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### Effects of a large breakfast versus large dinner on 24-h blood glucose profiles during a day of prolonged sedentary behaviour



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Evidence indicates that postprandial glucose concentrations may be manipulated by reducing energy consumption at dinner and increasing energy intake at breakfast. It is possible that the effects may be largest for dysglycaemic individuals, particularly those who are inactive on a daily basis. We aim to test the hypothesis that an increased energy intake at breakfast can improve blood glucose metabolism during periods of prolonged sitting in overweight/obese men and women with prediabetes.

To date, nine adults (age:  $58 \pm 5$  y, BMI:  $33 \pm 4$  kg/m<sup>2</sup>) with prediabetes (IFG and/or IGT) have completed two 10 h laboratory visits in a randomised order consisting of sitting uninterrupted for breakfast, lunch and dinner meals of either 20%/30%/50% energy intake (dinner condition) or 50%/30%/20% energy intake (breakfast condition), respectively, with the same meal composition (50% carbohydrate, 20% protein, 30% fat). Continuous glucose monitors (CGM) measured interstitial [glucose] from 0800 on a trial day to 0800 the morning after.

The total 24 h area under the curve (AUC) [glucose] was not different between conditions ( $P=0.49$ ) nor was the mean amplitude of glucose excursions (MAGE;  $P=0.22$ ). The incremental AUC (iAUC) between breakfast and lunch was higher in the breakfast condition ( $P=0.01$ ) but between lunch and dinner was greater for the dinner condition ( $P=0.001$ ). No difference in iAUC between conditions from dinner to 0800 the following day ( $P=0.08$ ) was observed.

Our preliminary findings indicate that while the total 24 h AUC and the MAGE do not support a

difference in blood glucose regulation in response to a large breakfast, a more consistent blood glucose concentration profile was observed across a day in the breakfast condition. These findings suggest that a larger breakfast balanced by a smaller dinner may hold some benefit for the acute regulation of blood glucose during prolonged sedentary behaviour in dysglycaemic individuals.

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### Invited talk: The Mexico experience with SSB and junk food taxes: Impact after 1 and 2 years of the taxes



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From 1 January 2014, Mexico implemented an excise tax of 1 peso per liter on sugar sweetened beverages and an 8% tax on nonessential food products (junk food tax). In both cases, longitudinal models that examined how pretax trends in SSB and food purchases of a representative sample of Mexican urban consumers were studied. A panel of households who kept all receipts and all containers along with registering the location of the purchases were surveyed biweekly to create the longitudinal data used for these analyses. Outcomes were volumes of beverages and grams of foods. The results for both studies on impact of the tax overall and on different socioeconomic (SES) groups were comparable. Consumption declined significantly of the taxed items with the largest impacts in low and middle SES consumers. Purchases of taxed beverages decreased by an average of 6% in 2014 compared with expected purchases without the tax. Furthermore, these reductions became large over time, reaching a 12% decline by December 2014. All three socioeconomic groups reduced purchases of taxed beverages, but the reduction was greatest among households of low socioeconomic status, averaging a 9% decline during 2014 and reaching a 17% decrease by December 2014 compared with pretax trends. For taxed foods, there was a 5.1% decline change beyond what would have been expected

based on pre-tax (2012–2013) trends, with no corresponding change in purchases of untaxed foods. Low SES households showed greater response to the tax, purchasing on average 10.2% less taxed foods than expected, whereas middle and high SES households purchased 5.8% and 2.3% less taxed foods than expected, respectively. Additional research examined trajectories of consumption for high and low consumers prior to the tax and after them. High consumers significantly reduced both SSB's and taxed food much more than others.

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**Invited talk: Enabling healthy food and beverage choices: Is the price right?**



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An unhealthy diet is considered the leading cause of poor health in Australia and globally, including excess weight gain and obesity. The price of foods and beverages has been shown to influence what people consume. Healthier foods and beverages are often more expensive than less healthy options, creating an economic barrier to healthier choices. This is especially true for individuals with lower incomes. Food and beverage pricing strategies can create incentives for purchasing and consuming healthier items. Among various options, taxing unhealthy foods and/or beverages or subsidising fruits and vegetables are two commonly proposed policies to promote healthy diets. Whilst, several countries have been successful in enacting such policies, political obstacles have limited the uptake and implementation of such. This presentation will explore the potential role of food and beverage pricing strategies in a range of contexts and for different population sub-groups. It will draw on current and new methodological techniques for examining the effect of food and beverage pricing strategies on consumer dietary choices and will outline real-world future strategies that alter the relative price of healthy and unhealthy foods to promote healthy choices.

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**Invited talk: Modelling the health impact of taxing sugared drinks in Australia and South Africa**



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Worldwide, countries are experiencing a nutrition transition towards foods of higher energy density, and a rapid increase in obesity is observed. This is contributing to an increasing burden of chronic disease. There is strong evidence that sugar-sweetened beverage (SSB) intake is causally related to increased body mass. Higher SSB prices are associated with reduced consumption of SSBs.

We used established multi-state life table modelling methods and publicly available data to estimate the potential impact of SSB taxes on health in South Africa, and in Australia.

For South Africa, we estimated that a 20% tax would reduce energy intake by about 36 kJ per day, reducing obesity prevalence by 3.8% in men and 2.4% in women. Our 2014 paper generated much debate, and we have since published papers the impact on diabetes (374,000 health-adjusted life years [HALYs] gained over 20 years) and stroke (550,000 HALYs over 20 years). In February this year, Finance Minister Pravin Gordhan announced plans to introduce a tax on SSBs.

For Australia, we estimated that a 20% tax could lead to gains of 168,000 HALYs, a reduction in overall health care expenditure of AUD609 million over the lifetime of the cohort of adult Australians currently alive, and revenue of AUD400 million annually. Following the announcement of a sugar tax in the UK as it did, our paper generated much media interest last April. The third largest political party endorsed a tax, but at the time of writing, we are yet to see further policy action.

In combination with targeted health promotion efforts (lobbying), quantifying the expected impact on of fiscal measures that improve nutrition can help mobilise public opinion. More importantly, the research has informed briefings with policy makers, politicians, and public health organisations, so they can understand the benefits of an SSB tax and potentially support it.

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