

Table S1: Adjusted outcome ratios with and without BMI adjustment according to sugar-sweetened and artificially sweetened beverage consumption among participants, FEPOS 2017-2019

	Sugar-sweetened beverage consumption	Sugar-sweetened beverage consumption	Artificially sweetened beverage consumption	Artificially sweetened beverage consumption
	Adjusted ratio and 95% CI ^{a,b}	Adjusted ratio and 95% CI ^{a,c}	Adjusted ratio and 95% CI ^{a,b}	Adjusted ratio and 95% CI ^{a,c}
Semen parameters				
Semen volume ^d	0.98 (0.91, 1.07)	0.98 (0.90, 1.07)	1.04 (0.93, 1.17)	1.04 (0.93, 1.18)
Sperm concentration	1.02 (0.89, 1.17)	1.02 (0.89, 1.17)	0.97 (0.81, 1.16)	0.97 (0.81, 1.15)
Total motility ^e	0.98 (0.95, 1.02)	0.98 (0.95, 1.02)	1.01 (0.98, 1.05)	1.01 (0.98, 1.05)
Sperm morphology (% normal sperm)	1.02 (0.91, 1.15)	0.99 (0.88, 1.13)	0.89 (0.76, 1.04)	0.88 (0.76, 1.03)
Total sperm count ^d	0.98 (0.84, 1.14)	0.98 (0.84, 1.14)	0.99 (0.81, 1.21)	1.00 (0.82, 1.23)

^aRatio between the semen quality characteristics for moderate consumption (≥3 days per week) relative to infrequent consumption (<3 days per week)

^bAdjusted for candy intake, cake intake, energy drink consumption, coffee consumption, smoking, maternal smoking, maternal BMI, parental socio-economic status, abstinence time and fever

^cAdjusted for BMI, candy intake, cake intake, energy drink consumption, coffee consumption, smoking, maternal smoking, maternal BMI, parental socio-economic status, abstinence time and fever

^dParticipants with recording of spillage excluded from analyses on semen volume and total sperm count (mill.)

^eAnalyses on total motility (A + B %) additionally adjusted for time to analysis

Table S2: Adjusted outcome ratios including unhealthy diet according to sugar-sweetened beverage consumption among participants, FEPOS 2017-2019

	Sugar-sweetened beverage consumption Adjusted ratio and 95% CI ^{a,b}
Semen parameters	
Semen volume ^c	1.00 (0.93, 1.08)
Sperm concentration	1.00 (0.88, 1.13)
Total motility ^d	0.98 (0.96, 1.01)
Sperm morphology (% normal sperm)	1.00 (0.90, 1.11)
Total sperm count ^c	0.96 (0.84, 1.01)

^aRatio between the semen quality characteristics for moderate consumption (≥3 days per week) relative to infrequent consumption (<3 days per week)

^bAdjusted for unhealthy diet, energy drink consumption, coffee consumption, smoking, maternal smoking, maternal BMI, parental socio-economic status, abstinence time and fever

^cParticipants with recording of spillage excluded from analyses on semen volume and total sperm count (mill.)

^dAnalyses on total motility (A + B %) additionally adjusted for time to analysis

Supplementary Table S3: Adjusted outcome ratios including varicocele according to sugar-sweetened or artificially sweetened beverage consumption among participants, FEPOS 2017-2019

	Sugar-sweetened beverage consumption Adjusted ratio and 95% CI ^{a,b}	Artificially sweetened beverage consumption Adjusted ratio and 95% CI ^{a,b}
Semen parameters		
Semen volume ^c	0.99 (0.91, 1.07)	1.03 (0.92, 1.16)
Sperm concentration	1.03 (0.89, 1.18)	0.96 (0.81,1.14)
Total motility ^d	0.98 (0.95, 1.02)	1.01 (0.98, 1.05)
Sperm morphology (% normal sperm)	0.98 (0.86, 1.11)	0.89 (0.77, 1.04)
Total sperm count ^c	0.97 (0.83, 1.14)	0.98 (0.80, 1.20)

^aRatio between the semen quality characteristics for moderate consumption (≥3 days per week) relative to infrequent consumption (<3 days per week)

^bAdjusted for candy intake, cake intake, energy drink consumption, coffee consumption, smoking, maternal smoking, maternal BMI, parental socio-economic status, abstinence time, varicocele, and fever

^cParticipants with recording of spillage excluded from analyses on semen volume and total sperm count (mill.)

^dAnalyses on total motility (A + B %) additionally adjusted for time to analysis