

Table S1. Substituted food items in the FFQ

Methods	Number of food items	Foods
Using different parts of the same species, similar species, or same species with different cooking or purification methods	18	Vitamin-enriched rice, akamiso (a type of miso), pickled radish, pickled green vegetable, pickled plum, pickled Chinese cabbage, pickled cucumber, pickled eggplants, leaf mustard, Swiss chard, sponge gourd, mugwort, hassaku orange(a type of citrus fruits), citrus iyo (a type of citrus fruits), dried wakame (seaweed), margarine, mayonnaise, and sauce
Prepared by dietitians using the recipes	6	Grilled eel, chikuwa, kamaboko, salad dressing, canned coffee, powder corn soup

FFQ, frequency food questionnaire

Table S2. Major foods contributing to sugar intake according to the DR (Cohorts I and II)

Men (n=276)				Women (n=289)		
Sugars	Food groups	Major contributing foods	Proportion (%)	Food groups	Major contributing foods	Proportion (%)
Total sugars						
	Fruits		21.3	Fruits		24.4
		Apples	(5.0)		Apples	(5.5)
		Citrus	(3.9)		Citrus	(5.0)
		Bananas	(3.0)		Japanese persimmons	(3.5)
		Japanese persimmons	(2.8)		Bananas	(2.8)
		Watermelon	(1.2)		Watermelon	(1.4)
		Grapes	(0.9)		Grapes	(1.0)
		Muskmelons	(0.9)		Muskmelons	(0.9)
		Pears	(0.7)		Pears	(0.7)
		Jam	(0.6)		Jam	(0.7)
		Peaches	(0.5)		Peaches	(0.7)
	Vegetables		14.3	Confectionaries		19.3
		Onions	(2.1)		Traditional fresh and semi-dry confectionery	(10.8)
		Carrots	(1.8)		Cake and pastry	(2.7)
		Japanese radishes	(1.8)		Traditional dry confectionery	(1.6)
		Pumpkin and squash	(1.5)		Bun with filling	(1.5)
		Tomatoes	(1.4)		Pudding and chilled dessert	(1.0)
		Cabbage	(1.2)		Chocolate	(0.8)
		Cucumber	(0.7)		Biscuits	(0.7)
		Eggplant	(0.7)			
		Welsh onions	(0.5)	Milk and milk products		13.1
		Chinese cabbage	(0.5)		Liquid milk	(8.6)
		Sweet corn	(0.5)		Yogurt	(2.4)
					Ice cream	(1.5)
	Sugars and sweeteners		14.2	Sugars and sweeteners		12.4
		Sugars	(13.6)		Sugars	(11.8)
		Honey and syrup	(0.6)		Honey and syrup	(0.5)
	Confectionaries		13.4	Vegetables		12.3
		Traditional fresh & semi-dry confectionery	(8.1)		Onions	(1.7)
		Cake & pastry	(1.5)			

Bun with filling	(1.3)
Traditional dry confectionery	(1.1)
Chocolate	(0.5)
Milk and milk products	11.1
Liquid milk	(8.0)
Yogurt	(1.7)
Ice cream	(1.0)
Non-alcoholic beverages	8.3
Carbonated beverage	(3.6)
Coffee	(2.1)
Lactic acid bacteria beverage	(1.0)
Fruit drinks	(1.0)
100 percent fruit juice	(0.6)
Seasonings	4.8
Miso	(2.8)
Japanese Worcester sauce	(0.6)
Soy sauce	(0.5)
Alcohol	4.5
Fermented alcoholic beverage	(2.5)
Compound alcoholic beverage	(2.0)
Cereals	3.3
Bread	(1.9)
Rice	(0.8)
Noodles	(0.6)

Pumpkin and squash	(1.5)
Carrots	(1.5)
Japanese radishes	(1.4)
Tomatoes	(1.4)
Cabbage	(0.9)
Cucumber	(0.6)
Sweet corn	(0.5)
Eggplant	(0.5)
Non-alcoholic beverages	5.9
Carbonated beverage	(1.8)
Lactic acid bacteria beverage	(1.4)
Fruit drinks	(1.0)
Coffee	(0.9)
100 percent fruit juice	(0.8)
Seasonings	3.7
Miso	(2.1)

Glucose

Vegetables	26.9
Japanese radishes	(4.2)
Onions	(4.1)
Cabbage	(3.0)
Tomatoes	(2.9)
Carrots	(2.4)
Pumpkin and squash	(1.5)
Cucumber	(1.5)

Fruits	30.1
Japanese persimmons	(7.3)
Citrus	(5.9)
Apples	(3.5)
Grapes	(2.8)
Bananas	(2.6)
Watermelon	(2.0)
Pears	(0.7)

	Eggplant	(1.5)
	Chinese cabbage	(1.3)
	Welsh onions	(1.0)
	Sweet corn	(0.5)
Fruits		20.8
	Japanese persimmons	(4.6)
	Citrus	(3.6)
	Apples	(2.6)
	Bananas	(2.3)
	Grapes	(2.0)
	Watermelon	(1.4)
	Pears	(0.6)
	Muskmelons	(0.5)
	Pineapple	(0.5)
Alcohol		19.4
	Fermented alcoholic beverage	(11.1)
	Compound alcoholic beverage	(8.3)
Seasonings		15.1
	Miso	(11.1)
	Soy sauce	(1.6)
	Japanese Worcester sauce	(1.4)
	Tomato products	(0.8)
Non-alcoholic beverages		8.7
	Carbonated beverage	(5.3)
	Fruit drinks	(1.3)
	Lactic acid bacteria beverage	(1.2)
	100 percent fruit juice	(0.9)
Cereals		3.9
	Bread	(2.3)
	Rice	(1.5)

	Muskmelons	(0.7)
	Strawberries	(0.6)
	Pineapple	(0.6)
Vegetables		28.0
	Onions	(4.1)
	Japanese radishes	(4.1)
	Tomatoes	(3.6)
	Cabbage	(2.9)
	Carrots	(2.4)
	Pumpkin and squash	(2.0)
	Cucumber	(1.6)
	Eggplant	(1.4)
	Chinese cabbage	(1.2)
	Welsh onions	(1.0)
	Sweet corn	(0.7)
Seasonings		14.3
	Miso	(10.5)
	Soy sauce	(1.5)
	Japanese Worcester sauce	(1.2)
	Tomato products	(0.8)
Non-alcoholic beverages		8.4
	Carbonated beverage	(3.3)
	Lactic acid bacteria beverage	(1.9)
	Fruit drinks	(1.7)
	100 percent fruit juice	(1.3)
Alcohol		8.4
	Compound alcoholic beverage	(7.8)
	Fermented alcoholic beverage	(0.5)
Cereals		4.1
	Bread	(2.9)
	Rice	(1.1)

Fructose

Fruits 41.4

Fruits 48.2

Apples	(14.5)
Japanese persimmons	(5.7)
Citrus	(5.3)
Watermelon	(3.9)
Bananas	(2.8)
Grapes	(2.6)
Pears	(2.0)
Muskmelons	(0.7)
Strawberries	(0.6)
Pineapple	(0.6)
Vegetables	32.8
Onions	(5.2)
Tomatoes	(4.3)
Japanese radishes	(4.3)
Cabbage	(3.0)
Carrots	(3.0)
Cucumber	(2.2)
Pumpkin and squash	(1.8)
Eggplant	(1.8)
Chinese cabbage	(1.3)
Welsh onions	(1.3)
Sweet corn	(0.6)
Non-alcoholic beverages	13.1
Carbonated beverage	(7.6)
Fruit drinks	(2.2)
100 percent fruit juice	(1.8)
Lactic acid bacteria beverage	(1.6)
Cereals	4.5
Bread	(4.4)
Seasonings	3.6
Japanese Worcester sauce	(1.5)
Miso	(1.1)
Tomato products	(0.9)

Apples	(16.3)
Japanese persimmons	(7.2)
Citrus	(7.1)
Watermelon	(4.6)
Grapes	(2.9)
Bananas	(2.6)
Pears	(2.1)
Strawberries	(0.8)
Muskmelons	(0.8)
Pineapple	(0.6)
Vegetables	28.3
Tomatoes	(4.4)
Onions	(4.2)
Japanese radishes	(3.4)
Carrots	(2.5)
Cabbage	(2.4)
Pumpkin and squash	(2.0)
Cucumber	(1.9)
Eggplant	(1.4)
Chinese cabbage	(1.0)
Welsh onions	(1.0)
Sweet corn	(0.7)
Non-alcoholic beverages	11.1
Carbonated beverage	(4.2)
Fruit drinks	(2.5)
100 percent fruit juice	(2.3)
Lactic acid bacteria beverage	(2.1)
Cereals	4.6
Bread	(4.5)

Seasonings	55.6	Milk and milk products	57.2
Soy sauce	(34.9)	Yogurt	(54.7)
Miso	(20.2)	Ice cream	(1.7)
		Cheeses	(0.5)
Milk and milk products	43.8	Seasonings	42.1
Yogurt	(41.7)	Soy sauce	(26.5)
Ice cream	(1.2)	Miso	(15.3)
Cheeses	(0.8)		
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Sucrose			
Sugars and sweeteners	27.8	Confectionaries	34.7
Sugars	(27.8)	Traditional fresh and semi-dry confectionery	(20.0)
Confectionaries	25.9	Cake and pastry	(4.9)
Traditional fresh and semi-dry confectionery	(15.9)	Traditional dry confectionery	(2.9)
Cake and pastry	(2.9)	Bun with filling	(2.6)
Bun with filling	(2.4)	Pudding and chilled dessert	(1.5)
Traditional dry confectionery	(2.2)	Biscuits	(1.3)
Chocolate	(0.9)	Chocolate	(1.2)
Biscuits	(0.8)	Sugars and sweeteners	22.6
Pudding and chilled dessert	(0.6)	Sugars	(22.6)
Fruits	20.1	Fruits	21.3
Citrus	(4.5)	Citrus	(5.4)
Bananas	(4.2)	Apples	(4.2)
Apples	(4.0)	Bananas	(3.6)
Japanese persimmons	(1.6)	Japanese persimmons	(2.0)
Muskmelons	(1.3)	Muskmelons	(1.3)
Jam	(1.0)	Jam	(1.1)
Peaches	(0.8)	Peaches	(1.0)
Watermelon	(0.5)	Watermelon	(0.5)
Pears	(0.5)	Pears	(0.5)
Pineapple	(0.5)	Pineapple	(0.5)
Non-alcoholic beverages	7.9	Vegetables	4.9
Coffee	(3.9)	Pumpkin and squash	(1.7)
Carbonated beverage	(2.3)	Carrots	(1.2)
Lactic acid bacteria beverage	(0.8)	Sweet corn	(0.5)
Fruit drinks	(0.6)	Onions	(0.5)

Vegetables	5.9
Pumpkin and squash	(1.7)
Carrots	(1.6)
Onions	(0.6)
Sweet corn	(0.6)
Milk and milk products	3.0
Yogurt	(1.4)
Ice cream	(1.3)

Non-alcoholic beverages	4.5
Coffee	(1.6)
Carbonated beverage	(1.0)
Lactic acid bacteria beverage	(1.0)
Fruit drinks	(0.5)
Milk and milk products	4.1
Yogurt	(2.1)
Ice cream	(1.8)

Maltose

Cereals	41.4
Noodles	(20.8)
Bread	(20.0)
Wheat flour	(0.5)
Potatoes	21.5
Sweet potato	(21.5)
Confectionaries	16.8
Traditional fresh and semi-dry confectionery	(11.1)
Traditional dry confectionery	(2.2)
Candy	(1.6)
Bun with filling	(1.4)
Alcohol	8.8
Compound alcoholic beverage	(8.8)
Milk and milk products	4.2
Ice cream	(3.6)
Sherbet	(0.6)

Cereals	32.5
Bread	(18.6)
Noodles	(13.5)
Potatoes	27.0
Starch sweeteners	(0.6)
Confectionaries	22.3
Traditional fresh and semi-dry confectionery	(14.1)
Candy	(3.3)
Traditional dry confectionery	(3.2)
Bun with filling	(1.4)
Alcohol	6.3
Compound alcoholic beverage	(6.3)
Milk and milk products	5.4
Ice cream	(4.8)
Sherbet	(0.5)

Lactose

Milk and milk products	93.0
Liquid milk	(80.0)
Yogurt	(7.5)
Ice cream	(2.4)
Milk powder	(2.1)

Milk and milk products	93.0
Liquid milk	(76.9)
Yogurt	(9.0)
Ice cream	(3.1)
Milk powder	(3.1)

Coffee whitener, cream	(0.6)	Coffee whitener, cream	(0.5)
Non-alcoholic beverages	3.2	Confectionaries	3.7
Coffee	(2.0)	Chocolate	(1.4)
Lactic acid bacteria beverage	(1.2)	Bun with filling	(0.8)
		Cake and pastry	(0.8)
		Pudding and chilled dessert	(0.5)

Starch

Cereals	90.7	Cereals	85.0
Rice	(75.5)	Rice	(67.6)
Noodles	(9.0)	Noodles	(8.9)
Bread	(3.7)	Bread	(5.7)
Wheat	(2.0)	Wheat	(2.4)
Confectionaries	3.6	Confectionaries	7.0
Traditional fresh and semi-dry confectionery	(1.3)	Traditional fresh and semi-dry confectionery	(2.6)
Traditional dry confectionery	(0.9)	Traditional dry confectionery	(1.5)
Bun with filling	(0.6)	Cake and pastry	(1.2)
Cake and pastry	(0.5)	Bun with filling	(1.0)
		Biscuits	(0.6)
		Potatoes	3.7
		Potato	(1.9)
		Sweet potato	(1.2)

DR, dietary record

Foods that contributed to at least 0.5% have been listed.

Table S3-1. Comparison of FFQ for sugar intakes with urinary sugars based on cross classification by quintile (%)

	Cohort I		
	n=72 (Men: n=27, Women: n=45)		
	Same category¹	Same or Adjacent category²	Extreme category³
Total sugars ^{4,5}	22 (n=16)	63 (n=45)	6 (n=4)

¹Percentage of participants whose sugar intakes from FFQ and urinary sugars were classified into the same category by quintile.

²Percentage of participants whose sugar intakes from FFQ and urinary sugars were classified into the same or adjacent category by quintile.

³Percentage of participants whose sugar intakes from FFQ and urinary sugars were classified into the extreme (lowest or highest) category by quintile.

⁴"Total sugars" was the sum of the crude consumption of the following saccharides: glucose, fructose, galactose, sucrose, maltose, and lactose.

⁵Sugar intakes were adjusted using the density method and urinary sugars were adjusted by urinary creatinine concentration.

FFQ, food frequency questionnaire.

Table S3-2. Frequency and means of FFQ for sugar intakes with urinary sugars based on cross classification by quintile (Cohort I, n=72)

		Sugar intakes from FFQv (% energy)¹				
Means (SD)		6.7 (2.2)	10.7 (1.0)	13.3 (0.6)	16.2 (0.6)	19.0 (2.0)
Urinary sugar (creatinine- adjusted)¹	0.17 (0.04)	3	4	1	3	3
	0.32 (0.05)	4	4	2	3	2
	0.57 (0.08)	5	4	2	2	1
	0.85 (0.08)	1	2	5	3	4
	1.26 (0.38)	1	1	4	4	4

FFQv, food frequency questionnaire for validity; SD, standard deviation

Dark grey cells represent the number of participants whose sugar intakes from FFQv and urinary sugars were classified into the same category by quintile.; Light grey cells represent the number of participants whose sugar intakes from FFQv and urinary sugars were classified into the adjacent category by quintile.; Shaded cells represent the number of participants whose sugar intakes from FFQv and urinary sugars were classified into the extreme (lowest or highest) category by quintile.

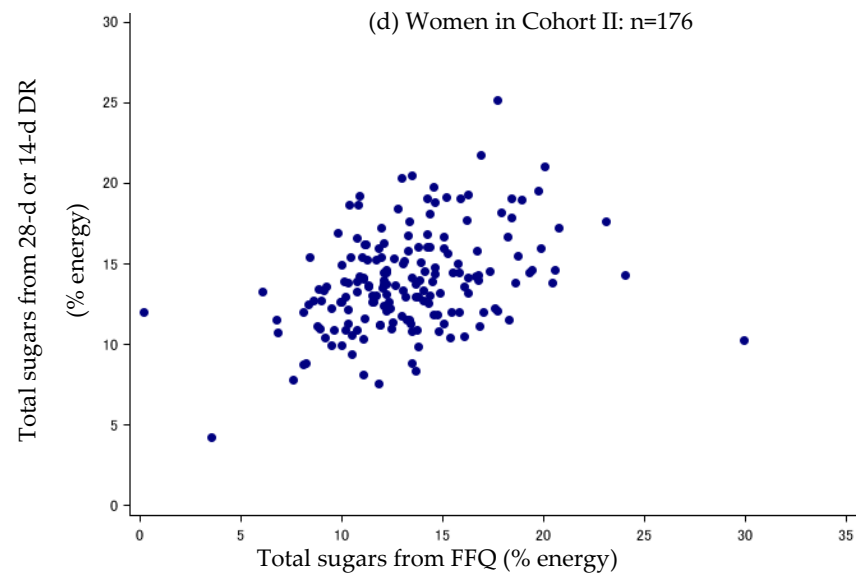
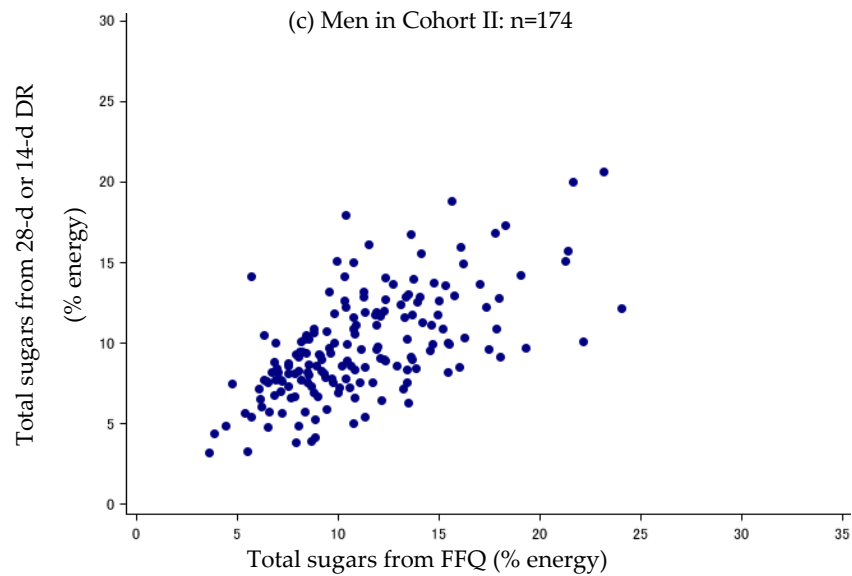
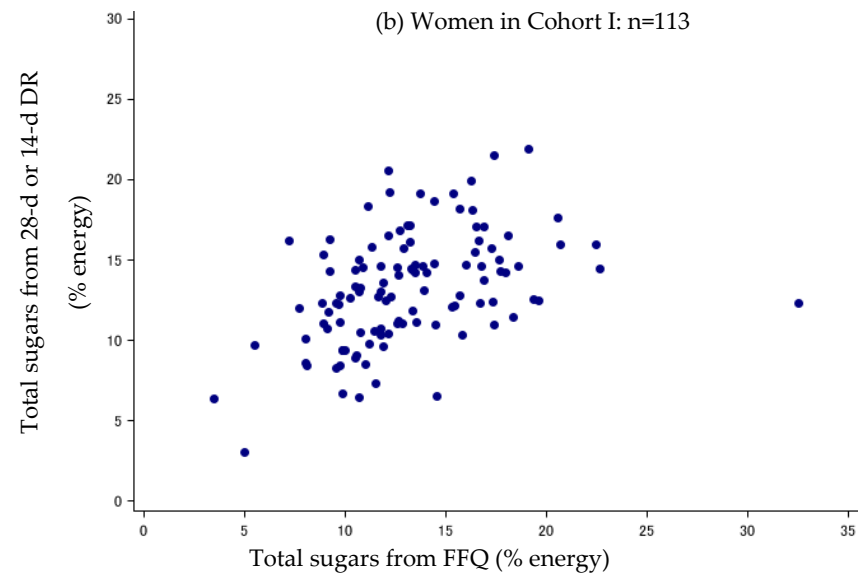
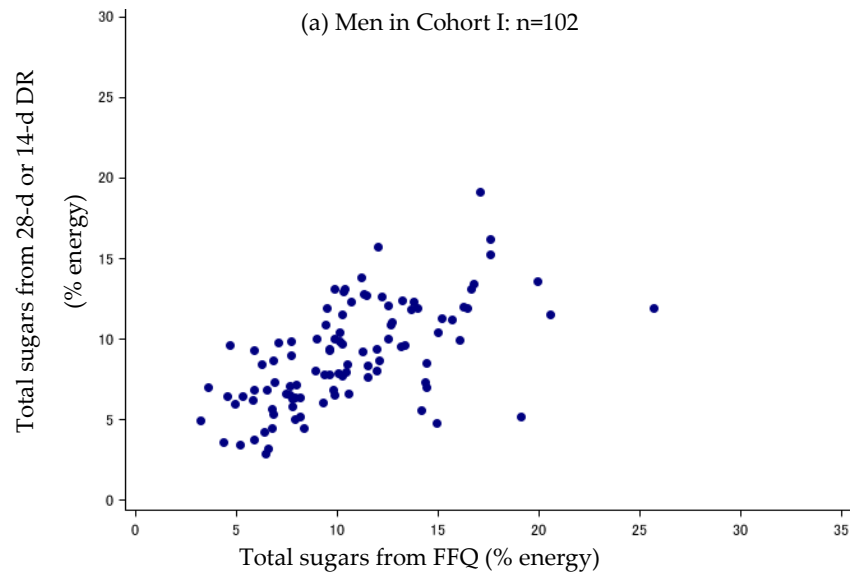


Figure S1. Scatter plots between total sugars from FFQ and DR

The regression coefficients: $\beta=0.58$ ($p<0.001$), men in Cohort I; $\beta=0.49$ ($p<0.001$), women in Cohort I; $\beta=0.61$ ($p<0.001$), men in Cohort II; $\beta=0.26$ ($p<0.001$), women in Cohort II. The percent energy of total sugar intake from the FFQ and DR were log-transformed for the regression analysis.

Table S4. Correlations between FFQv and DR for 28- or 14-days

	Spearman's rank Correlation Coefficient						ICC for DR
	Crude		Energy-adjusted (residual) ¹		Energy-adjusted (density) ²		
	r	95% CI	r	95% CI	r	95% CI	
Cohort I							
Men (n=102)							
Total sugars ³	0.64	(0.51, 0.74)	0.57	(0.43, 0.69)	0.64	(0.50, 0.74)	0.43
Glucose	0.67	(0.54, 0.76)	0.57	(0.43, 0.69)	0.63	(0.49, 0.73)	0.27
Fructose	0.59	(0.44, 0.70)	0.56	(0.42, 0.68)	0.58	(0.43, 0.69)	0.27
Galactose	0.55	(0.40, 0.67)	0.53	(0.38, 0.66)	0.56	(0.41, 0.68)	0.44
Sucrose	0.61	(0.48, 0.72)	0.55	(0.40, 0.67)	0.61	(0.47, 0.72)	0.41
Maltose	0.47	(0.31, 0.61)	0.45	(0.28, 0.60)	0.46	(0.29, 0.60)	0.13
Lactose	0.66	(0.54, 0.76)	0.60	(0.45, 0.71)	0.61	(0.47, 0.72)	0.43
Starch	0.74	(0.64, 0.82)	0.52	(0.36, 0.65)	0.47	(0.30, 0.61)	0.37
Energy	0.53	(0.37, 0.65)					
Protein	0.46	(0.29, 0.60)	0.29	(0.10, 0.46)	0.22	(0.02, 0.39)	0.21
Fat	0.32	(0.14, 0.49)	0.53	(0.37, 0.66)	0.49	(0.32, 0.62)	0.25
Carbohydrate	0.71	(0.59, 0.79)	0.60	(0.46, 0.71)	0.62	(0.48, 0.72)	0.42
Women (n=113)							
Total sugars ³	0.52	(0.37, 0.64)	0.31	(0.13, 0.46)	0.48	(0.32, 0.61)	0.36
Glucose	0.48	(0.32, 0.61)	0.32	(0.15, 0.48)	0.42	(0.25, 0.56)	0.18
Fructose	0.51	(0.36, 0.63)	0.36	(0.18, 0.51)	0.46	(0.30, 0.59)	0.22
Galactose	0.67	(0.55, 0.76)	0.60	(0.47, 0.71)	0.64	(0.52, 0.74)	0.23
Sucrose	0.48	(0.32, 0.61)	0.33	(0.16, 0.49)	0.43	(0.27, 0.57)	0.32
Maltose	0.42	(0.26, 0.56)	0.43	(0.26, 0.57)	0.41	(0.24, 0.55)	0.13
Lactose	0.69	(0.58, 0.78)	0.66	(0.54, 0.75)	0.65	(0.52, 0.74)	0.34
Starch	0.58	(0.44, 0.69)	0.45	(0.29, 0.59)	0.34	(0.17, 0.49)	0.29
Energy	0.41	(0.25, 0.56)					

Protein	0.38	(0.21, 0.53)	0.25	(0.07, 0.42)	0.21	(0.03, 0.38)	0.17
Fat	0.20	(0.02, 0.37)	0.46	(0.30, 0.59)	0.45	(0.29, 0.59)	0.22
Carbohydrate	0.58	(0.45, 0.69)	0.43	(0.27, 0.57)	0.41	(0.24, 0.55)	0.29
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Cohort II							
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Men (n=174)							
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Total sugars ³	0.45	(0.32, 0.56)	0.62	(0.52, 0.70)	0.62	(0.52, 0.71)	0.42
Glucose	0.40	(0.27, 0.52)	0.53	(0.41, 0.63)	0.52	(0.40, 0.62)	0.30
Fructose	0.45	(0.32, 0.56)	0.57	(0.46, 0.66)	0.57	(0.46, 0.66)	0.33
Galactose	0.59	(0.49, 0.68)	0.60	(0.50, 0.69)	0.61	(0.51, 0.70)	0.45
Sucrose	0.41	(0.28, 0.53)	0.54	(0.42, 0.63)	0.54	(0.43, 0.64)	0.35
Maltose	0.30	(0.16, 0.43)	0.40	(0.27, 0.52)	0.44	(0.31, 0.55)	0.20
Lactose	0.76	(0.69, 0.82)	0.75	(0.68, 0.81)	0.77	(0.70, 0.82)	0.48
Starch	0.54	(0.43, 0.64)	0.64	(0.55, 0.72)	0.58	(0.47, 0.67)	0.39
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Energy	0.37	(0.24, 0.49)					
Protein	0.29	(0.15, 0.42)	0.35	(0.22, 0.48)	0.34	(0.20, 0.47)	0.24
Fat	0.25	(0.10, 0.38)	0.54	(0.43, 0.64)	0.49	(0.37, 0.60)	0.30
Carbohydrate	0.46	(0.34, 0.57)	0.69	(0.60, 0.76)	0.67	(0.58, 0.74)	0.42
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Women (n=176)							
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Total sugars ³	0.25	(0.11, 0.39)	0.39	(0.26, 0.51)	0.37	(0.23, 0.49)	0.30
Glucose	0.29	(0.14, 0.42)	0.34	(0.21, 0.47)	0.36	(0.22, 0.48)	0.20
Fructose	0.28	(0.14, 0.41)	0.30	(0.16, 0.43)	0.31	(0.17, 0.44)	0.20
Galactose	0.59	(0.48, 0.68)	0.63	(0.54, 0.71)	0.64	(0.55, 0.72)	0.28
Sucrose	0.22	(0.08, 0.36)	0.32	(0.18, 0.45)	0.30	(0.16, 0.43)	0.24
Maltose	0.24	(0.10, 0.38)	0.24	(0.10, 0.38)	0.26	(0.11, 0.39)	0.15
Lactose	0.67	(0.58, 0.74)	0.71	(0.62, 0.77)	0.71	(0.63, 0.78)	0.40
Starch	0.44	(0.31, 0.55)	0.45	(0.32, 0.56)	0.37	(0.23, 0.49)	0.38
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Energy	0.26	(0.11, 0.39)					
Protein	0.33	(0.20, 0.46)	0.31	(0.17, 0.44)	0.26	(0.11, 0.39)	0.21
Fat	0.32	(0.18, 0.45)	0.48	(0.36, 0.59)	0.37	(0.23, 0.49)	0.26

Carbohydrate	0.31	(0.17, 0.44)	0.47	(0.35, 0.58)	0.37	(0.24, 0.49)	0.29
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DR, dietary record; FFQv, food frequency questionnaire for validity; r, correlation coefficient; CI, confidence interval; ICC, intra-class correlation coefficient

¹ Sugar and other nutrients intakes were adjusted for energy intake by residual model.

² Sugar and other nutrients intakes were energy-adjusted using the density method (percentage of energy).

³ "Total sugars" was the sum of the crude consumption of the following saccharides: glucose, fructose, galactose, sucrose, maltose, and lactose.

Table S5. Rank correlation coefficients between %energy of sugar intake assessed using the DR for 28 days and FFQv in Cohorts I and II using the probit transformation method with correction for measurement error

	Cohort I				Cohort II			
	Men (n=75), Women (n=85)				Men (n=174), Women (n=176)			
	Observed		Corrected		Observed		Corrected	
	Spearman's rank CC		Spearman's rank CC		Spearman's rank CC		Spearman's rank CC	
	r	(95% CI)	r	(95% CI)	r	(95% CI)	r	(95% CI)
Men								
Total sugars ^{1,2}	0.58	(0.40, 0.71)	0.65	(0.50, 0.77)	0.60	(0.49, 0.69)	0.66	(0.56, 0.73)
Glucose ²	0.59	(0.41, 0.72)	0.73	(0.61, 0.82)	0.48	(0.36, 0.59)	0.56	(0.45, 0.65)
Fructose ²	0.54	(0.36, 0.68)	0.72	(0.59, 0.81)	0.55	(0.43, 0.64)	0.61	(0.51, 0.69)
Galactose ²	0.47	(0.27, 0.63)	0.77	(0.66, 0.85)	0.52	(0.40, 0.62)	0.64	(0.55, 0.72)
Sucrose ²	0.58	(0.41, 0.71)	0.65	(0.49, 0.76)	0.56	(0.44, 0.65)	0.63	(0.53, 0.71)
Maltose ²	0.51	(0.32, 0.66)	0.77	(0.66, 0.85)	0.55	(0.43, 0.64)	0.68	(0.59, 0.75)
Lactose ²	0.69	(0.55, 0.80)	0.81	(0.71, 0.88)	0.69	(0.60, 0.76)	0.76	(0.69, 0.82)
Starch	0.45	(0.25, 0.62)	0.51	(0.32, 0.66)	0.58	(0.47, 0.67)	0.64	(0.55, 0.72)
Women								
Total sugars ^{1,2}	0.39	(0.19, 0.56)	0.46	(0.27, 0.61)	0.38	(0.24, 0.50)	0.44	(0.31, 0.55)
Glucose ²	0.24	(0.03, 0.43)	0.30	(0.09, 0.48)	0.40	(0.26, 0.51)	0.47	(0.35, 0.58)
Fructose ²	0.27	(0.06, 0.45)	0.34	(0.14, 0.52)	0.38	(0.24, 0.50)	0.44	(0.31, 0.55)
Galactose ²	0.41	(0.21, 0.57)	0.55	(0.38, 0.68)	0.50	(0.38, 0.60)	0.63	(0.54, 0.71)
Sucrose ²	0.37	(0.17, 0.54)	0.43	(0.24, 0.59)	0.31	(0.17, 0.44)	0.37	(0.24, 0.49)
Maltose ²	0.45	(0.26, 0.60)	0.59	(0.43, 0.71)	0.43	(0.30, 0.54)	0.53	(0.42, 0.63)
Lactose ²	0.69	(0.56, 0.79)	0.86	(0.79, 0.91)	0.66	(0.57, 0.74)	0.74	(0.67, 0.80)
Starch	0.41	(0.22, 0.57)	0.51	(0.34, 0.66)	0.36	(0.22, 0.48)	0.41	(0.28, 0.52)

DR, dietary record; FFQv, food frequency questionnaire for validity; CC, correlation coefficient; CI, confidence interval

Participants living in Ishikawa area in Cohort I were excluded from the analysis because they completed 14 days of DR.

¹ "Total sugars" was the sum of the crude consumption of the following saccharides: glucose, fructose, galactose, sucrose, maltose, and lactose.

² Sugars intakes were adjusted by using the density method (percentage of energy).

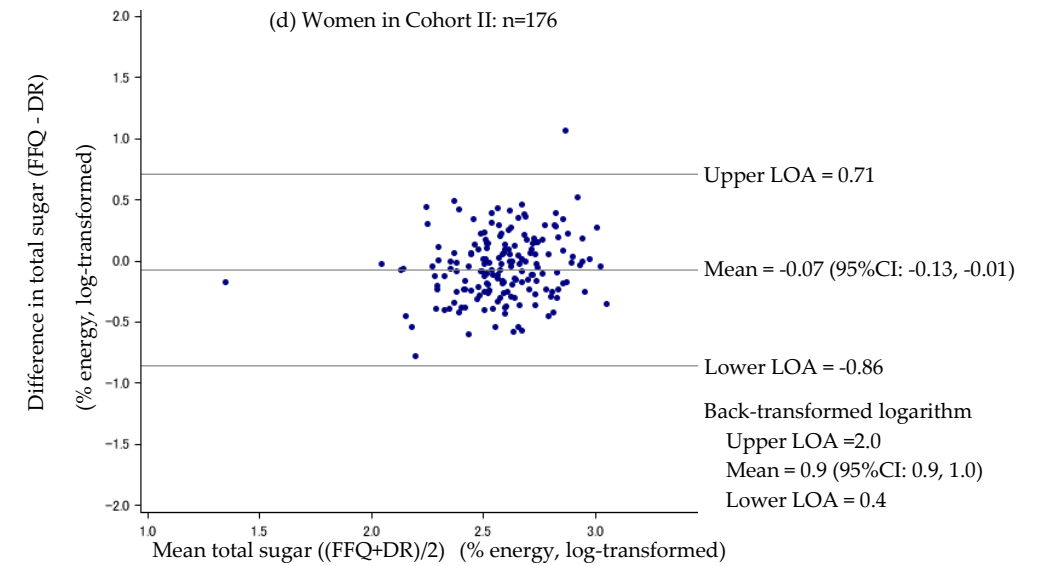
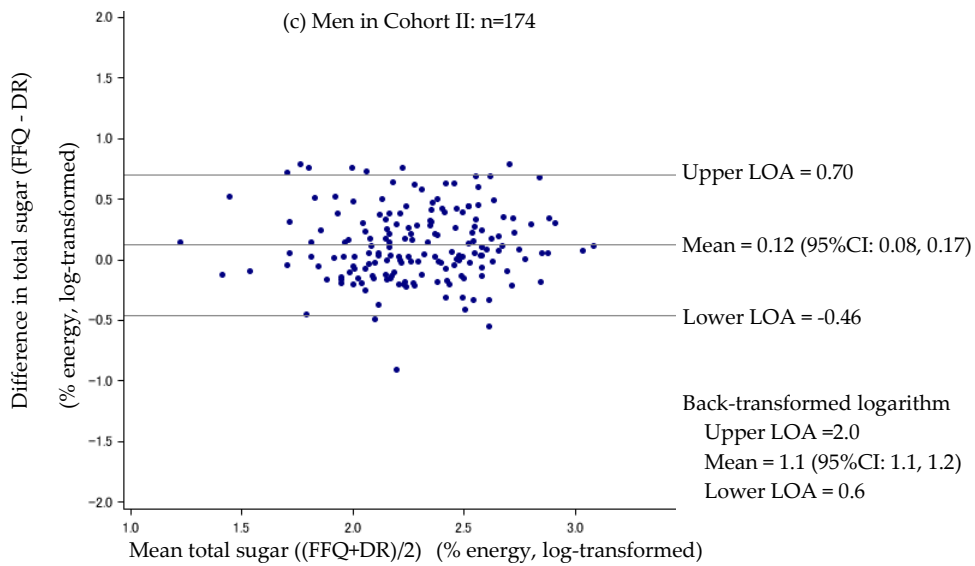
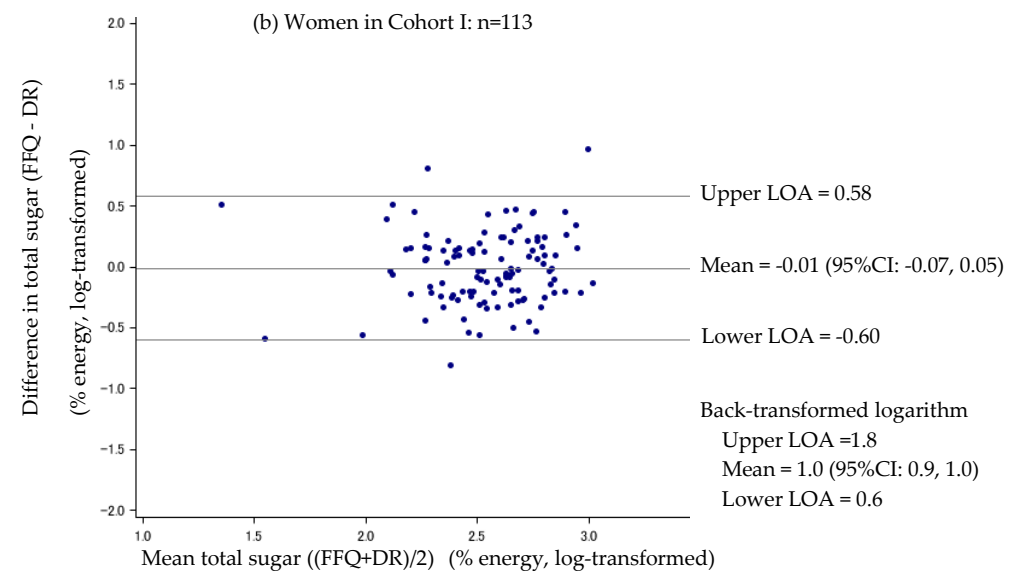
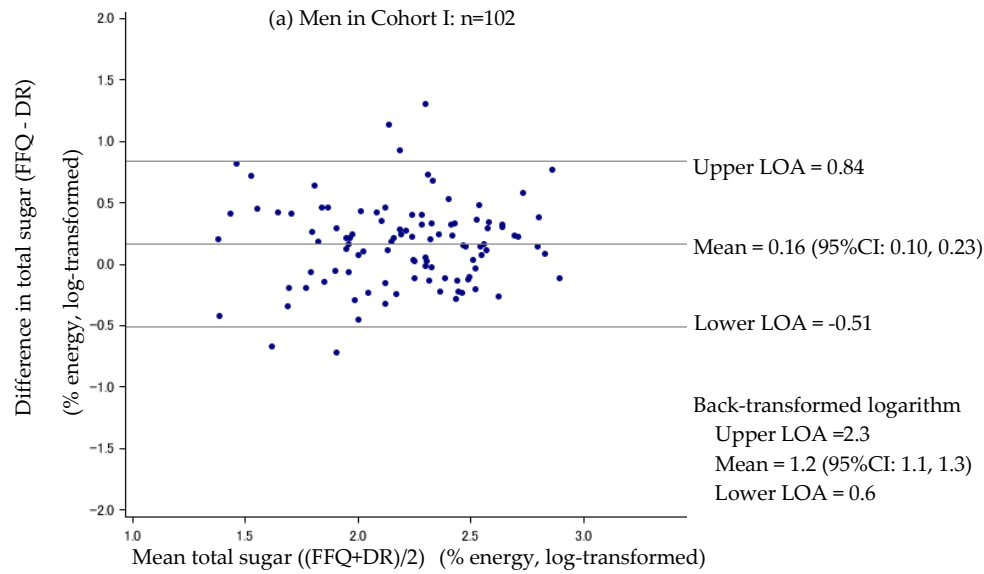


Figure S2. Bland-Altman plot for the comparison of the FFQ and DR in measuring the total sugar intake
 FFQ, food frequency questionnaire; DR, dietary record; LOA, limit of agreement

Table S6. Comparison of FFQv with DR for sugar intakes based on cross classification by quintile (%)

	Cohort I			Cohort II		
	Men (n=102), Women (n=113)			Men (n=174), Women (n=176)		
	Same category ¹	Same or Adjacent categories ²	Extreme category ³	Same category ¹	Same or Adjacent categories ²	Extreme category ³
Men						
Total sugars ^{4,5}	36	81	3	34	75	1
Glucose ⁵	31	75	1	34	71	1
Fructose ⁵	30	77	0	36	73	1
Galactose ⁵	34	71	1	40	80	1
Sucrose ⁵	28	78	2	32	75	2
Maltose ⁵	32	72	1	32	69	3
Lactose ⁵	35	82	1	45	87	1
Starch	35	74	3	37	72	1
Women						
Total sugars ^{4,5}	22	69	2	28	66	3
Glucose ⁵	27	70	2	30	65	3
Fructose ⁵	33	68	2	28	60	3
Galactose ⁵	36	80	0	35	78	0
Sucrose ⁵	29	72	3	33	64	3
Maltose ⁵	20	68	4	26	60	6
Lactose ⁵	43	78	1	41	87	1
Starch	35	64	4	27	67	3

FFQ, food frequency questionnaire for validity; DR, dietary record

¹ Percentage of participants whose sugar intakes from FFQ and DR were classified into the same category by quintile.

² Percentage of participants whose sugar intakes from FFQ and DR were classified into the same or adjacent category by quintile.

³ Percentage of participants whose sugar intakes from FFQ and DR were classified into the extreme (lowest or highest) category by quintile.

⁴ "Total sugars" was the sum of the crude consumption of the following saccharides: glucose, fructose, galactose, sucrose, maltose, and lactose.

⁵ Sugars intakes were adjusted for using the density method.