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Public Health Roles in Addressing Commercial Determinants of Health

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Abstract

The shared challenges posed by the production and distribution of health-harming products have led to growing recognition of the need for policy learning and transfer across problems, populations, and social contexts. The commercial determinants of health (CDoH) can serve as a unifying concept to describe the population health consequences arising from for-profit actors and activities, along with the social structures that sustain them. Strategies to mitigate harms from CDoH have focused on behavioral change, regulation, fiscal policies, consumer and citizen activism, and litigation. While there is evidence of effective measures for each strategy, approaches that combine strategies are generally more impactful. Filling gaps in evidence can inform ways of adapting these strategies to specific populations and social contexts. Overall, CDoH are addressed most effectively not through siloed efforts to reduce consumption of health-harming products, but instead as a set of integrated strategies to reduce exposures to health-harming commercial actors and activities.

INTRODUCTION

The concept of the commercial determinants of health (CDoH) is increasingly applied to describe the population health consequences of for-profit actors and activities as well as the social structures that sustain them. Several reviews of this growing subject set out definitions (28), conceptual frameworks (68, 77, 79), and intellectual boundaries (102). This discussion includes scholarly debates about the historical location and contemporary nature of CDoH. The Industrial Revolution, especially beginning in the nineteenth century, gave rise to concerns about unsafe working conditions, poor housing and sanitation, infectious disease outbreaks, and other public health risks from large-scale economic change driven by for-profit motives (40). From the late twentieth century, the market-driven restructuring of the world economy prompted new public health concerns focused on the growth of transnational corporations (TNCs) producing health-harming products (58, 104). An epidemiological shift in the burden of disease, from communicable to noncommunicable diseases (NCDs) in globalizing countries, drew attention to the increased worldwide influence of commercial actors (37, 76).

By the second decade of the twenty-first century, accumulating evidence of the wider impact of economic globalization on public health led to the coining of the term CDoH (66, 83). Research on CDoH seeks to broaden the range of commercial actors, practices, and social structures studied and to understand their relationship to changing patterns of health and disease. Researchers seek to explain how commercial factors across sectors harm individual, population, and environmental health worldwide (72, 84, 85). In addition, scholars recognize that CDoH can be potentially health promoting by generating employment opportunities, producing basic necessities for health and wellness such as food and housing, and creating innovations such as new medications and technologies.

While academics strive to advance the conceptual and empirical study of CDoH, public health agencies, practitioners, and advocates work to mitigate their adverse impact. Most efforts to date aim to reduce the consumption of individual unhealthy commodities, notably tobacco, alcohol, and highly processed food products. Recognition of the shared challenges across these and other potentially harmful products and practices, using CDoH as a unifying framework, offers opportunities for policy learning, sharing of effective strategies, and amplification of public health efforts (80, 104).

We review the evidence spanning the breadth of CDoH to identify effective ways to address their harmful health effects and to promote their health-enhancing influences. We begin by describing five approaches (see the sidebar titled Approaches and Strategies for Mitigating Harmful Health Effects of Commercial Determinants of Health) and summarize evidence of their effectiveness, including gaps in the existing literature. To expand understanding of CDoH, we then identify additional strategies that public health agencies, practitioners, and advocates might use to strengthen their efforts. We conclude that practice-based evidence addressing specific products and industries (46) can usefully inform efforts to tackle other products and industries. However, the most promising approaches apply multiple interventions on the basis of a broader understanding of CDoH, recognizing the linkages across different commercial products and actors, and the contexts within which they operate.

APPROACHES TO MITIGATE THE HARMFUL HEALTH EFFECTS OF CDOH

Approaches to mitigate the harmful health effects of CDoH have generally targeted either the consumer (demand side) or producer (supply side) of those harms. Demand-side approaches,

APPROACHES AND STRATEGIES FOR MITIGATING HARMFUL HEALTH EFFECTS OF COMMERCIAL DETERMINANTS OF HEALTH

- Behavioral change: Modify behavior of consumers to reduce exposure to harmful effects of commercial practices.
- Regulation of market and nonmarket business practices: Use regulation to change behaviors of commercial actors.
- Fiscal policy strategies: Use public spending, taxes, financial incentives, and subsidies to alter commercial practices.
- Citizen/consumer activism: Mobilize populations to put pressure on elected officials or businesses to take actions that reduce harmful practices.
- Litigation and other legal remedies: Use the courts and legal system to force commercial actors or government to end harmful practices and determine liability.

centered on behavioral change, have been most widely used. However, evidence of the substantial and varied influences of commercial actors on consumption behaviors has spurred attention to supply-side strategies. Accumulating research on the strategies of relevant industries, revealed through litigation, whistleblowers, and internal industry documents, has also supported this shift (12, 131). Limited attention to date has been given to the structural factors that shape the social conditions within which consumers and producers of CDoH come together.

Behavioral Change Approaches

The most widely used strategies to mitigate harms from CDoH have focused on behavioral change (56), composed of "coordinated sets of activities designed to change specified behavior patterns" (87), namely consumption of health-harming products and engagement in unhealthy lifestyle choices. Several taxonomies categorize the plethora of behavioral change interventions, as in **Figure 1** (87). The dominance of behavioral approaches in health promotion accounts, in part, for the strong CDoH emphasis on unhealthy commodities (55). Interventions aim to educate people on the risks from consuming tobacco, alcohol, and highly processed food products and to encourage alternative behaviors to mitigate those risks (e.g., through quitting smoking, moderating drinking, and reducing consumption of salt and sugar). In some cases, public health policies may restrict the behavioral choices available by limiting access (e.g., enforcing a minimum age for purchasing tobacco and alcohol products) or reducing exposure to marketing (e.g., through point of sale restrictions, prohibited targeting of children and youth) (123). Recognition of the powerful influence of marketing, advertising, and promotion on behavioral change also led to the adoption of countermarketing campaigns as an effective form of persuasion and attitude change (103). Enhancing opportunities for people to make healthier behavioral choices through improved availability (e.g., distribution of fresh produce, public transportation) and affordability (e.g., pricing) has also been a common strategy (26).

Behavioral health interventions targeted at changing individual behavior have been less effective than changing government policies and business environments that shape individual choices (26). Theories suggest that this lack of effectiveness is because individual inertia toward behavioral change can be overcome by more intense messaging at the societal level, through peer effects (e.g., other nonsmokers in social group), and by increased awareness of the externalities

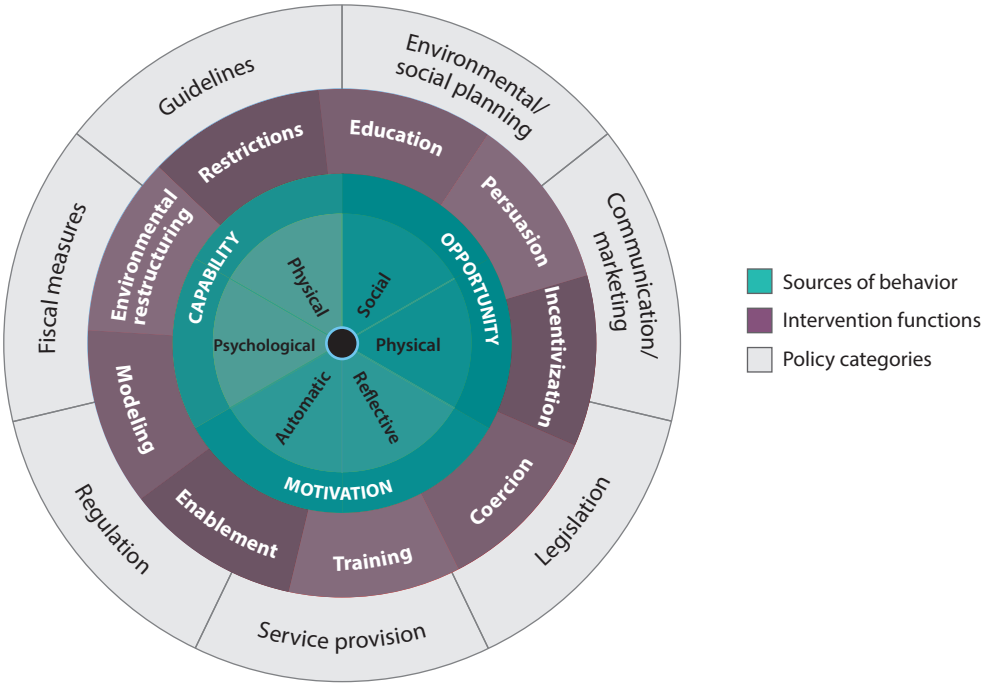

Figure 1

Behavioral change wheel. Figure adapted from Michie S, van Stralen MM, West R. 2011. The behavior change wheel: a new method for characterizing and designing behavior change interventions. *Implement. Sci.* 6:42 (87) (CC BY 2.0).

caused by a behavior (e.g., victims of drunk driving) (26). These assumptions are confirmed by available evidence on interventions to reduce NCDs by targeting unhealthy behaviors and lifestyle choices associated with CDoH. A 2010 meta-review of interventions to change six health-related behaviors (healthy eating, physical exercise, smoking, alcohol misuse, sexual risk taking in young people, and illicit drug use) finds "[i]nterventions. . .most effective across a range of health behaviours included physician advice or individual counselling, and workplace- and school-based activities. Mass media campaigns and legislative interventions also showed small to moderate effects in changing health behaviours" (62, p. 1). However, the evidence was related to short-term effects rather than sustained impacts (62). For example, Young et al. (142) find "little evidence that mass media campaigns have reduced alcohol consumption" (p. 302). Overall, evidence suggests that longer-term behavioral change is more likely to be achieved through policies that broadly support healthy behaviors and create environments that support healthy choices, combined with supply-side approaches (discussed below).

Commercial interests have emphasized biological factors (e.g., metabolism, genetic predisposition) or individual-level behaviors as the key challenge associated with health-harming products. For example, the alcohol industry has promoted responsible drinking and moderate consumption over minimum pricing (51). An analysis of email exchanges documented Coca-Cola Company sponsorship of research and scientific conferences "to shift blame for the rising incidence of obesity and diet-related diseases away from its products onto physical activity and individual choice" (140, p. 1). This approach, in turn, reinforces the traditional focus on less effective individual-level behavioral interventions and away from broader attention to CDoH.

Regulation of Market and Nonmarket Strategies

Commercial actors use market and nonmarket strategies to encourage unhealthy but profitable consumption patterns. Market strategies are actions that businesses take to maximize returns on investment, revenues, profits, shareholder value, and market share. Nonmarket strategies are actions that businesses take to exert political and economic influence in ways that create and sustain favorable operating environments. Regulatory science approaches to mitigate health harms from CDoH have generally targeted one of these strategies.

With regard to market strategies, product regulation and regulatory science in public health emerged from reactions to tragedies involving food and medical products (105). Nevertheless, the regulation of products causing health harms has a long, hard-fought regulatory history. Debates about stronger regulation come following the release of clear evidence of the harms of products such as tobacco and asbestos; however, even when evidence is clear, regulatory efforts have been prolonged (14, 75). Today, product regulation is well-established in most countries for selected products, such as tobacco and food, providing direction on how products are to be manufactured, packaged, and labeled for commercial sale. Rules restrict, for example, the use of tobacco and alcohol product flavorings designed to appeal to children; likewise, they stipulate which ingredients can be used (or not) in food products and in what amounts, as well as how products must be processed and stored to minimize risks to human health. Packaging and labeling of food products generally require a full ingredients list, along with the country and date of manufacture. Health claims made on product packaging (e.g., use of words such as natural, healthy, additive free, organic) must comply with legal standards and be supported by appropriate documentation. The shift toward the globalization of production from the late twentieth century, a key driver of CDoH, revealed gaps and variations in product safety regulation (105). The Framework Convention for Tobacco Control (FCTC) is, in part, a response to such gaps for tobacco products, covering such practices as packaging and labeling, ingredients disclosure, and marketing practices.

Regulation of the marketing, advertising, sponsorship, and promotion of health-harming products has also been a major focus of action. In some countries, well-established regulations limit targeted marketing of certain products, such as tobacco, alcohol, and highly processed food products, to specified populations such as children (47). Some jurisdictions, for example, restrict advertising of unhealthy products at certain times of the day, marketing near schools and other venues, and marketing that uses cartoon characters that appeal to this demographic (123). Similarly, some public bodies have regulated the distribution of unhealthy products, banning vending machines from schools and other venues frequented by children (45) as well as point-of-sale displays and advertising for tobacco products. Pharmaceutical companies have targeted medical professionals through financial and other incentives, a practice that has come under closer regulation owing to its encouragement of potentially unsafe prescribing practices (44).

In many countries, governments set standards for regulating market strategies. However, in other countries, manufacturers may promote their own standards, which tend to be weaker. Industry also favors voluntary rather than mandatory standards backed by enforcement. Evidence shows that this approach weakens the effective regulation of health-harming market practices (13). Where commercial actors operate across multiple countries, some trade and investment agreements contain measures that prevent governments from, or sanction them for, adopting public health protections deemed to interfere with global commerce (11).

The regulation of nonmarket strategies has attracted increased attention since the early 2000s, prompted by better understanding of how commercial actors have furthered their economic interests through varied forms of political influence. Rules governing the interactions between business and government have been adopted to increase transparency and accountability and

to limit conflicts of interest (59). For example, registration of lobbyists has been established in some countries to increase the transparency of efforts by commercial interests to influence public policy decisions (86, 100). Other means of influence, in the form of financial contributions to political figures, have been subject to tighter regulation. Individuals seeking public office, political campaigns, and public officials in many countries may be banned from receiving such contributions or are required to report the amounts and sources. Alternatively, public officials may be required to decline gifts (including hospitality) over an agreed-upon value or from certain sources deemed to pose a conflict of interest. Most countries have rules governing elections and may restrict political donations to nationals or residents to prevent undue foreign influence (34).

While a growing number of countries regulate nonmarket business strategies, regulatory standards vary. Enforcement can be especially challenging, especially when dealing with TNCs with global operations, which can threaten to leave countries that employ more stringent rules. In addition, governments in low- and middle-income countries often have less capacity to regulate the health practices of TNCs than do those in high-income countries (94).

The World Health Organization (WHO) FCTC recognized the need to establish international rules to limit the undue influence of the tobacco industry over public health policy making. Thus, Article 5.3 requiring States Parties to prohibit engagement between public health officials and vested interests has been introduced to prevent undue influence or conflicts of interest. Some have proposed similar treaties to regulate the alcohol and food industries as well as other sectors that produce health-harming products (31, 98). The WHO Foundation was criticized for accepting a major donation from Nestlé (81).

What is known about the impact and effectiveness of these approaches? Substantial evidence demonstrates the effectiveness of regulating market strategies to protect and promote population health (10, 31, 123). While regulatory responses to health-harming events have been important markers of progress in public health, evidence suggests that wider impacts can be achieved through regulations that emphasize prevention. Moreover, regulations that address market strategies more broadly, rather than specific harms, are likely to achieve greater impact (105). Debates about the reformulation of food products, based on a nutrient profiling system, illustrate this tension between narrow and broad regulatory focus. One industry-affiliated research group concluded that reformulation was "effective in improving population nutritional intakes and thereby" improving population health (74, p. 255). However, a systematic review of modeling studies found that "evidence on the positive effects of reformulation on consumption and health was stronger for sodium interventions, [but] less conclusive for sugar and fats" (35, p. 1). Other scholars have questioned the modest improvements in dietary health from reformulation, a strategy often supported by the food industry, compared with transformative strategies that address the globalized market strategies now producing and distributing highly processed and health-harming products more generally (74, 117).

Evidence has demonstrated even greater potential impacts and effectiveness from regulating the nonmarket strategies of commercial actors. Article 5.3 of the FCTC, to protect public health policies "from commercial and other vested interests of the tobacco industry in accordance with national law," has led to increased transparency requirements and restrictions on interaction (21). Substantial evidence of commercial actors undermining the scientific process (143), including payments made to scientists willing to distort research to serve vested interests (32), has prompted other initiatives to strengthen international standards on conflict-of-interest disclosures and limit interactions between market and public health actors. The effectiveness of such regulations depends on how rigorously they are implemented and enforced. A review of the *Code of Conduct for Journal Editors* by the Committee on Publication Ethics (COPE) found numerous examples of noncompliance and a "feeble, unresourced" compliant process (116). The proliferation of so-called

predatory journals, driven by profit rather than science, further complicates regulation. Steele et al. (120) write that conflicts of interest remain concerning with regard to industry-funded research institutions (e.g., the International Life Sciences Institute), scientific events, third parties (e.g., think tanks, consultancy firms), and other domains where the lines between science and commercial interests can be blurred.

Industry groups have initiated activities to self-regulate their market and nonmarket strategies, which are often supported by public–private partnerships (111, 113). Such initiatives have often been introduced in response to calls for binding regulation amid growing concerns about CDoH (119). Varied industries have advocated approaches such as "sensible regulation" and "good governance," often applying these rhetorical frames to oppose the "nanny state" and "big government" (20, 22, 51, 130). However, evidence shows that industry approaches have had limited effectiveness at protecting public health. Industry self-regulation of advertising content on US children's television programs, for example, led to "no significant improvement in the overall nutritional quality of foods marketed to children" because of weak standards for defining healthy foods by industry and nonparticipation by a high proportion of manufacturers (71, p. 181). Studies show that self-regulated alcohol marketing codes in Brazil, the United Kingdom, and the United States suffer from vague language, are routinely violated, and delay statutory regulation (96). Nine of ten vape shops in the United Kingdom break the Independent British Vape Trade Association code of conduct by selling to nonsmokers (114).

Industries have also sought to self-regulate nonmarket strategies. Their circumscribed scope of change, reliance on voluntary compliance, and lack of independent monitoring and enforcement have weakened their impact (71). Some countries have implemented lobby registers to promote transparency in interactions between public and commercial institutions, with best practices supporting mandatory compliance, precise definition of who must register, appropriate public information to enable understanding of who is seeking to influence whom, accessible and searchable databases online, and enforcement by a government agency independent from lawmakers or lobbyists (54). However, a 2021 report taking stock of progress in implementing the OECD Principles for Transparency and Integrity in Lobbying adopted in 2010 found that only 23 of 41 countries analyzed provided some level of transparency over lobbying activities either through a public registry or through disclosure by public officials (100). At the international level, one study found that 16% of FCTC guideline recommendations have been implemented, and 83% of States Parties have taken action on fewer than one-third of such recommendations (38). Overall, the evidence shows that binding forms of regulation led by government, independently adopted and fully implemented, with clear targets, timelines, and enforcement of sanctions, have the most impact and effect.

Fiscal Policy Approaches

Fiscal policy uses government spending and taxation to influence aggregate demand, supply, and distribution of goods and services; patterns of employment, trade and investment, inflation, and deflation; economic growth; and other economic variables. Fiscal policy as a strategy to mitigate CDoH expanded from the early 2000s amid increased evidence of the high societal costs of unhealthy populations (e.g., health care, lost productivity), alongside the potential to generate substantial tax revenues. This action brought finance and health ministers together with multilateral institutions, notably the WHO (133) and the World Bank (141). In their report with Public Health England, Pimpin et al. (107) write that the "goals may range from health improvement (either in the population at large or in high-risk individuals), to revenue generation (if this can be at least partly directed to the financing of public health or health care measures), to the reduction of health inequalities" (p. 56).

Government spending is an important fiscal policy to mitigate CDoH. The most direct form is through ownership and investment. In many countries, governments have chosen to control the manufacturing and/or retail distribution of health-related products such as alcohol, tobacco, and cannabis. For example, 40% of global production is by state-owned tobacco companies (SOTCs) (53). While there are public interest reasons for state production, the significant revenues from these products also become an important consideration in maintaining state control. Where concerns are raised about states supplying health-harming products, privatization alone is not a simple alternative. Hogg et al. (53, p. 367) write that the "legislative separation of tobacco control from SOTC oversight provides a desirable alternative to industry privatisation, and that radically realigning the goals of SOTCs to reduce tobacco consumption could make an important contribution to endgame strategies."

Subsidies, in the form of direct payments or reduced taxes, are a more widely used form of government spending as fiscal policy. Subsidies encourage the production of some commodities over others by reducing the cost of production and creating incentives to producers. Producers of many unhealthy commodities historically have received agricultural subsidies, resulting in an artificial reduction in production costs and thus a lower price to consumers. The World Bank and many governments have ended subsidies to grow tobacco leaf, for example. There are similar calls to reduce agricultural subsidies that support the production of sugar, palm oil, and other unhealthy commodities.

Taxation is a fiscal policy used by many countries seeking to mitigate the harms from CDoH. Research has focused on analyzing the relative effectiveness of direct (paid by the consumer) and indirect (paid by the producer) excise taxes, and different forms of assessment such as value added (by percentage of value) and by unit volume of an unhealthy ingredient. Many governments have begun to use direct taxes to increase the price of health-harming products to consumers and thus dampen consumption (sometimes called "sin taxes") (64). For example, to reduce the consumption of sugar-sweetened beverages, the largest source of added dietary sugar and which has been linked to multiple adverse health effects, dozens of jurisdictions worldwide have passed taxes on these beverages (70, 109). Reducing direct taxes on healthy products, such as fresh produce, or behaviors, such as joining a sports club, can encourage healthier choices. In some countries, excise taxes have been earmarked for health-related purposes, thus amplifying their mitigating effects, building public support, and countering claims that health taxes are regressive (17). Tariffs are a form of taxation applied to international transactions to influence the supply and demand of imported products. The global restructuring of the world economy and the shift in production to many health-harming products by large TNCs have increased the importance of trade policy in mitigating CDoH.

Conversely, policies that reduce taxes for producers of health-harming products can weaken efforts to mitigate CDoH. In the United States, for example, food, alcohol, and tobacco companies can deduct their marketing expenses from their taxes, forcing taxpayers to subsidize the ads and then pay for the health-related burdens they encourage. One study estimated that ending this tax subsidy for advertising unhealthy food to children could prevent 129,061 cases of child obesity in the United States over 10 years and save $32.53 for every dollar spent on this policy (42). Reducing the tax breaks that big corporations win in the political arena provides more revenue for governments to protect public health and enforce regulations (136). The proposal to establish a global minimum corporate tax has the potential to increase government resources and to discourage corporations from moving to lower tax jurisdictions (124).

Finally, governments may act to set the price of selected products to protect and promote public health goals. For example, a minimum pricing policy for alcohol in Scotland was associated with an increase in purchase price of alcohol and a reduction in weekly purchases of alcohol

(99). Many governments have also offered subsidies, discounts, or free distribution of healthy products such as fruits and vegetables, thus reducing the cost incentives for less healthy, often highly processed foods.

Evidence worldwide suggests that the domestic use of excise taxes by governments (on the sale of a specific good, service, or activity) is effective in reducing the consumption of specific targeted products, such as tobacco (127), alcohol (110), and, more recently, sugar-sweetened beverages (known as STAX) especially among youth (18, 121). The tobacco economics literature provides strong evidence that excise taxes are highly effective at reducing smoking in certain higher-risk populations, such as youth and persons of lower socioeconomic status (9, 57). Growing evidence of taxing other unhealthy products suggests similar effectiveness in reducing consumption and improving population health (8), while increasing public resources for health purposes (115) in dozens of diverse settings worldwide (23, 89, 106, 108, 138). These potential gains, however, depend on how tax policies are implemented. For example, broad geographic coverage is needed to prevent tax avoidance (i.e., buying from nearby jurisdictions) (118). There should be limited capacity for manufacturers to reduce prices to circumvent tax increases (137) or for consumers to access untaxed products (e.g., contraband) (3). The potential for taxation to generate more sustainable health financing in low- and middle-income countries also depends on adoption and enforcement of legislation (61).

Evidence suggests that using taxation effectively to mitigate CDoH also requires addressing industry arguments that attempt to label taxation as regressive. Adams et al. (2) find that population interventions such as excise taxes that emphasize a low level of individual agency are "most effective and most equitable" (p. 1). Earmarking taxes for health purposes can enhance accountability, transparency, and public support and protect resources from other political priorities, although doing so comes at the cost of fiscal flexibility (29). The tobacco industry and others have also argued that raising taxes contributes to increased illicit trade. However, extensive evidence of the tobacco industry's complicity in the illicit trade, as substantiated in internal documents and supported by successful legal prosecution, along with wide-ranging economic analyses, has undermined this narrative (93, 112).

Opponents of domestic excise taxes and international tariffs on health-harming products have lodged complaints in trade and investment dispute settlement bodies. Complainants charge that these measures unfairly discriminate against imported goods or harm commercial interests (41, 128). Although tribunals have upheld public health goals, in many cases, the cost of responding to disputes and the potential for large penalties have had a chilling effect on the willingness of some governments to apply fiscal policies. Alternatively, governments may design and structure fiscal policies to be compatible with trade and investment agreements rather than to optimize public health effectiveness (60).

Finally, as attention turns to reducing corporate tax avoidance and evasion, evidence suggests that developing effective national and international measures to curb practices that deprive national governments of legitimate revenues remains challenging. The alignment of tax policies across a majority of countries is required to ensure that TNCs cannot play governments against each other in their pursuit of tax-favorable environments (78).

Citizen and Consumer Activism

Social movements have long campaigned against commercial products and practices that cause health and other social harms (6). Activism, specifically, seeks to harness the collective buying power of individual consumers to prompt changes to unwanted commercial practices. King (67) identifies two main approaches to mitigate commercial harms: market disruption, which deters

the ability of the target to effectively accrue and use market resources; and mediated disruption, whereby activists encourage third parties such as the media to disrupt the image and reputation of businesses. The strategies used by activists have included public awareness campaigns, boycotts and buycotts (selective buying of healthy products or products from companies deemed to follow ethical practices), petitions for policy change, and codes of practice or standards (144). For example, the long-standing global campaign against Nestlé, for violating the International Code of Marketing of Breast-Milk Substitutes adopted by the WHO World Health Assembly in 1981, has involved many activist organizations worldwide. Coordinated by the International Nestlé Boycott Committee since 2013, the wide-ranging campaign includes boycotts, monitoring of company practices, and campaigning for legislation (63).

Another form of citizen and consumer action to mitigate CDoH is shareholder activism, which involves the organized purchase of the requisite shares in target companies to allow campaigners to attend shareholder meetings. Activists use the processes set for these events to introduce or modify resolutions designed to change harmful company practices, sometimes also organizing demonstrations or distributing campaign literature to other shareholders and the media. The potential influence of shareholders over company practices is illustrated by the 40% of shareholders who opposed a salary bonus for the chief executive of the pharmaceutical giant AstraZeneca. Shareholders expressed dismay over the company's record profits amid the lack of global access to the coronavirus disease 2019 (COVID-19) vaccine (69).

Investor campaigns to reduce the financial resources invested in the fossil fuel, tobacco, and arms manufacturing sectors have further potential to reduce the production and promotion of health-harming commercial products and activities. These campaigns have targeted individual and institutional investment funds, including pensions and endowments that collectively represent trillions of dollars. These campaigns appeal to socially responsible investors to influence which companies or sectors receive investment, with the goal of depriving health-harming industries of new capital and denormalizing and even stigmatizing profit-making from activities that harm health. Campaigns may lead to the adoption of nonbinding codes or binding regulations at the national and global levels. By the end of 2019, for example, the Fossil Free divestment campaign reported the diversion of more than $11 trillion from the fossil fuel industry over 5 years (15). In Australia, a campaign by Tobacco-Free Portfolios led to the diversion of $1.3 trillion into tobacco-free funds (49).

Consumer activist campaigns have gained frequency, intensity, reach, and visibility over the past decade, further enabled and amplified by social media (7). Successful campaigns against child labor, sweatshops, and environmental harms are a few examples. By jeopardizing the reputation and credibility of TNCs, activist social media campaigns can quickly and effectively mobilize public scrutiny. Evidence suggests that campaigns are enabled by, and influence, the buying practices of consumers, which in recent years have shifted. Thirty percent of consumers report buying from companies or brands with a social purpose or that make a positive contribution globally or in the specific market in which they operate (129). King (67) concludes that the effectiveness of market disruption strategies depends on target characteristics, whereas mediated disruption is influenced by movement and target characteristics. In addition, strategies are influenced by characteristics of the target consumers (75). A 2016 survey of American consumers found that "[s]ocial media activity, political knowledge, ideological intensity, and an interest in politics are significantly associated with political-consumer behavior" (30, p. 1).

Consumer campaigns require sustained effort by campaigners, which can wane over time as public attention turns to other issues. Nevertheless, evidence suggests that consumer campaigns can prompt normative shifts in acceptable standards of practice. For example, consumer campaigns have successfully highlighted the harms of child labor (e.g., tobacco) and habitat destruction (e.g.,

palm oil). Certain commercial practices can become denormalized and considered unacceptable, such as the use of cartoon characters by the tobacco industry to appeal to children and youth. Codes of conduct and certification systems have followed these shifts, although most have been voluntary and weakly enforced. Some have been put forth by commercial actors themselves as strategic initiatives to deflect criticism while making limited changes to their operations. Systemic change requires the independent adoption of binding legislation and appropriate enforcement mechanisms, changes which have been limited.

Litigation and Other Legal Remedies

Legal action has been widely used in the United States, and increasingly worldwide, to reduce the supply of health-harming products, hold manufacturers to account, recover societal costs, and compensate for harms caused. Product liability law, spanning several theories of liability and classes of plaintiffs, emerged in the United States during the 1960s as a distinct field of study. This development followed two landmark legal cases, notably *Greenman v. Yuba Power Products* (in 1963), which recognized that a defendant's liability should be based not on the defendant's "fault" or "warranty," but on whether part of a business enterprise is responsible for inflicting injuries (101). On health-harming products, evidence of the association between lung cancer and smoking then prompted a first wave of state-level legal cases by individual plaintiffs against American tobacco companies from the 1960s onward. These cases were based on a variety of legal theories: negligent manufacture, product liability, negligent advertising, and fraud. All were successfully defended on the grounds that tobacco is not harmful, that cancer is caused by other factors, and that smokers assume responsibility when they choose to smoke. A smaller number of similar cases have been brought in other high-income countries, including Canada, the United Kingdom, Australia, and South Korea. A second wave of litigation began in the 1980s on the grounds that tobacco companies knew, but did not warn consumers, that cigarettes are addictive and cause cancer. These cases were largely unsuccessful, with companies arguing that smokers knowingly assumed the risk of cancer by smoking and that states lacked jurisdiction over federal laws governing advertising. From the 1990s, internal industry documents prompted a turning point in the success of legal cases brought by individual plaintiffs against tobacco companies. This third wave of cases saw the rise of class action lawsuits, which pooled the costs of legal action as well as any settlements. Most notably, US state attorneys general filed cases individually and then collectively against tobacco companies to recover health care costs from smoking. In 1998, the Minnesota Consent Judgment led to the release of tens of millions of pages of internal documents that provided legal evidence for further cases. In 1998, the US government filed a successful case against leading American tobacco companies under the Racketeer Influenced and Corrupt Organizations (RICO) Act (88).

The experience from US tobacco litigation prompted a wide range of tobacco control litigation in other countries (16), as well as strategies to address health harms from other industries such as alcohol, pharmaceuticals, firearms, and automobiles (43). Following adoption of the FCTC, the tobacco industry itself has brought legal action against the adoption of stronger tobacco control measures (e.g., plain packaging) on the grounds that these measures violated national and international law. By the early 2000s, prompted by sharply rising rates of obesity and noncommunicable diseases in the United States and elsewhere (5), public health lawyers began to use strategies borrowed from tobacco litigation to bring similar actions against the food industry (27). By the mid-2010s, US class action consumer litigation related to food and beverage products were reaching record levels. In 2019, 177 putative class action complaints were filed in US courts. Other lawsuits related to misleading claims (e.g., "natural," "whole grain" sugary cereals), packaging (e.g., slack fill), or inaccurate or misleading labeling (e.g., 100% cheese with additives) (4).

Litigation has also been used to address health harms by the pharmaceutical industry on a variety of grounds, including product liability (individual and class action) (36), excess profiteering, antitrust, and prescription of drugs without legitimate medical purposes. The latter was brought by the US Department of Justice against opioid manufacturers for paying health care companies and doctors to encourage overprescribing (48). State and local lawsuits remain pending.

The breakthroughs in tobacco litigation from the late 1990s, initially intended to recover health care costs but extended to illicit trade and violation of the RICO Act, have prompted increased litigation in other countries and industries (3). The discovery process and new disclosure obligations imposed on major US tobacco companies have provided valuable evidence to support further litigation (91). The health harms from new nicotine products, notably electronic cigarettes, have prompted 758 lawsuits against Juul (as of July 22, 2020) in the United States (126). The first to be settled, with Juul agreeing to pay $40 million to settle litigation brought by the Attorney General of North Carolina for marketing to youth, is expected to be followed by further settlements in the United States (65) and litigation worldwide (134). The tentative $26 billion settlement with counties and cities against four pharmaceutical companies, for damages caused by prescription opioids (1), is similarly expected to force changes in business practices after severe harms have been caused (97). The effectiveness of litigation against the food (50) and alcohol industries has been more circumscribed to date. While these settlements may change future company practices, these and other legal remedies do not mitigate past health harms. Moreover, legal remedies may be limited to specific jurisdictions. Evidence suggests that tobacco, alcohol, and food manufacturers often respond to legal defeats in one country by expanding operations where there are less stringent rules, especially in low- and middle-income countries (90). For example, Juul's operations in non-US markets limit the impact of bans agreed upon in American courts against marketing to youth and using flavors (82).

International agreements to address CDoH have seen limited success to date. Almost two decades after implementation, the International Code of Marketing of Breast-Milk Substitutes continues to be routinely violated, variably enforced, and thus circumscribed in regulating the practices of infant formula manufacturers (10, 123). While the FCTC saw a remarkable number of countries quickly become signatories to the treaty, since coming into force in 2005, implementation has remained challenging. Efforts to advance international agreements on alcohol, highly processed food, and other specific health-harming products and practices have stalled. Beyond such products, international regulation of powerful commercial actors with less direct, but potentially greater, health impacts has remained elusive. For example, despite growing evidence of the health harms associated with their products and practices, global technology companies such as Facebook, now called Meta, Google, and Microsoft have thus far eluded health-related regulation (145).

Wider debates about the risks to political stability, social cohesion, and environmental sustainability from extreme concentrations of capital have increased attention to the structural nature of CDoH. Rather than using a product-by-product approach, market capitalism in the twenty-first century requires far greater scrutiny, particularly of its wide-ranging adverse health impacts. These efforts should include rebalancing the role of the state and market and developing systems of corporate transparency of and accountability to public interests. The Sustainable Development Goals (SDGs), for example, provide a more integrated framework for global action across multiple products and sectors related to CDoH. To what extent the SDG process can become an effective forum for addressing CDoH remains contested. For example, while alcohol consumption is included in the SDGs, critics note the framework's support for trade liberalization and public–private partnerships. These recommendations have enabled industry initiatives such as the International Alliance for Responsible Drinking (a collaboration of leading producers)

to strategically align itself with the SDGs, while failing to recognize that "the structure of the alcohol industry itself could constitute a key health risk" (25, p. 2582).

EXISTING GAPS IN THE EVIDENCE BASE

This review of approaches to mitigating the health harms from CDoH highlights six areas where more evidence is needed to promote effective research and policy action:

1. Syntheses of evidence across product areas and producers that assess the efficacy and impacts of different approaches and specific strategies to reduce the health harms associated with commercial actors (52);
2. Evidence of how behavior change, regulation of commercial practices, fiscal policy, citizen and consumer activism, and legal approaches may be used in combination to effectively mitigate health-harming CDoH;
3. Evidence on how different approaches can effectively reduce health inequalities and inequities arising from the differential and intersectional impacts of CDoH (62);
4. Evidence to distinguish CDoH-related health harms and health benefits that informs appropriate engagement and alliance building with commercial actors in addition to civil society groups, consumers, and various levels of government;
5. Evidence on approaches that involve population interventions requiring lower versus higher levels of individual agency, given that lower levels of agency tend to be more effective and equitable (2); and
6. Standardized metrics for assessing exposures to CDoH over place, time, and populations to promote the setting of goals and tracking of progress in the effort to reduce health-harming influences (73).

Building on the substantial evidence reviewed in this article, scholars, practitioners, policy makers, and activists have important opportunities to bring together evidence and experiences across specific products, practices, industries, populations, social contexts, and jurisdictions to better understand and mitigate the health harms from CDoH.

LESSONS FOR PUBLIC HEALTH AGENCIES AND PRACTITIONERS

This review of relevant evidence on five approaches to mitigating health-harming CDoH (i.e., behavioral change, regulation of market and nonmarket business practices, fiscal policy strategies, citizen and consumer activism, and litigation and other legal remedies), as well as the different strategies that are used to advance these approaches, shows a substantial and wide-ranging yet heterogeneous body of evidence to inform public health practice and policy. Several lessons can be drawn from this body of knowledge.

First, as revealed in evidence from several decades of public health initiatives to reduce the harmful practices of the tobacco industry and other sectors, effective control strategies for CDoH will depend not on magic bullets but on comprehensive policy packages that address commercial actors on multiple levels and through multiple routes. As researchers refine definitions, conceptual frameworks, and theoretical models for understanding CDoH (68, 72, 79), the field can move beyond a search for targeted fixes that focus on the impacts of selected products, notably tobacco, alcohol, and highly processed foods, on noncommunicable diseases. This broader perspective requires attention to population interventions that target production and consumption and, thus, supply-side and demand-side measures. More integrated approaches to CDoH must also recognize the cumulative nature of exposures to these diverse influences across biological,

environmental, occupational, and other social pathways. A comprehensive theory of CDoH can lead to systematic identification of the most promising avenues for intervention.

Second, effective action to mitigate health-harming CDoH will require less siloed approaches, whereby proponents of specific strategies (e.g., health promoters, litigators, legislators, activists), split further into specific industries (e.g., tobacco, food, alcohol, pharmaceuticals, firearms), act separately. The business sector recognizes the value of forming alliances through trade associations, public and corporate relations, and regulatory agencies. Those seeking to reduce the adverse impacts of CDoH will need to have a similar capacity to break down institutional boundaries to mobilize evidence and political power (125, 139). Policy coherence across sectors and approaches can break down self-limiting siloes (24). This effort should include rebuilding the alliances between social movements and public health professionals, which have led to progress in reducing health-harming CDoH in the past century (33, 92).

Third, effective action to reduce harmful commercial influences will require a praxis of traditional epidemiological and health policy research, practice-based evidence, and analyses from public health professionals and activists. The codification of such evidence, as illustrated by the WHO's Best Buys (132) and the INFORMAS proposals for monitoring the food industry (122), will be critical.

Fourth, to ensure that a cadre of public health researchers, professionals, and activists have the knowledge and skills to develop and propose policies, practices, and governance processes to control CDoH, schools of public health and other training programs will need to recruit such individuals and develop the requisite competencies (39). Similarly, schools of public health will need to develop and support interdisciplinary initiatives that recognize the wide range of methodologies, disciplinary expertise, and theoretical frameworks that are needed to understand and mitigate health harms from CDoH.

Fifth, the advancement of rigorous and thus credible evidence to underpin the role of public health agencies and practitioners requires firm commitment to limiting conflicts of interest and to preventing commercial interference with public health interests. Rules should define clear boundaries for for-profit involvement in research and wider scholarly activities (e.g., scientific conferences, expert witnesses); ensure that scientific journals and professional associations maintain independence and integrity; and protect researchers, advocates, and whistleblowers (95).

CONCLUSION

In 2013, WHO Director-General Margaret Chan warned that "[e]fforts to prevent noncommunicable diseases go against the business interests of powerful economic operators. In my view, this is one of the biggest challenges facing health promotion" (19). How we understand the nature of CDoH will inform priority action to reduce their harmful influences. The initial focus on a small number of products and their production by large TNCs in selected industries has shaped the current boundaries of public health action. From the late 1990s, the tobacco control community focused much needed attention on industry products and practices that globally now kill more than 8 million people annually, including 1.2 million people exposed to secondhand smoke. The public health community then extended these insights to other industries that produce health-harming products, including alcohol, food and beverage, and pharmaceuticals. The health harms from oil and gas, mining, firearms, gambling, fashion, digital technology, and other industries have now come under scrutiny.

As the gaze of CDoH has broadened over time to include a wider range of commercially produced products, actors and their practices, and the social structures that enable and sustain them, the public health community has begun to recognize the need for a broader range of approaches

and strategies. Creating platforms and forums that convene agents of public health change around CDoH can strengthen local, national, and global efforts to limit harmful commercial influences. The WHO commitment to "build and strengthen the evidence base on the economic and commercial determinants of health and the impact of the private sector and economic determinants on health" (135, p. 91) is one such opportunity. The emergence and growth of several global networks bringing together research, policy, and action on CDoH provide additional opportunities. In the coming decade, advancing effective approaches and strategies to mitigate the health harms from commercial influences now driving population health and health inequalities globally will define this era's contribution to improved public health.

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Annual Review of Public Health
Volume 43, 2022

Contents

Epidemiology and Biostatistics

Social Environment and Behavior

Environmental and Occupational Health

Public Health Practice and Policy

Health Services

Indexes

Errata

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W. Stewart Agras and Cara Bohon

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Mary Jane Rotheram-Borus

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Sharon Dolovich

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Erle C. Ellis

Anxiety, Worry, and Grief in a Time of Environmental and Climate Crisis: A Narrative Review
Maria Ojala, Ashlee Cunsolo, Charles A. Ogunbode, and Jacqueline Middleton

The Cold Region Critical Zone in Transition: Responses to Climate Warming and Land Use Change
Kunfu Pi, Magdalena Bieroza, Anatoli Brouchkov, Weitao Chen, Louis J.P. Dufour, Konstantin B. Gongalsky, Anke M. Herrmann, Eveline J. Krab, Catherine Landesman, Anniet M. Laverman, Natalia Mazei, Yuri Mazei, Mats G. Öquist, Matthias Peichl, Sergey Pozdniakov, Fereidoun Rezanezhad, Céline Roose-Amsaleg, Anastasia Shatilovich, Andong Shi, Christina M. Smeaton, Lei Tong, Andrey N. Tsyganov, and Philippe Van Cappellen

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Alexandros Nikitas, Nikolas Thomopoulos, and Dimitris Milakis

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Abishek Sankara Narayan, Sara J. Marks, Regula Meierhofer, Linda Strande, Elizabeth Tilley, Christian Zurbrügg, and Christoph Lüthi

Freshwater Scarcity
Peter H. Gleick and Heather Cooley

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Karen C. Seto, Galina Churkina, Angel Hsu, Meredith Keller, Peter W.G. Newman, Bo Qin, and Anu Ramaswami

How to Prevent and Cope with Coincidence of Risks to the Global Food System
Shenggen Fan, Emily EunYoung Cho, Ting Meng, and Christopher Rue

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Isak Stoddard, Kevin Anderson, Stuart Capstick, Wim Carton, Joanna Depledge, Keri Facer, Clair Gough, Frederic Hache, Claire Hoolohan, Martin Hultman, Niclas Hällström, Sivan Kartha, Sonja Klinsky, Magdalena Kuchler, Eva Lövbrand, Naghmeh Nasiritousi, Peter Newell, Glen P. Peters, Youba Sokona, Andy Stirling, Matthew Stilwell, Clive L. Spash, and Mariama Williams

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Roger Cotterrell

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Benjamin Justice

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Megan Ming Francis and Leah Wright-Rigueur

From the ***Annual Review of Medicine***, Volume 73 (2022)

Cardiovascular Effects of Particulate Air Pollution
Aruni Bhatnagar

From the ***Annual Review of Nutrition***, Volume 41 (2021)

Breastfeeding Beyond 12 Months: Is There Evidence for Health Impacts?
Kimberly A. Lackey, Bethaney D. Fehrenkamp, Ryan M. Pace, Janet E. Williams, Courtney L. Meehan, Mark A. McGuire, and Michelle K. McGuire

Sleep and Diet: Mounting Evidence of a Cyclical Relationship
Faris M. Zuraikat, Rebecca A. Wood, Rocío Barragán, and Marie-Pierre St-Onge

The Influence of Front-of-Package Nutrition Labeling on Consumer Behavior and Product Reformulation
Christina A. Roberto, Shu Wen Ng, Montserrat Ganderats-Fuentes, David Hammond, Simon Barquera, Alejandra Jauregui, and Lindsey Smith Taillie

From the ***Annual Review of Psychology***, Volume 73 (2022)

Human Cooperation and the Crises of Climate Change, COVID-19, and Misinformation
Paul A.M. Van Lange and David G. Rand

From the ***Annual Review of Sociology***, Volume 47 (2021)

Recent Trends in Global Economic Inequality
Ho-fung Hung

Social Inequality and the Future of US Life Expectancy
Iliya Gutin and Robert A. Hummer

The Social and Sociological Consequences of China's One-Child Policy
Yong Cai and Wang Feng

From the ***Annual Review of Statistics and Its Application***, Volume 8 (2021)

Distance-Based Statistical Inference
Marianthi Markatou, Dimitris Karlis, and Yuxin Ding

From the ***Annual Review of Virology***, Volume 8 (2021)

Viruses and Metabolism: The Effects of Viral Infections and Viral Insulins on Host Metabolism

Khyati Girdhar, Amaya Powis, Amol Raisingani, Martina Chrudinová, Ruixu Huang, Tu Tran, Kaan Sevgi, Yusuf Dogus Dogru, and Emrah Altindis