

Sugar in our diet: How much is enough?

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The importance of sweet taste and diet

- Sweetness is one of the five “**basic tastes**” detected by sensory receptors in the oral cavity
- Liking for sweetness is **innate** and influenced by cultural and personal preferences
- Sweetness increases the **palatability** of numerous foods and beverages, and stimulates intake
- All humans express the same response to **sweetness** immediately after birth
- “Sweet” denotes “safe”
- With the acquisition of various food likes as the child grows, the liking for sweetness changes
- In adolescents, the preferred intensity of sweetness is lower than in younger children, and it is lower in adults than in adolescents
- An appetite for sweetness is present in most adults, although large individual differences exist in both the preferred level of sweetness in familiar products and in the range of foods and drinks that are consumed sweet

Two main features determining acceptance of a food by a young child are familiarity and sweetness

What are sugars?

Free sugars: all monosaccharides and disaccharides added to foods by manufacturer, cook or consumer; sugars naturally present in honey, syrups and fruit juices

The term “**added sugar**” is used interchangeably with “**free sugar**”: include sugars and syrups added to foods during processing, food preparation, or at the table, but does not include honey or fruit juices

Nutrition Facts

Serving Size 2/3 cup (55g)
Servings Per Container About 8

Amount Per Serving

Calories 230 Calories from Fat 72

% Daily Value*

Total Fat 8g **12%**

Saturated Fat 1g **5%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 160mg **7%**

Total Carbohydrate 37g **12%**

Dietary Fiber 4g **16%**

Sugars 1g

Protein 3g

Vitamin A 10%

Vitamin C 8%

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Cholesterol 0mg **0%**

Sodium 160mg **7%**

Total Carbohydrate 37g **13%**

Dietary Fiber 4g **14%**

Total Sugars 12g

Includes 10g Added Sugars **20%**

Protein 3g

Sugar-sweetened beverages (SSBs) include aerated drinks, fruit drinks, and energy and vitamin water drinks containing added sugars. Many of these are sweetened with high fructose corn syrup (HFCS) and some with sucrose or fruit juice concentrates. The HFCS that is commonly used in beverages contains 55% fructose and 45% glucose, while sucrose or table sugar consists of 50% fructose and 50% glucose

Sources of sugar in the Indian diet

- Sugar, honey, brown sugar, jaggery, khandsari
- Traditional sweets
- Bakery and confectionary – cakes, biscuits, chocolates, candies
- Processed foods – breakfast cereals, salad dressings, spreads and sauces, aerated beverages
- Hidden sugar - high fructose corn syrup, cane sugar, glucose, lactose, maltose, dextrose, malt syrup, molasses, agave nectar, maple syrup



Read food labels carefully to spot hidden sugars

Ingredients: Whole Grain Wheat, Corn Bran, Raisins, **Sugar**, Corn Starch, Chicory Root Extract, Whole Grain Oats, Glycerin, **Corn Syrup**, Crisp Oats (rice flour, whole grain oats, **sugar**, barley malt extract, salt), **Brown Sugar**, Salt, **Toasted Oats** (whole grain oats, **sugar**, canola oil, molasses, honey), **Brown Sugar Syrup**, **Honey**, Wheat Bits (whole grain wheat, corn starch, corn meal, **sugar**, salt, trisodium phosphate, baking soda, color added), **Malt Syrup**, Tripotassium Phosphate, Color Added, Cinnamon, Natural and Artificial Flavor. Vitamin E (mixed tocopherols) and BHT Added to Preserve Freshness.

Vitamins and Minerals: Calcium Carbonate, Zinc and Iron (mineral nutrients), Vitamin C (sodium ascorbate), A B Vitamin (niacinamide), Vitamin B₆ (pyridoxine hydrochloride), Vitamin B₁ (thiamin mononitrate), A B Vitamin (folic acid)
CONTAINS WHEAT; MILK ALMOND AND MILK



Agave nectar Agave syrup Barley malt **Beet sugar** Brown rice syrup
 Brown sugar Buttered syrup Cane sugar Cane juice Cane juice crystals
 Carob syrup Confectioner's sugar Corn syrup **High fructose corn syrup**
 Corn sugar Corn sweetener Corn syrup solids Crystalized fructose
 Date sugar **Dextran** Dextrose Diatase Diastatic malt Evaporated cane juice

WHERE'S ALL THAT SUGAR HIDING?

Fructose Fruit juice Fruit juice concentrate Glucose Glucose solids
 Golden sugar Golden syrup **Grape sugar** Grape juice concentrate Honey
 Invert sugar Lactose Malt Maltodextrin Maltose **Maple syrup** Molasses
 Raw sugar Refiner's syrup Sorghum syrup Sucanat Sucrose **Sugar**
 Turbinado sugar Yellow sugar

Nutrition Facts	
Serving Size 8 fl oz (240ml)	
Servings Per Container 4	
Amount Per Serving	
Calories 50	
% Daily Value*	
Total Fat 0g	0%
Sodium 110mg	5%
Potassium 30mg	1%
Total Carbohydrate 14g	5%
Sugars 14g	
Protein 0g	

NO FRUIT JUICE
 INGREDIENTS: WATER, SUCROSE SYRUP, GLUCOSE-FRUCTOSE SYRUP, CITRIC ACID, NATURAL GRAPE FLAVOR WITH OTHER NATURAL FLAVORS, SALT, SODIUM CITRATE, MONOPOTASSIUM PHOSPHATE, RED 40, BLUE 1.
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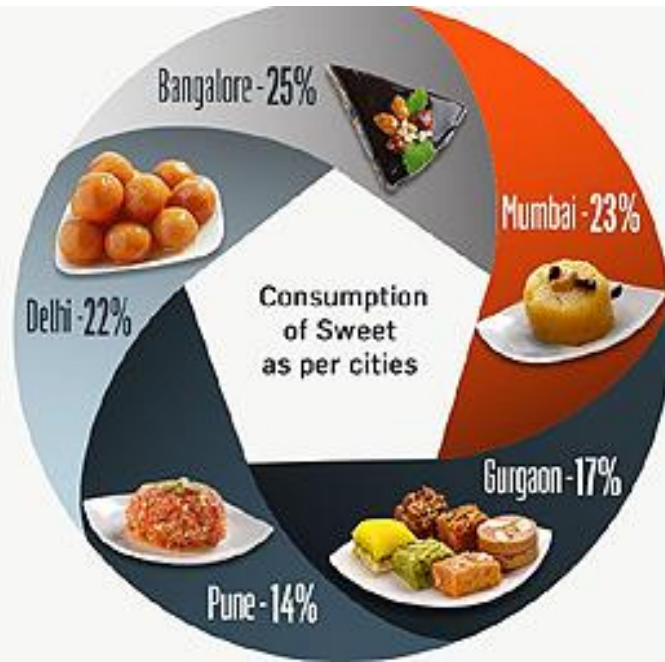
14G X 4 = 56G SUGAR!

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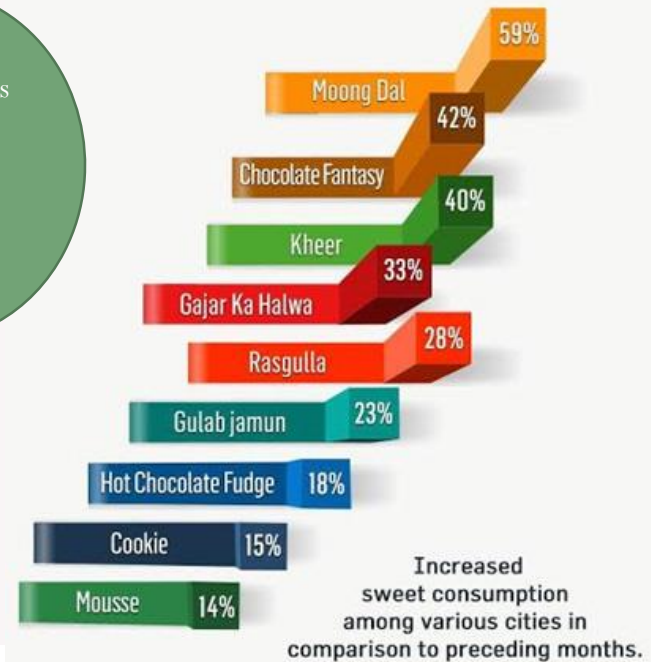
Trends in Sweets Consumption

Foodpanda.in, the online food ordering platform, conducted a survey across India to comprehend sweets consumption trends during the festive season (October)

The survey was made on the basis of two verticals i.e. Traditional Sweet Consumption and Overall Sweet Consumption



Traditional Indian sweets market estimated at Rs.49,000 crore (\$8 billion)



- ✓ Overall sweet consumption was the highest in Bengaluru, followed by Mumbai, Delhi and Gurgaon, with a distinct preference for western sweets such as chocolate mousse, chocolate fantasy cake etc
- ✓ Gurgaon ranked first on traditional sweets, followed by Delhi, Pune and Bengaluru.
- ✓ A 20 % spurt was observed in people indulging in sweet delicacies pan India during the festive season, as compared to preceding months

Sugar Consumption in India

- The per capita consumption of sugar in India is 20.2 kg. It is lower than the global average of 24.8 kg, but consumption of sugar in India is growing more rapidly than the global average
- In the last 50 years, sugar consumption in India has risen from 5% of the global production to 13%. India has become the world's biggest sugar consumer today, consuming one-third more sugar than the entire E.U. and 60% more than China!

COMPARISON CHART - WORLD PER CAPITA CONSUMPTION OF SUGAR, 2008 to 2017
(Kilograms)

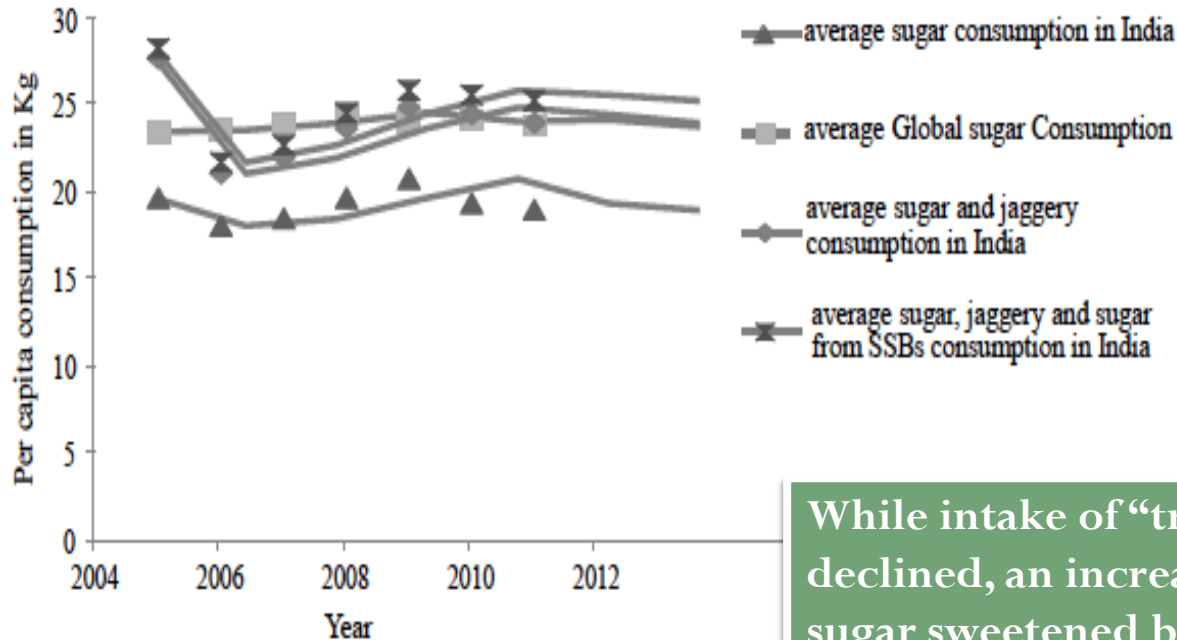
Countries	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
USA	30.4	29.4	30.8	31.1	30.8	30.4	29.5	31.5	31.8	30.8
Russian Fed.	39.8	39.2	39.3	39.3	39.3	39.3	36.9	37.5	38.8	39.5
Brazil	60.7	58.8	63.8	62.0	59.6	59.0	54.5	53.9	53.9	52.6
India	19	19.1	18.1	16.5	18.1	17.9	18.6	19.8	18.8	18.4
Japan	16.2	16.8	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

Sugar intake in adults is 7-8% of total energy intake in countries like Hungary and Norway, 16-17% in countries like Spain and the UK. Intake is much higher among children, ranging from about 12% in countries like Denmark, Slovenia and Sweden, to nearly 25% in Portugal

In India, the increase in sugar consumption has been at the cost of gur and khandsari

Figure 3. Trend line showing average intake of sugar globally and total sugar intake from various sources (“traditional sugars”: jaggery and *khandsari*; sugar and sugar from sugar-sweetened beverages) compiled for India.



Source: [24–26].

Gulati and Misra, 2014

While intake of “traditional sugars” has declined, an increase in the intake of sugar from sugar sweetened beverages has been recorded. There is increasing concern that intake of free sugars – particularly in the form of sugar-sweetened beverages – increases overall energy intake and may reduce the intake of foods containing more nutritionally adequate calories, leading to an unhealthy diet, weight gain and increased risk of NCDs

Sugar Consumption in India

- Indian sugar consumption is majorly dominated by the **industrial sector** (61%) followed by the **household** (39%) or the consumer sector
- The industrial sector includes companies that produce products which require sugar e.g. confectionary, carbonated beverages, dairy processing, bakery and others
- The household sector has been subdivided into lower and higher income group
- The **lower income group** consumed the maximum sugar with 3.0 million tons which is followed by the **higher income group** which consumed around 1.4 million tons of sugar in FY'2015

Per capita consumption of low income segments is nearly half that of high income segments

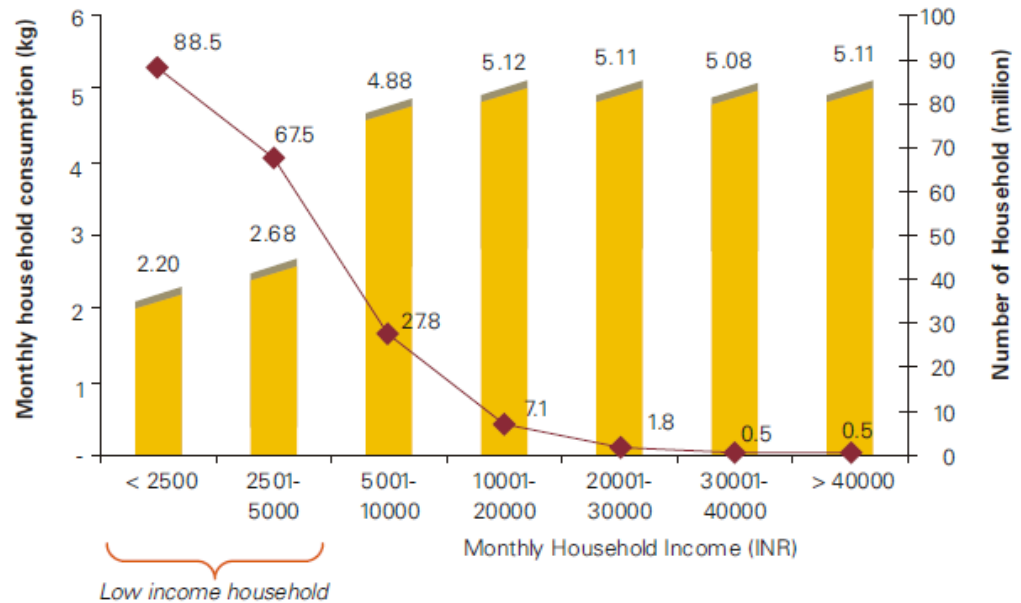


Figure 20: All India non-levy household monthly sugar consumption by income levels (2006-07)²⁷
Source: AC Nielsen survey conducted in March 2007, KPMG analysis

Sugar Consumption in India

Dairy, confectionary, bakery and beverages account for 75 percent of industrial consumption

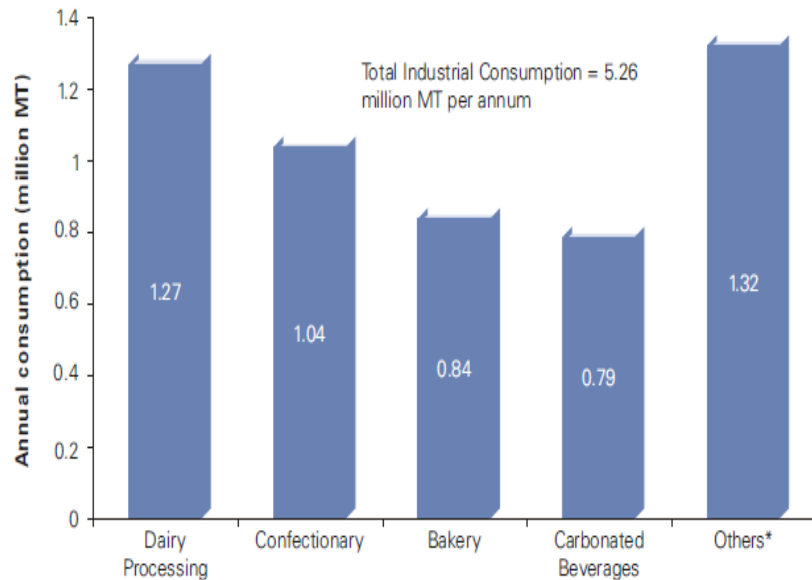


Figure 22: Industrial consumption by segments (2006-07)²⁹

Source: AC Nielsen survey conducted in March 2007, KPMG analysis

Sweet meat vendors are the largest consumers of sugar amongst small businesses

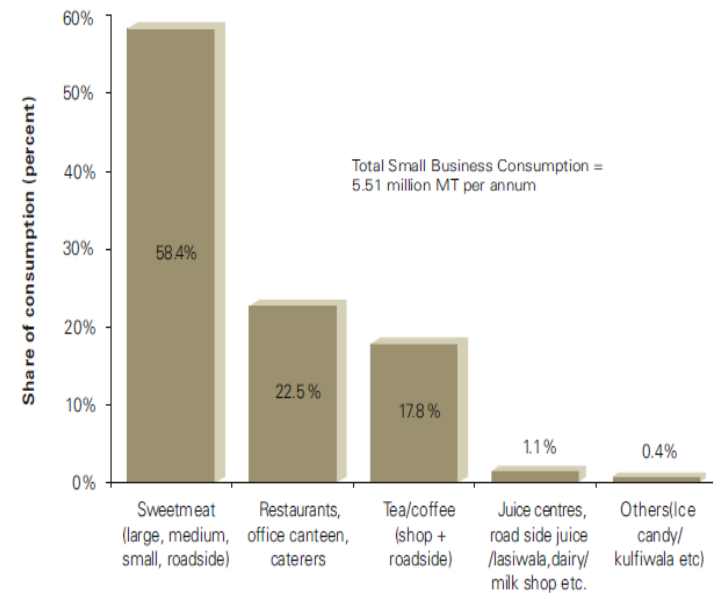
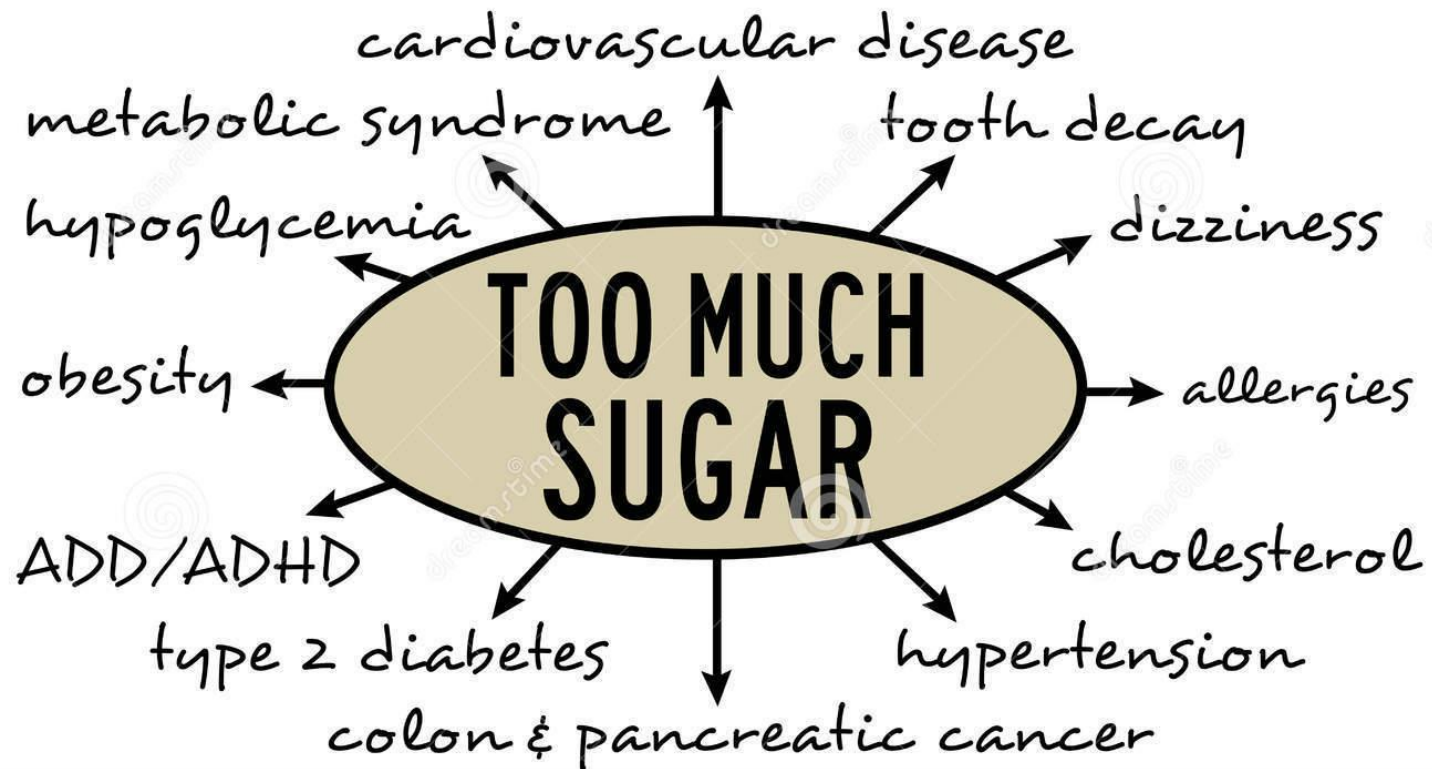


Figure 23: Small business consumption by segments (2006-07)

Source: AC Nielsen survey conducted in March 2007, KPMG analysis

²⁹ Others include ice cream, fruit juices, fruit drinks, fruit nectars, squashes, health drinks, beer, wine, pharmaceuticals, chyawanprash, ketchup/sauces, jams and star hotels



Sugar is the “new tobacco” as it is highly addictive

Sugar is the “new cholesterol” because it gets converted into stored fat and increases risk of NCDs

International Guidelines for Sugar

- Various government and health authorities have suggested new sugar recommendations and guidelines as low as 5% of total calories from free sugars
- Definitions for total sugars, free sugars, and added sugars are not standardized, nor are there accepted nutrient databases for this information
- Without an accepted definition and equation for calculating added sugar, added sugar recommendations are arbitrary and may reduce intakes of nutrient-rich, recommended foods, such as yogurt, whole grains, and tart fruits including cranberries, cherries, and grapefruit.

International Recommendations

Name of the Organization or Country	Recommendations
American Heart Association	Adult women less than 25g/day and adult men less than 40g/day.
Australia	Limit intake of foods and drinks containing added sugars such as confectionary, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, energy and sports drinks.
Austria	Little portions, not quantified
Brazil	Less than 10%of energy intake
Canada	Maximal intake of 25% of energy from added sugars
China	For sugar, the daily intake should be properly controlled, and should be less than 50 g, or preferably less than 25 g.
Germany	Moderate intake, food or beverages containing sugar should be consumed only occasionally
India	<10% energy/day
Turkey	9-10% of total energy: 40 and 30 grams for men and women respectively.
Ukraine	40g/day
World Health Organization	Less than 10% energy/day and further benefits on consumption of <5%energy/day.

US Recommendations

- **The Institute of Medicine** has not issued an RDA for sugar as it is not a nutrient
- It suggests that no more than 25% calories come from added sugars – or 38-55% of all calories from carbohydrates
- In the Dietary Guidelines for Americans 2010, the **USDA**'s recommendation is more vague, advising that combined calories from saturated or trans – fats and added sugar be limited to 5 to 15 % of total calories. On a 2,000-calorie diet, this would mean limiting yourself to between 100 and 300 calories from these two types of ingredients, but the USDA offers no separate recommendation for sugar
- Compliance with proposed added sugar recommendations would require strict dietary compliance and may not be sustainable for many Americans.
- According to the **American Heart Association (AHA)**, the maximum amount of added sugars you should eat in a day are: Men: 150 calories per day (37.5 grams or 9 tsps). Women: 100 calories per day (25 grams or 6 tsps)

WHO Recommendations for Sugar

- Free sugars refer to monosaccharides (glucose, fructose) and disaccharides (sucrose or table sugar) added to foods and drinks and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates
- WHO strongly recommends a reduced intake of free sugars throughout the life course
- In both adults and children, WHO recommends reducing the intake of free sugars to less than 10% of total energy intake. Evidence that this level reduces the risk of overweight, obesity and tooth decay
- WHO suggests a further reduction of the intake of free sugars to below 5% of total energy intake as a “conditional” recommendation
- The WHO guideline does not refer to the sugars in fresh fruits and vegetables, and sugars naturally present in milk, because there is no reported evidence of adverse effects of consuming these sugars
- These sugars guidelines should be used in conjunction with other nutrient guidelines and dietary goals, in particular those related to fats and fatty acids, including saturated fat and trans-fat

Indian Recommendations for sugar

- The National Institute of Nutrition recommends an added sugar intake of not more than 20 to 25g a day for normal adults
- To achieve this, one needs to avoid processed foods rich in sugar like soft drinks, sugary beverages like coffee and excessive over-the-table use of sugar
- Just one can of soft drink may contain 8tsp of sugar, 1tbsp of ketchup may contain 1 tsp of sugar
- The Consensus Dietary Guidelines for Indians recommend less than 10% of total calories from free sugars per day

Translate recommendations into food-based dietary guidelines that consider locally available food and customs

- Dietary guidelines should clearly translate the recommendations of sugar into daily consumable portions of foods
- While promoting locally available and seasonal foods, guidelines should also give details of processed foods and the contents of sugar, salt and fat in these foods
- Dissemination of dietary guidelines among the community is very imperative
- Reformulation to reduce the amount of sugars added to processed foods
- Mandatory nutrition labeling for calories, CHO, sugars, fat, protein, sodium, and fiber, and trans fat in India

HFSS Report, India 2017

A guidance document for industry, FSSAI, and consumers. It includes eight recommendations:

- Establish nutrient-specific guidelines for fats, sugars, and salt
- Establish reliable monitoring systems to assess national intakes
- Ban HFSS foods from advertising on children's TV channels or during children's shows (this "is urged") – children are defined as 5-12
- Tax ultra-processed commodities (pre-packaged foods with high salt and fat content) and SSBs
- Increase nutrition education and awareness (multi-faceted, multi-sector approach with policy convergence) to bring down population intakes
- Encourage industry to voluntarily reformulate products
- Mandatory nutrition labeling for calories, CHO, sugars, fat, protein, sodium, and fiber, and trans fat
- Provide a nutrition-sensitive and enabling environment to make healthier choices (sync health, agriculture, and food systems sectors)

Should sugar be regulated in the same way as tobacco and alcohol?

- Is a ban the answer?
- Creating awareness maybe the answer? Labels? Campaigns? Media?
- Identify alternatives to sugar?
- Can the use of non-caloric sweeteners assist in obesity prevention? Or are non-caloric sweeteners a short-term solution as it promotes a preference for sweetness and a reliance on highly-processed foods in the diet?
- Growing sugar supports the livelihoods of millions of farmers and agricultural workers. It is also an important source of national revenue. Reducing production could potentially have adverse economic impacts. The economic threats posed by reduced production have led to opposition to policies to reduce sugar consumption
- Are there any supply-side sugar policies that could make a difference to sugar consumption?
- Initiate dialogue with stakeholders in the sugar supply chain. This could identify what 'upstream' actions can be taken to reduce the supply and demand for sugar

Thank You



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