Consumption of sugars in the Netherlands

What is the intake of sugars by the Dutch population and has it changed in recent years?

The results of the sixth Dutch National Food Consumption Survey 2019-2021 compared to the results of previous surveys.

Cosun
Nutrition Center

What is the intake of sugars in The Netherlands and has it changed over time? The results of the Dutch National Food Consumption Survey 2019-2021, undertaken by the National Institute for Public Health and the Environment (RIVM), were used to document current sugar intake and provide answers to these and other questions. The results were also compared with findings from earlier surveys. This factsheet presents the findings of this analysis.

A few definitions

In order to properly interpret the data, it is helpful to clarify a few sugar-related terms. Sugar usage is often wrongly interpreted as sugar intake. This is incorrect: data on sugar usage also includes sugar intended, for example, for animal feed and non-food products like soap, bee feed, cosmetics and even car tyres. Sugar usage also includes sugar that is lost during storage and transportation as well as sugar that is processed in imported and exported goods (like chocolate). In the Netherlands, the export of sugar and sweets exceeds the import[2]. In restaurants, stores, and homes, sugar is frequently lost through preparation, storage, and disposal of items like stale cookies, flat soda, and leftovers. The best estimate of actual sugar consumption is achieved by establishing sugar intake through food consumption research. Sugar intake is the estimate of actual sugar consumption obtained from food frequency questionnaires and based on self-reporting.

There is some confusion about sugar-related terms and not all dietary guidelines use the same definitions[3]. That is why **Table 1** contains the definitions of different sugar-related terms as used by the Cosun Nutrition Center.

The most important results of the sixth Dutch National Food Consumption Survey (VCP) 2019-2021 [1]:

- In 2019-2021, the average intake of monosaccharides and disaccharides* by people aged 1-79 in the Netherlands was 93 g/day, which corresponds to 19 percent of energy intake.
- The average intake of monosaccharides and disaccharides was lower in 2019-2021 than in 2012-2016. In the three previous surveys (conducted in 1987-1998), the intake of monosaccharides and disaccharides was relatively stable.
- Of the 93 grams of sugars consumed by the average Dutch person per day, 49 grams are free sugars. That is equivalent to 196 kcal and comprises 10% of the total daily energy intake. The consumption of added sugar has decreased compared to the previous survey (2012-2016).

*Naturally present and added to food

Table 1. Definitions of a few sugar-related terms.

Carbohydrates	Carbohydrates are made up of the elements carbon, hydrogen and oxygen. Carbohydrates fall into three main groups: monosaccharides and disaccharides (i.e. sugars), oligosaccharides (such as maltodextrin) and polysaccharides (such as amylose and starch). Non-digestible carbohydrates (i.e. fibres) are not included in carbohydrate intake because the enzymes in the gastrointestinal tract of humans are unable to digest them.
Sugars	All monosaccharides and disaccharides with the exception of polyols (sugar alcohols like xylitol).
Monosaccharides and disaccharides	Monosaccharides: glucose (dextrose), fructose (fruit sugar) and galactose. Disaccharides: sucrose (granulated sugar), lactose (milk sugar), maltose (malt sugar) and trehalose.
Added sugars	All monosaccharides and disaccharides that are added during food production and preparation. It is assumed that all unrefined white and brown sugar, honey, syrup and molasses are added during food production or preparation. This is why these fall under added sugars. Naturally present monosaccharides and disaccharides in unprocessed products (fruits, vegetables, legumes, potatoes, fish, meat, poultry and eggs) and in juices, fruit concentrates and bread do not fall under the term, nor does lactose in dairy products.
Free sugars	Free sugars include all added sugars, in addition to sugars that are naturally present in fruit juices and concentrated fruit juice.
Naturally present sugars	Sugars that are naturally present in dairy products (lactose), vegetables and fruits do not fall under the categories of added or free sugars.

Source: [4, 5, 6]

Dutch National Food Consumption Surveys

On behalf of the Ministry of Health, Welfare and Sport, the National Institute for Public Health and the Environment (RIVM) collects data on the food consumption and nutritional status of the Dutch population in the Dutch National Food Consumption Survey (VCP). Since 1987, these polls have been conducted on a regular basis. VCP 1987–1988, VCP 1992, VCP 1997–1998, VCP 2007–2010, VCP 2012–2016 and VCP 2019-2021 are the six surveys that have been finished to date. This factsheet was created using information from the most recent VCP (2019-2021) regarding dietary intake of carbohydrates, (free) monosaccharides, and disaccharides.

Data from the first five surveys are used as well to examine the trend in the dietary consumption of monosaccharides and disaccharides through time. Because different methods were used for the various surveys, comparing intake data has limits. Additionally, different age groups were included in different surveys.

Old and new surveys

The note-taking method, which involved documenting food intake over the course of two consecutive days in a diary, was used to collect data on food consumption from surveys up until 2003. Since 2003, data have been gathered utilizing two 24-hour recall questionnaires filled out by qualified dieticians on two non-consecutive, distinct days. While children aged 1 to 15 were interviewed at home with a parent or guardian, adults were interviewed over the phone. These methodological variations may account for the variations in survey findings between those conducted before and after 2003 [7]. The age distribution has been standardised to include people aged 7 to 69 by the RIVM in order to allow comparisons between the fourth, fifth and sixth survey.

Underreporting

Food consumption in the fourth, fifth and sixth survey is measured using a recall method, which means that it is based on people's memory. In practice, respondents tend to also provide socially desirable answers, which can lead to over- and underreporting of certain foods. In the first three surveys, food intake is established using a two-day note-taking method. This method is susceptible to socially desirable answers and over- and underreporting. In the first survey, the average energy intake was 2308 kcal/day, while it was 2212 kcal/day in the second and 2190 kcal/day in the third. In other words, there was a downward trend in energy intake during the period 1987-1998. Low or too low energy intake can be a consequence (in full or in part) of underreporting due to socially desirable answers [1].

NEVO online

The Dutch Food Composition Database (NEVO), version 2021/7.0, was used to convert the consumption data from the sixth survey into nutrient intake. NEVO online contains data on the composition of foods and dishes consumed frequently by a large percentage of the Dutch population and that significantly contribute to the intake of energy and nutrients. Data on nutritional composition always lag behind real composition, which is after all variable. A change in composition is not immediately included in the NEVO. Additionally, due to natural fluctuation, various production techniques, home preparation techniques, and storage times, food composition varies. Regular updates are made to the NEVO database [8].

See: https://nevo-online.rivm.nl/Home/En

Contribution of the energy-providing nutrients to total energy intake.

Carbohydrates contribute to 43 percent of the average Dutch person's total energy consumption (**Figure 1**). Alcohol, fats, proteins, and to a lesser extent, fibres, are the primary sources of energy. Starch, or complex carbs, make up 24% of the 43% of total carbohydrates. As a result, monosaccharides and disaccharides (sugars) account for the remaining 19% of caloric consumption. Free sugars are all monosaccharides and disaccharides added by the producer, cook or consumer and sugars naturally present in honey, syrups, fruit juices and fruit concentrate and contribute 10% to total energy intake.

More information on the consumption of carbohydrates and (free) sugars, their role in dietary energy intake, and the food categories that contribute most to overall intake can be found in the remaining sections of the factsheet.

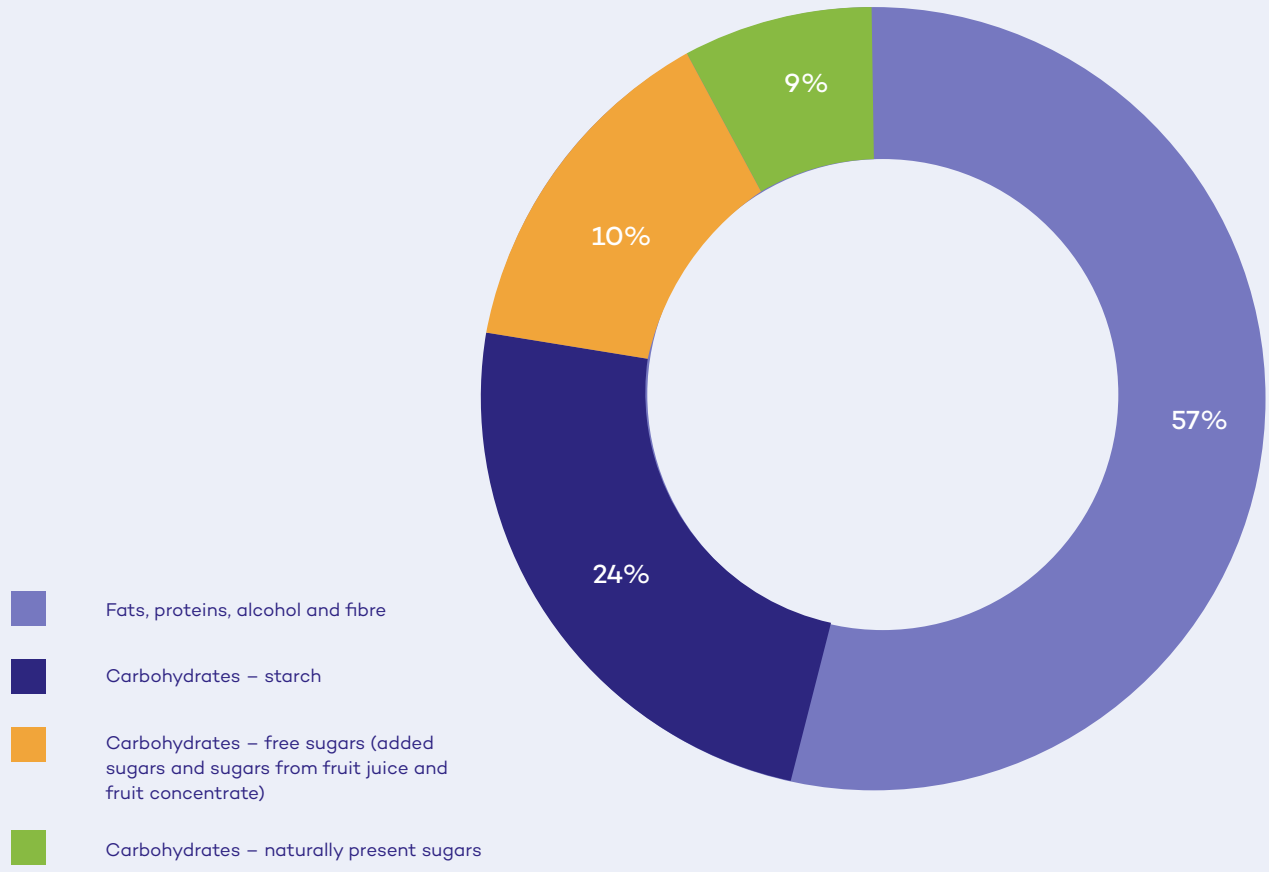

Figure 1. Distribution of energy-providing nutrients consumed by the average Dutch person.

How many carbohydrates do we consume in the Netherlands?

According to the most recent survey, the average intake of carbohydrates is 213 grams per day. This corresponds to 43% of an average energy intake of 2010 kilocalories (kcal). The intake of digestible carbohydrates meets the recommendations of the Health Council of the Netherlands for all groups except for women aged 65-79 years old, which assumes that at least 40% of energy is from carbohydrates, without setting an upper limit (**Table 2**) [9]. This recommendation does not distinguish between different types of digestible carbohydrates (monosaccharides, disaccharides and polysaccharides). Proteins contribute 16% of energy on average, while fats contribute 37%. These amounts also fall within the recommendations of the Health Council of the Netherlands.

What is the current sugar intake in the Netherlands?

According to the most recent survey, the average intake of monosaccharides and disaccharides is 93 grams per day. This intake corresponds to 19% of average energy intake. This includes naturally occurring mono- and disaccharides (such as those found in fruit, vegetables, and lactose in dairy products), as well as added mono- and disaccharides.

According to **Table 3**, children consume more monosaccharides and disaccharides (both in g/d and en%). Out of the eight age groups children in the age range of 1-3 had the highest intake of monosaccharides and disaccharides. The average energy percentage decreases with age and stabilises somewhat from 30 years of age. Men in all age groups have a higher intake of mono- and disaccharides in grams per day (g/d) than women, although the difference with children aged 1-3 years is relatively minor.

Table 2. Average intake of total carbohydrates, polysaccharides in grams per day (g/d) and energy percentage (en%) and average intake of dietary fibre (g/d).

Age	Male	Female
Total carbohydrates (g/d (en%))		
1-3 years	170 (51.1)	159 (51.5)
4-11 years	230 (49.4)	199 (49.4)
12-17 years	251 (47.2)	206 (47.2)
18-50 years	250 (42.5)	195 (43.2)
51-64 years	234 (40.2)	182 (40.6)
65-79 years	221 (40.1)	174 (39.7)
Polysaccharides (g/d (en%))		
1-3 years	81 (24.6)	77 (24.6)
4-11 years	142 (26.3)	115 (26.2)
12-17 years	121 (26.2)	105 (26.3)
18-50 years	105 (26.3)	109 (24.2)
51-64 years	135 (23.4)	98 (22.1)
51-70 years	122 (22.5)	91 (20.9)
Dietary fibres* (g/d)		
1-3 years	15.2	14.2
4-11 years	18.6	16.9
12-17 years	21	18
18-50 years	23.7	18.7
51-64 years	23.6	19.1
51-70 years	22.7	19.2

Source: [1]

Table 3. Average intake of monosaccharides and disaccharides in grams per day (g/d) and energy percentage (en%).

Age	Male	Female
Monosaccharides and disaccharides (g/d (en%))		
1-3 years	90 (26.7)	90 (26.9)
4-11 years	109 (20.6)	88 (21)
12-17 years	107 (23.5)	90 (23.7)
18-50 years	104 (17.2)	83 (18.2)
51-64 years	99 (16.8)	82 (18)
65-79 years	96 (17.6)	84 (19.2)

Source: [1]

Minimise consumption of sugar-containing beverages

One of the dietary guidelines established by the Health Council of the Netherlands in 2015 is to 'minimise consumption of sugar-containing beverages'. Sugar-containing beverages include not only dairy and other beverages with added sugars, but also fruit juices. It is a well-known fact that liquid sugars are less filling than solid sugars. This makes it easy to consume too many calories, which in turn increases the risk of becoming overweight [10].

Which foods are the main source of sugars?

In the most recent survey, the consumed foods are separated into 18 major groups. The most important groups that influence the consumption of mono- and disaccharides are listed in **Table 4**. Dairy products and substitutes are the main source of mono- and disaccharides for children and adult men (**Table 4**). Women, on the other hand, obtain most of their mono- and disaccharides from the fruit, nuts and seeds, and olives group, followed by dairy products and substitutes. On average, the top five sources account for approximately 90% of mono- and disaccharide intake in children, and around 80% in adults.

Have we been consuming more sugar in recent years?

The average intake of monosaccharides and disaccharides in the period 1987-1998 was relatively stable. In the period 2007-2021, the intake of monosaccharides and disaccharides decreased significantly (**Table 5** and **Figure 2**). This applies to both absolute intake and the contribution to energy intake among both children and adults.

Survey comparison

In order to compare the last two surveys, the sampling has been standardised to age 7-69 (**Table 5**). This provides a good indication of the differences between 2007-2010, 2012-2016 and 2019-2021.

The difference in age range in the first three surveys has probably not caused any significant effects because the respondents in these surveys originated from a representative panel of households with a housewife/househusband under the age of 75 years. As a result of this selection criterion, the majority of older respondents will be similar. However, the ages of the oldest partner of the housewife/househusband in the three first surveys differ.

Table 4. Top 5 foods that contribute the most to the intake of monosaccharides and disaccharides (naturally present and added), as identified in the 2019-2021 survey.

Food group	Contribution (%)
Boys aged 1-17 years	
1. Dairy products and substitutes	23.6
2. Non-alcoholic beverages	19.6
3. Fruits, nuts and seeds, olives	17.2
4. Sugar and confectionery	17.2
5. Cakes and sweet biscuits	9.8
Girls aged 1-17 years	
1. Dairy products and substitutes	23
2. Fruits, nuts and seeds, olives	19.7
3. Sugar and confectionery	17.8
4. Non-alcoholic beverages	17.0
5. Cakes and sweet biscuits	10.5
Men aged 18-79 years	
1. Dairy products and substitutes	20.4
2. Fruits, nuts and seeds, olives	17.6
3. Non-alcoholic beverages	15.6
4. Sugar and confectionery	14.9
5. Cakes and sweet biscuits	10.3
Women aged 18-79 years	
1. Fruits, nuts and seeds, olives	21.2
2. Dairy products and substitutes	19.1
3. Sugar and confectionery	13.2
4. Non-alcoholic beverages	12.5
5. Cakes and sweet biscuits	12.4

Source: [1]

Table 5. Average intake of monosaccharides and disaccharides in grams per day (g/d) and energy percentage (en%) as identified in the six surveys.

Survey executed:	Age range	Number of persons in the sampling	Monosaccharides and disaccharides (g/day)	Monosaccharides and disaccharides (en%)
1987–1988	1-85	5898	128	22.5
1992	1-92	6218	122	22.5
1997-1998	1-97	5958	125	23.3
2007-2010	7-69	3819	120	21.3
2012-2016	7-69	2801	112*	20.4*
2019-2021	7-69	3570	95*	18.4*

Source: [11, 12, 1]

* The age range has been aligned with the 2007-2010 survey (to achieve an equivalent comparison), namely ages 7-69 years. As a result, the values deviate from the values that apply to the entire sampling of the 2012-2016 and 2019-2021 survey (aged 1-79).

The horizontal dotted line in the table indicates when the food consumption research method was changed.

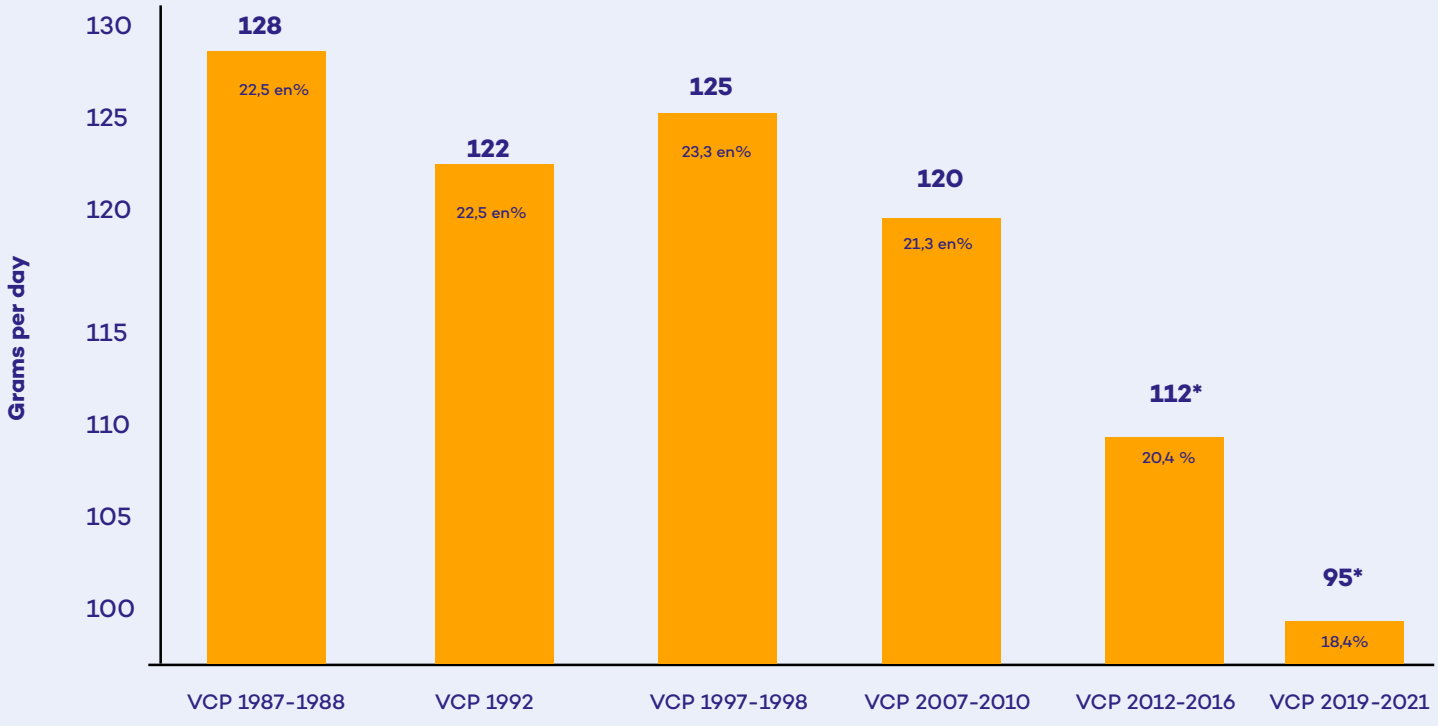

Figure 2. A visual representation of Table 5. Trend in monosaccharide and disaccharide intake over the years.

* The age range has been aligned here with the VCP 2007-2010 (to achieve an equivalent comparison), namely ages 7-69 years. As a result, the values deviate from the values that apply to the entire sampling of the 2012-2016 and 2019-2021 survey (ages 1-79).

How much added sugar and free sugar do we consume?

The average intake of free sugars is 49 grams per day (10 en%). The absolute intake of free sugars is on average higher in men than in women (**Table 6**). The contribution of added and free sugars to energy intake is highest among children aged 4-11 years. The average energy percentage of added and free sugars decreases with age.

The Health Council of the Netherlands does not have any guidelines for added and free sugars [10].

Which foods are the main source of added and free sugars?

Sugar and confectionery are the main sources of free sugars, followed by non-alcoholic beverages (**Table 7**). Together, these account for half of the total free sugar intake.

Table 6. Average intake of added and free sugars in grams per day (g/d) and energy percentage (en%).

Age	Male	Female
Added sugars (g/d (en%))		
1-3 years	42.1 (11.3)	40.2 (11.6)
4-11 years	66 (13.5)	56.1 (13.7)
12-17 years	66.3 (12.1)	52.3 (12.1)
18-50 years	57.4 (9.8)	43.4 (9.5)
51-64 years	50.8 (8.7)	38.3 (8.1)
65-79 years	47.6 (8.2)	36.3 (7.6)

Table 7. Top 5 foods that contribute most to the intake of free sugars.

Food group	Contribution (%)
Sugar and confectionary	28
Non-alcoholic beverages	23
Cakes and sweet biscuits	20
Dairy products and substitutes	13
Sauces and seasonings	7

Source: [1]

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Cosun Nutrition Center, November 2025

Cosun Nutrition Center is grateful to its Scientific Advisory Board, consisting of experts in nutrition, health and sustainability, food safety and nutrition communication, for their critical contributions to this factsheet.

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