



Does sugar cause diseases like

diabetes & dental caries??

ABINASH VERMA

Non-communicable diseases being associated with sugar

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- Diabetes
- Dental Caries
- Cardiovascular diseases
- Hypertension & Blood pressure
- Cancer etc.

Diabetes: As per International Diabetes Federation

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- What is Diabetes?
 - When the pancreas is no longer able to make insulin, or
 - When the body cannot make good use of the insulin it produces.
- And why is insulin important?
 - All carbohydrate foods are broken down into glucose in the blood.
 - Insulin helps let glucose pass from the blood stream into the cells in the body to produce energy.

So, can we say sugar causes diabetes???

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□ Not being able to produce insulin or use it effectively leads to raised glucose levels in the blood

□ So, what we need to understand is:

Whether sugar consumption affects the pancreas from producing insulin?

□ I personally do not think so.

Diabetes in India....

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- Diabetes is said to be a growing challenge in India with estimated 8.8% diabetic population, in the age group of 20 and 70 years.
 - Total adult population :829,491,000
 - Prevalence of diabetes in adults :8.8%
 - Total cases of diabetes in adults :72,946,400
- In 2000, 31.7 million were said to be diabetic
 - Said to have risen to 63 million in 2016 (almost 100%).

Sugar consumption in 2000 and 2016

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Year	Domestic consumption	Indian population	Per capita consumption
2000	16.1 mn tons	1053 mn	15.3
2016	24.5 mn tons	1324 mn	18.5
Growth	52 %	25.7 %	20.9 %

- Growth of diabetes in India from 2000-2016 has been @100% or around 6.25% per annum (simple average)
- As compared to that, Sugar consumption per person per year has grown @21% or around 1.3% per annum (simple average)

Dental Caries

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- Dental caries is a medical term for tooth decay or cavities.
- For simple understanding, dental caries occurs when bacteria living in our mouth make acid, which then begins to eat away at our teeth or erodes the tooth enamel.
- Along with the saliva and food particles, the bacteria accumulate on the surface of the teeth in a sticky film called plaque.
 - The plaque forms easily in cracks, pits or fissures in the back teeth, between teeth and near the gum line.

Acid in the villain

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- The villain when it comes to our teeth is plaque, and plaque's evil minion is acid.
- If the food itself is acidic, no bacteria is needed to metabolise foods to form a plaque.
- We can therefore, protect our teeth by:
 - Reducing our intake of acidic foods and /or
 - Not allowing the foods or acids too much time to form a plaque on our teeth.

Sugar has a pH value of

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- Citrus fruits, lemons, pickles, grains, tomatoes, coffee, processed foods, high protein foods, sodas, fresh & processed meats etc. are acidic.
 - Lemon juice has a very low pH of 2 to 2.35
 - Tomatoes have pH of 4.30 to 4.90.
- Unfortunately, some fruits like blue plums (pH 2.80-3.40), grapes (pH 2.90-3.82), pomegranates (pH 2.93 - 3.20) and even apples and mangoes, having pH of below 4.80, are acidic.

Sugar has a pH value of 7

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- Sugar like water is neutral
 - And itself cannot harm our teeth or the enamel
- However, there is a second aspect to the whole story
 - Whether the ‘bad’ bacteria needs only sugar to form acids/plaque. Is the evil minion for the bacteria only sugar
 - Or are there other factors?
- To metabolise any food, the bacteria requires adequate time.
 - Therefore, the faster a food is removed, the less chance it will have to feed the bacteria.

Sticky foods !!!!

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- Sticky foods, which don't get easily washed away, either naturally with saliva or with the water we drink, give more time to the bacteria to metabolise them into acid
 - Potato starch in potato chips cling longer to the teeth than many sugar foods, like chocolate bars (New York University Dental Care)
- Tooth decay also related to frequency of eating
 - Than to the amount of starch or sugar etc.
 - Frequent snacking hurts teeth, because it reintroduces food particles and keeps a thin layer on the teeth all day, enabling plaque buildup

So, what do we think about dental caries

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- Sugar is not acidic: cannot directly harm our teeth on its own.
- The ‘bad’ bacteria form acid/plaque by feeding on and metabolising several foods, and not only sugar.
- Sticky foods are more dangerous and too much snacking, not giving time between meals for the saliva or water to wash away the acid or plaque, are more dangerous.
- Regular cleansing and washing, including brushing and flossing will check all teeth decay, and allow us to eat anything we want.

WHO recommendation

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- WHO has recommended that not more than 10% energy should come from sugar
 - That translates into roughly 50 grams of sugar for a person of normal weight
- The question that needs to be asked is how these numbers have been derived by WHO
- Also, whether there is any scientific evidence or any conclusive research which confirms or even suggests that sugar consumption leads to any disease??
 - At least, we have not found any

What does WHO say:

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- Rising prevalence of diabetes & other non-communicable diseases is driven by a combination of factors –
 - Rapid urbanization, sedentary lifestyles, unhealthy diets, tobacco use, and increasing life expectancy.
 - Obesity and overweight are the most important risk factors responsible for diabetes.
 - Much of the diabetes burden can be prevented or delayed by behavioural changes favouring a healthy diet and regular physical activity.

WORLD PER CAPITA CONSUMPTION OF SUGAR (in kg)

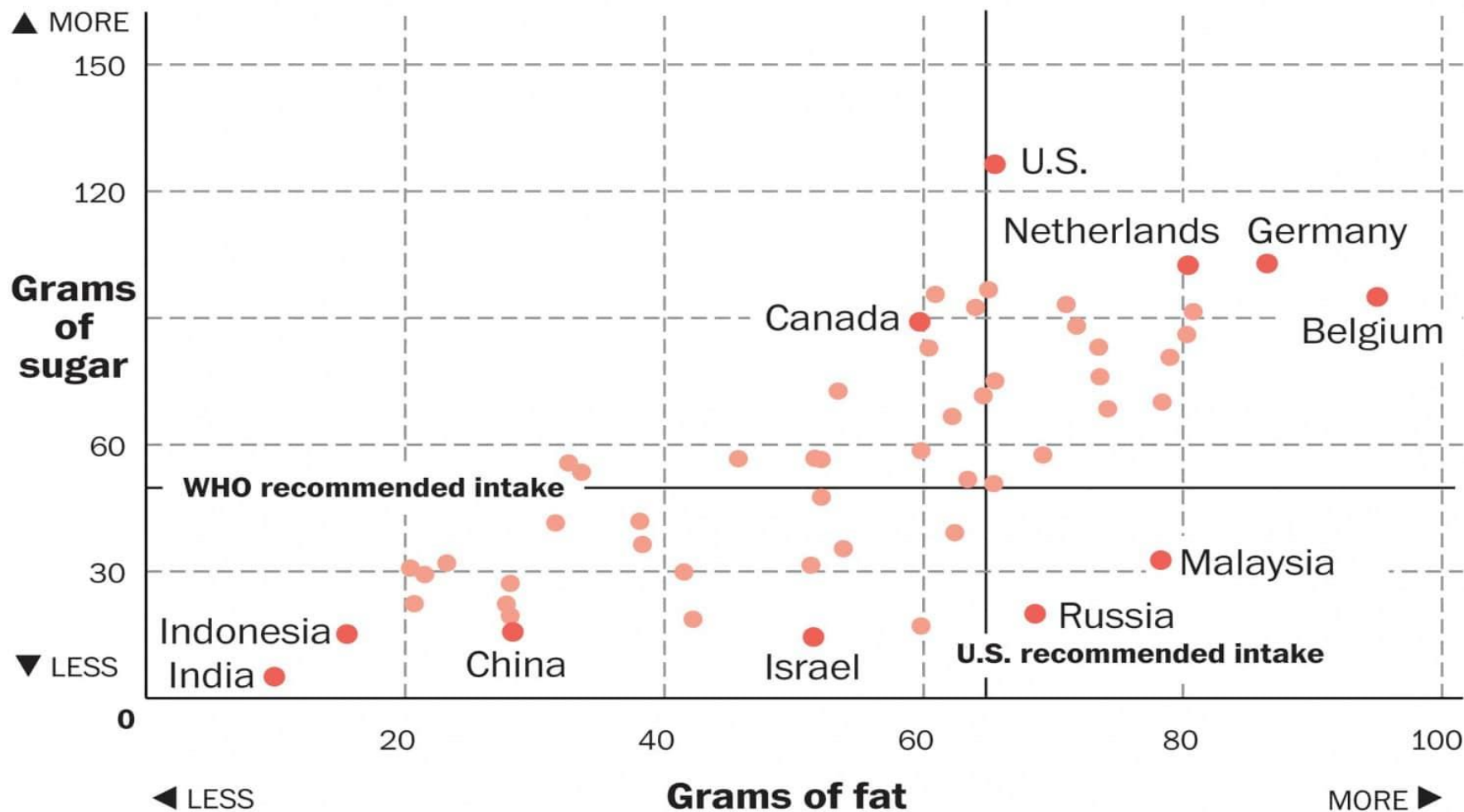
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Countries	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
USA	30.4	29.4	30.8	31.1	30.8	30.4	29.5	31.5	31.8	30.8
Russia	39.8	39.2	39.3	39.3	39.3	39.3	36.9	37.5	38.8	39.5
Brazil	60.7	58.8	63.8	62.0	59.6	59.0	54.5	53.9	53.9	52.6
India	19	19.1	18.1	16.5	18.1	17.9	18.6	19.8	18.8	18.4
Japan	16.2	16.8	17.5	17.3	17.3	17.1	17.0	16.4	16.5	16.6
Bangladesh	8.4	9	9.6	10.0	10.6	11.2	11.6	12.0	12.5	13.0
Pakistan	25.7	25.8	25.8	25.2	25.3	25.4	25.5	25.7	25.3	25.7
Thailand	32.2	34.1	36.6	38.1	39.6	42.0	43.1	42.7	44.4	44.2
Sri Lanka	30	30.4	30.3	31.0	31.1	31.6	31.8	32.1	32.2	32.2
Australia	52.5	47.1	46.5	45.3	46.1	44.7	46.9	54.7	35.3	37.7
New Zealand	50.4	49.8	49.2	48.7	48.1	47.6	48.2	47.7	47.2	46.7
Singapore	58.1	55.3	54.4	52.4	51.4	50.9	50.5	49.7	48.0	47.3

Source: ISO

Where people eat the most sugar and fat

Daily fat and sugar consumption



Source: Euromonitor

WAPO.ST/WONKBLOG

Indian scenario

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- At about 19 kilos of per capita consumption of sugar in India, the per day consumption works out to around 52 grams
- Does that raise any concern or establishes any correlation that diabetes or other non-communicable disease can or has been caused by sugar consumption in India??
- If not, we should be careful about simply copying something from another country and unnecessarily worrying people
 - Or making them believe that if they reduce sugar consumption, all their health problems will be solved
 - Whereas the problem lies somewhere else

Thank you

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