

## Supplementary material

### SUPPLEMENTARY TABLES

**Supplementary table 1** Search terms

**Supplementary table 2** Analysis of confounding variables among 3 studies of food sources of sugar intake and incident gout

**Supplementary table 3** Newcastle-Ottawa Scale (NOS) for assessing the quality of cohort studies

### SUPPLEMENTARY FIGURES

**Supplementary figure 1** Linear and non-linear dose-response relationship between fruit juice intake and incident gout per serving/week

**Supplementary figure 2** Linear and non-linear dose-response relationship between SSB intake and incident gout per serving/week

**Supplementary table 1.** Search terms

## Database and search terms

### MEDLINE

1. sugar\*.mp.
2. exp fructose/
3. fructose.mp.
4. HFCS.mp.
5. exp high fructose Corn Syrup/
6. sucrose.mp.
7. exp dietary Sucrose/
8. sugar sweetened beverage\*.mp.
9. ssb.mp.
10. soda.mp.
11. soft drink\*.mp.
12. exp carbonated beverages/
13. carbonated beverages.mp.
14. non alcoholic beverage\*.mp.
15. nonalcoholic beverage\*.mp.
16. exp energy drinks/
17. energy drink\*.mp.
18. smoothie\*.mp.
19. exp "fruit and vegetable juices"/
20. fruit.mp.
21. exp fruit/
22. exp honey/
23. y\*g\*rt.mp.
24. exp yogurt/
25. ice cream\*.mp.
26. icecream\*.mp.
27. exp ice cream/
28. exp edible grain/
29. cereal\*.mp.
30. dessert\*.mp.
31. sweets.mp.
32. confection\*.mp.
33. pastries.mp.
34. biscuit\*.mp.
35. cookie\*.mp.
36. cake\*.mp.
37. candy.mp.
38. candies\*.mp.
39. exp candy/
40. (chocolate adj2 milk).mp.
41. chocolate.mp
42. exp chocolate/
43. cacao.mp
44. exp cacao/
45. cohort.mp.
46. exp prospective study/
47. (prospective adj2 (cohort or study)).mp.
48. exp multivariate analysis/
49. exp follow up studies/
50. exp proportional hazards models/
51. follow-up study.mp.
52. (longitudinal adj2 study).mp.
53. gout/
54. gout\*.mp.
55. uric acid\*.mp.

### EMBASE

1. sugar\*.mp.
2. exp sugar/
3. exp fructose/
4. fructose.mp.
5. HFCS.mp.
6. exp high fructose Corn Syrup/
7. sucrose.mp.
8. exp dietary Sucrose/
9. sugar sweetened beverage\*.mp.
10. SSB.mp.
11. soda.mp.
12. soft drink\*.mp.
13. exp soft drink/
14. exp carbonated beverages/
15. carbonated beverages.mp.
16. non alcoholic beverage\*.mp.
17. nonalcoholic beverage\*.mp.
18. exp energy drinks/
19. energy drink\*.mp.
20. smoothie\*.mp.
21. exp "fruit and vegetable juices"/
22. fruit.mp.
23. exp fruit/
24. exp honey/
25. y\*g\*rt.mp.
26. exp yoghurt/
27. ice cream\*.mp.
28. icecream\*.mp.
29. exp ice cream/
30. cereal\*.mp.
31. dessert\*.mp.
32. sweets.mp.
33. confection\*.mp.
34. exp bakery product/
35. pastries.mp.
36. biscuit\*.mp.
37. cookie\*.mp.
38. cake\*.mp.
39. candy.mp.
40. candies\*.mp.
41. chocolate.mp
42. exp chocolate/
43. cacao.mp
44. exp cacao/
45. (chocolate adj2 milk).mp.
46. cohort.mp.
47. exp prospective study/
48. (prospective adj2 (cohort or study)).mp.
49. exp multivariate analysis/
50. exp proportional hazards models/
51. follow-up study.mp.
52. (longitudinal adj2 study).mp.
53. gout/
54. gout\*.mp.
55. uric acid\*.mp.

### Cochrane

1. sugar\*.mp.
2. exp fructose/
3. fructose.mp.
4. HFCS.mp.
5. exp Nutritive Sweeteners/
6. sucrose.mp.
7. exp dietary sucrose/
8. sugar sweetened beverage\*.mp.
9. ssb.mp.
10. soda.mp.
11. soft drink\*.mp.
12. exp carbonated beverages/
13. non alcoholic beverage\*.mp.
14. nonalcoholic beverage\*.mp.
15. exp energy drinks/
16. energy drink\*.mp.
17. smoothie\*.mp.
18. ((fruit or vegetable) and juice\*).mp.
19. fruit.mp.
20. exp fruit/
21. exp honey/
22. y\*g\*rt.mp.
23. exp yogurt/
24. ice cream\*.mp.
25. icecream\*.mp.
26. exp ice cream/
27. cereal\*.mp.
28. dessert\*.mp.
29. sweets.mp.
30. confection\*.mp.
31. pastries.mp.
32. biscuit\*.mp.
33. cookie\*.mp.
34. cake\*.mp.
35. candy.mp.
36. candies.mp.
37. exp candy/
38. (chocolate adj2 milk).mp.
39. cohort.mp.
40. exp Prospective Studies/
41. chocolate.mp
42. cacao.mp
43. exp cacao/
44. (prospective adj2 (cohort or study)).mp.
45. exp follow-up studies/
46. exp multivariate analysis/
47. exp proportional hazards models/
48. follow up study.mp.
49. (longitudinal adj2 study).mp.
50. gout/
51. gout\*.mp
52. uric acid\*.mp
53. hyperuricemia\*.mp
54. hyperuricemia/
55. hyperuricaemia\*.mp

56. hyperuricemia\*.mp.  
57. hyperuricemia/  
58. hyperuricaemia\*.mp.  
59. uric.mp.  
60. or/1-44  
61. or/45-52  
62. or/53-59  
63. and/60-62

56. hyperuricemia\*.mp.  
57. hyperuricemia/  
58. hyperuricaemia\*.mp.  
59. uric.mp.  
60. or/1-45  
61. or/46-52  
62. or/53-59  
63. and/60-62

56. uric.mp  
57. or/1-43  
58. or/44-49  
59. or/50-56  
60. and/57-59

Database	Total
MEDLINE: September 13, 2017	81
EMBASE: September 13, 2017	202
Cochrane: September 13, 2017	19
Manual search	7
Total	309

For all databases, the original search was September 13, 2017.

**Supplementary table 2.** Analysis of confounding variables among 3 studies of food sources of sugar intake and incident gout

Study	HPFS (Choi <i>et al.</i> , 2008)	NRHS (Williams, 2008)	NHS (Choi <i>et al.</i> , 2010)
Number of variables in fully adjusted model	14	6	14
Number of multivariable models presented	2	1	3
Timing of measurement of confounding variables	2y	BL*	2y
<b>Pre-specified primary confounding variable</b>			
Age	✓	✓	✓
<b>Pre-specified secondary confounding variables</b>			
Marker of overweight/obesity (Body mass index, weight, waist circumference, waste to hip ratio)	✓		✓
Sex	M §	M §	F ‡
History of gout/hyperuricemia			
Diabetes			
Physical activity			
Lipid medication/dyslipidemia			
Animal protein intake	✓		✓
Hypertension or blood pressure medication including diuretics	✓		✓
<b>Other confounding variables</b>			
<b>Lifestyle factors</b>			
Weekly intake of:			
Alcohol	✓	✓	✓
Seafood	✓		✓
Purine from vegetables	✓		✓
Dairy food	✓		✓
Vitamin C	✓		✓
Coffee		✓	
Meat		✓	
Fish			✓∇
Diet soda	✓∇		✓∇
Sugar-sweetened cola	✓∇		✓∇
Other soda	✓∇		✓∇
Orange or apple juice	✓∇		✓∇
Other fruit juice			✓∇
Orange or apple	✓∇		
Total energy	✓		✓
Weekly intake of aspirin		✓	
<b>Medical history</b>			
History of Hypertension	✓	✓	✓
History of chronic Renal failure	✓		
Menopause status			✓
Use of hormonal therapy			✓

HPFS=Health Professionals Follow-Up Study, NHS=Nurses Health Study

\*Denotes confounders measured only at baseline years.

† Indicates confounders measured every 2 years.

‡ Indicates the study includes only female subjects

§ Indicates the study includes only male subjects

∇ Indicates the confounder was present in some, but not all, models.

**Supplementary table 3.** Newcastle-Ottawa Scale (NOS) for assessing the quality of cohort studies

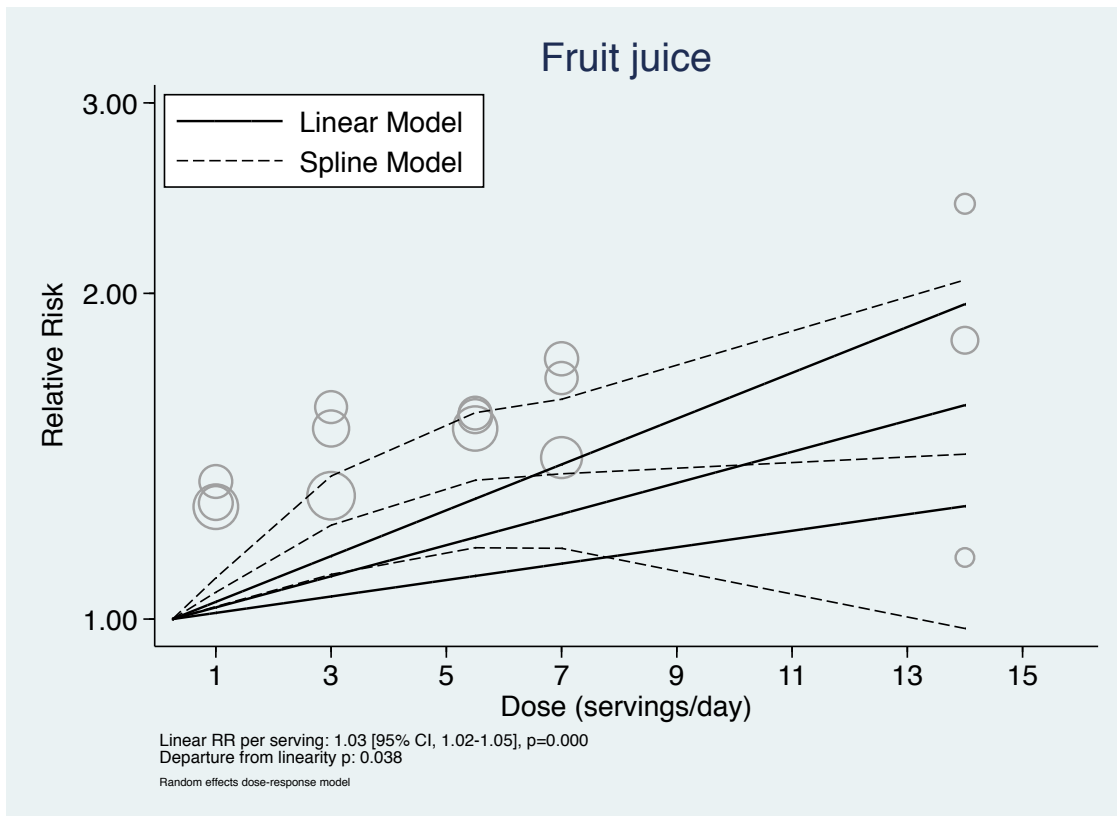
Study	Selection*	Outcome†	Comparability‡	total§
Choi <i>et al.</i> , 2008	2	3	1	6
Williams, 2008	2	2	1	5
Choi <i>et al.</i> , 2010	2	3	1	6

\*Maximum 4 points awarded for cohort representativeness, selection of non-exposed cohort, exposure assessment and demonstration outcome not present at baseline.

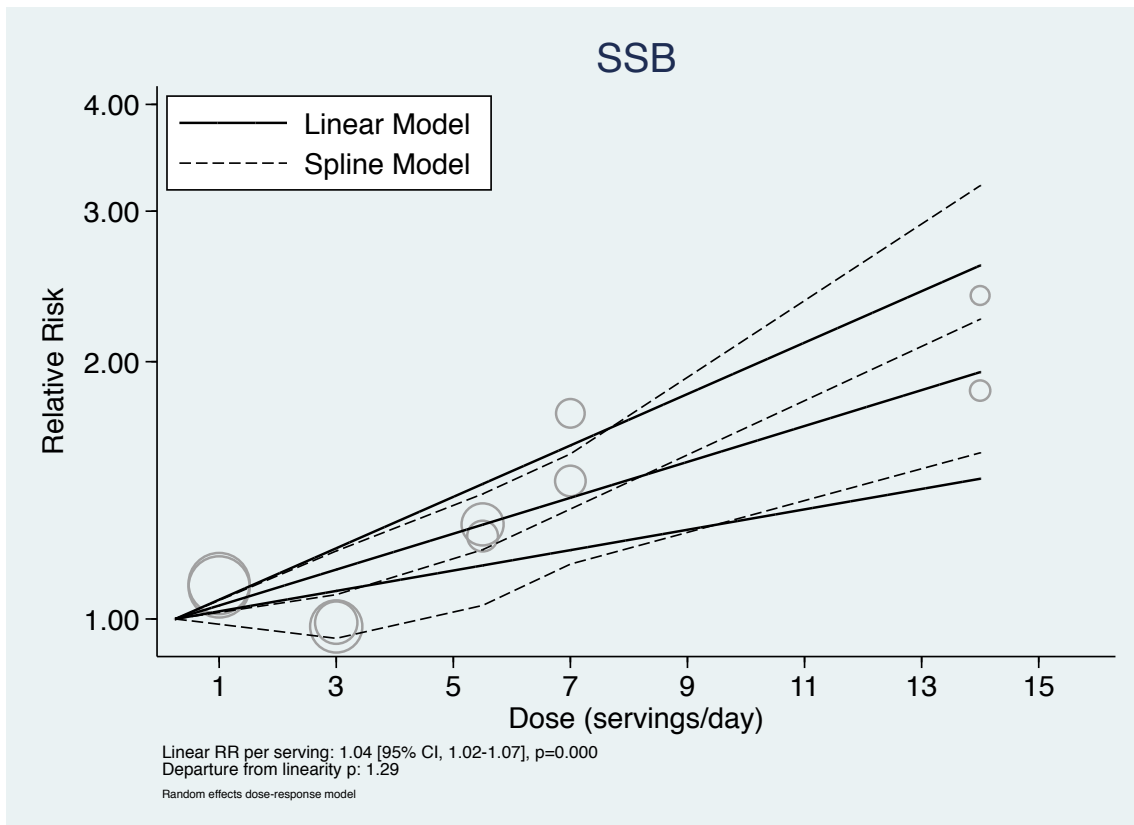
†Maximum 3 points awarded for follow-up length, adequacy of follow-up and outcome assessment.

‡Maximum 2 points awarded for controlling for the pre-specified primary confounding variable (age) and >6 of the secondary confounding variables (sex, body mass index, history of gout or hyperuricemia, diabetes, alcohol, physical activity, lipid medication/dyslipidemia, animal protein intake, hypertension or blood pressure medication including diuretics).

§A maximum of 9 points could be awarded.



**Supplementary figure 1.** Linear and non-linear dose-response relationship between fruit juice intake and incident gout per serving/week. Linear dose response data (solid lines) were modeled using the generalized least squares trend estimation models (GLST). Non-linear dose response data (dashed lines) were modeled with fixed-effects restricted cubic spline models with 3 knots. 95% confidence interval for the fitted trend are shown above and below the solid line. Each study was centered to its own baseline reference dose when estimating increasing dose risk.



**Supplementary figure 2.** Linear and non-linear dose-response relationship between SSB intake and incident gout per serving/week. Linear dose response data (solid lines) were modeled using the generalized least squares trend estimation models (GLST). Non-linear dose response data (dashed lines) were modeled with fixed-effects restricted cubic spline models with 3 knots. 95% confidence interval for the fitted trend are shown above and below the solid line. Each study was centered to its own baseline reference dose when estimating increasing dose risk.