



Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Trends in beverage prices following the introduction of a tax on sugar-sweetened beverages in Barbados

Miriam Alvarado^{a,e}, Deliana Kostova^b, Marc Suhrcke^c, Ian Hambleton^a, Trevor Hassell^d, T. Alafia Samuels^{a,*}, Jean Adams^e, Nigel Unwin^{a,e}, on behalf of the Barbados SSB Tax Evaluation Group

^a George Alleyne Chronic Disease Research Centre, University of the West Indies, Barbados

^b Center for Global Health, US Centers for Disease Control and Prevention, Atlanta, Georgia, USA

^c Centre for Health Economics, University of York, UK

^d Healthy Caribbean Coalition, and National NCD Commission, Barbados

^e Centre for Diet & Activity Research, MRC Epidemiology Unit, University of Cambridge, UK

ARTICLE INFO

Article history:

Received 6 February 2017

Received in revised form 7 July 2017

Accepted 12 July 2017

Available online xxxxx

Keywords:

Nutrition policy

Obesity

Primary prevention

Economics

Diet

Diabetes mellitus

ABSTRACT

A 10% excise tax on sugar sweetened beverages (SSBs) was implemented in Barbados in September 2015. A national evaluation has been established to assess the impact of the tax. We present a descriptive analysis of initial price changes following implementation of the SSB tax using price data provided by a major supermarket chain in Barbados over the period 2014–2016. We summarize trends in price changes for SSBs and non-SSBs before and after the tax using year-on-year mean price per liter. We find that prior to the tax, the year-on-year growth of SSB and non-SSB prices was very similar (approximately 1%). During the quarter in which the tax was implemented, the trends diverged, with SSB price growth increasing to 3% and that of non-SSBs decreasing slightly. The growth of SSB prices outpaced non-SSBs prices in each quarter thereafter, reaching 5.9% compared to <1% for non-SSBs. Future analyses will assess the trends in prices of SSBs and non-SSBs over a longer period and will integrate price data from additional sources to assess heterogeneity of post-tax price changes. A continued examination of the impact of the SSB tax in Barbados will expand the evidence base available to policymakers worldwide in considering SSB taxes as a lever for reducing the consumption of added sugar at the population level.

© 2017 Published by Elsevier Inc.

Caribbean populations suffer from the highest burden of non-communicable diseases (NCDs) in the Americas (*Health in the Americas 2012 Edition: Regional Outlook, 2012*). Barbados, an island in the Eastern Caribbean, faces a serious problem with overweight, obesity and related diseases. In 2012, the adult rates of overweight and obesity were 74.2% and 43.4%, respectively, for women, and 66.2% and 23.4%, respectively, for men (*Howitt et al., 2015*).

In June 2015, the Government of Barbados announced the introduction of a 10% ad valorem tax on sugar-sweetened beverages (SSBs). The tax is applied to sodas, sugar-sweetened juices, and sugar-sweetened sports and energy drinks, but not 100% juices, sugar-free (diet) sodas, or sugar-free flavored waters (*Healthy Caribbean Coalition, 2016*). The tax was implemented in September 2015, making Barbados the first country in the Caribbean with this measure (*Healthy Caribbean Coalition, 2016*).

There is considerable evidence linking increased consumption of SSBs with weight gain in adults and children, and with increased

incidence of type 2 diabetes independent of adiposity (*Imamura et al., 2015; Malik et al., 2013*). Reduced consumption of beverages with added sugar can have population-level health benefits (*Brownell et al., 2009; Mytton et al., 2014; World Health Organization, 2016*). A tax on SSBs can lead to an increase in the prices of SSBs relative to other beverages, creating an incentive for reducing the demand for SSBs. Prices of SSBs have been shown to increase relative to prices of non-SSBs following implementation of SSB taxes in Mexico and Berkeley, California (*Cawley and Frisvold, 2017; Colchero et al., 2015; Grogger, 2015*). An ongoing evaluation of the effect of the 2015 SSB tax on beverage prices and sales in Barbados is presently being conducted at the University of West Indies, on behalf of the Barbados SSB Tax Evaluation Steering Committee. This letter highlights the motivation for further analytic assessment of SSB tax effects in Barbados by comparing the pace of growth in SSB and non-SSB prices leading up to and immediately following the tax implementation.

We used retail sales data on 224 unique beverages from a large supermarket chain in Barbados from the last quarter of 2013 through the first quarter of 2016. Prices per liter were calculated by dividing total beverage sales in Barbados dollars by sales volume. We classified sodas, sugar-sweetened juices, and sugar-sweetened sports and energy

* Corresponding author at: George Alleyne Chronic Disease Research Centre, Avalon, Jemmott's Lane, Bridgetown, St. Michael BB11115, Barbados.

E-mail address: alafia.samuels@cavehill.uwi.edu (T.A. Samuels).

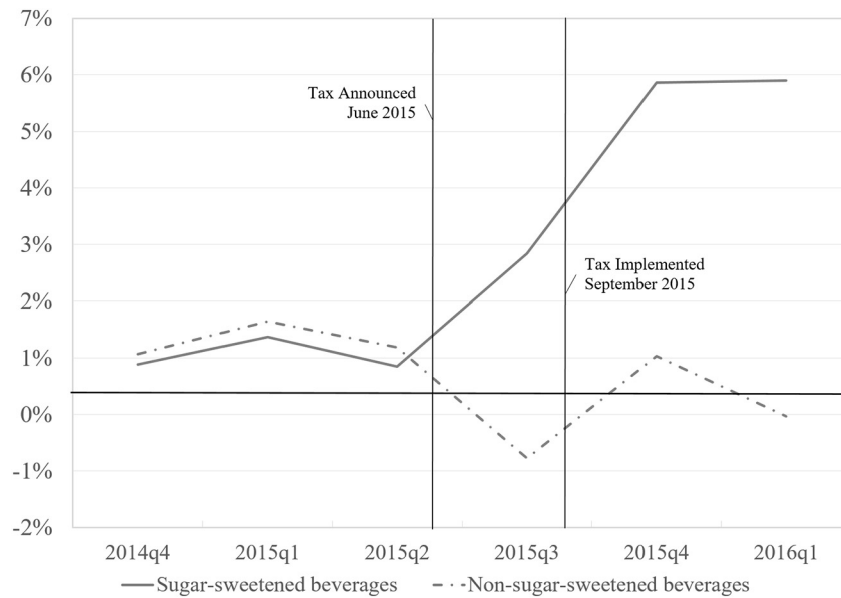


Fig. 1. Year-over-year percent change in the average quarterly price per liter of sugar-sweetened and non-sugar-sweetened beverages, Barbados, 2014–2016. The first line corresponds to June 2015 when the tax was first announced, and the second line corresponds to September 2015, when the tax was first implemented.

drinks as SSBs, and no-added-sugar juices, sugar-free (diet) sodas/energy drinks/sports drinks, and bottled waters as non-SSBs. We then calculated average quarterly prices and estimated the year-over-year percentage change in quarterly prices for each category. Prices in each quarter were assessed relative to the same quarter of the previous year to account for within-year seasonality. The resulting price growth estimates were compared across categories (Fig. 1). In the three quarters prior to the introduction of the tax, SSBs and non-SSBs experienced very similar year-over-year price growth of approximately 1% for both beverage categories, and had parallel patterns of fluctuation. During the third quarter of 2015, at the end of which the SSB tax took effect, the trends diverged. At that time, the growth in SSB prices approached 3% while the growth in non-SSB prices decreased; thereafter, the change in SSB prices outpaced that of non-SSBs. In the two quarters after the tax took effect, the growth in average SSB prices compared to the previous year reached 5.9%, while staying mostly flat, between 0 and 1%, for non-SSBs. The two vertical lines in Fig. 1 correspond, respectively, to June 2015, when the tax was first announced and to September 2015, when the tax was first implemented. It is possible that manufacturers or retailers may have increased prices following the announcement of the tax, in anticipation of the actual implementation date.

This is a preliminary descriptive analysis using readily available price data following the Barbados SSB tax. For this descriptive analysis, unadjusted prices were used. As inflation would lead to similar proportional price changes among SSBs and non-SSBs, using unadjusted prices still allows a comparison of price change trends following the implementation of the tax. Additional data are being collected to extend the post-tax observation period to 18 months, expanding the analysis of the tax effect on beverage prices and sales volume while accounting for variations in product size and type and adjusting for inflation.

It is possible that the slight dip in non-SSB prices may have been part of an industry response to the introduction of the SSB tax, or may reflect other unknown factors. Bottled water and other diet beverages are produced/imported by some of the same manufacturers and distributors that supply SSBs. Future analyses will assess the trends in prices of SSBs and non-SSBs over a longer period and by manufacturer/distributor to further explore these diverging trends. In addition, these price data represent prices in one major retail chain, and may not be representative of price changes across all stores. Future work will aim to

integrate price data from additional sources to assess heterogeneity of post-tax price changes.

In summary, we have shown a divergence in the growth trends of SSB prices relative to non-SSB prices following the introduction of the tax. This evidence is foundational to the forthcoming evaluation of the tax as a factor in raising SSB prices in Barbados. Presently, the number of countries that have implemented SSB taxes is limited. An examination of the impact of SSB taxes in Barbados will expand the evidence base available to policymakers worldwide in considering SSB taxes as a lever for reducing the consumption of added sugars at the population level.

Acknowledgements

The full Barbados SSB Tax Evaluation Group is: Trevor Hassell (Chairperson of the group, National NCD Commission of Barbados and Healthy Caribbean Coalition); Miriam Alvarado (CEDAR, University of Cambridge); Kenneth George (Ministry of Health), Ian Hambleton (UWI); Maisha Hutton (Healthy Caribbean Coalition); Winston Moore (UWI); Madhuvanti Murphy (UWI); Alafia Samuels (UWI); Godfrey Xuereb (PAHO); Nigel Unwin (UWI; CEDAR, University of Cambridge), Cyril Gill (Ministry of Finance).

The group is supported by a Technical Advisory Committee: Jean Adams (CEDAR, University of Cambridge); Deliana Kostova (US Center for Disease Control and Prevention); Charmaine Metivier (UWI); Marc Suhrcke (University of York); Anne Marie Thow (University of Sydney); James Woodcock (CEDAR, University of Cambridge).

Financial support for the analyses presented in this paper was from the US Center for Disease Control and Prevention (TEPHINET) (NU2GGH001873-02-00). The full evaluation is receiving support from the Canadian International Development Research Centre (grant no. 107604-001), and the Pan American Health Organization. MA is funded through a Gates Cambridge PhD Scholarship. JA is funded by the Centre for Diet and Activity Research (CEDAR), a UKCRC Public Health Research Centre of Excellence. Funding from the British Heart Foundation, Cancer Research UK, Economic and Social Research Council, Medical Research Council, the National Institute for Health Research, and the Wellcome Trust, under the auspices of the UK Clinical Research Collaboration, is gratefully acknowledged.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات