

## Just Desserts

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**For the House Agriculture Appropriations Subcommittee, May 22, 2024**

Dear Chairman Harris, Ranking Member Bishop, and members of the Committee:

My name is Robert Lustig, an Emeritus Professor at UCSF. I am a pediatric neuro-endocrinologist, and was head of the pediatric obesity program at UCSF for 16 years. I am here to state for the record, that I am for dessert — for *dessert* — but I am not for dessert for breakfast, lunch, snacks, and dinner. The sugar in the American diet is both toxic and addictive.

The global crisis of chronic non-communicable diseases (NCD's) continues to chew through lives and money in the U.S. and around the world. Despite clear knowledge of the diseases, their causes, and their consequences, virtually no headway has been made in stemming the tide of this NCD tsunami. For instance, the global burden of diabetes was estimated at 151 million individuals in 2000, 285 million in 2010, 422 million in 2014, 539 million in 2021, and is now expected to reach 563 million in 2030 and a whopping 785 million by 2050. Likewise, the burden of cancer and dementia continue at an unabashed rate and presenting earlier in age. Not only are the frequency and prevalence of these diseases increasing, but the age at which they tend to occur is getting earlier as well, thus increasing the cost of delivering healthcare to affected populations, yet with fewer people able to pay into socialized health care delivery systems such as Medicaid. Currently, health care costs are 17% of GDP; yet NCD costs are 75% of health care. That means that care for NCD's is now 13% of GDP. This is bankrupting our

healthcare budget, and placing untoward burdens on its delivery. You can't fix healthcare until you fix health. You can't fix health until you fix the diet. And we haven't fixed the diet.

Worse yet, these diseases now affect children — type 2 diabetes and fatty liver disease used to be the diseases of alcohol, and now they are the diseases of 5-year olds. Today, the average life span of a 3-year old is 1.5 years shorter than that of a 38-year old. Social Security is a legal pyramid scheme – the young healthy people pay in so the old infirm people can take out. But what if the young healthy people aren't healthy? What if they're not paying in, but rather taking out? The entire pyramid collapses.

There are three myths that must first be debunked if we are to get a handle on this scourge.

1. It's about obesity. In fact, metabolic syndrome is the problem. 45% of adults are now pre-diabetes, and 93% of Americans now manifest at least one aspect of metabolic dysfunction, while only 65% are overweight or obese.
2. All calories are the same. Not true. Certain consumables convey disease risk exclusive of their calories. For instance, alcohol is toxic, not because of its calories - but because it is metabolized to a toxin. *Trans*-fats are toxic, not because of their calories, but because they cannot be metabolized, and the toxins build up. Likewise, sugar is metabolized the same way as alcohol and causes the same diseases. How else do we explain the stunning rise in type 2 diabetes and “non-alcoholic fatty liver disease” in one-third of the American population, and one-quarter of children? These used to be the diseases of alcohol. Sugar is a chronic dose-dependent mitochondrial toxin, just as is alcohol. Furthermore, I just came from the International Food Addiction Consensus Conference in London. The epidemiologic, neurochemical, and imaging studies confirm that sugar is addictive. Indeed, sugar is the “alcohol of the child”.

3. It's about personal responsibility. This is an "ideology", and there are four problems with it. First, we have an epidemic of obese newborns. They don't diet or exercise. Second, every personal responsibility issue (e.g. tobacco, alcohol, HIV) eventually morphs into a public health crisis because these diseases are not due to behaviors but exposures. Third, the cost is borne by all of society. Witness the problem of Medicare in coping with diabetes. Fourth, it absolves "corporate responsibility" in the same way tobacco companies wangled free of their culpability. The Western Diet, consisting of ultraprocessed foods, has supplanted traditional diets globally, with an attendant global increase in obesity, diabetes, and most notably, fatty liver disease. Ultraprocessed foods are extremely high in added sugar, which is converted by the liver via the process of *de novo* lipogenesis, or "new fat making", and generates fatty liver which is an intermediate in a vicious cycle connecting the sugar in processed foods to addiction. Thus, "Personal responsibility" is a lame meme that denies the biology of addiction.

Drugs are a luxury. Food is a necessity. How can a consumable — like sugar — that is necessary to survival, also be addicting? Because certain consumables are not necessary for survival. We *need* essential nutrients such as amino acids and certain fats and vitamins and other micronutrients, or we die. And yet foods that contain these essential nutrients are not addicting. In fact, the only foods that are addicting are those that are not required — the luxuries. Alcohol is the most addicting. But sugar is the one that is available even to newborns. Everyone likes sweet. It's the fructose molecule that drives the reward center specifically. And it's fructose that we crave. Just like alcohol. Fructose may be an energy source, but it is not a nutrient, because we don't need it. just like alcohol. And fructose is something we love, something we want, even to excess, even to binge. Just like alcohol. When it's not necessary,

but yet you still *need* it, that's dependence. Just because there are social drinkers who can put a beer down, that doesn't mean that alcohol isn't addictive. And just because sugar can be put down by many people without serious sequelae, that doesn't mean that sugar isn't addictive.

Sugar used to be a condiment; but now it's a diet staple. Soda, juice, sweetened teas, Frappucinos — these are all desserts. Foods with added sugar are dessert if any form of sugar is one of the first three ingredients. Granola is dessert. Fruit-flavored yogurt is dessert. Chinese chicken salad is dessert. We, and especially our kids, are eating and drinking dessert all day long. It is creating a tidal wave of chronic diseases — diseases so nefarious and insidious that our “sick care” system is not prepared for the flood of children with Type 2 diabetes and liver disease, who will be sick for decades. Sugar captivates our brain's “reward center”, which of course is why the food industry puts it there in the first place, to get you to buy more. Tell a heroin addict to lay off their drug of choice — see how far that gets you. About as far as telling a kid to cut the cookies. Sugar is the payload, ultraprocessed food is the vehicle. The industry will argue that they “fortify” the food with vitamins to make them healthy. Not true — “Toxin A plus Antidote B still equals death”.

It is up to elected representatives to ensure the public good when the market fails to do so. When the market failed with alcohol, tobacco, and opioids, Congress stepped in. In the case of sugar, the market has failed equally miserably, yet Congress has done nothing. The preconditions for societal intervention of any substance include: 1) ubiquity, 2) toxicity, 3) abuse, and 4) externalities, or negative impact on society. Substances that meet all four criteria include heroin, cocaine, amphetamine, tobacco, and alcohol — and societies regulate them. Well, sugar meets all four criteria as well. Yet we have no societal interventions.

In fact, the U.S. government has previously made the situation worse. For example, the American Heart Association's upper limit of sugar for children is 12 grams per day. The current National School Breakfast Program breakfast consists of a bowl of Froot Loops and a glass of chocolate milk. That is 27 grams of sugar, more than double the upper limit, and it's just breakfast. But we don't have to tolerate "Dessert for Breakfast". Last year the USDA started to adopt the Dietary Guidelines' 10% of daily calories limit on added sugar for school food, and California voted unanimously to regulate children's sugar intake to match the DGA's.

The abuse of sugar is particularly egregious within the SNAP program. Currently one-seventh of all Americans are eligible for SNAP. Three modeling studies, two at UCSF and one at Harvard, argue that banning SSB's from SNAP is expected to result in a 0.89% lower obesity prevalence within 10 years, while lowering the amount of sugars in the food supply through a cap and trade approach by 1% annually would be expected to lower the prevalence of obesity by 1.7% after 20 years. Some say that removing SSB's from SNAP is regressive against the poor. Do you know what's more regressive against the poor? Diabetes. At UCSF, we instituted our "Healthy Beverage Initiative" in 2015. You can't find a sugared soda on our campus. And we studied the effect on our employees. SSB consumption was cut in half, waist circumference went down, and insulin sensitivity improved. And not one person complained. In fact, our employees applauded our efforts, and nine years later, it's still in place. Want to get people to stop drinking soda? Give them something healthy in its place. In the Bronx, we focus grouped the populace – they told us that they would relinquish sodas if they could have free water, or vitamins, or other nutritious foodstuffs in its place. People don't want to be sick. They just want to be treated like they matter. Getting SSB's off SNAP shows them that they matter.