Supplementary Table 1. Age-standardized participant characteristics of person-years according to average sugar-sweetened beverage intake at age 13-18 among women younger than age 50 in the NHSII, 1998-2015[a]

Characteristic	Sugar-sweetened beverage intake at age 13-18		
	<1 serving/wk	1 serving/wk to <2 servings/d	≥2 servings/d
Person-years, No.	113 475	218 172	25 788
Age, y	44.5 (3.9)	44.6 (3.9)	44.1 (4.1)
Race, white, %	95	94	94
Height, cm	165 (6.7)	165 (6.6)	164 (6.6)
BMI at age 18, kg/m²	21.6 (3.3)	20.9 (3.1)	21.0 (3.5)
Ever smokers before age 20, %	20	22	33
Pack-years among ever smokers before age 20	2.9 (2.2)	2.8 (2.1)	3.4 (2.3)
Physical activity at grade 9-12, MET-h/wk	52.6 (36.6)	54.7 (36.2)	57.0 (38.4)
Use of multivitamins at age 13-18, %	17	17	12
Dietary intake in adolescence[b]			
Alcohol, g/d	1.3 (4.1)	1.3 (3.7)	2.1 (5.8)
Red and processed meat, servings/wk	1.3 (0.7)	1.5 (0.7)	1.7 (0.7)
Dietary fiber, g/d	22.6 (6.2)	20.8 (4.8)	18.3 (4.1)
Total folate, µg/d	369 (140)	334 (112)	283 (94.7)
Total calcium, mg/d	1160 (375)	1077 (328)	872 (255)

Abbreviations: BMI, body mass index; MET, metabolic equivalent of task; NHSII, Nurses' Health Study II.

[a] Data are presented as mean (standard deviation) of person-years unless otherwise indicated. All values other than age were directly standardized to the age distribution (in 5-year intervals) of all participants.

[b] At age 13-18 other than alcohol intake at age 15-17.

Supplemental material

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Gut

Supplementary Table 2. Age-standardized participant characteristics at baseline according to average beverage intake in adulthood among women younger than age 50 in the NHSII, 1991-2015[a]

Characteristic	Sugar-sweetened beverages		Artificially sweetened beverages		Fruit juice	
	<1 serving/wk	≥2 servings/d	<1 serving/wk	≥2 servings/d	<1 serving/wk	≥2 servings/d
N	44 769	8740	32 777	23 098	37 271	1431
Age, y	37.2 (4.5)	35.6 (4.8)	36.5 (4.6)	36.5 (4.7)	36.9 (4.6)	35.4 (4.8)
Race, white, %	94	90	91	95	93	88
Height, cm	165 (6.6)	165 (6.7)	165 (6.7)	165 (6.6)	165 (6.6)	165 (6.6)
BMI, kg/m²	24.6 (5.0)	24.6 (5.9)	23.2 (4.7)	25.8 (5.6)	24.7 (5.2)	23.0 (4.5)
Postmenopausal, %	3.0	3.9	3.0	3.5	3.5	3.8
Current menopausal hormone use among postmenopausal women, %	83	79	83	83	83	74
Family history of colorectal cancer, %	4.3	4.2	4.3	4.3	4.3	4.6
Screening lower endoscopy within the past 10 y, %	1.2	1.3	1.2	1.2	1.2	0.9
Lower endoscopy due to other indications within the past 10 y, %	1.8	2.2	1.8	2.0	1.8	2.0
Ever smokers, %	36	36	33	37	38	31
Pack-years among ever smokers	11.7 (8.4)	14.1 (9.9)	12.8 (9.1)	12.4 (8.8)	12.8 (9.0)	10.4 (8.0)
Physical activity, MET-h/wk	24.6 (28.5)	19.7 (26.3)	21.3 (26.4)	23.5 (27.6)	21.2 (26.2)	29.2 (34.1)
Regular use of aspirin, %	11	13	10	13	12	8.5
Regular use of non-aspirin NSAIDs, %	20	22	16	25	20	18
Current use of multivitamins, %	44	41	46	40	38	55
Dietary intake						
Beverage intake, servings/d	0.0 (0.0)	4.0 (1.7)	0.0 (0.0)	4.6 (2.2)	0.1 (0.0)	2.8 (0.9)
Alcohol, g/d	3.4 (6.3)	2.2 (5.2)	2.7 (5.8)	3.5 (6.6)	3.1 (6.2)	3.0 (6.0)
Red and processed meat, servings/wk	5.7 (4.3)	8.6 (5.1)	6.6 (4.8)	7.0 (4.8)	6.3 (4.6)	6.1 (4.6)
Dietary fiber, g/d	19.7 (5.9)	14.2 (4.0)	17.7 (5.8)	18.4 (5.4)	18.1 (6.1)	18.2 (5.8)
Total folate, µg/d	502 (302)	386 (240)	485 (312)	452 (266)	438 (291)	584 (285)
Total calcium, mg/d	1085 (464)	794 (346)	997 (451)	1016 (426)	1004 (467)	996 (378)
Alternative Healthy Eating Index-2010 score[b,c]	41.8 (9.4)	34.9 (8.2)	39.5 (9.8)	38.8 (8.9)	38.9 (9.5)	42.8 (9.8)

Abbreviations: BMI, body mass index; MET, metabolic equivalent of task; NHSII, Nurses' Health Study II; NSAID, nonsteroidal anti-inflammatory drug.

[a] Data are presented as mean (standard deviation) of person-years unless otherwise indicated. All values other than age were directly standardized to the age distribution (in 5-year intervals) of all participants.

[b] Without sugar-sweetened beverages and alcohol.

[c] According to the predefined intake criteria for 11 dietary components (e.g. fruits, vegetables, whole grains, nuts and legumes, red and processed meat, sugar-sweetened beverages, sodium, alcohol, polyunsaturated fatty acids, omega-3 fatty acids, and trans fatty acids), a score ranging from 0 to 10 was given to each component, yielding a total score ranging from 0 to 110. A higher score reflects better diet quality.

Supplementary Table 3. Sweetened beverage intake in adulthood and risk of early-onset colorectal cancer with mutual adjustment for beverages

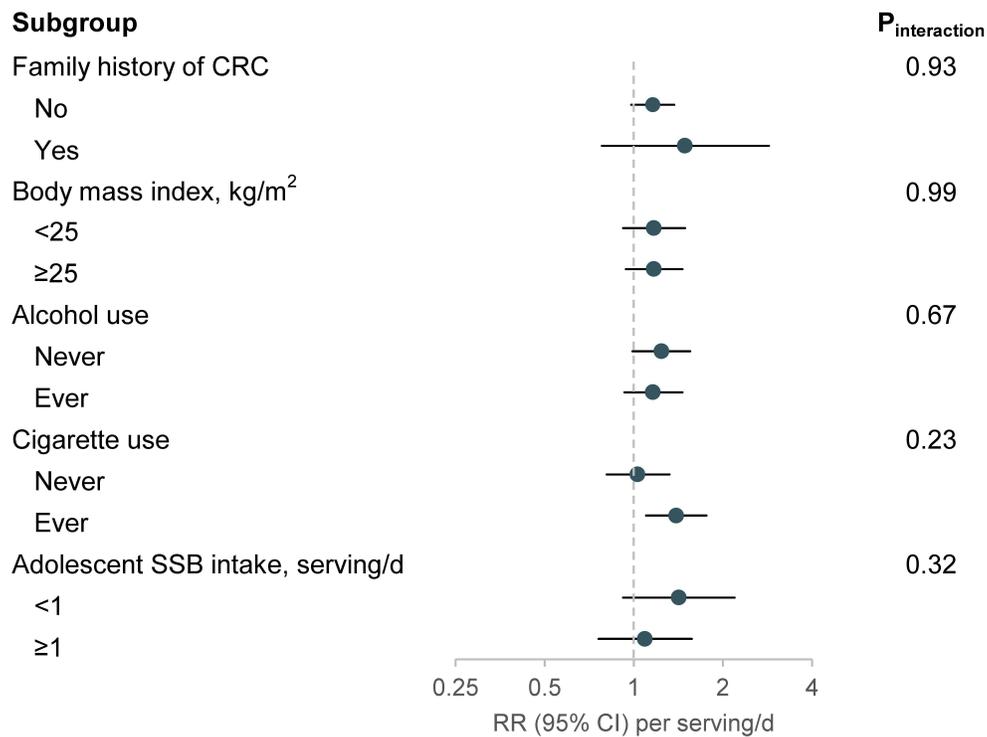| Exposure	<1 serving/wk	1 serving/wk to <1 serving/d	1 serving/d to <2 servings/d	≥2 servings/d	P_{trend}[a]	Each serving/d increase
Sugar-sweetened beverages						
Person-years	536 446	504 341	178 886	138 469		
No. of cases	45	34	14	16		
Multivariable RR (95% CI)[b,c]	1 [Reference]	0.91 (0.57-1.48)	1.14 (0.58-2.23)	1.97 (0.96-4.03)	0.03	1.15 (0.97-1.35)
Artificially sweetened beverages						
Person-years	424 283	321 864	258 215	353 780		
No. of cases	32	33	19	25		
Multivariable RR (95% CI)[b,c]	1 [Reference]	1.29 (0.78-2.14)	0.96 (0.53-1.74)	0.83 (0.47-1.47)	0.24	0.95 (0.85-1.06)
Fruit juice						
Person-years	450 890	799 663	92 765	14 825		
No. of cases	44	59	5	1		
Multivariable RR (95% CI)[b,c]	1 [Reference]	0.84 (0.55-1.29)	0.74 (0.28-1.98)	1.13 (0.15-8.60)	0.63	1.17 (0.72-1.90)

Abbreviations: CI, confidence interval; RR, relative risk.

One beverage serving is 8 oz.

[a] Calculated using the median of each category of beverage intake as a continuous variable.

[b] Covariates listed in the footnote of Table 2 were included in the model: race (white, nonwhite), height (continuous), body mass index (continuous), menopausal status and menopausal hormone use (premenopausal, postmenopausal never user, postmenopausal ever user, unknown menopausal status or hormone use), family history of colorectal cancer (yes, no), pack-years of smoking (continuous), physical activity (continuous), regular use of aspirin (yes, no), regular use of nonsteroidal anti-inflammatory drugs (yes, no), current use of multivitamins (yes, no), intake of alcohol, red and processed meat, dietary fiber, total folate [from foods and supplements], and total calcium (all continuous), Alternative Healthy Eating Index-2010 score without sugar-sweetened beverages and alcohol (continuous), and lower endoscopy due to screening (yes, no) or for other indications within the past 10 years (yes, no).

[c] Additionally adjusted for consumption of the other two beverages, depending on the main exposure (continuous).

Subgroup	$P_{interaction}$
Family history of CRC	0.93
No	
Yes	
Body mass index, kg/m^2	0.99
<25	
≥25	
Alcohol use	0.67
Never	
Ever	
Cigarette use	0.23
Never	
Ever	
Adolescent SSB intake, serving/d	0.32
<1	
≥1	

RR (95% CI) per serving/d

Supplementary Figure 1. Sugar-sweetened beverage intake in adulthood and risk of early-onset colorectal cancer according to participant characteristics

Abbreviations: CI, confidence interval; CRC, colorectal cancer; RR, relative risk; SSB, sugar-sweetened beverage.
One beverage serving is 8 oz. The models were adjusted for covariates listed in the footnote of Table 2, except family history of CRC in the corresponding stratified model, alcohol intake among never drinkers, and pack-years of smoking among never smokers.