Noncommunicable diseases linked to diet have unequivocal health, social, and economic ramifications that should not be overlooked. Against this backdrop, for more than a decade in the US, improving the nutritional quality of foods and beverages sold in vending machines and adopting behavioral design standards to nudge patrons toward selecting these healthier offerings have garnered significant interest as a way to combat the increasing burden of diet-related diseases nationwide. The labeling of vended products and messaging on vending machines constitutes a key behavioral economic component of this intervention. However, as noted by Gibson and colleagues, limited research has identified the most effective types of vending machine labels and messages for influencing the desirable purchasing behaviors of patrons.

To address this empirical gap, the researchers conducted a randomized trial in the city of Philadelphia comparing 4 point-of-sale nutrition message interventions designed to increase patrons’ purchases of healthier vending machine products compared with less healthy products. These interventions included (1) a non–product-specific poster drawing attention to a local-level tax on sugar-sweetened beverages and artificially sweetened drinks; (2) a green label identifying a product meeting a healthy threshold; (3) a green, yellow, and red traffic light labeling system highlighting products meeting healthy, moderately healthy, and unhealthy thresholds, respectively; and (4) a label providing context on how many minutes of physical activity would be needed to expend the calories contained in each product. A key finding from the study by Gibson et al is that the traffic light labeling system and the physical activity calorie equivalent label were more effective in encouraging purchases of healthier beverages compared with the nonspecific beverage tax poster. However, there were no significant differences in snack sales between these interventions. Another finding was that the traffic light labeling system was more effective than the physical activity calorie equivalent label in decreasing the number of beverage and snack calories sold. These results suggest that traffic light labeling systems and physical activity calorie equivalent labels may be successful in encouraging individuals to choose healthier beverages, although it may be more challenging to prompt individuals to select healthier snacks through labeling approaches.

The investigation by Gibson et al is notable because it appears to be the first to use a randomized design to examine the effectiveness of different types of vending machine messaging interventions in a natural environment. Thus, the findings from this experimental field study address a crucial research gap in implementation science concerning best practices for healthy vending machine messaging interventions in applied contexts. It is a novel study with practical significance because it elucidates messaging opportunities to increase patron uptake of healthy vending machine products.

This study is also noteworthy given the increasing popularity of diet-related policy, systems, and environmental (PSE) change strategies during the last decade (ie, those informed by behavioral economic principles and that seek to address underlying socioecologic barriers to a healthy diet). Healthy vending machine policies and interventions, which are part of broader healthy food procurement efforts, represent a type of PSE strategy aimed at making healthy eating the easy choice for individuals. Therefore, Gibson et al advance the evidence base on a public health approach that has gained traction among program planners and decision-makers alike.
Interest in improving the nutritional quality of food and beverages in vending machines is unsurprising given the ubiquity of vending machines containing products of minimal nutritional value in a variety of settings, from parks to schools to health care facilities and other large institutional settings. The popularity of healthy vending machine strategies also makes sense given the perceived implementation simplicity and cost-effectiveness. Nevertheless, practitioners and policymakers aiming to mitigate the increasing burden of diet-related diseases at the population level should consider additional factors before deciding to implement such an intervention.

This assertion is based, in part, on our experience evaluating a 100% healthy vending machine policy in Los Angeles County. The policy mandated that all snack and beverage products sold in vending machines operated by the County of Los Angeles vendor adhere to nutrition standards outlined in their contract. The county vendor was also required to implement several product placement, pricing, and promotion standards. Our study analyses revealed that the policy enhanced the nutritional quality of snack and beverage items sold in vending machines during the study assessment period. However, purchases of the vending machine products decreased, as evidenced by revenue decreases for both snacks and beverages sold across county-operated machines after execution of the policy.

Related to this latter finding, our study also shed light on several obstacles that hindered implementation of the county's 100% healthy vending machine policy to fidelity. These obstacles included a limited ability to monitor policy adherence due to staffing and time constraints, restricted availability of healthy snack products, absence of a food distributor database that increased the vendor’s ability to easily identify healthy products, anticipated loss of revenue, and high prices and commission rates. During our field-based assessments conducted as part of the study, we also found that employees in institutional settings impacted by the policy sought alternative methods to obtain desired snack and beverage products, such as installing their own vending machines or establishing a snack pool wherein employees coordinated among themselves to jointly procure their preferred snacks. Some of these challenges align with those documented during the early phase of related healthy food procurement efforts in Los Angeles County. Collectively, these barriers call into question the notion that healthy vending interventions are straightforward and economical PSE strategies. They also underscore the importance of priming patrons to accept and take advantage of the increased availability of healthy products in vending machines, especially if populations accessing the machines remain consistent on a day-to-day basis.

These implementation and sustainability barriers, as well as barriers to broader healthy food procurement efforts, persist in Los Angeles County. For example, a recent study evaluating the integration of healthy nutrition standards and practices by the Los Angeles County Department of Public Health between 2011 and 2021 into the county government’s requests for proposals and food vendor contracting process pinpointed similar challenges, including resource constraints and a lack of stakeholder buy-in.

In summary, despite healthy vending being a popular diet-related behavioral economic strategy for more than a decade, our research conducted in a large racially and ethnically diverse local jurisdiction indicates that this is a challenging intervention to scale, and its impact on consumer behavior is not guaranteed. Priming target populations through health education, identifying items that resonate with them, and obtaining their buy-in may improve the success of this PSE approach.

Considering these lessons learned and given scarce public health resources, important questions arise: Do individuals consume the largest proportion of unhealthy foods and beverages in their diet from vending machines? Are there easier-to-implement interventions in other settings (eg, grocery stores and farmers’ markets) that would better facilitate access to nutritionally dense foods in communities that need them most? Is healthy vending a stopgap solution to a more substantial issue? These questions are important in the context of poverty and the impact of social and economic factors that shape dietary habits. Finding answers and solutions may help narrow health inequities in the US and globally, especially among communities grappling with systemic forces (eg, structural racism) that have long shaped their social determinants of health.
ARTICLE INFORMATION
Published: May 8, 2024. doi:10.1001/jamanetworkopen.2024.9400
Open Access: This is an open access article distributed under the terms of the CC-BY License. © 2024 Robles B et al. JAMA Network Open.
Corresponding Author: Brenda Robles, PhD, MPH, Department of Economics, University Rovira i Virgili, Faculty of Business and Economics, Av. de la Universitat 1, 43204 Reus, Catalonia, Spain (brenda.robles@urv.cat).
Author Affiliations: Department of Economics, University of Rovira i Virgili, Reus, Catalonia, Spain (Robles); Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública, Instituto de Salud Carlos III, Madrid, Spain (Robles); Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health, Los Angeles, California (Wickramasekaran).
Conflict of Interest Disclosures: None reported.
Disclaimer: The findings and conclusions in this commentary are those of the authors and do not represent the views or the official positions of the University of Rovira i Virgili, Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública, the Los Angeles County Department of Public Health, or the Centers for Disease Control and Prevention.
Additional Contributions: Tony Kuo, MD, MSHS and Michelle Wood, DrPH, MPP, Los Angeles County Department of Public Health, Los Angeles, California, provided support and contributions in executing and evaluating the healthy vending machine policy project and other healthy food procurement efforts in Los Angeles County; this support was partially funded by the Centers for Disease Control and Prevention awards in Los Angeles County.
Additional Information: This commentary draws on the authors' findings from their evaluation of the implementation of a 100% healthy vending machine project, partially funded by a Centers for Disease Control and Prevention initiative in Los Angeles County (award 1U58DP004927-01 [2013-2016]). It is also based on their evaluation findings related to other healthy food procurement efforts in Los Angeles County during the past decade, which were also partially funded by the Centers for Disease Control and Prevention (awards 3U58DP002485-01S1 [2010-2012], 1U58DP003061-01 [2010-2013], and INU58DP000020-01 [2016-2021]).

REFERENCES