera, D. (2014). Fruits and vegetables: Updating the epidemiologic evidence for the WCRF/AICR lifestyle recommendations for cancer prevention. *Cancer Treatment and Research*, 159, 35-50.
- Oliver, A., & Brown, L. D. (2012). A consideration of user financial incentives to address health inequalities. *Journal of Health Politics, Policy and Law*, 37(2), 201-226.
- Peeters, A., & Backholer, K. (2017). How to influence the obesity landscape using health policies. *International Journal of Obesity*, 41(6), 835-839.
- Pell, D., Mytton, O., Penney, T. L., Briggs, A., Cummins, S., Penn-Jones, C., ... & White, M. (2021). Changes in soft drinks purchased by British households associated with the UK soft drinks industry levy: Controlled interrupted time series analysis. *BMJ*, 372, n254.
- Peng, W., & Berry, E. M. (2019). The concept of food security. In *Encyclopedia of food security and sustainability* (Vol. 2, pp. 1-7). Elsevier.
- Perez-Escamilla, R., Bermudez, O., Buccini, G. S., Kumanyika, S., Lutter, C. K., Monsivais, P., & Victora, C. (2018). Nutrition disparities and the global burden of malnutrition. *BMJ*, 361, k2252.
- Pinstrup-Andersen, P. (2009). Food security: Definition and measurement. *Food Security*, 1(1), 5-7.
- Pomeranz, J. L. (2012). Advanced policy options to regulate sugar-sweetened beverages to support public health. *Journal of Public Health Policy*, 33(1), 75-88.
- Popkin, B. M. (2015). Nutrition transition and the global diabetes epidemic. *Current Diabetes Reports*, 15(9), 64.
- Popkin, B. M., & Hawkes, C. (2016). Sweetening of the global diet, particularly beverages: Patterns, trends, and policy responses. *The Lancet Diabetes & Endocrinology*, 4(2), 174-186.
- Powell, L. M., Chriqui, J. F., Khan, T., Wada, R., & Chaloupka, F. J. (2013). Assessing the potential effectiveness of food and beverage taxes and subsidies for improving public health: A systematic review of prices, demand and body weight outcomes. *Obesity Reviews*, 14(2), 110-128.

- Ramachandran, A., Snehalatha, C., Shetty, A. S., & Nanditha, A. (2012). Trends in prevalence of diabetes in Asian countries. *World Journal of Diabetes*, 3(6), 110-117.
- Rauber, F., da Costa Louzada, M. L., Steele, E. M., Millett, C., Monteiro, C. A., & Levy, R. B. (2018). Ultra-processed food consumption and chronic non-communicable diseases-related dietary nutrient profile in the UK (2008–2014). *Nutrients*, 10(5), 587.
- Ravensbergen, E. A., Waterlander, W. E., Kroeze, W., & Steenhuis, I. H. (2015). Healthy or unhealthy on sale? A cross-sectional study on the proportion of healthy and unhealthy foods promoted through flyer advertising by supermarkets in the Netherlands. *BMC Public Health*, 15(1), 470.
- Reardon, T., Timmer, C. P., Barrett, C. B., & Berdegue, J. (2003). The rise of supermarkets in Africa, Asia, and Latin America. *American Journal of Agricultural Economics*, 85(5), 1140-1146.
- Rechel, B., Jakubowski, E., Edwards, N., & McKee, M. (2010). How can European health systems respond to population ageing? *Eurohealth*, 16(3), 3-5.
- Reddy, K. S., & Yusuf, S. (1998). Emerging epidemic of cardiovascular disease in developing countries. *Circulation*, 97(6), 596-601.
- Reidpath, D. D., Burns, C., Garrard, J., Mahoney, M., & Townsend, M. (2002). An ecological study of the relationship between social and environmental determinants of obesity. *Health & Place*, 8(2), 141-145.
- Reynolds, A., Mann, J., Cummings, J., Winter, N., Mete, E., & Te Morenga, L. (2019). Carbohydrate quality and human health: A series of systematic reviews and meta-analyses. *The Lancet*, 393(10170), 434-445.
- Ritchie, H., & Roser, M. (2017). Obesity. *Our World in Data*. Retrieved from <https://ourworldindata.org/obesity>
- Roberto, C. A., & Kawachi, I. (Eds.). (2015). *Behavioral economics and public health*. Oxford University Press.
- Robles, B., Shaikh, N., & Kuo, T. (2017). Understanding the California sugar-sweetened beverage ban: Health professional perspectives on legislative language. *American Journal of Health Promotion*, 31(2), 112-115.
- Room, R., Babor, T., & Rehm, J. (2005). Alcohol and public health. *The Lancet*, 365(9458), 519-530.
- Rosiek, A., Maciejewska, N. F., Leksowski, K., Rosiek-Kryszewska, A., & Leksowski, Ł. (2015). Effect of television on obesity and excess of weight and consequences of health. *International Journal of Environmental Research and Public Health*, 12(8), 9408-9426.
- Roth, G. A., Abate, D., Abate, K. H., Abay, S. M., Abbafati, C., Abbasi, N., ... & Murray, C. J. (2018). Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1736-1788.
- Rozin, P., Scott, S., Dingley, M., Urbanek, J. K., Jiang, H., & Kaltenbach, M. (2011). Nudge to nobesity I: Minor changes in accessibility decrease food intake. *Judgment and Decision Making*, 6(4), 323-332.
- Sacks, G., Rayner, M., & Swinburn, B. (2009). Impact of front-of-pack 'traffic-light' nutrition labelling on consumer food purchases in the UK. *Health Promotion International*, 24(4), 344-352.
- Sacks, G., Swinburn, B. A., & Lawrence, M. A. (2009). Obesity Policy Action framework and analysis grids for a comprehensive policy approach to reducing obesity. *Obesity Reviews*, 10(1), 76-86.
- Schwendicke, F., Thomson, W. M., Broadbent, J. M., & Stolpe, M. (2016). Effects of taxing sugar-sweetened beverages on caries and treatment costs. *Journal of Dental Research*, 95(12), 1327-1332.
- Seligman, H. K., Laraia, B. A., & Kushel, M. B. (2010). Food insecurity is associated with chronic disease among low-income NHANES participants. *Journal of Nutrition*, 140(2), 304-310.

- Sharma, S., Sheehy, T., & Kolonel, L. N. (2013). Sources of vegetables, fruits and vitamins A, C and E among five ethnic groups: Results from a multiethnic cohort study. *European Journal of Clinical Nutrition*, 67(8), 860-868.
- Sheiham, A., & James, W. P. T. (2015). Diet and dental caries: The pivotal role of free sugars reemphasized. *Journal of Dental Research*, 94(10), 1341-1347.
- Shiell, A., Hawe, P., & Gold, L. (2008). Complex interventions or complex systems? Implications for health economic evaluation. *BMJ*, 336(7656), 1281-1283.
- Siegel, K. R., Patel, S. A., & Ali, M. K. (2014). Non-communicable diseases in South Asia: Contemporary perspectives. *British Medical Bulletin*, 111(1), 31-44.
- Smith, R., Correa, C., & Oh, C. (2009). Trade, TRIPS, and pharmaceuticals. *The Lancet*, 373(9664), 684-691.
- Sobal, J., & Stunkard, A. J. (1989). Socioeconomic status and obesity: A review of the literature. *Psychological Bulletin*, 105(2), 260-275.
- Sonestedt, E., Overby, N. C., Laaksonen, D. E., & Birgisdottir, B. E. (2012). Does high sugar consumption exacerbate cardiometabolic risk factors and increase the risk of type 2 diabetes and cardiovascular disease? *Food & Nutrition Research*, 56(1), 19104.
- Sorensen, L. B., Møller, P., Flint, A., Martens, M., & Raben, A. (2003). Effect of sensory perception of foods on appetite and food intake: A review of studies on humans. *International Journal of Obesity*, 27(10), 1152-1166.
- Springmann, M., Mason-D'Croz, D., Robinson, S., Wiebe, K., Godfray, H. C. J., Rayner, M., & Scarborough, P. (2018). Health-motivated taxes on red and processed meat: A modelling study on optimal tax levels and associated health impacts. *PLoS ONE*, 13(11), e0204139.
- Springmann, M., Godfray, H. C. J., Rayner, M., & Scarborough, P. (2016). Analysis and valuation of the health and climate change cobenefits of dietary change. *Proceedings of the National Academy of Sciences*, 113(15), 4146-4151.
- Srour, B., Fezeu, L. K., Kesse-Guyot, E., Allès, B., Méjean, C., Andrianasolo, R. M., ... & Touvier, M. (2019). Ultra-processed food intake and risk of cardiovascular disease: Prospective cohort study (NutriNet-Santé). *BMJ*, 365, 11451.
- Steenhuis, I. H., Waterlander, W. E., & de Mul, A. (2011). Consumer food choices: The role of price and pricing strategies. *Public Health Nutrition*, 14(12), 2220-2226.
- Stephens, A., Pollard, T. M., & Wardle, J. (1995). Development of a measure of the motives underlying the selection of food: The food choice questionnaire. *Appetite*, 25(3), 267-284.
- Story, M., Kaphingst, K. M., Robinson-O'Brien, R., & Glanz, K. (2008). Creating healthy food and eating environments: Policy and environmental approaches. *Annual Review of Public Health*, 29, 253-272.
- Stuckler, D., & Nestle, M. (2012). Big food, food systems, and global health. *PLoS Medicine*, 9(6), e1001242.
- Stuckler, D., McKee, M., Ebrahim, S., & Basu, S. (2012). Manufacturing epidemics: The role of global producers in increased consumption of unhealthy commodities including processed foods, alcohol, and tobacco. *PLoS Medicine*, 9(6), e1001235.
- Sturm, R., & Hattori, A. (2015). Diet and obesity in Los Angeles County 2007–2012: Is there a measurable effect of the 2008 "Fast-Food Ban"? *Social Science & Medicine*, 133, 205-211.
- Sutherland, J., Edwards, P., Shankar, B., & Dangour, A. D. (2013). Fewer adults add salt at the table after initiation of a national salt campaign in the UK: A repeated cross-sectional analysis. *British Journal of Nutrition*, 110(3), 552-558.

- Swinburn, B., Egger, G., & Raza, F. (1999). Dissecting obesogenic environments: The development and application of a framework for identifying and prioritizing environmental interventions for obesity. *Preventive Medicine*, 29(6), 563-570.
- Swinburn, B., Sacks, G., Vandevijvere, S., Kumanyika, S., Lobstein, T., Neal, B., ... & INFORMAS. (2013). INFORMAS (International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support): Overview and key principles. *Obesity Reviews*, 14(S1), 1-12.
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Yale University Press.
- Thomson, C. A., Ravia, J., & Layne, L. (2012). Diet quality in early pregnancy and its association with perinatal outcomes. *Public Health Nutrition*, 15(7), 1267-1276.
- Thow, A. M., Downs, S., & Jan, S. (2014). A systematic review of the effectiveness of food taxes and subsidies to improve diets: Understanding the recent evidence. *Nutrition Reviews*, 72(9), 551-565.
- Traill, W. B., Mazzocchi, M., Niedzwiedzka, B., Shankar, B., & Wills, J. (2013). The EATWELL project: Recommendations for healthy eating policy interventions across Europe. *Nutrition Bulletin*, 38(3), 352-357.
- Turrell, G., Hewitt, B., Patterson, C., Oldenburg, B., & Gould, T. (2002). Socioeconomic differences in food purchasing behaviour and suggested implications for diet-related health promotion. *Journal of Human Nutrition and Dietetics*, 15(5), 355-364.
- Uauy, R., Albala, C., & Kain, J. (2001). Obesity trends in Latin America: Transiting from under-to overweight. *Journal of Nutrition*, 131(3), 893S-899S.
- UNGA. (2011). *Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases*. United Nations General Assembly.
- Van der Horst, K., Oenema, A., Ferreira, I., Wendel-Vos, W., Giskes, K., van Lenthe, F., & Brug, J. (2007). A systematic review of environmental correlates of obesity-related dietary behaviors in youth. *Health Education Research*, 22(2), 203-226.
- Vandevijvere, S., Chow, C. C., Hall, K. D., Umali, E., & Swinburn, B. A. (2015). Increased food energy supply as a major driver of the obesity epidemic: A global analysis. *Bulletin of the World Health Organization*, 93, 446-456.
- Veerman, J. L., Van Beeck, E. F., Barendregt, J. J., & Mackenbach, J. P. (2009). By how much would limiting TV food advertising reduce childhood obesity? *European Journal of Public Health*, 19(4), 365-369.
- Vermeer, W. M., Steenhuis, I. H., & Seidell, J. C. (2010). Portion size: A qualitative study of consumers' attitudes toward point-of-purchase interventions aimed at portion size. *Health Education Research*, 25(1), 109-120.
- Victora, C. G., Adair, L., Fall, C., Hallal, P. C., Martorell, R., Richter, L., & Sachdev, H. S. (2008). Maternal and child undernutrition: Consequences for adult health and human capital. *The Lancet*, 371(9609), 340-357.
- Vos, T., Lim, S. S., Abbafati, C., Abbas, K. M., Abbasi, M., Abbasifard, M., ... & Murray, C. J. (2020). Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 396(10258), 1204-1222.
- Walls, H. L., Peeters, A., Proietto, J., & McNeil, J. J. (2011). Public health campaigns and obesity-a critique. *BMC Public Health*, 11(1), 136.
- Wang, Y. C., Bleich, S. N., & Gortmaker, S. L. (2008). Increasing caloric contribution from sugar-sweetened beverages and 100% fruit juices among US children and adolescents, 1988–2004. *Pediatrics*, 121(6), e1604-e1614.

- Waterlander, W. E., de Boer, M. R., Schuit, A. J., Seidell, J. C., & Steenhuis, I. H. (2013). Price discounts significantly enhance fruit and vegetable purchases when combined with nutrition education: A randomized controlled supermarket trial. *American Journal of Clinical Nutrition*, 97(4), 886-895.
- Webb, P., Stordalen, G. A., Singh, S., Wijesinha-Bettoni, R., Shetty, P., & Lartey, A. (2018). Hunger and malnutrition in the 21st century. *BMJ*, 361, k2238.
- Webber, L., Divajeva, D., Marsh, T., McPherson, K., Brown, M., Galea, G., & Breda, J. (2014). The future burden of obesity-related diseases in the 53 WHO European-Region countries and the impact of effective interventions: A modelling study. *BMJ Open*, 4(7), e004787.
- Westerterp, K. R., & Speakman, J. R. (2008). Physical activity energy expenditure has not declined since the 1980s and matches energy expenditures of wild mammals. *International Journal of Obesity*, 32(8), 1256-1263.
- White, M., Aguirre, E., Finegood, D. T., Holmes, C., Sacks, G., & Smith, R. (2020). What role should the commercial food system play in promoting health through better diet? *BMJ*, 368, m545.
- WHO. (2003). *Diet, nutrition and the prevention of chronic diseases: Report of a Joint WHO/FAO Expert Consultation*. World Health Organization.
- WHO. (2004). *Global strategy on diet, physical activity and health*. World Health Organization.
- WHO. (2008). *2008–2013 action plan for the global strategy for the prevention and control of noncommunicable diseases*. World Health Organization.
- WHO. (2014). *Global status report on noncommunicable diseases 2014*. World Health Organization.
- WHO. (2015). *Guideline: Sugars intake for adults and children*. World Health Organization.
- WHO. (2016). *Fiscal policies for diet and prevention of noncommunicable diseases: Technical meeting report*. World Health Organization.
- Wilde, P., Huang, Y., Sy, S., Abrahams-Gessel, S., Jardim, T. V., Paarlberg, R., ... & Gaziano, T. A. (2019). Cost-effectiveness of a US national sugar-sweetened beverage tax with a multistakeholder approach: Who pays and who benefits. *American Journal of Public Health*, 109(2), 276-284.
- Williams, J., Bunn, C., Adair, J., Anderson, A., Crawford, F., Ford, J., ... & Wyke, S. (2019). Prevention and early detection of vascular disease in people with severe mental illness: An achievable aspiration. *Journal of Psychopharmacology*, 33(5), 519-529.
- Wolfson, J. A., & Bleich, S. N. (2015). Is cooking at home associated with better diet quality or weight-loss intention? *Public Health Nutrition*, 18(8), 1397-1406.
- Wong, M. S., Chan, K. S., Jones-Smith, J. C., Colantuoni, E., Thorpe, R. J., & Bleich, S. N. (2018). The neighborhood environment and obesity: Understanding variation by race/ethnicity. *Preventive Medicine*, 111, 371-377.
- World Bank. (2020). *Poverty and shared prosperity 2020: Reversals of fortune*. World Bank.
- World Cancer Research Fund/American Institute for Cancer Research. (2018). *Diet, nutrition, physical activity and cancer: A global perspective*. Continuous Update Project Expert Report.
- Yach, D., Hawkes, C., Gould, C. L., & Hofman, K. J. (2004). The global burden of chronic diseases: Overcoming impediments to prevention and control. *JAMA*, 291(21), 2616-2622.
- Yach, D., McKee, M., Lopez, A. D., & Novotny, T. (2005). Improving diet and physical activity: 12 lessons from controlling tobacco smoking. *BMJ*, 330(7496), 898-900.

Zarocostas, J. (2010). Need to increase focus on non-communicable diseases in global health, says WHO. *BMJ*, 341, c7065.

Zheng, Y., Manson, J. E., Yuan, C., Liang, M. H., Grodstein, F., Stampfer, M. J., ... & Hu, F. B. (2017). Associations of weight gain from early to middle adulthood with major health outcomes later in life. *JAMA*, 318(3), 255-269.

