Promotion of healthy food and beverage purchases: are subsidies and consumer education sufficient?

Published Online
January 24, 2017
http://dx.doi.org/10.1016/S2468-2667(17)30012-9

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Poor diet accounts for a larger global burden of non-communicable disease than tobacco, alcohol, and physical inactivity combined.[1] Furthermore, the burden of non-communicable disease is substantially higher in socioeconomically disadvantaged communities. There is, therefore, an urgent need to identify the most effective and cost-effective interventions to minimise poor diet, by increasing the intake of healthy food and reducing the intake of sugar-sweetened beverages and junk foods that are high in salt, sugar, and saturated fats. The randomised controlled trial of dietary subsidies in socioeconomically disadvantaged communities by Julie Brimblecombe and colleagues,[2] published in *The Lancet Public Health*, is therefore of potentially great interest. Using a stepped-wedge trial design, Brimblecombe and colleagues randomly assigned 20 stores serving small indigenous communities across the rural Australian Northern Territories to apply in-store price discounts with or without consumer education. The stores implemented a 20% discount on fruit, vegetables, bottled water, and artificially sweetened soft drinks for 24 weeks. The effect of the discount on the weight of fruit and vegetables and other food purchased during and after the intervention was assessed using weekly store sales data and consumption per capita was estimated.

The researchers deserve considerable credit for completing this challenging trial, and generating potentially valuable results that could be useful to policy makers. Benefits were mixed, modest, and potentially negated by unintended consequences. The estimated daily intake (per capita) of fresh and frozen fruit and vegetables at baseline was predictably very low, at just 90 g (37 g for fruit and 53 g for vegetables). WHO recommends up to 600 g per day.[3] The 20% subsidies resulted in positive, but frustratingly small, absolute improvements. Overall, fruit and vegetable purchases increased by 13% during the intervention and 20% after the intervention. However, this finding represented an additional 18 g, barely equalling a quarter of an apple per day.

Consumer education via in-store promotional materials appeared to increase intake by a further 8%, but only during the discount period. This result is consistent with other studies[4] that showed small or negligible effects from providing consumer information in both retail and fast-food settings.

Unfortunately, the improvements in Brimblecombe and colleagues' study were potentially undermined by a concomitant 13% increase in less healthy food purchases. Although bottled water purchases increased by 18%, sugar-sweetened beverage purchases also increased by 6%, from an already high baseline of 365 g per capita per day. Furthermore, baseline sodium intake of 2623 mg per capita per day (equivalent to 6·5 g salt) rose by approximately 8% during the intervention, and by 14% thereafter. Saturated fat intake rose, and total energy purchased also increased by 7% during the intervention and by 14% after the intervention. Quantitative modelling by ourselves and others suggests that such increases in salt and other adverse risk factors, if sustained, could result in substantial additional disease, potentially neutralising the headline benefits from increased fruit and vegetables.[5]

These adverse trends reflect firstly, predictable cross-elasticities between sugar-sweetened beverages and other food-stuffs; and secondly, factors beyond the researchers' control, notably that the stores reduced the prices of less healthy food by about 5%. Were these retailers perhaps preserving their more profitable lines?

The authors acknowledge some of these issues. They observe that elsewhere, bigger subsidies than were used in their study (up to 50%) have achieved bigger benefits, but that these larger discounts generally have bigger political and practical barriers, such as opposition by an industry obliged to maximise profits.[6] Useful suggestions for future trials might therefore include simultaneous implementation of subsidies on healthy items and price increases on unhealthy items, replication in diverse settings, and analysis of lag times and hangover effects.

Brimblecombe and colleagues concluded that a 20% discount can only increase fruit and vegetable purchases to a certain extent and that other strategies might be needed. Quite so. Happily, the feasibility and effectiveness of national policies taxing sugar and junk food have been shown by governments in Finland,

France, and Hungary.[7] Other authorities now tax sugary drinks, including Mexico, Finland, Estonia, France, a growing number of US cities, and the UK (from 2018).[8]

The mixed and modest benefits reported here represent useful first steps. However, subsidies alone are clearly not sufficient. In addition to randomised controlled trials such as Brimblecombe and colleagues' study, the increasingly solid evidence base underpinning public health nutrition is also powerfully informed by natural experiments, policy analyses, observational studies, and disease modelling. This totality of evidence suggests that effectively addressing poor diet could potentially halve the burden of non-communicable diseases, particularly benefiting disadvantaged communities.[9,10] Optimal diet means substantial increases in fruit and vegetables, pulses, nuts, seeds, fish, seafood, olive oil, and omega-3. But, crucially, radical reductions in junk foods and sugary drinks are also needed.[6-9]

Past dietary strategies have failed to stem the ongoing obesity and non-communicable disease epidemics. Policy makers therefore need more powerful approaches. Valuable lessons come from successes in tobacco and alcohol control, in which comprehensive strategies have addressed the 3As of affordability, availability, and acceptability,[11] and highlighted the effectiveness hierarchy. In other words, downstream preventive activities targeting individuals (such as one-to-one personal advice or health education) depend on a sustained, purposeful response,[12] and consistently achieve small or negligible population benefits. Conversely, upstream policy interventions (eg, smoke-free legislation, alcohol minimum pricing, or regulations reducing salt or eliminating dietary trans fats) are generally more powerful, equitable, rapid, and cost-saving.[10,13-16] These structural interventions could create healthier food environments for affluent and disadvantaged communities alike.

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We declare no competing interests.

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