Detailed Study Notes

Table of Contents

Introduction to this Episode

The current food environment is continuously highlighted as a problem for public health. And so there is a strong focus in both public policy and research circles to determine which strategies could lead to a healthier food environment.

One potential strategy that is widely recommended by public health experts is the use of fiscal/taxation policies to decrease the consumption of unhealthy foods and beverages. By making unhealthy foods and beverages relatively more expensive than healthy foods and beverages it is hoped that this would alter the composition of the average diet in a favorable manner.

This is based on economic theory and evidence showing that most foods are relatively price "inelastic". This means that increases in the prices of particular foods can be expected to lead to reductions in the purchase of those foods.

But there have also been some concerns raised about the potential effectiveness of strategies aimed at taxing a certain nutrient (e.g. sugar) or a group of foods. There are worries that such policies wouldn't lead to healthier diets; with people either not changing behavior or just substituting in other processed foods that industry has formulated to avoid a specific nutrient tax.

So what does the current evidence say?

With a number of countries having implemented a range of taxes or health levies, what lessons can we learn from these? And what does the best public health nutrition currently tell us about the likely effectiveness of different policies or interventions?

To get to some evidence-based answers, Dr. Kathryn Backholer, an Associate Professor at Deakin University, is on the podcast to discuss the current state of the evidence on various taxes and levies on different nutrients and unhealthy foods.

Connection to Previous Episodes

363: Public Health Policy vs. Personal Responsibility: Evidence vs. Ideology

- In this episode Danny and Alan discussed the evidence for public health nutrition interventions, how health inequalities are driven by socioeconomic factors, and how ideology and simplistic rhetoric about "personal responsibility" can get in the way.
- This included a discussion of different policy types that require government regulation, including the use of taxes.
- You can find the episode page here.

428: Food Environments

- In this episode the Sigma team discuss the concept of a “food environment”, a term used to describe the physical, economic, political and socio-cultural contexts in which choices are made about acquiring, preparing and consuming food.
- The episode included a discussion of exactly which environmental conditions impact food choices and the evidence that exists for public health policy that may address the problematic aspects of modern food environments.
- You can find the episode page here.

461: Prof. Emma Boyland – How Food Marketing Impacts Eating Behaviour

- In this episode Prof. Emma Boyland discussed the evidence we have to date on:
    - What are the exact effects of marketing on food choices?
    - What strategies are likely to yield the best results in terms of mitigating the harms of food marketing on eating behaviour, particularly in children and adolescents?
- This again included a look at the role of the food industry in shaping our diets.
- You can find the episode page here.

339: Prof. Corinna Hawkes – Food Policy, Food Systems & Public Health

- In this episode a range of topic relevant to the current episode were discussed, including: food systems, forces that dictate the appearance of poor quality food in the food supply, and top-down regulation vs bottom-up regulation.
- You can find the episode page here.

Social & Commercial Determinants of Health

The **social determinants of health** are:

> *"the non-medical factors that influence health outcomes. They are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems."* - WHO

So they're upstream drivers of health and are largely ties to socioeconomic status. *"In countries at all levels of income, health and illness follow a social gradient: the lower the socioeconomic position, the worse the health." (WHO)*

Examples of the social determinants of health:

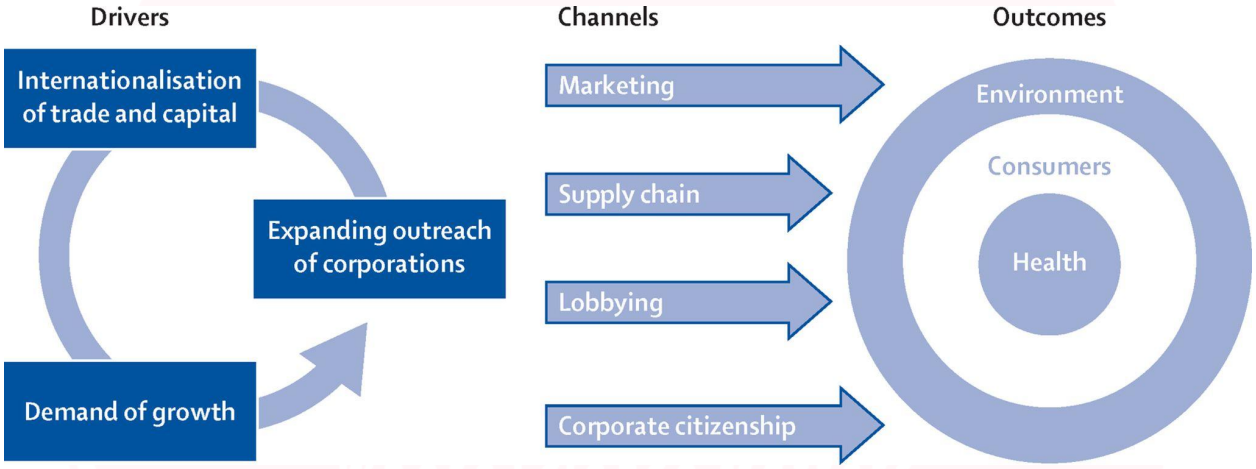
- Income
    - Unemployment and job insecurity
- Access to health services
- Education
- Food insecurity
- Social inclusion and non-discrimination

From: Weiss-Randall, 2014

Commercial determinants of health can be considered to be the power of corporations and *"the strategies and approaches used to promote their products, at the expense of public health"*.

Some examples in relation to diet include:

1. ***Marketing*:** e.g., junk food marketing.
2. ***Supply chain:*** e.g., in remote areas it is difficult to transport food there, so food costs go up, particularly for healthy foods.
3. ***Lobbying:*** Big, transnational food corporations lobby governments to relax the regulatory environment.



From: Kickbusch et al., 2016; © 2016 The Author(s). Published by Elsevier Ltd.

Dr. Backholer discussed one of the key examples of these issues is the role that industry has in the policy-making process:

> "The food industry: Their primary purpose is to make profits and to return value to their shareholders. So there's a clear conflict of interest if there's a policy where the primary objective is to reduce consumption of the very products that they make money on. So there needs to be really clear conflict of interests policies put in place when governments are developing and formulating policy.
>
> I don't think that industry should be at the table in the policy development process. Where they should be at the policy table is in the *implementation*, not in development."

Intro to Taxation Policies

"An important component in the transition to healthier food environments that is widely recommended by health authorities and public health experts is the use of fiscal policies to disincentivise consumption of unhealthy foods and beverages, including by making unhealthy foods and beverages relatively more expensive and less affordable than healthy foods and beverages" - Sacks et al., 2021

Dr. Backholer and her colleagues like to refer to such policies as "health levy", rather than a tax. This is because they feel it is about "recouping the true price of the foods we eat." This also aims to speak to the huge cost to healthcare systems of chronic disease prevalence that is tied to population diet.

Reasons Why a Tax is Introduced

Taxes (or health levies) on sugar-sweetened beverages and other foods/nutrients have been adopted by more than 50 countries across the world.Governments typically introduce food product or nutrient taxes for a combination of some of the following four reasons. They may do it to:

1. **Reduce consumption of a product.**
    a. If consumption drops, we can assume that there may be a knock-on health benefit at the population level.
2. **Raise revenue.**
    a. Usually in times of economic downturn, taxes have been used to raise money. Which, in theory, could be reinvested back into public health.
3. **Send an educational message to the population.**
    a. Taxing sends a really powerful educational message that "these foods that are being taxed or the drinks that are being taxed shouldn't be part of a healthy diet." It is hoped this helps in shifting social norms towards healthier diets.
4. **Encourage industry reformulation.**
    a. With a higher tax level on a certain nutrient (e.g. sugar), that encourages industry to reformulate their products in order to stay at a lower tax level.
    b. So in the case of sugar taxes, if industry reduces the sugar in their product, they pay less tax. This industry incentive has the knock-on benefit to the population of now having reformulated products with less sugar.
    c. So in the UK there's a tax on drinks for every eight grams of sugar per 100ml. And then it goes up to higher levels of sugar.

Examples of Taxation Policies

The majority of evidence of the impact of taxes on unhealthy foods and beverages on purchases and consumption relates to SSB taxes.

The WHO Commission on Ending Childhood Obesity recommended implementation of a tax on sugar-sweetened beverages (SSBs)

The following table shows an overview of jurisdictions that have introduced a tax or levy, and the outcomes associated with them. Most studies had a follow-up period of about one year.

Jurisdiction	Taxed Products	Tax Rate	Outcomes
Barbados	Beverages with added sugar	10%	Decreased sales of SSBs Increased sales of bottled water
Catalonia, Spain	Pre-packaged beverages with added sugar	€0.08/L for SSBs with 5-8 g sugar per 100ml. €0.12/L for those with > 8g /100ml	Decreased sales of the taxed beverages in the one major supermarket chain that was tested
Chile	Beverages with added sugar	10-18%	Decreased purchases of high-sugar SSBs
Denmark	Saturated fat	€2.14 per kg of saturated fat (if > 2.3 g per 100g)	Decreased saturated fat intake Increased vegetable intake But increased salt consumption
Hungary	Range of foods containing salt and sugar	Variable rates	Decreased consumption of processed foods
Mexico	SSBs	10 (1 peso per liter)	Decreased sales of SSBs Increased sales of bottled water and of untaxed beverages
Norway	Chocolate and confectionary	Increase of €1.73 per kg	No change in sales
Saudi Arabia	Carbonated SSBs and energy drinks	50% for SSBs 100% for energy drinks	Decreased sales of carbonated SSBs and energy drinks

UK	SSBs	£0.18 p/L for SSBs with 5-8 g sugar per 100ml. £0.24 p/L for those with > 8g per 100ml.	Decreased purchases of the levied beverages No change in non-levied beverages Decreased sugar in purchases
Berkeley, USA	Beverages with added sugar	$0.01/oz	Decreased sales of SSBs Increased sales of bottled water and untaxed beverages
Philadelphia, USA	Sweetened beverages	$0.015/oz	Decreased sales of taxed beverages
Seattle, USA	Sweetened beverages	$0.0175/oz	Decreased sales of taxed beverages

Adapted from: Sacks et al., Curr Nutr Rep. 2021 Sep;10(3):179-187

In general, it seems that:

- SSB taxes are effective in reducing SSB purchase and consumption, at least in the short term
- Higher taxes on SSBs have been associated with larger declines in purchases of SSBs
- Increases in sales and purchases of untaxed beverages, particularly plain bottled water, are consistent

However, there is still discussion as to how certain taxes impact overall diet quality and what products people purchase instead of the taxed products.

Impacts of Changes in Food Price on Purchases

One of the principles of economic theory that proposed taxes are based on is that of **"price elasticity"**.

- In economics, a basic principle suggests that (for most goods) as the price of a product increases, demand and consumption falls.
- *Price elasticity* describes the extent to which consumption of a product shifts in response to price.
- The overall body of evidence suggests that **most foods are relatively price inelastic**, meaning that increases in the prices of particular foods result in modest reductions in the purchase of those foods (Andreyeva et al., 2010)
- However, it's important to note the impact of a price change will have differing impacts in different populations and sub-groups. So the higher income is, the lower the level of responsiveness to price changes (Femenia, 2019)
    - So changes in global food prices tend to have a greater effect on food consumption in lower income countries and in poorer households within countries (Green et al., 2013)

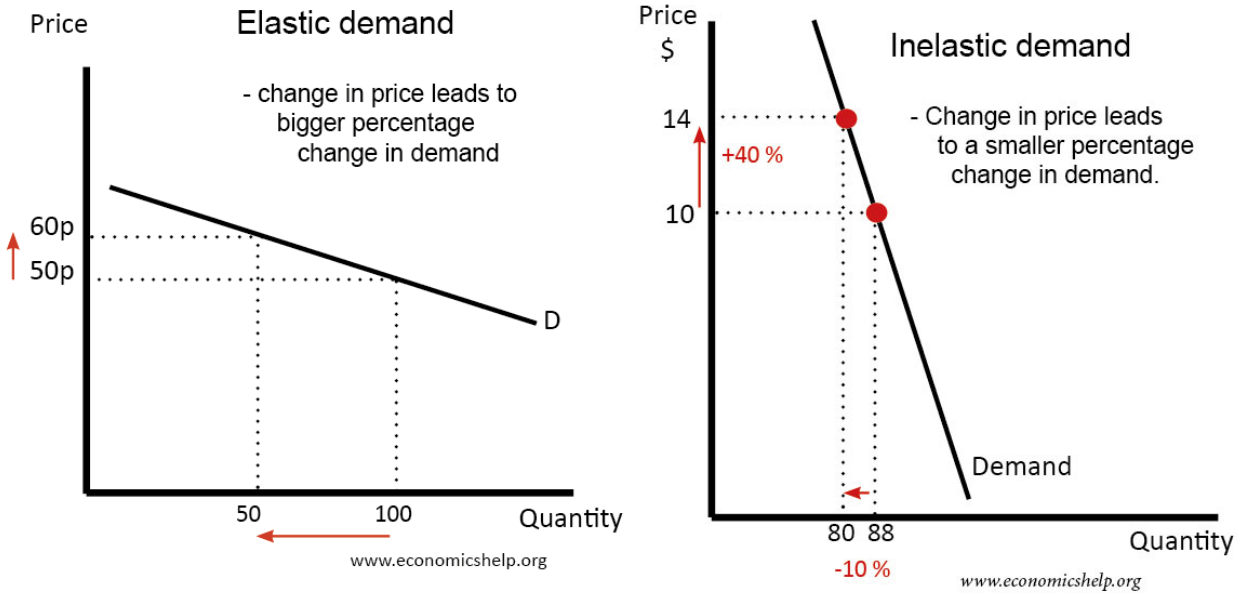


Image from: economicshelp.org

Impacts of Socioeconomic Status

Dr. Backholer brought up one of the common arguments from the food industry against taxes. Essentially, it's an argument along the lines of: *"you can't implement a sugary drinks tax, it's going to hit the poor the hardest".*

But Dr. Backholer outlined that the evidence shows really clearly that it's actually those with social and economic resources that benefit most.

- For example, in Mexico a 10% tax led to a 10% reduction in purchases of SSBs.
- However, that tax led to a 17% reduction in purchases for low socioeconomic status (SES) households (Colchero et al., 2017)
- And this makes sense in light of the fact that lower income households are more sensitive to price changes.

So those of lower socioeconomic status do reduce their consumption the most, but therefore it is those groups who see the greatest potential health benefit. And then, as Dr. Backholer's group has shown, if you factor in the future healthcare savings across the life course, it's an even greater benefit for those with lower incomes.

However, this response does seem to differ from country to country. For example, while in Mexico lower-income groups were more sensitive to price changes, in Chile it was the higher-income groups that seemed to be most responsive (Caro et al., 2018).

Substitution Effect

As noted previously, one of the important questions to consider with such policies is what happens to people's purchases if they do end up purchasing less of the taxed food?

Because in order to have a positive health benefit, we need them to switch to a healthier option, rather than just another product that has just as much potential detriment to health.

One example of how there is the potential for simply substituting out taxed products for non-taxed unhealthy products may be that of Denmark's saturated fat tax.

- Denmark introduced a saturated fat tax of €2.14 per kg of saturated fat (if saturated fat content was greater than 2.3 g per 100g of the food).
- And while this did result in a reduction in saturated fat intake (and increase in vegetable intake), there was an observed increase in salt consumption, which potentially could have been a result of what foods/products people consumed instead (Jensen et al., 2016).

In terms of most data on SSB/sugar taxes, we consistently see increases in:

- Bottled water
- Non-taxed beverages (including milks and artificially sweetened beverages)

In terms of taxes on foods/food products, working out the substitution is far more difficult, as we need to look at the entire diet. With drinks, there are a select number of things that someone would replace SSBs with. But with food, the options for different foods/meals are extensive. So working out the effect is incredibly difficult, and so far there is a lack of understanding in this area.

The Need for Multiple Concurrent Interventions

Dr. Backholer stated the importance of not viewing the impact of an intervention like a sugar tax in isolation. Those who detract from the utility of such a policy will try to determine the effects of that intervention alone on a large outcome like population health or obesity. However, public health experts are proposing such interventions in the context of many levers that need to be pulled at the same time.

From this episode, Dr. Backholer states:

> *“We are tweaking (the food system in) just one part and there's many different parts we need to tweak. And a sugar drinks tax does tweak the system. So if it does reduce purchase consumption (which it does), then I think that's enough. We don't need to go any further. We know that we are influencing diets in a positive way, and then we have to think about what else we can do to change social norms, to send our kids out to an environment that promotes health rather than one that promotes profits and they are driven to make unhealthy choices. How do we set up the environments around us so that, …people make their own decisions, but they're doing that in an environment that promotes health.”*

Health Equity

From Zorbas et al., 2021:

> *"The notion that policy actions should be for all and reach everyone were seldom backed by specific actions. Rhetorical acknowledgements of the upstream drivers of health inequalities were also rarely problematized, as were government responsibilities for health equity and the role of policy and governance in reducing socioeconomic inequalities in nutrition."*

What are Effective Policies?

The following factors will likely impact the effectiveness of future taxation policies:

1. **Object of the tax** (i.e. which products or nutrients are taxed)
    a. Likely to shape substitution behaviors
2. **Nutrient-based taxes vs. product-based taxes**
    a. Taxation of a single nutrient: risk of just reformulation of products that are on net still unhealthy?
    b. A modeling study in Chile found that a 30% tax on foods that exceed sodium, saturated fat and added sugar limits was expected to significantly reduce their consumption without increasing intake of any "risk nutrients" (Caro et al., 2017)
3. **The taxation base** (e.g. whether the tax is calculated on a quantity or value base)
    a. Excise taxes targeting physical quantities (e.g. price per kg) vs. ad valorem (product value based)
    b. Excise taxes have been recommended by public health experts as preferable as they minimize substitution towards lower cost, but equally unhealthy, alternatives (Jensen & Smed, 2018)
4. **The rate and/or magnitude of taxes**
    a. Must be large enough to elicit a change in consumer behavior
        i. There is general consensus that price increases of at least 20%, applied to a broad range of beverages, are needed to effectively shift behavior (Sacks et al., 2019)
    b. Extent to which manufacturers 'pass-through' taxes to consumers
        i. There is mixed evidence on the extent to which manufacturers 'pass-through' taxes to consumers, with some examples of consumer prices rising by the full amount of the tax, and other examples of manufacturers absorbing a substantial component of the tax themselves
            1. UK: Scarborough et al., 2020
            2. Philadelphia, US: Coary et al., 2018
            3. Mexico: Campos Vasquez et al., 2019

Dr. Backholer gave three things that an effective policy must have: it addresses the structural environment, it keeps industry out of the process, and it's a multi-pronged, systems-wide approach.