

Sugar and health in South Africa: Potential challenges to leveraging policy change

Alex Myers, David Fig, Aviva Tugendhaft, Jessie Mandle, Jonathan Myers & Karen Hofman

To cite this article: Alex Myers, David Fig, Aviva Tugendhaft, Jessie Mandle, Jonathan Myers & Karen Hofman (2015): Sugar and health in South Africa: Potential challenges to leveraging policy change, *Global Public Health*, DOI: [10.1080/17441692.2015.1071419](https://doi.org/10.1080/17441692.2015.1071419)

To link to this article: <http://dx.doi.org/10.1080/17441692.2015.1071419>



Published online: 28 Aug 2015.



Submit your article to this journal [↗](#)



Article views: 221



View related articles [↗](#)



View Crossmark data [↗](#)

Sugar and health in South Africa: Potential challenges to leveraging policy change

Alex Myers^a, David Fig^{b,c,d}, Aviva Tugendhaft^a, Jessie Mandle^a, Jonathan Myers^e and Karen Hofman^a

^aPRICELESS SA- MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health-Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa;

^bEnvironmental Evaluation Unit, University of Cape Town, Cape Town, South Africa; ^cSociety, Work and Development Institute, University of the Witwatersrand, Johannesburg, South Africa; ^dTransnational Institute, Amsterdam, Netherlands; ^eCentre for Environmental and Occupational Health Research, School of Public Health and Family Medicine, University of Cape Town, Cape Town, South Africa

ABSTRACT

A growing body of evidence indicates that excessive sugar consumption is driving epidemics of obesity and related non-communicable diseases (NCDs) around the world. South Africa (SA), a major consumer of sugar, is also the third most obese country in Africa, and 40% of all deaths in the country result from NCDs. A number of fiscal, regulatory, and legislative levers could reduce sugar consumption in SA. This paper focuses on a sugar-sweetened beverage (SSB) tax. The purpose of the paper is to highlight the challenges that government might anticipate. Policies cannot be enacted in a vacuum and discussion is focused on the industrial, economic, and societal context. The affected industry actors have been part of the SA economy for over a century and remain influential. To deflect attention, the sugar industry can be expected either to advocate for self-regulation or to promote public-private partnerships. This paper cautions against both approaches as evidence suggests that they will be ineffective in curbing the negative health impacts caused by excessive sugar consumption. In summary, policy needs to be introduced with a political strategy sensitive to the various interests at stake. In particular, the sugar industry can be expected to be resistant to the introduction of any type of tax on SSBs.

ARTICLE HISTORY

Received 7 July 2014
Revised 1 April 2015
Accepted 27 May 2015

KEYWORDS

Sugar; sugar-sweetened beverage tax; obesity; non-communicable diseases; industry challenges

Introduction

Sugar: a chronic toxin

Excessive sugar consumption is a serious public health concern worldwide and has led in recent decades to a sharp increase in obesity and associated non-communicable diseases (NCDs) such as diabetes (Malik et al., 2010), cardiovascular disease (Yang et al., 2014), cancer (Chocarro-Calvo, García-Martínez, Ardila-González, De la Vieja, & García-Jiménez, 2013), and dental caries (Touger-Decker & Van Loveren, 2003). In 2013, 42% of women and 13.5% of men over 20 years of age had a Body Mass Index greater than

or equal to 30 kg/m^2 , making South Africa (SA) the third most obese nation on the African continent (Murray et al., 2013) (Figure 1) and 17th in the world (http://www.who.int/gho/ncd/risk_factors/overweight/en/). The obesity epidemic poses an especially serious threat in SA, a setting in which the HIV-positive adult population is simultaneously set to grow.

A 2013 study estimates that, in SA, the annual incidence of amputations from diabetes is approximately 2000 and of blindness is 8000 (Bertram, Jaswal, Pillay Van Wyk, Levitt, & Hofman, 2013). NCDs in general account for 40% of all deaths in the country (South African National Department of Health [NDoH], 2013, p. 18). Sixty per cent of 6-year-olds have tooth decay and only 2% of 44-year-olds have healthy gums (NDoH, 2013). In SA, one of the most unequal societies in the world, the poor in particular cannot afford quality health care and die prematurely from NCDs. As a result of conditions such as diabetes and stroke, a 'poverty spiral' is created in which poor health and disability lead to a labour force with diminished capacity. This in turn leads to slower economic growth, which exacerbates the original problems of poverty and inequality.

SA ranks number eight worldwide for sugar consumption (Koo & Taylor, 2011). 'Free' sugars refer to 'monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit concentrates' (World Health Organisation [WHO], 2014a, p. 3). In SA, 'sugar' typically refers to white granular sucrose, which is refined from sugarcane sap. The average South African consumed 36.4 kg of sugar in 2012–2013 (South African Sugar Association [SASA], 2013). Overconsumption of sugar among children is especially concerning. The recommended limit for prepubescent children is 15 g per day (Johnson et al., 2009, p. 1013; WHO, 2014a),¹ but sugar intake among six to nine-year-olds in 1999 ranged from 22 g per day in the Eastern Cape to 57 g per day in the Western Cape. Countrywide, the average

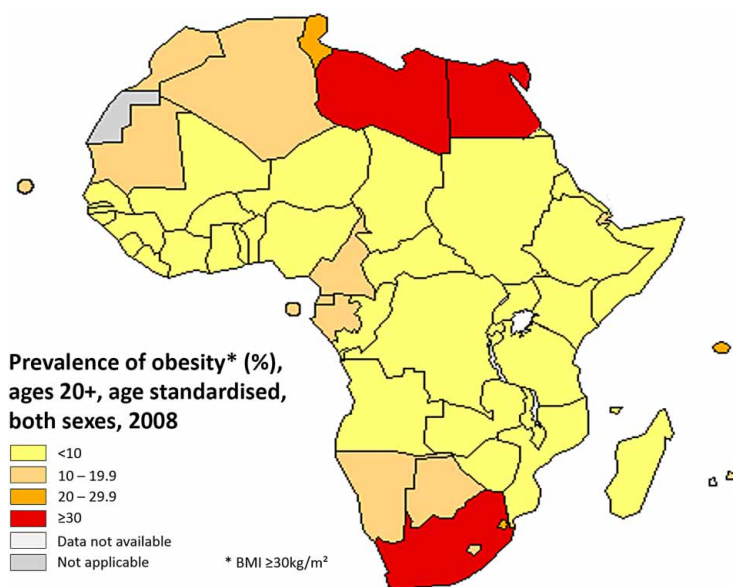


Figure 1. Prevalence of obesity in Sub Saharan Africa.
Source: World Health Organisation (WHO) (2011).

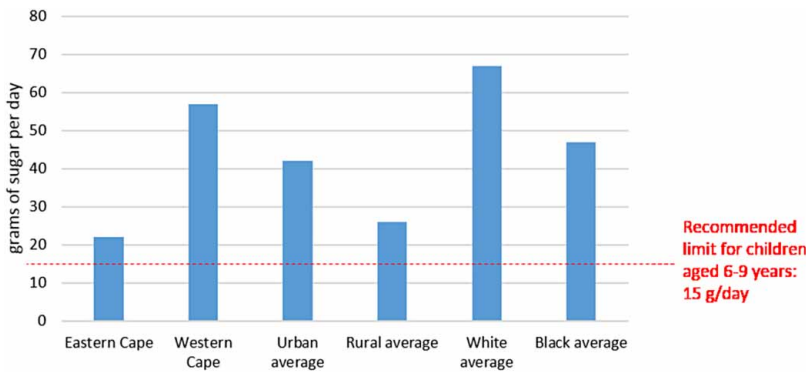


Figure 2. Consumption of sugar by children aged six to nine years in South Africa – 1999 National Food Consumption Survey.

Source: Steyn and Temple (2012).

intake in urban areas was 42 g and in rural areas 26 g. White children consumed significantly more sugar than black children: 67 g and 47 g, respectively (Steyn & Temple, 2012) (Figure 2).

Feasibility of fiscal and legal regulation in SA

Current evidence suggests that a tax on sugar-sweetened beverages (SSBs) would be particularly effective in reducing obesity and associated NCDs. This is because (1) liquid sugar calories are especially harmful – drinking just one SSB per day increases an adult's likelihood of being overweight by 27% and a child's by 55% (Morenga, Mallard, & Mann, 2013); (2) SSBs are less satiating than solid sources of sugar, leading to the greater likelihood that they will be consumed in excess; (3) they contain little else apart from sugar, artificial chemicals, and water; (4) they account for around one-third of all sugar consumed by the average South African;² (5) such a tax has already been implemented with varying amounts of success in other lower and middle-income countries (LMICs) with epidemics of obesity and related NCDs; and (6) it would send a clear message to the public and raise awareness about sugar, which is necessary in an environment where marketing and other industry practices are confusing the public and undermining the ability of consumers to make healthy choices. According to its *Strategic plan for the prevention and control of non-communicable diseases 2013–17*, the NDoH considers a tax on unhealthy foods – specifically those 'high in fats and sugar' – to be 'very' cost-effective (2013, pp. 30–31). New research has found that a 20% tax on SSBs in SA would reduce obesity by 3.8% in men and 2.4% in women in one year, resulting in a reduction of the absolute number of obese people by 220,000 over that same period.³

None of this is to suggest that an SSB tax alone will be sufficient; it should rather be seen as one of a raft of measures that might be taken to limit the public's consumption of sugar. The purpose of this paper is to highlight the fact that none of these will be applied within a societal vacuum. Significant resistance can be expected from related industry sectors, chiefly sugar and soft drinks. These countervailing pressures need to be understood before government can embark strategically upon any policy involving sugar regulation.

Methodology

This paper is a narrative review of potential challenges surrounding the regulation of sugar in SA. The issues reviewed are as follows. (1) Evidence regarding the link between sugar and NCDs both globally and in SA. (2) Evidence for the effectiveness of an SSB tax, as well as for alternatives to government regulation (voluntary industry self-regulation and public-private partnerships). PubMed was used to search for and select key academic articles relevant to (1) and (2). (3) Challenges involved in adopting such a tax in SA. In considering these, the paper adopts a whole-of-society approach, following Walt and Gilson's (1994) 'policy triangle' (Figure 3) of stakeholders (p. 354). The challenges are considered in light of the nature of the intervention itself (*content*), the societal and historical *context* in which these occur, as well as aspects of the *process* of implementing them. The *actors* discussed include government, industry, the media, and the consumer public, and each of these is considered, where possible, at the level of *individuals* as well as at a collective level (*as members of groups*). The term sugar industry is used flexibly in the following text and refers to the collectivity of actors in the production, manufacture, and distribution of sugar (either as a product *per se* or in other products). There is a particular emphasis on sugar producers. In order to inform (3), academic articles, books, and online publications in the social, environmental, and geographical sciences, as well as media, government, and market reports (either online or in print) were selected according to their relevance to the questions raised. Given that the paper is concerned chiefly with (3), it may be useful to policy-makers (especially in SA, but also elsewhere) in the initial two stages of developing policy, 'agenda setting', and 'formulation', according to the four-stage heuristic first proposed by Lasswell (1956) and subsequently developed further by others (Brewer & deLeon, 1983; Walt et al., 2008).

Comparisons with the regulation of alcohol, tobacco, and salt

The regulation of widely consumed, harmful substances other than sugar is far from unprecedented. In SA, alcohol and tobacco have already been regulated for some time in a variety of ways. So-called 'sin taxes' have been placed on alcohol and tobacco for decades and are considered by government to be a 'best buy' (i.e. highly cost-effective, deterring consumption of these products as well as raising tax revenue). There have also been restrictions on the advertisement of both, especially tobacco. All tobacco products and alcoholic beverages now contain labels warning the consumer of the health

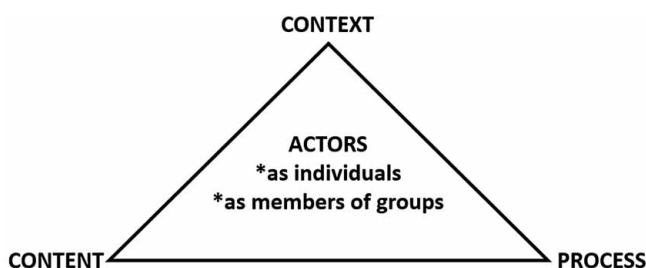


Figure 3. Policy triangle.
Source: Walt and Gilson (1994).

risks involved in their consumption. Liquor stores have traditionally been closed on Sundays and recently, in the Western Cape, legislation has been introduced restricting the availability of alcohol during the week (Western Cape Liquor Act, 4 of 2008, as amended by the Western Cape Liquor Amendment Act, 10 of 2010).

More recently, the South African government created new regulations to limit the amount of salt – which is linked to hypertension – in certain staples, such as bread, cereals, butter, and processed meats (SA Government Gazette, 2012, pp. 6–7). Over a period of three years, from 2016 to 2019, manufacturers of these and other foods are expected to comply with progressively lower limits on their sodium content (Hofman & Lee, 2013, pp. 6–7). Although it is too soon to appraise such a policy in full, mathematical modelling shows that reducing the sodium content of bread from 650 to 350 mg per 100 g would prevent 8% of strokes, 6.5% of ischaemic heart disease, and 11% of hypertensive heart disease, which would result in 7400 fewer deaths from cardiovascular disease, including 4300 fewer non-fatal strokes per year. The savings from hospitalisation alone would be ZAR350 million per year (Hofman & Lee, 2013, p. 6).

Unlike alcohol and tobacco, salt does not cause harm directly to others. The harm is self-inflicted, assuming at least, that consumers are informed about the health risks of high sodium intake and have no dependents. Nevertheless, this harm is very serious from a public health perspective. In these respects, salt is more like sugar. In the case of sugar, however, no regulatory action has yet occurred, with the exception of some self-regulatory measures adopted by industry. These include a pledge by the soft drink industry that it will not market its products to children under 12 years of age (Consumer Goods Council of SA, 2009, p. 5), but the reality is that children remain exposed to soft drink advertisements on television, billboards, and the internet as well as through sports promotion (Hawkes & Harris, 2011). The products themselves sometimes also contain cartoon images, which are aimed at children, or increase the appeal of these products for them.

The South African sugar industry

Like the tobacco and alcohol industries, the sugar industry constitutes a significant part of the economy and has long been embedded in the industrial landscape. The industry began in the 1850s, and its history is intertwined with the country's colonial and racist past. Between 1860 and 1911, approximately 150,000 Indian labourers were imported from the Indian subcontinent into the British colony of Natal (Dubb, 2013, p. 2) (Figure 4). As the colony expanded, the industry increasingly relied on Zulu labour (Dubb, 2013, pp. 2–3). By 1910, the sugar industry was an oligopoly consisting mainly of the same three producers that continue to dominate the industry today: Illovo, Tongaat-Hulett, and TSB (Transvaal Sugar Limited) (Lewis, 1990, p. 70) (Figure 5). SA sugar production continued to increase throughout the first part of the twentieth century and enjoyed a long boom, especially after the Second World War (Lewis, 1990, p. 73; Tinley, 1954, pp. 43–44). From the late 1980s onwards, however, production began to exceed consumption. This prompted the industry to investigate the possibility of producing ethanol, but this avenue was abandoned after opposition from the oil industry ('Oil firms', 1987, p. 8). Post-1994, following SA's regional re-integration, Illovo and Tongaat-Hulett began expanding into Swaziland, Zambia, and Mozambique, where labour and production costs were lower. Deregulatory measures adopted by the Department of Trade and

Industry (DTI) during this period also put the sugar industry's operations in SA under some strain (Dubb, 2013, pp. 10–18; Godfrey, Lincoln, Theron, & Tuomi, 2003).

Present state of the sugar industry

In recent years, the industry has lobbied for protectionist measures mostly out of concern for cheap sugar imports from Brazil and India (Hedley, 2014). In April 2014, an application by the industry for an increase in the import tariff on sugar was granted by the DTI. The tariff was raised by 58%, but this increase was not as much as the 113% that the industry had requested. It was, however, significant enough to be met with objections from retailers, importers, and the Botswana Ministry of Trade and Industry, all of which argued that it would lead to price increases and harm downstream industries. The International Trade Administration Commission (within the DTI), however, denied that the proposed tariff increase would have any substantial effect on the price of sugar in SA, and concluded that it would lead to greater productivity and profitability for the local industry (Visser, 2014). Perhaps one of the industry's most persuasive arguments, from the Commission's point of view, was that failing to increase the tariff might mean that 'jobs could be at risk at black-owned millers and cane growers' (Hedley, 2014). The sugar industry is well aware of the high priority placed by government on Black Economic Empowerment and promotes itself as 'highly empowered' (Hedley, 2014). It has also attempted to create a new small-scale grower class in the former SA homelands (Bantustans), which remain underresourced. According to an industry representative;

We are not doing this only by ourselves, many stakeholders are on board, including the Department[s] of Agriculture and Land Reform. The aim of this project is to use the 'free' communal land to plant sugarcane for the purpose of providing the country with adequate sugar for the future. This also creates job opportunities for local people. (Dlamini, 2014)



Figure 4. Indian indentured labourers cutting sugarcane in Natal in the nineteenth century.

Source: The Gandhi-Luthuli Documentation Centre, University of KwaZulu-Natal, SA. http://www.thehindu.com/opinion/columns/Kalpana_Sharma/the-other-half-at-the-crossroads-of-identity/article900234.ece

Under current conditions, however, the industry can scarcely afford to pay small-scale growers a living wage (Dubb, 2013, pp. 16–17). The benefits of such a project can thus be expected to accrue mainly to the industry.

The idea of converting surplus sugar into ethanol is also being revisited by the industry as a long-term strategy to increase its profits. From 1 October 2015, fuel producers will be required ‘to blend diesel and petrol with biofuels, such as ethanol’ (Prinsloo, 2014). The industry has said, however, that it will be unable to afford conversion of sugar mills into ethanol-producing facilities – which would cost some ZAR20 billion – without government subsidies. Meanwhile, the industry is expanding its operations in other Southern African countries. One reason for this is tax related. In Zambia, for instance, one producer has avoided paying some ZAR185 million in tax revenue to the government (Lewis, 2013). There are also fewer hurdles involved in acquiring land elsewhere in Southern Africa. In Mozambique, another producer managed to acquire over 30,000 hectares of land, displacing whole communities of subsistence farmers in the process and poisoning their water supply (Ferro, 2012). This increasing regional investment will likely be accelerated by a sugar workers’ strike in SA in 2014, the first such strike since 1997 (Mkhize & Gernetzky, 2014). Five thousand five hundred workers, chiefly represented by the Food and Allied Workers’ Union demanded an 11% wage increase, a 40-hour working week, and a housing allowance of ZAR800 per month (‘Sugar strike ends’, 2014). If further strikes occur, this could put industry under significant additional financial strain.

Consumption trends in SA

Rising average incomes, coupled with the ubiquity of high-sugar ultra-processed foods,⁴ has led to a rapid increase in sugar consumption in SA during the latter part of the twentieth century. An example of this is the remarkable 10-fold increase in sugar consumption by the rural Zulu population – who inhabit SA’s sugar cane-growing

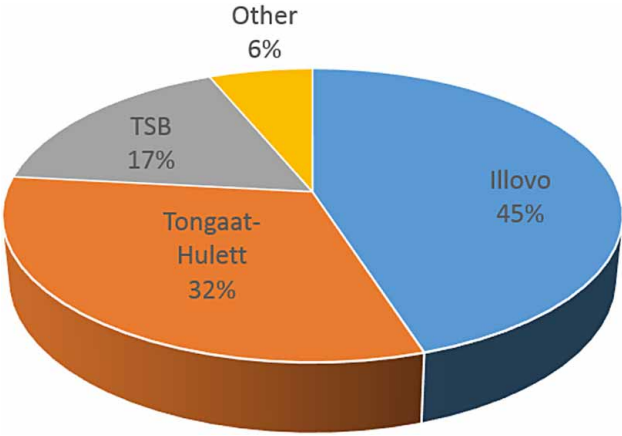


Figure 5. Major sugar producers in South Africa (by market share).
Source: National Department of Agriculture, Republic of South Africa (2006).

region – from under 3 kg of sugar per year in 1953 to nearly 30 kg in 1964 (Yudkin, 1986, p. 39). A 1981 study showed that black urban South African teenagers aged 16–18 consumed 45%–71% more sugar than their rural counterparts (Walker et al., 1981). Another study from 1975 revealed that white South African 16–17-year-old teenagers were consuming about 49 kg of sugar per year (Walker, 1975). In the late 1950s, one-fifth of all the sugar consumed in SA was found in ultra-processed foods such as confectionary, ice creams, soft drinks, cakes, and biscuits (Yudkin, 1986, p. 47). In 2012, soft drinks alone constituted about one-third of sugar in the South African diet. Coca-Cola has a monopoly over soft drinks in SA with approximately 60% of the market share, while 30 smaller companies account for the remaining 40% (Euromonitor International, 2013).

In recent years, as mentioned, the increase in sugar consumption has slowed, but consumption remains high. According to SASA (2013), the average amount consumed per person per day – 23.5 teaspoons, or about 99 g – is four times that of the new WHO recommendations (Figure 6).⁵ In March 2014, the WHO revised its recommended limit of sugar to 5% of daily calories (World Health Organisation, 2014a, p. 3), approximately equivalent to six teaspoons, or about 25 g. This means that consuming a single 330 ml soft drink (which contains seven to eight teaspoons of sugar) per day should be considered excessive. From a dental health point of view, the recommended limit is even lower at 2–3% (Scheiham & James, 2014). Meanwhile, soft drink sales in SA are projected to increase by nearly 13% between 2012 and 2017 (Euromonitor International, 2013).

SA SUGAR SUPPLIES INTO SACU MARKET

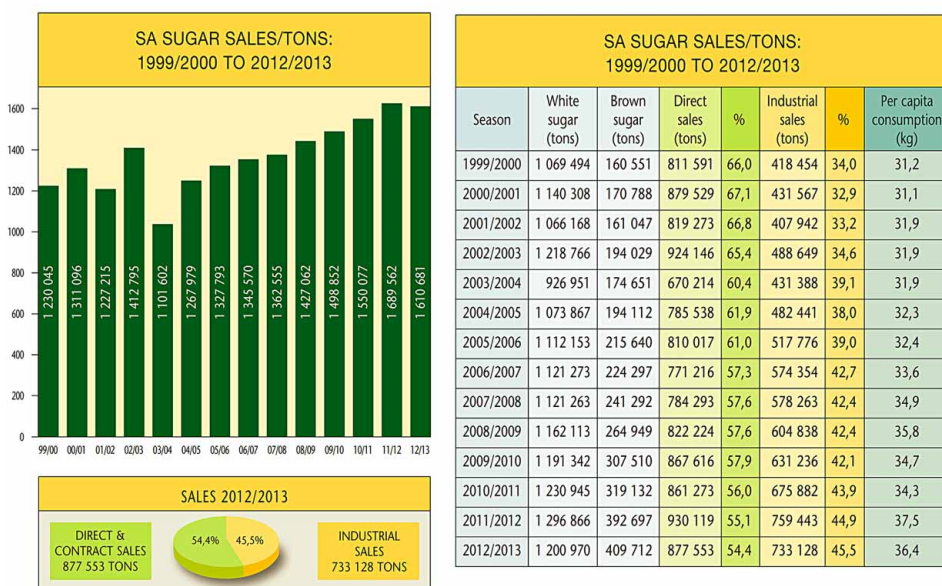


Figure 6. South African sugar supplies into the South African customs union market.

Source: South African Sugar Association (2013). <http://www.sasa.org.za/Files/SA%20sugar%20supplies%20into%20SACU%20market%202013.pdf>.

Industry response to SSB taxes

Industry response worldwide

In those countries that have recently imposed a tax on SSBs, industry response has varied. In Mexico, for instance, ‘bottlers and food companies ... launched an aggressive media campaign against the tax’, proposed by their president in 2013 (Estevez, 2013). President Peña Nieto intended the revenue from the tax, approximately 15 billion pesos (ZAR12.2 billion), to be ‘earmarked for drinking water in schools – in some communities there is none, while in others it is not potable and bottled soft drinks are safer’ (Boseley, 2014). In response, full-page advertisements in Mexican newspapers proclaimed, ‘You don’t fight obesity with taxes’ (Estevez, 2013). The proposed tax was blamed on ‘foreign influences’, such as the wealthy former New York Mayor Bloomberg (Estevez, 2013). The pretext for this was that Consumer Power, a Mexican NGO that lobbied for the SSB tax, receives funds from Bloomberg Philanthropies. Mexico’s largest TV network refused to air pro-tax advertisements (Estevez, 2013). After the SSB tax was imposed in the face of this fierce opposition, one Mexican bottler responded by announcing that it may have to switch from cane sugar to the cheaper alternative of high fructose corn syrup (Flannery, 2013).

In the USA, SSB taxes and similar measures such as New York Mayor Bloomberg’s proposed ban on soft drinks of more than 16 fluid ounces (or 473 ml) have consistently been opposed by industry. One exception to this was industry cooperation on a soft drinks ban in schools (Burros & Warner, 2006). In 2009, there were SSB taxes in 33 US states, but public health researchers argued that at a mean rate of 5.2%, these were too low to have any deterrent effect (Brownell et al., 2009). In opposition to existing SSB taxes as well as to any increase or further spread of these, a group called Americans Against Food Taxes was set up in 2009 with financial support from a number of large food and beverage companies (‘Tax Soft Drinks’, 2009). Although such lobbying has generally been unsuccessful, one of its main victories was a legal one against Mayor Bloomberg’s proposed ban. In June 2014, the New York State Court of Appeals upheld two lower court judgments declaring the ban unconstitutional on the basis that it violated separation of powers (Ax, 2013; Grynbaum, 2014).

In Europe, industry has been less hostile. When France’s SSB tax came into effect in 2012, industry announced that it would compensate for the tax by increasing soft drink prices by as much as 35%. Assuming negative price elasticity, this would deter consumers to an even greater extent from consuming too many SSBs. Coca-Cola, however, announced that it would suspend a €17 million (ZAR257 million) investment near Marseille in ‘a symbolic protest against a tax that punishes our company and stigmatizes our products’ (‘French “Cola Tax”’, 2011). Food manufacturers in Hungary have responded to that country’s tax by complaining that ‘the government should at least consult them before introducing a tax that will likely heavily impact the future of Hungarian food processing, which is already facing hardships due to the economic crisis’ (Gulyas, 2011). Denmark, meanwhile, which had maintained a soft drink tax since the 1930s, abolished it at the start of 2014 as part of a government strategy ‘to create jobs and boost the economy’ (Scott-Thomas, 2013). Danish excise duties remain, however, on other products high in sugar such as confectionery and ice cream (Scott-Thomas, 2013).

One industry-funded study showed that a US 10 cent tax on a 12 ounce (355 ml) SSB would lead to a loss of 210,000 jobs in the American beverage industry and 150,000 jobs in

related industries (Hahn, 2009). An independent study has shown, however, that a 20% SSB tax would actually result in small *increases* in overall employment (Powell, Wada, Persky, & Chaloupka, 2014). This is because the money not spent on soft drinks would be spent elsewhere by consumers. There would also be an increase in government jobs, as people would need to be employed in order to enforce the tax. When these factors were taken into account, there was a net increase in employment in both Illinois (0.06%) and California (0.03%). This latter study concluded that ‘SSB taxes do not have a negative impact on state-level employment’ and went on to warn that ‘industry claims of regional job losses are overstated and may mislead lawmakers and constituents’ (Powell et al., 2014, pp. 675–676).

Industry also continues to dispute, just as the tobacco industry did for decades, the very harmfulness of its products. It has funded many of its own studies, which show no association between sugar consumption and overweight or obesity. A recent meta-analysis, however, casts doubt on these studies. While five out of six studies funded by industry found no association between sugar consumption and weight gain, the exact same proportion of independently funded studies found a clear one (Bes-Rastrollo, Shulze, Ruiz-Canela, & Martinez-Gonzales, 2013).

Self-regulation

To the extent that industry acknowledges the problem of excessive sugar consumption, it usually proposes self-regulation as the most appropriate solution (Chan, 2013). Reliable evidence for the effectiveness of self-regulation is limited. One independent study, however, has evaluated a voluntary (US) industry pledge to sell 1 trillion fewer calories by 2012 and 1.5 trillion fewer calories by 2015 (from a 2007 baseline) (Ng, Slining, & Popkin, 2014, pp. 508–519). The authors conclude that industry succeeded in meeting – and even exceeding – the 2012 target, but go on to note several important caveats (Ng, Slining, & Popkin, 2014, p. 508). The evaluation only concerned the Consumer Product Goods sector and therefore did not take into account fast food (Ng, Slining, & Popkin, 2014, pp. 516–517):

Moreover, because the ... pledge only refers to changes in calories sold, this evaluation does not look at other measures of nutritional concern. Changes in intakes of solid fats, added sugars, refined carbohydrates, and sodium were not specifically examined, but their levels are still too high in the U.S. (Ng, Slining, & Popkin, 2014, p. 517)

A crucial question, therefore, is whether the current calorie reduction trajectories can be sustained in the future. The authors express some doubt over this (Ng, Slining, & Popkin, 2014, p. 516). They also leave room for optimism, however. Recent research shows that ‘industry efforts to reduce excess calories sold through product reformulation, changes in portion size, and marketing do not need to be at odds with profits and may actually lead to improved corporate bottom lines’ (Ng, Slining, & Popkin, 2014, p. 517).

Public–private partnerships

In September 2011, just two days after the United Nations General Assembly concluded a conference on the prevention and control of NCDs (<http://www.un.org/en/ga/president/65/issues/ncdiseases.shtml>), UN Women – an organisation formed in July 2010 –

announced a public–private partnership with The Coca-Cola Company ‘to promote women’s economic empowerment’ (UN Women, 2011). The partnership aims to achieve this goal ‘by building upon the strengths of both organizations’ (UN Women, 2011). In SA, it would involve providing business training, mentoring and capital to ‘a total of 25,000 women entrepreneurs, many of whom are running small retail businesses [e.g. so-called “spaza shops”] within the Coca-Cola value chain’ (UN Women, 2014).

From industry’s point of view, there are few if any disadvantages to such a partnership, through which it can improve its public relations. The Director for Gender and Women Empowerment at the SA DTI, for instance, has said that she was ‘encouraged’ by this ‘display of corporate citizenry’ (Maqutu, 2014). The juxtaposition of the UN imprimatur and Coca-Cola logo is a huge asset for the company in terms of promoting its brand, particularly in remote rural areas. These strategies, which are ultimately good for industry’s ‘bottom line’, have been described as ‘corporate capture’, that is, the capture by corporations of the public sector (Mindell, Reynolds, Cohen, & McKee, 2012).

Such a partnership thus raises some serious questions from the perspective of UN Women. According to its official website, ‘Several international agreements guide the work of UN Women’ (<http://www.unwomen.org/en/about-us/guiding-documents>). These include the Millennium Declaration and Millennium Development Goals, which are summarised on UN Women’s website as ‘a set of time-bound and measurable goals and targets to promote gender equality and to combat poverty, hunger, *disease* [emphasised here], illiteracy and environmental degradation by 2015’ (<http://www.unwomen.org/en/about-us/guiding-documents>). While these goals ought not to be pursued in such a way that they conflict with one another, it is inevitable that partnerships with SSB companies could result in the achievement of some only at the expense of others. On the one hand, the economic empowerment of women, especially in LMICs, will contribute towards greater gender equality and the alleviation of poverty. On the other hand, the more successful these women-led businesses are, the more SSBs will be sold and the worse the obesity epidemic – which affects women especially badly – will become. Moreover, the growth of SSB industries in SA will probably result in greater environmental devastation. Sugar production is both water- and land-intensive, and leads to a large amounts of (especially water) pollution, affecting downstream producers (Fig. 2007, p. 174).

A 2013 study cautions governments against ‘public–private partnerships’, which are at best an attempt to delay government regulation of industry and at worst ‘a means for industry to co-opt public health’ (Moodie et al., 2013, p. 675). The authors conclude that ‘there is no evidence that the partnerships with ... ultra-processed food and drink industries are safe or effective, unless driven by the threat of government regulation ... Regulation or the threat ... [thereof], is the only way to change transnational corporations’ (Moodie et al., 2013, pp. 676–677). The UN itself seems to have arrived at the same conclusion. In 2014, the UN Human Rights Council published a report specifically addressing the issues of ‘unhealthy foods, NCDs and the right to health’, which also treats the idea of public–private partnerships with scepticism:

Collaboration between Governments and food corporations has been recommended as an alternative to self-regulation. One of the major reasons cited ... is that food corporations have the ability to promote healthier dietary habits and are therefore a part of the solution to reduce and prevent the obesity epidemic. However, the conflict of interest between the State’s duty to promote public health and companies’ responsibility

towards their shareholders to increase profits renders private – public partnership suspect. (2014, p. 10)

The WHO, for its part, ‘does not engage with industries making products that directly harm human health, including specifically the tobacco and arms industries’ (2014b, p. 3). Since a single 330 ml soft drink exceeds the WHO’s recommended limit for sugar, this might reasonably be interpreted to include the SSB industry.

Addressing the challenges of the sugar industry

At its worst, industry has actively sought to frustrate the public health goals of government organisations. In 2003, when the WHO recommended that sugar should account for 10% or less of daily calories, the US sugar industry attempted to intimidate the organisation by threatening to withdraw its funding (\$406 million) unless it raised this to 25% of daily calories (Boseley, 2003, pp. 831–832). Although the attempt was unsuccessful, this episode serves to illustrate the lengths to which industry may go in opposing any moves that it perceives as being against its interests.

The experiences globally show that industry resistance can be overcome, even in the USA, with its large industry-funded lobby groups and much stronger free market tradition. In a country with a high unemployment rate, however, policy advisors will be expected to make a strong case that there will be no net job losses, at least not in the long term. Perhaps by employing similar modelling techniques to those used by Powell et al. (2014) in the USA, this could be shown convincingly for SA. An even more broad-minded policy might look into the possibility of gradual long-term crop substitution. This would ensure not only that those employed by the sugar industry have the option of remaining in the agricultural sector, but also that sugar is replaced with nutritious alternatives. KwaZulu-Natal, where most of SA’s sugarcane is currently grown, has an ideal climate for maize, round beans, jumbo beans, cowpeas, sesame seeds, and ground nuts in the summer, and onions, spinach, beetroot, peppers, lettuce, tomatoes, cabbages, pumpkins, and butternut in the winter. Many of these crops were traditionally grown in the region before the advent of sugar; for this reason, their cultivation would also be less water-intensive and less environmentally destructive (Personal communication with Lawrence Mkaliphi of Biowatch, an SA sustainability NGO, 2014).

The sugar industry in SA can be expected to offer significant resistance to a tax that might weaken it any further. According to SASA’s official website, ‘sugar is not the new tobacco’ and ‘myths about sugar’ include: ‘sugar makes you gain weight’, ‘sugar is addictive’, ‘sugar gives you diabetes’, and ‘sugar rots your teeth’ (<http://www.sasa.org.za/SugarandHealth/Mythsaboutsugar.aspx>). This information either distorts or contradicts current scientific evidence and serves to confuse the public.

Media response and public opinion

South African media response to the proposed SSB tax

The SA media have been broadly sympathetic to the idea of a sugar tax or other forms of regulation such as warning labels similar to those currently found on tobacco products (Ashton, 2014; Holmes, 2013; ‘Protecting a poison’, 2014). Some in the media, however,

have voiced concerns about the emergence of a ‘nanny state’. One striking example of this is an article by a representative of the South African Free Market Foundation:

Taxing sugar and other ‘sinful products’ is a blunt instrument that, besides treating adults like children, diverts attention from the government’s insatiable appetite to control people’s lives and to raise revenue by any means possible.

The unhealthy appetite belongs not to those consumers of sugar, but the taxpayer. If you are an individual concerned about your health, take charge of your own life – don’t shrug off your personal responsibilities and entrust your health care to a non-existent collective. There is no such thing as ‘public health’. (Nolutshungu, 2014)

The extent to which such libertarian arguments enjoy support in SA is unclear, but they ought to be addressed. The provocative statement that there is ‘no such thing as “public health”’ is especially troubling (Nolutshungu, 2014). The main drivers of sugar consumption are not individual, but environmental. Individuals overconsume due to (physical, social, political, economic, and legal) macro-level factors beyond their control, which determine the price, availability, promotion, and marketing of high-sugar products. When one considers all this, as well as the fact that the sugar industry is likely behind these drivers, it becomes clear that governments have a duty to act and to protect people by creating an environment in which consumers can make healthier choices free of constant and overwhelming pressures to consume sugar. It should also be pointed out ‘nanny state’ arguments rely heavily on an artificial ‘slippery slope’ from regulation of potentially harmful substances – such as tobacco, alcohol, salt and sugar – to regulation of all our personal choices.

The importance of the media

The media has the potential to relay independent and reliable information to the public about the negative health consequences of consuming too much sugar. Some individuals would undoubtedly continue to overconsume whether or not they have access to this information. However, as was the case with tobacco, accurate media portrayal of the situation may lead over time to a shift in public attitudes and changes in the general diet.

Public opinion regarding an SSB tax

It is unclear how many South Africans would favour an SSB tax, but an opinion poll conducted in Mexico, another large LMIC, is instructive. When polled simply on whether or not they would support an SSB tax, under half of respondents replied in the affirmative, but this increased to 70% when they were told that the tax revenue would be used to fund obesity prevention programmes and the provision of clean water in schools (Bittman, 2013). Even in the USA, where one might expect to encounter greater suspicion among the public towards any new taxes, majorities in northern as well as southern states agreed with the idea of an SSB tax, provided that the revenue would go towards obesity prevention programmes, oral health programmes, and healthcare programmes for lower and middle-income children. A lesson that may be drawn from these examples is that SSB taxes ‘are most likely to receive public support when the revenues are designated to promote the health of key groups, such as children and underserved populations’

(Friedman & Brownell, 2012, p. 5). This lesson should be applicable to SA as well, although opinion polls would need to be conducted there in order to confirm this.

Conclusion

Before adopting and implementing an SSB tax, public health experts need to be cognisant of persisting complex societal obstacles. The main challenge comes from vested interests. Aggressive marketing and advertising campaigns, including corporate social responsibility initiatives, ensure that excessive consumption remains the social norm. This is especially the case in emerging economies such as SA with growing populations that can afford SSBs and other low-cost, high-sugar foods. Current consumption trends, if allowed to continue unchecked, will likely lead to unprecedented rates of obesity and related NCDs. In 2014, the WHO revised its recommended limit of sugar to 5% of daily calories. Many other countries in the Global South are already taking various steps to bring sugar consumption more in line with this recommendation. SA ought to leverage this inflection point.

One important task is to ensure greater public awareness of the harmfulness of sugar. In order to achieve this, the power of the media should be harnessed. Sugar should be portrayed as the ‘new tobacco’. A public awareness campaign is unlikely to be sufficient, however. An SSB tax is another effective policy that should be considered in order to combat dental caries, obesity and related NCDs. For this to succeed in SA, several challenges must be anticipated. Strategic solutions to overcome them must then be developed.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This project was supported by the International Research Development Centre (IDRC, Canada) [grant number PROP020911E]. The funders had no role in study design or analysis methods, decision to publish, or preparation of the manuscript.

Notes

1. This assumes that prepubescent children will consume between 1200 and 1600 calories in total per day.
2. This approximate figure has been calculated using SASA data on annual per capita sugar consumption for 2012/2013 (36 kg) and data on soft drink sales (Euromonitor International, 2013).
3. Paper currently under review.
4. This paper follows the definition provided by Moodie et al. (2013): ‘Ultra-processed products are made from processed substances extracted or refined from whole foods – e.g., oils, hydrogenated oils and fats, flours and starches, variants of sugar, and cheap parts or remnants of animal foods – with little or no whole foods’ (p. 671).
5. These figures have been calculated by taking the annual per capita sugar consumption for 2012/2013 (36 kg) dividing this by 365, the number of days in the year and then multiplying by 1000 to arrive at an amount in grams. In order to calculate the number of teaspoons, this figure was further divided by 4.2. Figures have been rounded off.

References

- Ashton, G. (2014, January 28). Why sugar tax is a good idea. *Business Day*. Retrieved from <http://www.bdlive.co.za/>
- Ax, J. (2013, July 30). Bloomberg's ban on big sodas is unconstitutional: Appeals court. *Reuters*. Retrieved from <http://www.reuters.com/>
- Bertram, M. Y., Jaswal, A. V. S., Pillay Van Wyk, V., Levitt, N. S., & Hofman, K. J. (2013). The non-fatal disease burden caused by type 2 diabetes in South Africa, 2009. *Global Health Action*, 6, 893. doi:10.3402/gha.v6i0.19244
- Bes-Rastrollo, M., Schulze, M. B., Ruiz-Canela, M., & Martinez-Gonzalez, M. A. (2013). Financial conflicts of interest and reporting bias regarding the association between sugar-sweetened beverages and weight gain: A systematic review of systematic reviews. *PLOS Medicine*, 10 (12). doi:10.1371/journal.pmed.1001578
- Bittman, M. (2013, 29 November). ¡Viva México! *New York Times*. Retrieved from <http://www.nytimes.com/>
- Boseley, S. (2003). Political context of the world health organisation: Sugar industry threatens to scupper the WHO. *International Journal of Health Sciences*, 33, 831–833.
- Boseley, S. (2014, January 16). Mexico enacts soda tax in effort to combat world's highest obesity rate. *The Guardian*. Retrieved from <http://www.theguardian.com/>
- Brewer, G., & deLeon, P. (1983). *The foundations of policy analysis*. Monterey, CA: Brooks/Cole.
- 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, 1599. doi:10.1056/NEJMp0905723.
- Burros, M., & Warner, M. (2006, May 4). Bottlers agree to a school ban on sweet drinks. *New York Times*. Retrieved from <http://www.nytimes.com/>
- Chan, M. (2013, June). *Director-general address*. WHO health promotion conference, Helsinki, Finland.
- Chocarro-Calvo, A., García-Martínez, J. M., Ardila-González, S., De la Vieja, A., & García-Jiménez, C. (2013). Glucose-induced β -catenin acetylation enhances Wnt signaling in cancer. *Molecular Cell*, 49, 474–486. doi:10.1016/j.molcel.2012.11.022
- The Coca-Cola company and UN Women Form Global Partnership to accelerate women's economic empowerment*. (2011, September 22). Retrieved from UN Women official website: <http://www.unwomen.org/en/news/stories/2011/9/the-coca-cola-company-and-un-women-form-global-partnership-to-accelerate-women-s-economic-empowermen>
- Coca-Cola SA and UN Women partner to economically empower women*. (2014, February 18). Retrieved from UN Women official website: <http://www.unwomen.org/en/news/stories/2014/2/coca-cola-partnership>
- Consumer Goods Council of South Africa. (2009). *The South African marketing to children pledge*. Retrieved from: https://www.ifballiance.org/sites/default/files/South_african_marketing_to_children_pledge.pdf
- Dlamini, X. (2014, March 31). Sugar cane project to benefit people. *The New Age*. Retrieved from <http://www.thenewage.co.za/>
- Dubb, A. (2013). *The rise and decline of small-scale sugarcane production in South Africa: A historical perspective* (Working Paper 28). Bellville: PLAAS, UWC.
- Estevez, D. (2013, October 28). Mexico's proposed tax on soda, junk food opposed by billionaire beverage and food barons. *Forbes*. Retrieved from <http://www.forbes.com/>
- Euromonitor International. (2013). *Soft drinks in South Africa: Industry overview United Kingdom*. Euromonitor International. Retrieved from <http://www.euromonitor.com/soft-drinks-in-south-africa/report> (subscription required).
- Ferro, F. (Producer) (2012). *Bitter Harvest* [Television series episode]. In B. Ntuli (Executive Producer), *Special Assignment*. Johannesburg: SABC 3.
- Fig, D. (2007). Chapter 5: The food and drink industry. In D. Fig (Ed.), *Staking their claims: Corporate and environmental responsibility in South Africa* (pp. 173–206). Scottsville: University of KwaZulu-Natal Press.

- Flannery, N. P. (2013, November 7). Mexico may make coca-cola give up cane sugar. *Forbes*. Retrieved from <http://www.forbes.com/>
- French 'Cola Tax' approved: Paris vows to fight deficit and obesity. (2011, December 29). *Der Spiegel*. Retrieved from <http://www.spiegel.de/>
- Friedman, R., & Brownell, K. D. (2012). *Sugar-sweetened beverage taxes: An updated policy brief* (Rudd Report). Yale University. Retrieved from: http://www.yaleruddcenter.org/resources/upload/docs/what/reports/Rudd_Policy_Brief_Sugar_Sweetened_Beverage_Taxes.pdf
- Godfrey, S., Lincoln, D., Theron, J., & Tuomi, K. (2003). Regulation and the sugar product chain in South Africa. In NALEDI et al. (Ed.), *Food sector strategy resource book*. Johannesburg: NALEDI.
- Grynbaum, M. M. (2014, June 26). Bloomberg's ban on big sodas is rejected by final court. *New York Times*. Retrieved from <http://www.nytimes.com/>
- Gulyas, V. (2011, February 28). Hungary to tax hamburgers, soda. *The Wall Street Journal*. Retrieved from <http://blogs.wsj.com/>
- Hahn, R. (2009). *The potential economic impact of a U.S. excise tax on selected beverages* (Report prepared for the American Beverage Association). Washington, DC: Georgetown University, Center for Business and Public Policy.
- Hawkes, C., & Harris, J. L. (2011). An analysis of the content of food industry pledges on marketing to children. *Public Health Nutrition*, 14, 1403–1414. doi:10.1017/S1368980011000607
- Hedley, N. (2014, February 27). Sugar producers seek import protection. *Business Day*. Retrieved from <http://www.bdlive.co.za/>
- Hofman, K., & Lee, R. (2013). *Intersectoral case study: Successful sodium regulation in South Africa*. WHO Regional Office for Africa. Retrieved from http://www.afro.who.int/index.php?option=com_docman&task=doc_download&gid=9240&Itemid=2593
- Holmes, T. (2013, 20 December). Sugar-coating a deadly health crisis. *Mail & Guardian*. Retrieved from <http://mg.co.za/>
- Johnson, R. K., Appel, L. J., Brands, M., Howard, B. V., Lefevre, M., Lustig, R. H., ... Wylie-Rosett, J. (2009). Dietary sugars intake and cardiovascular health a scientific statement from the american heart association. *Circulation*, 120(11), 1011–1020.
- Koo, W. W., & Taylor, R. D. (2011). *Outlook of the U.S. and world sugar markets, 2010–2020* (Agribusiness & Applied Economics 679). Fargo: Center for Agricultural Policy and Trade Studies, North Dakota State University.
- Lasswell, H. (1956). *The decision process*. College Park: University of Maryland Press.
- Lewis, C. A. (1990). The South African sugar industry. *The Geographical Journal*, 156, 70. Retrieved from http://eprints.ru.ac.za/312/1/The_South_African_sugar_industry.pdf
- Lewis, M. (2013). Sweet nothings: the human cost of a British sugar giant avoiding taxes in southern Africa. *ActionAid*. Retrieved from http://eurodad.org/files/integration/2013/02/sweet_nothings.pdf
- Malik, V. S., Popkin, B. M., Bray, G., Després, J. P., Willett, W. C., & Hu, F. B. (2010). Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: A meta-analysis. *Diabetes Care*, 33, 2477–2483. doi:10.2337/dc10-1079
- Maqutu, A. (2014, February 19). Coca-Cola, UN to back women in business. *Business Day*. Retrieved from <http://www.bdlive.co.za/>
- Mindell, J. S., Reynolds, L., Cohen, D. L., & McKee, M. (2012). All in this together: The corporate capture of public health. *British Medical Journal*, 345, e8082. doi:10.1136/bmj.e8082
- Mkhize, N., & Gernetsky, K. (2014, May 28). Unions at odds over sugar producers' 8.5% wage offer. *Business Day*. Retrieved from <http://www.bdlive.co.za/>
- Moodie, R., Stuckler, D., Monteiro, C., Sheron, N., Neal, B., Thamarangsi, T., ... Casswell, S. (2013). Profits and pandemics: Prevention of harmful effects of tobacco, alcohol, and ultra-processed food and drink industries. *Lancet*, 381, 670–679. doi:10.1016/S0140-6736(12)62089-3
- Morenga, L. T., Mallard, S., & Mann, J. (2013). Dietary sugars and body weight: Systematic review and meta-analyses of randomised controlled trials and cohort studies. *British Medical Journal*, 346, e7492. doi:10.1136/bmj.e7492
- Murray, C. J. L., Gakidou, E., Lopez, A. D., Ng, M., Fleming, T., Robinson, M., ... Zhu, S. (2013). 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. *Lancet*. doi:10.1016/S0140-6736(14)60460-8
- National Assembly, Republic of South Africa. (2012). Regulations relating to the reduction of sodium in certain foodstuffs and related matters (R. 533/2012). Government Gazette.
- National Department of Agriculture, Republic of South Africa. (2006). *Sugar*. Retrieved from www.nda.agric.za/docs/FactSheet/Sugar06.pdf
- National Department of Health (NDoH), Republic of South Africa. (2013). *Strategic plan for the prevention and control of non-communicable diseases 2013–17* (RP06/2013). Pretoria: NDoH.
- Ng, S., Slining, M. M., & Popkin, B. M. (2014). The healthy weight commitment foundation pledge calories sold from U.S. consumer packaged goods, 2007–2012. *American Journal of Preventative Medicine*, 47, 508–519. doi:10.1016/j.amepre.2014.05.029
- Nolutshungu, T. (2014, March 6). First tobacco, then sugar, then sex. *The Star*. Retrieved from <http://www.iol.co.za/the-star/>
- Oil firms 'block' ethanol. (1987, June 18). *Business Day*. Retrieved from SA Media, Sabinet Reference: http://reference.sabinet.co.za/sa_media (subscription required)
- Powell, L. M., Wada, R., Persky, J. J., & Chaloupka, F. J. (2014). Employment impact of sugar-sweetened beverage taxes. *American Journal of Public Health*, 4, 672–677.
- Prinsloo, L. (2014, April 27). Sugar looks to ethanol to help pick up speed. *Business Day*. Retrieved from <http://www.bdlive.co.za/>
- Protecting a poison. (2014, February 6). *Business Day*. Retrieved from <http://www.bdlive.co.za/opinion/editorials/2014/02/06/editorial-protecting-a-poison>.
- Scheiham, A., & James, W. P. T. (2014). A new understanding of the relationship between sugars, dental caries and fluoride use: Implications for limits on sugars consumption. *Public Health Nutrition*. doi:10.1017/S136898001400113X
- Scott-Thomas, C. (2013, April 25). Denmark to scrap decades-old soft drink tax. *Food Navigator*. Retrieved from <http://www.foodnavigator.com/>
- South African Sugar Association [SASA] Official Website. (2013–2014). Retrieved from <http://www.sasa.org.za/>
- Steyn, N. P., & Temple, N. J. (2012). Evidence to support a food-based dietary guideline on sugar consumption in South Africa. *BMC Public Health*, 12, 502. doi:10.1186/1471-2458-12-502
- Sugar strike ends with 10% increase for lowest paid workers. (2014, June 7). *SA Labour News*. Retrieved from <http://www.salabournews.co.za/>
- Tax soft drinks to fight obesity, U.S. experts say. (2009, September 16). *Reuters*. Retrieved from <http://www.reuters.com/>
- Tinley, J. M. (1954). *South African food and agriculture in world war II: Volume 6 of food, agriculture, and world war II*. Stanford: Stanford University Press.
- Touger-Decker, R., & Van Loveren, C. (2003). Sugars and dental caries. *American Journal of Clinical Nutrition*, 78, 881S–892S. Retrieved from <http://ajcn.nutrition.org/content/78/4/881S.full.pdf>
- United Nations Human Rights Council (UN HRC). (2014). *Report of the special rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, Anand Grover: Unhealthy foods, non-communicable diseases and the right to health* (Twenty-sixth session, Agenda item 3, Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development). UN HRC. Retrieved from http://www.unscn.org/files/Announcements/Other_announcements/A-HRC-26-31_en.pdf
- Visser, A. (2014, April 8). Sugar import tariff rise 'will lift output'. *Business Day*. Retrieved from <http://www.bdlive.co.za/>
- Walker, A. R. P. (1975). Sugar intake and dental caries in pupils in four South African ethnic groups. *South African Medical Journal*, 49, 617. Retrieved from <http://archive.samj.org.za/1975%20VOL%20XLIX%20Jan-Jun/Articles/04%20April/1.5%20SUGAR%20INTAKE%20AND%20DENTAL%20CARIES%20IN%20PUPIL%20IN%20FOUR%20SOUTH%20AFRICAN%20ETHNIC%20GROUPS.A.R.P.Walker.pdf>

- Walker, A. R. P., Dison, E., Duvenage, A., Faith Walker, B., Friedlander, I., & Aucamp, V. (1981). Dental caries in South African black and white high school pupils in relation to sugar intake and snack habits. *Community Dentistry*, 9, 37–43. doi:10.1111/j.1600-0528.1981.tb01026.x
- Walt, G., & Gilson, L. (1994). Reforming the health sector in developing countries: The central role of policy analysis. *Health Policy and Planning* 9, 353–370.
- Walt, G., Shiffman, J., Schneider, H., Murray, S. F., Brugha, R., & Gilson, L. (2008). ‘Doing’ health policy analysis: Methodological and conceptual reflections and challenges. *Health Policy and Planning*, 23, 308–317.
- Western Cape Liquor Act, 4 (2008), as amended by the Western Cape Liquor Amendment Act, 10. (2010). Retrieved from http://www.sawis.co.za/winelaw/download/Western_Cape_Liquor_Act,_as_amended.pdf
- World Health Organisation. (2011). Global Health Observatory Map Gallery. Retrieved from <http://gamapserver.who.int/mapLibrary/>
- World Health Organisation. (2014a). *Guideline: Sugars intake for adults and children* (Draft guidelines on free sugars released for public consultation). WHO. Retrieved from <http://www.who.int/mediacentre/news/notes/2014/consultation-sugar-guideline/en/>
- World Health Organisation. (2014b). *Framework of engagement with non-state actors: Report by the secretariat* (sixty-seventh world health assembly, Provisional agenda item 11.3 A67/6). WHO. Retrieved from http://apps.who.int/gb/ebwha/pdf_files/WHA67/A67_6-en.pdf
- Yang, Q., Zhang, Z., Gregg, E. W., Flanders, W. D., Merritt, R., & Hu, F. B. (2014). Added sugar intake and cardiovascular diseases mortality among US adults. *JAMA Internal Medicine*, 174, 516–524. doi:10.1001/jamainternmed.2013.13563
- Yudkin, J. (1986). *Pure, white and deadly* (2nd ed.). London: Penguin.