Supplementary Table 1: The results of the quality appraisal of the included articles using the Newcastle-Ottawa Scale (NOS)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Selection** | | | | **Comparability** | **Outcome** | | |
| **1** | **2** | **3** | **4** | **1** | **1** | **2** | **3** |
| Bhole et al. (2010) | A\* | A\* | A\* | A\* | A\*, B\* | B\* | A\* | B\* |
| Burke et al. (2016) | C | C | A\* | B | A\*,B\* | C | A\* | B\* |
| Chen et al. (2012) | A\* | A\* | A\* | A\* | A\*, B\* | B\* | A\* | B\* |
| Chen et al. (2013) | A\* | A\* | A\* | A\* | A\*, B\* | B\* | A\* | B\* |
| Choi and Curhan (2008) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Choi and Curhan (2010) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Choi et al. (2004) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Choi et al. (2004) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Choi et al. (2005) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Choi et al. (2007) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Choi et al. (2009) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Choi et al. (2010) | C | A\* | C | A\* | A\*, B\* | A\* | A\* | B\* |
| Grodzicki et al. (1997) | C | A\* | A\* | B | - | A\* | B | D |
| Hochberg et al. (1995) | C | B | D | B | A\*, B\* | B\* | A\* | B\* |
| Maynard et al. (2012) | B\* | A\* | A\* | A\* | A\*, B\* | C | A\* | B\* |
| Maynard et al. (2014) | B\* | A\* | A\* | A\* | A\*, B\* | C | A\* | B\* |
| McAdams-DeMarco et al. (2011) | A\* | A\* | C | A\* | A\*, B\* | C | A\* | B\* |
| McAdams-DeMarco et al. (2012) | C | A\* | A\* | A\* | A\*, B\* | C | A\* | B\* |
| McAdams-DeMarco et al. (2013) | C | A\* | A\* | A\* | A\*, B\* | C | A\* | B\* |
| Merola et al. (2015) | C | A\* | B\* | A\* | A\*,B\* | C | A\* | B\* |
| Must et al. (1992) | C | A\* | A\* | B | A\*, B\* | C | B | C |
| Niu et al. (2017) | B\* | A\* | A\* | A\* | A\*,B\* | B\* | A\* | A\* |
| Pan et al. (2015) | A\* | A\* | B\* | B | A\*,B\* | C | A\* | B\* |
| Prior et al. (1987) | A\* | A\* | A\* | A\* | A\*, B\* | B\* | A\* | B\* |
| Rai et al. (2017) | C | A\* | B\* | A\* | A\*,B\* | C | A\* | B\* |
| Roubenoff et al. (1991) | C | A\* | A\* | B | A\*, B\* | B\* | A\* | B\* |
| Tan et al. (2017) | A\* | A\* | A\* | A\* | A\*,B\* | B\* | A\* | B\* |
| Teng et al. (2015) | A\* | A\* | B\* | B | A\*,B\* | C | A\* | B\* |
| Tofler and Woodings (1981) | C | A\* | D | B | - | A\* | A\* | B\* |
| Tu et al. (2016) | A\* | A\* | A\* | B | A\*,B\* | B\* | A\* | D |
| Wang et al. (2016) | B\* | A\* | A\* | A\* | A\*,B\* | B\* | A\* | B\* |
| Wijnands et al. (2015) | B\* | A\* | A\* | A\* | A\*,B\* | B\* | A\* | D |
| Williams (2008) | C | A\* | C | A\* | A\*, B\* | C | A\* | B\* |

A is the best response option compared to D which is the worst; see **Table 3.2** for full details of response options

An asterisk (\*) denotes that the article has scored one of the best response options for that particular criterion

A comma (,) separates the two scores for articles which adjusted for more than one potential confounding factor

Supplementary Table 2: Risk estimates for developing gout based on age

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min Adjustment)** | **Risk Value**  **(Max Adjustment)** |
| Bhole et al. (2010) | Men | Age  (per 5-year increase) | Self-report | RR (95%CI) | **1.14 (1.04-1.24)** | **1.14 (1.03-1.26)1** |
|  | Women | Age  (per 5-year increase) | Self-report |  | **1.32 (1.16-1.49)** | **1.24 (1.08-1.43)1** |
| Chen et al. (2012) | Men | Age  (per 1-year increase) | Record-linkage | - | - | **1.03 (1.02-1.03)2** |
|  | Women | Age  (per 1-year increase) | Record-linkage | - | - | **1.05 (1.04-1.06)2** |
|  | Women | Age in postmenopausal women  (per 1-year increase) | Record-linkage | - | - | 1.02 (1.00-1.04)2 |
|  | Women | Age in premenopausal women  (per 1-year increase) | Record-linkage | - | - | **1.09 (1.04-1.13)2** |
| Chen et al. (2013) | Men | Age  (per 1-year increase) | Record-linkage | HR (95%CI) | **1.03 (1.02-1.03)** | **1.02 (1.02-1.03)3** |
|  | Women | Age ≤50 years  (per 1-year increase) | Record-linkage |  | **1.10 (1.07-1.13)** | **1.08 (1.05-1.11)3** |
|  |  | Age >50 years  (per 1-year increase) | Record-linkage |  | **1.05 (1.03-1.07)** | **1.03 (1.01-1.05)3** |
| Prior et al. (1987) | Men | Age in men  (per 1-year increase) | Self-report | OR (95%CI) | 1.03 (0.99-1.05) | **1.05 (1.02-1.07)4** |

Significant values are in bold. RR = relative risk, HR = hazard ratio, OR = odds ratio, CI = confidence interval.1 Adjusted for age, education level, body mass index (BMI), alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 2 Adjusted for age, obesity (BMI≥27), hypertension, hyperlipidaemia, diabetes mellitus, alcohol drinking and cigarette smoking.3 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status.4 Adjusted for migration, BMI, weight, height, arm circumference, arm muscle circumference, subscapular skinfold thickness, triceps skinfold thickness, systolic and diastolic blood pressure, cholesterol, triglycerides, serum uric acid and alcohol consumption.Supplementary Table 3: Risk estimates for developing gout based on ethnicity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure**  **ascertainment** | **Outcome**  **measure** | **Risk Estimate**  **(Minimal adjustment)** | **Risk estimate**  **(Maximal adjustment)** |
| Hochberg et al. (1995) | Men | Ethnicity – black | Self-report | RR (95%CI) | **1.69 (1.02-2.80)** | 1.30 (0.77-2.19)2 |
| Maynard et al. (2014) | Men | Ethnicity – black | Self-report | HR (95%CI) | **1.73 (1.37-2.18)1** | **1.49 (1.11-2.00)3** |
|  | Women | Ethnicity – black | Self-report |  | **2.51 (2.03-3.12)1** | **1.62 (1.24-2.12)3** |

Significant values are in bold. RR = relative risk, HR = hazard ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for incident hypertension and baseline body mass index (BMI). 3 Adjusted for BMI, intake of protein, organ meat, shellfish, alcohol, education level, cigarette use, diabetes mellitus, renal function, coronary heart disease, waist-to-hip ratio, weight change from 25y-baseline, menopause (women only), hypertension, diuretic use and serum urate level at cohort entry

Supplementary Table 4: Risk estimates for developing gout based on diet

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | | **Exposure** | | **Exposure Ascertainment** | | **Outcome Measure** | | **Risk Value**  **(Min Adjustment)** | | | **Risk Value**  **(Max Adjustment)** | |
| Choi et al. (2004) | Men | | Total meat intake (servings/day) - <0.81/day | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | 1.00 (ref)1 | | | 1.00 (ref)3 | |
|  |  | | 0.81-1.12/day | |  | |  | | **1.20 (0.94-1.54)1** | | | 1.07 (0.84-1.37)3 | |
|  |  | | 1.13-1.46/day | |  | |  | | **1.48 (1.16-1.87)1** | | | 1.28 (1.00-1.63)3 | |
|  |  | | 1.47-1.92/day | |  | |  | | **1.51 (1.17-1.94)1** | | | 1.26 (0.97-1.63)3 | |
|  |  | | >1.92/day | |  | |  | | **1.77 (1.35-2.31)1** | | | **1.41 (1.07-1.86)3** | |
|  |  | | Additional serving/day | |  | |  | | **1.37 (1.18-1.58)1** | | | **1.21 (1.04-1.41)3** | |
|  |  | | Beef, pork, or lamb as a main dish: 4-6oz/112-168g (servings) - 1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | 1.00 (ref)1 | | | 1.00 (ref)3 | |
|  |  | | 1-3/month | |  | |  | | 1.39 (0.96-2.02)1 | | | 1.22 (0.84-1.77)3 | |
|  |  | | 1/week | |  | |  | | **1.55 (1.08-2.22)1** | | | 1.29 (0.89-1.85)3 | |
|  |  | | ≥2/week | |  | |  | | **1.92 (1.35-2.75)1** | | | **1.50 (1.04-2.17)3** | |
| Williams (2008) | Men | | Meat consumption (per serving/d) | | Questionnaire | | RR (95%CI) | | **1.45 (1.06-1.92)2** | | | 1.25 (0.90-1.68)4 | |
| Choi et al. (2004) | | Men | | Seafood intake (servings/day) - <0.15/day | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | 1.00 (ref)1 | 1.00 (ref)2 | |
|  | |  | | 0.15-0.28/day | |  | |  | | **1.41 (1.10-1.81)1** | **1.35 (1.05-1.74)2** | |
|  | |  | | 0.29-0.36/day | |  | |  | | **1.54 (1.21-1.98)1** | **1.45 (1.13-1.87)2** | |
|  | |  | | 0.37-0.56/day | |  | |  | | **1.43 (1.11-1.85)1** | **1.38 (1.06-1.79)2** | |
|  | |  | | >0.56/day | |  | |  | | **1.53 (1.20-1.96)1** | **1.51 (1.17-1.95)2** | |
|  | |  | | Additional serving/week | |  | |  | | **1.07 (1.02-1.12)1** | **1.07 (1.01-1.12)2** | |
|  | |  | | Canned tuna fish: 3-4oz/84-112g (servings) - 1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | 1.00 (ref)1 | 1.00 (ref)2 | |
|  | |  | | 1-3/month | |  | |  | | 1.14 (0.92-1.41)1 | 1.13 (0.91-1.40)2 | |
|  | |  | | ≥1/week | |  | |  | | **1.29 (1.03-1.60)1** | **1.28 (1.03-1.60)2** | |
|  | |  | | Dark-meat fish: 3-5oz/84-140g (servings) - 1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | 1.00 (ref)1 | 1.00 (ref)2 | |
|  | |  | | 1-3/month | |  | |  | | **1.19 (1.01-1.40)1** | 1.17 (0.99-1.39)2 | |
|  | |  | | ≥1/week | |  | |  | | **1.28 (1.03-1.57)1** | **1.32 (1.06-1.64)2** | |
|  | |  | | Other fish: 3-5oz/84-140g (servings) - 1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | 1.00 (ref)1 | 1.00 (ref)2 | |
|  | |  | | 1-3/month | |  | |  | | **1.57 (1.21-2.04)1** | **1.52 (1.17-1.97)2** | |
|  | |  | | ≥1/week | |  | |  | | **1.61 (1.24-2.09)1** | **1.55 (1.18-2.02)2** | |
|  | |  | | Shrimp, lobster or scallops as main dish (servings) - 1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | 1.00 (ref)1 | 1.00 (ref)2 | |
|  | |  | | 1-3/month | |  | |  | | **1.39 (1.18-1.64)1** | **1.23 (1.04-1.45)2** | |
|  | |  | | ≥1/week | |  | |  | | **1.57 (1.20-2.05)1** | 1.30 (0.99-1.70)2 | |
| Choi et al. (2004) | | Men | | Total intake of dairy products (servings/day) - <0.88/day | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | **1.00 (ref)1** | 1.00 (ref)2 | |
|  | |  | | 0.88-1.35/day | |  | |  | | **0.85 (0.69-1.04)1** | 0.83 (0.68-1.03)2 | |
|  | |  | | 1.36-1.91/day | |  | |  | | **0.66 (0.53-0.83) 1** | 0.66 (0.53-0.83)2 | |
|  | |  | | 1.92-2.88/day | |  | |  | | **0.62 (0.49-0.78) 1** | 0.64 (0.51-0.82)2 | |
|  | |  | | >2.88/day | |  | |  | | **0.52 (0.40-0.67) 1** | 0.56 (0.42-0.74)2 | |
|  | |  | | Additional serving/day | |  | |  | | **0.79 (0.73-0.86) 1** | 0.82 (0.75-0.90)2 | |
|  | |  | | Intake of low-fat dairy products (servings/day) - <0.20/day | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | **1.00 (ref) 1** | 1.00 (ref)2 | |
|  | |  | | 0.20-0.56/day | |  | |  | | **1.06 (0.86-1.31) 1** | 1.01 (0.82-1.25)2 | |
|  | |  | | 0.57-0.99/day | |  | |  | | **0.83 (0.67-1.04)1** | 0.80 (0.64-1.00)2 | |
|  | |  | | 1.00-1.67/day | |  | |  | | **0.67 (0.54-0.84) 1** | 0.67 (0.54-0.84)2 | |
|  | |  | | >1.67/day | |  | |  | | **0.56 (0.43-0.72) 1** | 0.58 (0.45-0.76)2 | |
|  | |  | | Additional serving/day | |  | |  | | **0.76 (0.69-0.83) 1** | 0.79 (0.71-0.87)2 | |
|  | |  | | Intake of high-fat dairy products (servings/day) - <0.34/day | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | **1.00 (ref) 1** | 1.00 (ref)2 | |
|  | |  | | 0.34-0.63/day | |  | |  | | **1.18 (0.94-1.47) 1** | 1.09 (0.87-1.37)2 | |
|  | |  | | 0.64-0.99/day | |  | |  | | **1.07 (0.85-1.35) 1** | 0.98 (0.77-1.25)2 | |
|  | |  | | 1.00-1.64/day | |  | |  | | **1.03 (0.81-1.30) 1** | 0.92 (0.72-1.18)2 | |
|  | |  | | >1.64/day | |  | |  | | **1.10 (0.86-1.41) 1** | 1.00 (0.77-1.29)2 | |
|  | |  | | Additional serving/day | |  | |  | | **1.01 (0.91-1.11) 1** | 0.99 (0.89-1.10)2 | |
|  | |  | | Skimmed milk or low-fat milk: 8oz/240ml (servings) - <1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | **1.00 (ref) 1** | 1.00 (ref)2 | |
|  | |  | | 1/month – 1/week | |  | |  | | **0.91 (0.72-1.14) 1** | 0.84 (0.67-1.05)2 | |
|  | |  | | 2-4/week | |  | |  | | **0.78 (0.63-0.96) 1** | 0.74 (0.60-0.92)2 | |
|  | |  | | 5/week – 1/day | |  | |  | | **0.57 (0.46-0.71) 1** | 0.57 (0.46-0.71)2 | |
|  | |  | | ≥2/day | |  | |  | | **0.52 (0.39-0.69) 1** | 0.54 (0.40-0.73)2 | |
|  | |  | | Low-fat yogurt: 1 cup/0.24l (servings) - <1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | **1.00 (ref) 1** | 1.00 (ref)2 | |
|  | |  | | 1-3/month | |  | |  | | **0.83 (0.69-1.00) 1** | 0.87 (0.72-1.05)2 | |
|  | |  | | 1/week | |  | |  | | **0.85 (0.64-1.12) 1** | 0.91 (0.68-1.21)2 | |
|  | |  | | ≥2/week | |  | |  | | **0.63 (0.47-0.85) 1** | 0.76 (0.56-1.03)2 | |
|  | |  | | Whole milk: 8oz/240ml (servings) - <1/month | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | **1.00 (ref) 1** | 1.00 (ref)2 | |
|  | |  | | 1-3/month | |  | |  | | **1.25 (1.00-1.57) 1** | 1.23 (0.98-1.55)2 | |
|  | |  | | 1/week | |  | |  | | **0.71 (0.47-1.10) 1** | 0.74 (0.48-1.13)2 | |
| Choi et al. (2004) | | Men | | Purine-rich vegetable intake (servings/day) - <0.35/day | | Semi-quantitative food-frequency questionnaire | | RR (95%CI) | | **1.00 (ref) 1** | 1.00 (ref)2 | |
|  | |  | | 0.35-0.50/day | |  | |  | | **1.05 (0.83-1.32) 1** | 0.99 (0.79-1.25)2 | |
|  | |  | | 0.51-0.71/day | |  | |  | | **1.15 (0.91-1.45) 1** | 1.10 (0.87-1.40)2 | |
|  | |  | | 0.72-1.05/day | |  | |  | | **1.11 (0.91-1.45) 1** | 1.06 (0.84-1.36)2 | |
|  | |  | | >1.05/day | |  | |  | | **0.97 (0.75-1.24) 1** | 0.96 (0.74-1.24)2 | |
|  | |  | | Additional serving/day | |  | |  | | **0.95 (0.78-1.16) 1** | 0.97 (0.79-1.19)2 | |
|  | |  | | ≥2/week | |  | |  | | **0.97 (0.76-1.23) 1** | 1.06 (0.83-1.35)2 | |
| Teng et al. (2015) | | Men | | Protein (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | 1st Quartile (Q1) | |  | |  | |  | 1.00 (ref) | |
|  | |  | | 2nd Quartile (Q2) | |  | |  | |  | **1.19 (1.01-1.39)** | |
|  | |  | | 3rd Quartile (Q3) | |  | |  | |  | 1.08 (0.91-1.27) | |
|  | |  | | 4th Quartile (Q4) | |  | |  | |  | **1.21 (1.03-1.43)** | |
|  | |  | | Soy protein (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.92 (0.79-1.06) | |
|  | |  | | Q3 | |  | |  | |  | 0.91 (0.77-1.08) | |
|  | |  | | Q4 | |  | |  | |  | 0.85 (0.72-1.00) | |
|  | |  | | Red meat (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.01 (0.84-1.21) | |
|  | |  | | Q3 | |  | |  | |  | 1.04 (0.86-1.24) | |
|  | |  | | Q4 | |  | |  | |  | 1.12 (0.92-1.35) | |
|  | |  | | Poultry (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.08 (0.90-1.29) | |
|  | |  | | Q3 | |  | |  | |  | 1.14 (0.95-1.36) | |
|  | |  | | Q4 | |  | |  | |  | 1.19 (0.99-1.43) | |
|  | |  | | Fish and shellfish (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.88 (0.75-1.03) | |
|  | |  | | Q3 | |  | |  | |  | 0.93 (0.79-1.10) | |
|  | |  | | Q4 | |  | |  | |  | 1.02 (0.86-1.22) | |
|  | |  | | Eggs (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.92 (0.78-1.08) | |
|  | |  | | Q3 | |  | |  | |  | 0.91 (0.77-1.07) | |
|  | |  | | Q4 | |  | |  | |  | 0.93 (0.79-1.10) | |
|  | |  | | Dairy (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.94 (0.81-1.09) | |
|  | |  | | Q3 | |  | |  | |  | 0.88 (0.75-1.04) | |
|  | |  | | Q4 | |  | |  | |  | 0.85 (0.71-1.02) | |
|  | |  | | Soy foods (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1(ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.86 (0.74-1.00) | |
|  | |  | | Q3 | |  | |  | |  | **0.76 (0.64-0.89)** | |
|  | |  | | Q4 | |  | |  | |  | **0.82 (0.68-0.97)** | |
|  | |  | | Non-soy legumes (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.91 (0.77-1.07) | |
|  | |  | | Q3 | |  | |  | |  | 0.99 (0.83-1.17) | |
|  | |  | | Q4 | |  | |  | |  | 0.89 (0.75-1.07) | |
|  | |  | | Nuts and seeds (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.15 (0.97-1.37) | |
|  | |  | | Q3 | |  | |  | |  | 1.00 (0.84-1.20) | |
|  | |  | | Q4 | |  | |  | |  | 1.10 (0.92-1.31) | |
|  | |  | | All grain (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.94 (0.80-1.11) | |
|  | |  | | Q3 | |  | |  | |  | 0.97 (0.81-1.16) | |
|  | |  | | Q4 | |  | |  | |  | 0.92 (0.74-1.14) | |
| Teng et al. (2015) | | Women | | Protein (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | 1st Quartile (Q1) | |  | |  | |  | 1.00 (ref) | |
|  | |  | | 2nd Quartile (Q2) | |  | |  | |  | 1.10 (0.91-1.34) | |
|  | |  | | 3rd Quartile (Q3) | |  | |  | |  | 1.04 (0.86-1.27) | |
|  | |  | | 4th Quartile (Q4) | |  | |  | |  | **1.32 (1.10-1.59)** | |
|  | |  | | Soy protein (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.01 (0.84-1.22) | |
|  | |  | | Q3 | |  | |  | |  | 0.97 (0.81-1.17) | |
|  | |  | | Q4 | |  | |  | |  | 0.95 (0.79-1.14) | |
|  | |  | | Red meat (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.04 (0.87-1.24) | |
|  | |  | | Q3 | |  | |  | |  | 1.04 (0.86-1.29) | |
|  | |  | | Q4 | |  | |  | |  | 1.06 (0.86-1.26) | |
|  | |  | | Poultry (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.17 (0.97-1.41) | |
|  | |  | | Q3 | |  | |  | |  | 1.11 (0.91-1.34) | |
|  | |  | | Q4 | |  | |  | |  | 1.37 (1.13-1.67) | |
|  | |  | | Fish and shellfish (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.07 (0.87-1.31) | |
|  | |  | | Q3 | |  | |  | |  | 1.13 (0.92-1.37) | |
|  | |  | | Q4 | |  | |  | |  | **1.36 (1.12-1.65)** | |
|  | |  | | Eggs (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.01 (0.85-1.21) | |
|  | |  | | Q3 | |  | |  | |  | 0.95 (0.79-1.14) | |
|  | |  | | Q4 | |  | |  | |  | 1.00 (0.83-1.20) | |
|  | |  | | Dairy (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.98 (0.81-1.18) | |
|  | |  | | Q3 | |  | |  | |  | 1.12 (0.93-1.35) | |
|  | |  | | Q4 | |  | |  | |  | 1.19 (0.98-1.43) | |
|  | |  | | Soy foods (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1(ref) | |
|  | |  | | Q2 | |  | |  | |  | 1.03 (0.85-1.25) | |
|  | |  | | Q3 | |  | |  | |  | 0.90 (0.74-1.09) | |
|  | |  | | Q4 | |  | |  | |  | 0.93 (0.77-1.14) | |
|  | |  | | Non-soy legumes (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.92 (0.77-1.10) | |
|  | |  | | Q3 | |  | |  | |  | 0.83 (0.69-1.00) | |
|  | |  | | Q4 | |  | |  | |  | **0.77 (0.64-0.94)** | |
|  | |  | | Nuts and seeds (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.97 (0.81-1.16) | |
|  | |  | | Q3 | |  | |  | |  | 0.88 (0.73-1.06) | |
|  | |  | | Q4 | |  | |  | |  | 1.02 (0.84-1.23) | |
|  | |  | | All grain (% calories per day) | | Self-report | | HR (95%CI) | |  |  | |
|  | |  | | Q1 | |  | |  | |  | 1 (ref) | |
|  | |  | | Q2 | |  | |  | |  | 0.87 (0.73-1.04) | |
|  | |  | | Q3 | |  | |  | |  | 1.00 (0.82-1.21) | |
|  | |  | | Q4 | |  | |  | |  | 0.95 (0.75-1.21) | |
| Rai et al. (2017) | | Men | | DASH diet | | Self-report | | HR (95%CI) | |  | 0.68 (0.57-0.80) | |
|  | |  | | Western diet | | Self-report | | HR (95%CI) | |  | 1.42 (1.16-1.74) | |

Significant values are in bold. RR = relative risk, HR = hazard ratio, OR = odds ratio, CI = confidence interval.1 Adjusted for age, education level, body mass index (BMI), alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 2 Adjusted for age, obesity (BMI≥27), hypertension, hyperlipidaemia, diabetes mellitus, alcohol drinking and cigarette smoking.3 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status.4 Adjusted for migration, BMI, weight, height, arm circumference, arm muscle circumference, subscapular skinfold thickness, triceps skinfold thickness, systolic and diastolic blood pressure, cholesterol, triglycerides, serum uric acid and alcohol consumption.Supplementary Table 5: Risk estimates for developing gout based on caffeine consumption

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value (Minimal Adjustment)** | **Risk Value (Maximal Adjustment)** |
| Choi et al. (2007) | Men | Coffee (cups/day) - 0 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | <1 |  |  | 0.95 (0.77-1.17)1 | 0.97 (0.78-1.20)3 |
|  |  | 1-3 |  |  | 0.96 (0.79-1.16)1 | 0.92 (0.75-1.11)3 |
|  |  | 4-5 |  |  | **0.65 (0.45-0.93)1** | **0.60 (0.41-0.87)3** |
|  |  | ≥6 |  |  | **0.44 (0.21-0.95)1** | **0.41 (0.19-0.88)3** |
|  |  | Decaffeinated coffee (cups/day) – 0 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | <1 |  |  | 0.88 (0.75-1.04)1 | **0.83 (0.70-0.99)3** |
|  |  | 1-3 |  |  | **0.76 (0.62-0.92)1** | **0.67 (0.54-0.82)3** |
|  |  | ≥4 |  |  | 0.87 (0.55-1.38)1 | 0.73 (0.46-1.17)3 |
|  |  | Tea (cups/day) - 0 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | <1 |  |  | 1.14 (0.97-1.35)1 | 1.09 (0.92-1.30)3 |
|  |  | 1-3 |  |  | 1.22 (0.98-1.52)1 | 1.06 (0.85-1.33)3 |
|  |  | ≥4 |  |  | 1.01 (0.47-2.14)1 | 0.82 (0.38-1.75)3 |
|  |  | Caffeine intake (mg/day) - <34 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | 34-114 |  |  | 0.99 (0.78-1.27)1 | 0.92 (0.72-1.17)3 |
|  |  | 115-220 |  |  | 1.21 (0.96-1.52)1 | 1.09 (0.86-1.38)3 |
|  |  | 221-379 |  |  | 1.00 (0.78-1.27)1 | 0.94 (0.74-1.20)3 |
|  |  | ≥380 |  |  | 0.90 (0.70-1.16)1 | 0.83 (0.64-1.08)3 |
| Choi and Curhan (2010) | Women | Coffee (cups/day) – 0 (0ml) | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)2 | 1.00 (ref)4 |
|  |  | 1 (1-237ml) |  |  | 0.98 (0.80-1.21)2 | 0.97 (0.78-1.20)4 |
|  |  | 1-3 (238-947ml) |  |  | **0.78 (0.65-0.95)2** | **0.78 (0.64-0.95)4** |
|  |  | ≥4 (≥948ml) |  |  | **0.37 (0.26-0.52)2** | **0.43 (0.30-0.61)4** |
|  |  | Decaffeinated coffee (cups/day) – 0 (0ml) | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)2 | 1.00 (ref)4 |
|  |  | 1 (1-237ml) |  |  | 0.99 (0.84-1.17)2 | 1.02 (0.85-1.22)4 |
|  |  | >1 (>237ml) |  |  | **0.77 (0.64-0.94)2** | **0.77 (0.63-0.95)4** |
|  |  | Tea (cups/day) – 0 (0ml) | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)2 | 1.00 (ref)4 |
|  |  | 1 (1-237ml) |  |  | 1.08 (0.89-1.32)2 | 1.05 (0.86-1.28)4 |
|  |  | 1-3 (238-947ml) |  |  | 0.99 (0.79-1.24)2 | 0.92 (0.74-1.16)4 |
|  |  | ≥4 (≥948ml) |  |  | 1.62 (1.03-2.55)2 | 1.55 (0.98-2.47)4 |
|  |  | Caffeine intake (mg/day) - ≤131 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)2 | 1.00 (ref)5 |
|  |  | 132-238 |  |  | 0.89 (0.74-1.08)2 | 0.84 (0.70-1.02)5 |
|  |  | 239-358 |  |  | 0.95 (0.79-1.14)2 | 0.91 (0.75-1.10)5 |
|  |  | 359-497 |  |  | **0.79 (0.64-0.97)2** | **0.77 (0.62-0.94)5** |
|  |  | ≥497 |  |  | **0.49 (0.38-0.63)2** | **0.52 (0.41-0.68)5** |

Significant values are in bold. RR = relative risk, CI = confidence interval. 1 Adjusted for age, body mass index (BMI), alcohol intake and total energy intake. 2 Adjusted for age

3 Adjusted for age, total energy intake, BMI, diuretic use, history of hypertension, history of renal failure and intake of alcohol, total meats, seafood, purine-rich vegetables, dairy foods, total vitamin C (also coffee, decaffeinated coffee and tea when not that exposure; none of these were adjusted when looking at caffeine intake). 4 Adjusted for age, total energy intake, BMI, menopause, use of hormonal replacement, diuretic use, history of hypertension and intakes of alcohol, sugar-sweetened drinks, total meats, seafood, chocolate, dairy foods, total vitamin C (also coffee, decaffeinated coffee and tea when not that exposure). 5 Adjusted for age, total energy intake, BMI, menopause, use of hormonal replacement, diuretic use, history of hypertension and intakes of alcohol, total meats, seafood, total vitamin C and dairy foodsSupplementary Table 6: Risk estimates for developing gout based on fructose consumption

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min djustment)** | **Risk Value**  **(Max adjustment)** |
| Choi and Curhan (2008) | Men | Sugar-sweetened drinks (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)2 |
|  |  | 1/month-1/week |  |  | 1.00 (0.84-1.19)1 | 1.00 (0.84-1.20)2 |
|  |  | 2-4/week |  |  | 1.00 (0.78-1.29)1 | 0.99 (0.77-1.29)2 |
|  |  | 5-6/week |  |  | **1.30 (1.01-1.67)1** | 1.29 (1.00-1.68)2 |
|  |  | 1/day |  |  | **1.44 (1.02-2.04)1** | **1.45 (1.02-2.08)2** |
|  |  | ≥2/day |  |  | **1.78 (1.06-2.98)1** | **1.85 (1.08-3.16)2** |
|  |  | Diet soft drinks (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)2 |
|  |  | 1/month-1/week |  |  | 1.18 (0.96-1.44)1 | 1.18 (0.97-1.45)2 |
|  |  | 2-4/week |  |  | 1.18 (0.92-1.51)1 | 1.15 (0.89-1.48)2 |
|  |  | 5-6/week |  |  | 1.13 (0.90-1.43)1 | 1.09 (0.86-1.38)2 |
|  |  | 1/day |  |  | 1.14 (0.89-1.47)1 | 1.07 (0.83-1.38)2 |
|  |  | ≥2/day |  |  | 1.23 (0.91-1.66)1 | 1.12 (0.82-1.52)2 |
|  |  | Sweetened cola (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)2 |
|  |  | 1/month-1/week |  |  | 1.09 (0.92-1.29)1 | 1.09 (0.92-1.29)2 |
|  |  | 2-4/week |  |  | 1.18 (0.93-1.52)1 | 1.18 (0.92-1.52)2 |
|  |  | 5-6/week |  |  | 1.17 (0.86-1.58)1 | 1.16 (0.85-1.58)2 |
|  |  | ≥1/day |  |  | **1.47 (1.02-2.12)1** | **1.50 (1.02-2.19)2** |
|  |  | Other sweetened soft drinks (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)2 |
|  |  | 1/month-1/week |  |  | **1.18 (1.01-1.39)1** | 1.15 (0.96-1.37)2 |
|  |  | 2-4/week |  |  | 1.34 (0.97-1.85)1 | 1.28 (0.92-1.80)2 |
|  |  | 5-6/week |  |  | 1.09 (0.56-2.12)1 | 1.05 (0.54-2.07)2 |
|  |  | ≥1/day |  |  | **2.89 (1.65-5.06)1** | **2.76 (1.55-4.89)2** |
|  |  | Total fruit juices (small glass) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | 1/month-1/week |  |  | 1.37 (0.92-2.02)1 | 1.34 (0.91-1.99)3 |
|  |  | 2-4/week |  |  | **1.64 (1.10-2.45)1** | **1.57 (1.05-2.35)3** |
|  |  | 5-6/week |  |  | **1.60 (1.09-2.35)1** | **1.55 (1.05-2.30)3** |
|  |  | 1/day |  |  | **1.76 (1.20-2.57)1** | **1.74 (1.18-2.56)3** |
|  |  | ≥2/day |  |  | **1.83 (1.14-2.93)1** | **1.81 (1.12-2.93)3** |
|  |  | Orange or apple juice (small glass) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | 1/month-1/week |  |  | **1.40 (1.03-1.92)1** | **1.41 (1.03-1.93)3** |
|  |  | 2-4/week |  |  | **1.61 (1.16-2.25)1** | **1.59 (1.14-2.23)3** |
|  |  | 5-6/week |  |  | **1.56 (1.13-2.15)1** | **1.55 (1.12-2.15)3** |
|  |  | 1/day |  |  | **1.53 (1.10-2.11)1** | **1.53 (1.09-2.13)3** |
|  |  | ≥2/day |  |  | **1.78 (1.09-2.91)1** | **1.82 (1.11-3.00)3** |
|  |  | Orange or apple - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | 1/month-1/week |  |  | 1.20 (0.79-1.83)1 | 1.24 (0.82-1.89)3 |
|  |  | 2-4/week |  |  | 1.17 (0.75-1.81)1 | 1.22 (0.79-1.90)3 |
|  |  | 5-6/week |  |  | 1.34 (0.88-2.04)1 | 1.43 (0.94-2.19)3 |
|  |  | ≥1/day |  |  | 1.43 (0.93-2.21)1 | **1.64 (1.05-2.56)3** |
|  |  | Free fructose (% of energy) - <3.5 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)4 |
|  |  | 3.5-4.4 |  |  | 1.19 (0.95-1.49)1 | **1.29 (1.02-1.64)4** |
|  |  | 4.5-5.3 |  |  | 1.21 (0.96-1.53)1 | **1.41 (1.09-1.82)4** |
|  |  | 5.4-6.6 |  |  | **1.45 (1.15-1.83)1** | **1.84 (1.40-2.41)4** |
|  |  | >6.6 |  |  | **1.43 (1.12-1.83)1** | **2.02 (1.49-2.75)4** |
|  |  | Total fructose (% of energy) - <6.9 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)4 |
|  |  | 6.9-8.5 |  |  | 0.90 (0.72-1.13)1 | 0.98 (0.77-1.25)4 |
|  |  | 8.6-10.0 |  |  | 1.11 (0.88-1.39)1 | 1.29 (1.00-1.67)4 |
|  |  | 10.1-11.8 |  |  | 1.08 (0.85-1.37)1 | **1.41 (1.06-1.88)4** |
|  |  | >11.8 |  |  | 1.24 (0.97-1.57)1 | **1.81 (1.31-2.50)4** |
| Choi et al. (2010) | Women | Sugar-sweetened sodas (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 1/month-1/week |  |  | 1.12 (0.94-1.33)1 | 1.09 (0.91-1.30)5 |
|  |  | 2-4/week |  |  | 1.07 (0.88-1.31)1 | 0.98 (0.79-1.20)5 |
|  |  | 5-6/week |  |  | 1.42 (1.00-2.02)1 | 1.25 (0.88-1.79)5 |
|  |  | 1/day |  |  | **2.09 (1.44-3.02)1** | **1.74 (1.19-2.55)5** |
|  |  | ≥2/day |  |  | **3.05 (1.74-5.35)1** | **2.39 (1.34-4.26)5** |
|  |  | Diet sodas (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 1/month-1/week |  |  | 1.12 (0.88-1.42)1 | 1.15 (0.90-1.47)5 |
|  |  | 2-4/week |  |  | 1.01 (0.81-1.25)1 | 1.05 (0.84-1.30)5 |
|  |  | 5-6/week |  |  | 1.19 (0.94-1.51)1 | 1.24 (0.97-1.58)5 |
|  |  | 1/day |  |  | 1.18 (0.93-1.50)1 | 1.18 (0.93-1.51)5 |
|  |  | ≥2/day |  |  | 1.22 (0.91-1.63)1 | 1.18 (0.87-1.58)5 |
|  |  | Sugar sweetened cola (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 1/month-1/week |  |  | 1.11 (0.93-1.32)1 | 1.00 (0.83-1.21)5 |
|  |  | 2-4/week |  |  | 0.85 (0.67-1.09)1 | 0.71 (0.55-0.91)5 |
|  |  | 5-6/week |  |  | **1.48 (1.01-2.18)1** | 1.16 (0.78-1.73)5 |
|  |  | 1/day |  |  | **1.67 (1.06-2.63)1** | 1.29 (0.81-2.05)5 |
|  |  | ≥2/day |  |  | **2.68 (1.47-4.92)1** | **1.97 (1.05-3.67)5** |
|  |  | Other sodas (servings) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 1/month-1/week |  |  | 1.12 (0.95-1.32)1 | 1.11 (0.93-1.34)5 |
|  |  | 2-4/week |  |  | 1.21 (0.90-1.63)1 | 1.19 (0.87-1.63)5 |
|  |  | ≥5-6/week |  |  | **1.76 (1.03-2.99)1** | 1.55 (0.89-2.69)5 |
|  |  | Orange juice (small glass) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)6 |
|  |  | 1/month-1/week |  |  | 1.33 (1.00-1.77)1 | 1.27 (0.95-1.69)6 |
|  |  | 2-4/week |  |  | **1.39 (1.07-1.81)1** | 1.30 (0.99-1.70)6 |
|  |  | 5-6/week |  |  | **1.59 (1.20-2.10)1** | **1.50 (1.12-2.00)6** |
|  |  | 1/day |  |  | **1.48 (1.09-2.01)1** | **1.41 (1.03-1.93)6** |
|  |  | ≥2/day |  |  | **2.52 (1.33-4.77)1** | **2.42 (1.27-4.63)6** |
|  |  | Other juices (small glass) - <1/month | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)6 |
|  |  | 1/month-1/week |  |  | 1.30 (0.89-1.89)1 | 1.28 (0.88-1.88)6 |
|  |  | 2-4/week |  |  | **1.49 (1.05-2.11)1** | **1.50 (1.05-2.14)6** |
|  |  | 5-6/week |  |  | **1.47 (1.01-2.13)1** | **1.54 (1.06-2.26)6** |
|  |  | 1/day |  |  | **1.60 (1.09-2.37)1** | **1.67 (1.12-2.49)6** |
|  |  | ≥2/day |  |  | 1.08 (0.54-2.13)1 | 1.14 (0.57-2.27)6 |
|  |  | Free fructose (% of energy) - <3.7 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)7 |
|  |  | 3.71-4.6 |  |  | 1.13 (0.90-1.42)1 | **1.31 (1.03-1.66)7** |
|  |  | 4.61-5.45 |  |  | 0.91 (0.72-1.16)1 | 1.15 (0.89-1.50)7 |
|  |  | 5.46-6.6 |  |  | 0.99 (0.78-1.26)1 | **1.34 (1.01-1.76)7** |
|  |  | >6.6 |  |  | 1.14 (0.90-1.45)1 | **1.62 (1.20-2.19)7** |
|  |  | Total fructose (% of energy) - <7.5 | Food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)7 |
|  |  | 7.51-8.97 |  |  | 1.01 (0.81-1.27)1 | 1.23 (0.97-1.57)7 |
|  |  | 8.97-10.2 |  |  | 0.87 (0.69-1.10)1 | 1.17 (0.90-1.54)7 |
|  |  | 10.3-11.9 |  |  | 0.98 (0.78-1.24)1 | **1.41 (1.06-1.88)7** |
|  |  | >11.9 |  |  | 0.98 (0.76-1.25)1 | **1.44 (1.04-2.00)7** |

Significant values are in bold. RR = relative risk, CI = confidence interval. 1 Adjusted for age, body mass index (BMI), alcohol intake and total energy intake. 2 Adjusted for age, total energy intake, BMI, diuretic use, history of hypertension, history of chronic renal failure, intake of total meats, seafood, purine-rich vegetables, dairy foods, total vitamin C, sweetened soft drinks, diet soft drinks, sweetened cola and other sweetened soft drinks. 3 Adjusted for age, total energy intake, BMI, diuretic use, history of hypertension, history of chronic renal failure, intake of total meats, seafood, purine-rich vegetables, dairy foods, total vitamin C, sweetened soft drinks, diet soft drinks, sweetened cola, other sweetened soft drinks and fruit juice. 4 Adjusted for age, total energy intake, BMI, diuretic use, history of hypertension, history of renal failure, intake of alcohol and total vitamin C and percentage of energy from total carbohydrate to estimate effects of fructose for equivalent energy from other carbohydrates. 5 Adjusted for age, total energy intake, BMI, menopause status, use of hormonal replacement, diuretic use, history of hypertension and alcohol, total meats, seafood, dairy products, total vitamin C, sugar sweetened sodas and cola and diet versions

6 Adjusted for age, total energy intake, BMI, menopause status, use of hormonal replacement, diuretic use, history of hypertension and alcohol, total meats, seafood, dairy products, total vitamin C, sugar sweetened sodas and cola and diet versions and fruit juice. 7 Adjusted for age, total energy intake, BMI, menopause status, use of hormonal replacement, diuretic use, history of hypertension, intake of alcohol and total vitamin C, caffeine and percentage of energy from total carbohydrate to estimate effects of fructose compared to equivalent energy from other carbohydrates.

Supplementary Table 7: Risk estimates for developing gout based on vitamin C consumption

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Choi et al. (2009) | Men | Total vitamin C intake (mg/day) - <250 | Semi-quantitative food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)2 |
|  |  | 250-499 |  |  | 1.00 (0.88-1.15)1 | 0.97 (0.85-1.12)2 |
|  |  | 500-999 |  |  | 0.85 (0.73-1.00)1 | **0.83 (0.71-0.97)2** |
|  |  | 1,000-1,499 |  |  | **0.68 (0.53-0.88)1** | **0.66 (0.52-0.86)2** |
|  |  | ≥1,500 |  |  | **0.55 (0.38-0.80)1** | **0.55 (0.38-0.80)2** |
|  |  | Supplemental vitamin C intake (mg/day) - 0 | Semi-quantitative food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)2 |
|  |  | 1-249 |  |  | 1.14 (0.99-1.30)1 | 1.10 (0.96-1.26)2 |
|  |  | 250-499 |  |  | 0.88 (0.72-1.08)1 | 0.86 (0.70-1.06)2 |
|  |  | 500-999 |  |  | 0.96 (0.79-1.16)1 | 0.92 (0.76-1.11)2 |
|  |  | 1,000-1,499 |  |  | **0.69 (0.51-0.92)1** | **0.66 (0.49-0.88)2** |
|  |  | ≥1,500 |  |  | **0.55 (0.36-0.86)1** | **0.55 (0.36-0.86)2** |

Significant values are in bold

RR = relative risk, CI = confidence interval

1 Adjusted for age and total energy intake

2 Adjusted for age, total energy intake, body mass index (BMI), diuretic use, history of hypertension, history of renal failure, and intake of alcohol, total meats, seafood, dairy foods and coffee (regular and decaffeinated) (and dietary vitamin C for supplemental vitamin C intake as an exposure)

Supplementary Table 8: Risk estimates for developing gout based on alcohol consumption

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Bhole et al. (2010) | Men | Alcohol consumption in men – 0-1oz/week | Self-report | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | 2-6oz/week |  |  | 1.45 (0.99-2.09)1 | 1.44 (0.99-2.08)3 |
|  |  | ≥7oz/week |  |  | **2.34 (1.66-3.30)1** | **2.21 (1.56-3.14)3** |
|  | Women | Alcohol consumption in women – 0-1oz/week | Self-report | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | 2-6oz/week |  |  | 1.10 (0.68-1.78)1 | 1.30 (0.80-2.12)3 |
|  |  | ≥7oz/week |  |  | **2.06 (1.14-3.71)1** | **3.10 (1.69-5.69)3** |
| Chen et al. (2013) | Men | Current or previous alcohol drinker in men | Record-linkage (initially structured questionnaire) | HR (95%CI) | 1.01 (0.88-1.15)1 | 1.05 (0.91-1.20)4 |
|  | Women >50 years | Current or previous alcohol drinker in women >50 years |  |  | 0.87 (0.60-1.24)1 | 0.89 (0.55-1.43)4 |
|  | Women ≤50 years | Current or previous alcohol drinker in women ≤50 years |  |  | 1.32 (0.84-2.07)1 | 1.42 (0.83-2.44)4 |
| Choi et al. (2004) | Men | Alcohol intake (g/day) - 0 | Semi-quantitative food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 0.1-4.9 |  |  | 1.13 (0.89-1.45)1 | 1.09 (0.85-1.40)5 |
|  |  | 5.0-9.9 |  |  | 1.30 (0.99-1.70)1 | 1.25 (0.95-1.64)5 |
|  |  | 10.0-14.9 |  |  | **1.37 (1.03-1.81)1** | 1.32 (0.99-1.75)5 |
|  |  | 15.0-29.9 |  |  | **1.63 (1.26-2.11)1** | **1.49 (1.14-1.94)5** |
|  |  | 30-49.9 |  |  | **2.30 (1.75-3.04)1** | **1.96 (1.48-2.60)5** |
|  |  | ≥50 |  |  | **3.02 (2.09-4.36)1** | **2.53 (1.73-3.70)5** |
|  |  | Beer intake - <1/month | Semi-quantitative food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 1/month-1/week |  |  | 1.10 (0.91-1.32)1 | 1.01 (0.82-1.24)5 |
|  |  | 2-4/week |  |  | **1.37 (1.11-1.70)1** | 1.27 (1.00-1.62)5 |
|  |  | 5/week-1/day |  |  | **1.83 (1.41-2.37)1** | **1.75 (1.32-2.32)5** |
|  |  | ≥2/day |  |  | **2.64 (1.92-3.64)1** | **2.51 (1.77-3.55)5** |
|  |  | Serving/day |  |  | **1.51 (1.35-1.69)1** | **1.49 (1.32-1.70)5** |
|  |  | Spirits intake - <1/month | Semi-quantitative food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 1/month-1/week |  |  | **1.34 (1.11-1.61)1** | **1.27 (1.03-1.56)5** |
|  |  | 2-4/week |  |  | **1.44 (1.16-1.79)1** | 1.25 (0.98-1.59)5 |
|  |  | 5/week-1/day |  |  | **1.51 (1.17-1.95)1** | 1.22 (0.93-1.60)5 |
|  |  | ≥2/day |  |  | **2.22 (1.68-2.93)1** | **1.60 (1.19-2.16)5** |
|  |  | Serving/day |  |  | **1.33 (1.20-1.47)1** | **1.15 (1.04-1.28)5** |
|  |  | Wine intake - <1/month | Semi-quantitative food-frequency questionnaire | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | 1/month-1/week |  |  | 0.99 (0.83-1.18)1 | 0.84 (0.69-1.01)5 |
|  |  | 2-4/week |  |  | 1.12 (0.91-1.38)1 | 0.90 (0.71-1.15)5 |
|  |  | 5/week-1/day |  |  | 1.06 (0.80-1.40)1 | 0.82 (0.61-1.11)5 |
|  |  | ≥2/day |  |  | 1.38 (0.85-2.23)1 | 1.05 (0.64-1.72)5 |
|  |  | Serving/day |  |  | 1.13 (0.96-1.32)1 | 1.04 (0.99-1.22)5 |
| Prior et al. (1987) | Men | Alcohol consumption | Self-report | OR (95%) | **2.92 (1.39-6.05)** | - |
| Tofler and Woodings (1981) | Men | Alcohol consumption – 0l/day | Interviewed | Change in percentage of people with gout over 13 years | -2% | - |
|  |  | 0-1.14l/day |  |  | +6% | - |
|  |  | 1.16-2.27l/day |  |  | +13% | - |
|  |  | 2.3-4.26l/day |  |  | +16% | - |
|  |  | >4.26l/day |  |  | +21% | - |
| Williams (2008) | Men | Alcohol consumption (per 10g/day) | Questionnaire | RR (95%CI) | **1.19 (1.12-1.26)2** | **1.19 (1.12-1.25)6** |
| Tu et al. (2016) | Men | Alcohol related diseases | ICD9 diagnosis | HR (95%CI) |  | **1.81 (1.64-1.99)7** |
|  | Women | Alcohol related diseases |  |  |  | **2.48 (1.97-3.13)7** |
|  | Both | Alcohol related diseases |  |  |  | **1.88 (1.72-2.06)7** |

Significant values are in bold. RR = relative risk, HR = hazard ratio, OR = odds ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age, hypertension, aspirin use and “other” dietary components. 3 Adjusted for age, education level, body mass index (BMI), alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 4 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status. 5 Adjusted for age, total energy intake, BMI, diuretic use, history of hypertension, history of renal failure and intake of alcohol, fluid, total meats, seafood, purine-rich vegetables and dairy products. 6 Adjusted for age, hypertension, aspirin use, “other” dietary components and BMI. 7Adjusted for age group, aboriginal region, urbanisation level, socioeconomic status, CCI score and, for combined group, sex.

Supplementary Table 9: Risk estimates for developing gout based on metabolic syndrome

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value (Minimal Adjustment)** | **Risk Value (Maximal Adjustment)** |
| Chen et al. (2013) | Men | Metabolic syndrome | Record-linkage (initially measured) | HR (95%CI) | **1.85 (1.61-2.12)1** | **1.37 (1.20-1.58)2** |
|  | Women | Metabolic syndrome  (>50 years) | Record-linkage (initially measured) |  | **1.52 (1.14-2.03)1** | 1.15 (0.85-1.54)2 |
|  | Women | Metabolic syndrome  (≤50 years) | Record-linkage (initially measured) |  | **1.75 (1.04-2.92)1** | 1.29 (0.76-2.19)2 |

Significant values are in bold. HR = hazard ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for baseline age, hyperuricaemia, renal insufficiency, cigarette smoking and alcohol drinking

Supplementary Table 10: Risk estimates for developing gout based on body mass index (BMI)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Bhole et al. (2010) | Men | <25kg/m2 | Self-report | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)6 |
|  |  | 25-29.9kg/m2 |  |  | **1.87 (1.29-2.69)1** | **1.76 (1.22-2.54)6** |
|  |  | ≥30kg/m2 |  |  | **3.50 (2.30-5.32)1** | **2.90 (1.89-4.44)6** |
|  | Women | <25kg/m2 | Self-report | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)6 |
|  |  | 25-29.9kg/m2 |  |  | **1.67 (1.03-2.72)1** | 1.44 (0.88-2.37)6 |
|  |  | ≥30kg/m2 |  |  | **3.52 (2.16-5.72)1** | **2.74 (1.65-4.58)6** |
| Chen et al. (2012) | Men | BMI ≥27kg/m2 | Record-linkage | HR (95%CI) | **2.13 (1.88-2.40)1** | **1.30 (1.15-1.47)7** |
|  | Women | BMI ≥27kg/m2 | Record-linkage |  | **3.70 (2.90-4.72)**1 | **2.15 (1.67-2.76)7** |
|  | Women (PostM) | BMI ≥27kg/m2 | Record-linkage |  | **2.97 (2.27-3.88)1** | **1.90 (1.44-2.51)7** |
|  | Women(PreM) | BMI ≥27kg/m2 | Record-linkage |  | **6.48 (3.67-11.50)1** | **2.50 (1.38-4.52)7** |
| Chen et al. (2013) | Men | BMI ≥27kg/m2 | Record-linkage | HR (95%CI) | **1.95 (1.67-2.27)1** | **1.30 (1.11-1.53)8** |
|  | Women (>50 years) | BMI ≥27kg/m2 | Record-linkage |  | **2.49 (1.89-3.29)1** | **1.97 (1.48-2.62)8** |
|  | Women (≤50 years) | BMI ≥27kg/m2 | Record-linkage |  | **2.22 (1.33-3.72)1** | 1.63 (0.93-2.86)8 |
|  | Men | BMI ≥24kg/m2 | Record-linkage |  | **1.99 (1.74-2.27)1** | **1.31 (1.14-1.51)8** |
|  | Women (>50 years) | BMI ≥24kg/m2 | Record-linkage |  | **2.47 (1.79-3.41)1** | **1.83 (1.31-2.55)8** |
|  | Women (≤50 years) | BMI ≥24kg/m2 | Record-linkage |  | **1.59 (1.02-2.48)1** | 1.18 (0.73-1.91)8 |
| Choi et al. (2005) | Men | Updated BMI - <21kg/m2 | Self-report of height and weight | RR (95%CI) | 0.79 (0.40-1.56)1 | 0.85 (0.43-1.68)8 |
|  |  | 21-22.9kg/m2 |  |  | 1.00 (ref)1 | 1.00 (ref)9 |
|  |  | 23-24.9kg/m2 |  |  | 1.40 (1.00-1.95)1 | 1.31 (0.94-1.83)9 |
|  |  | 25-29.9kg/m2 |  |  | **2.35 (1.74-3.17)1** | **1.95 (1.44-2.65)9** |
|  |  | 30-34.9kg/m2 |  |  | **3.26 (2.28-4.65)1** | **2.33 (1.62-3.36)9** |
|  |  | ≥35kg/m2 |  |  | **4.41 (2.59-7.51)1** | **2.97 (1.73-5.10)9** |
|  |  | BMI at cohort entry (1986) - <21kg/m2 | Self-report of height and weight | RR (95%CI) | 0.45 (0.22-0.94)1 | 0.48 (0.23-1.00)9 |
|  |  | 21-22.9kg/m2 |  |  | 1.00 (ref)1 | 1.00 (ref)9 |
|  |  | 23-2.49kg/m2 |  |  | 1.05 (0.78-1.40)1 | 0.97 (0.73-1.30)9 |
|  |  | 25-29.9kg/m2 |  |  | **1.99 (1.54-2.57)1** | **1.65 (1.27-2.13)9** |
|  |  | 30-34.9kg/m2 |  |  | **2.47 (1.77-3.45)1** | **1.79 (1.27-2.13)9** |
|  |  | ≥35kg/m2 |  |  | **3.40 (1.95-5.96)1** | **2.30 (1.30-4.06)9** |
|  |  | BMI at age 21 - <21kg/m2 | Self-report of height and weight | RR (95%CI) | 0.93 (0.75-1.16)1 | 0.92 (0.74-1.15)9 |
|  |  | 21-22.9kg/m2 |  |  | 1.00 (ref)1 | 1.00 (ref)9 |
|  |  | 23-2.49kg/m2 |  |  | 1.02 (0.83-1.26)1 | 1.00 (0.81-1.23)9 |
|  |  | 25-29.9kg/m2 |  |  | **1.38 (1.12-1.70)1** | 1.23 (1.00-1.52)9 |
|  |  | ≥30kg/m2 |  |  | **2.14 (1.37-3.32)1** | **1.66 (1.06-2.60)9** |
| Hochberg et al. (1995) | Men | Per unit of BMI (kg/m2) | Self-report | - | - | 1.07 (0.99-1.16)10 |
| Maynard et al. (2012) | Women | Baseline BMI ≥30kg/m2 | Measured | RR (95%CI) | **3.49 (2.37-5.14)1** | **2.37 (1.53-3.68)11** |
|  |  | Baseline BMI - <25kg/m2 | Measured | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)11 |
|  |  | 25-29.9kg/m2 |  |  | **2.72 (1.44-5.11)1** | 1.63 (0.84-3.18)11 |
|  |  | 30-34.9kg/m2 |  |  | **4.64 (2.44-8.82)1** | **2.76 (1.40-5.44)11** |
|  |  | ≥35kg/m2 |  |  | **8.69 (4.63-16.28)1** | **3.90 (1.95-7.82)11** |
|  |  | BMI at age 25y - <25kg/m2 | Measured | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)11 |
|  |  | 25-29.9kg/m2 |  |  | **4.23 (2.73-6.56)1** | **3.36 (2.09-5.41)11** |
|  |  | ≥30kg/m2 |  |  | **4.30 (2.14-8.64)1** | **2.84 (1.33-6.09)11** |
| Must et al. (1992) | Men | Obesity in adolescence in boys (BMI 22-25kg/m2) | Measured |  | **3.10 (1.10-9.30)** | 2.20 (0.70-6.90)14 |
| Prior et al. (1987) | Men | BMI | Measured | OR (95%CI) | **5.87 (2.94-11.80)** | - |
| Roubenoff et al. (1991) | Men | BMI at 35 years | Self-report | RR | 1.123 | - |
| Williams (2008) | Men | BMI (per unit of kg/m2) | Questionnaire | RR (95%CI) | **1.19 (1.15-1.23)5** | **1.18 (1.14-1.23)15** |

Significant values are in bold. RR = relative risk, HR = hazard ratio, OR = odds ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age and sex. 3 Adjusted for age and hypertension. 4 Adjusted for age, gender, social class and practice. 5 Adjusted for age, daily intakes of meat, fish, fruit, alcohol and aspirin and hypertension. 6 Adjusted for age, education level, body mass index (BMI), alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 7 Adjusted for age, obesity (BMI≥27), hypertension, hyperlipidaemia, diabetes mellitus, alcohol drinking and cigarette smoking. 8 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status. 9 Adjusted for age, total energy intake, diuretic use, history of hypertension, history of chronic renal failure, alcohol intake, fluid intake, meat intake, seafood intake, purine-rich vegetables, animal protein intake and dairy food intake. 10 Adjusted for ethnicity, baseline BMI and hypertension as a time-dependent covariate. 11 Adjusted for age, menopausal status, race, diabetes mellitus, hypertension, diuretic use, alcohol intake, organ meat intake and estimated glomerular filtration rate. 12 Adjusted for age, sex, alcohol intake, blood pressure, cholesterol and treatment for hypertension and hypercholesterolaemia. 13 Adjusted for adult BMI and sex. 14 Adjusted for adult BMI. 15 Adjusted for age, daily intakes of meat, fish, fruit, alcohol, aspirin, hypertension and running distance

Supplementary Table 11: Risk estimates for developing gout based on waist and chest circumference

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Chen et al. (2013) | Men | Waist circumference >90cm in men | Record-linkage (initially measured) | HR (95%CI) | **1.89 (1.65-2.17)1** | **1.30 (1.13-1.50)3** |
|  | Women | Waist circumference >80cm in women  >50 years | Record-linkage (initially measured) |  | **1.70 (1.24-2.32)1** | **1.39 (1.01-1.92)3** |
|  | Women | Waist circumference >80cm in women  ≤50 years | Record-linkage (initially measured) |  | **1.75 (1.12-2.74)1** | 1.45 (0.91-2.30)3 |
| Williams (2008) | Men | Waist circumference (per cm) | Questionnaire | RR (95%CI) | **1.06 (1.04-1.08)2** | 1.01 (0.98-1.04)4 |
|  |  | Chest circumference (per cm) | Questionnaire |  | **1.07 (1.05-1.08)2** | 1.03 (1.00-1.05)4 |

Significant values are in bold. HR = hazard ratio, RR = relative risk, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age, daily intakes of meat, fish, fruit, alcohol and aspirin and hypertension. 3 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status. 4 Adjusted for age, daily intakes of meat, fish, fruit, alcohol and aspirin, hypertension and body mass index (BMI)

Supplementary Table 12: Risk estimates for developing gout based on waist-to-hip ratio

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Choi et al. (2005) | Men | Waist-to-hip ratio in 1987 (cohort entry 1986) 0.70-0.88 | Measured | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)2 |
|  |  | 0.89-0.91 |  |  | 1.09 (0.81-1.47)1 | 1.02 (0.76-1.38)2 |
|  |  | 0.92-0.94 |  |  | 1.27 (0.94-1.71)1 | 1.11 (0.83-1.50)2 |
|  |  | 0.95-0.97 |  |  | **1.62 (1.20-2.16)1** | **1.35 (1.01-1.79)2** |
|  |  | 0.98-1.39 |  |  | **2.39 (1.83-3.13)1** | **1.82 (1.39-2.39)2** |
| Maynard et al. (2012) | Women | Baseline waist-to-hip ratio - <0.900 | Measured | RR (95%CI) | 1.00 (ref)1 | 1.00 (ref)3 |
|  |  | 0.901-0.967 |  |  | 1.65 (0.99-2.74)1 | 1.56 (0.91-2.69)3 |
|  |  | ≥0.968 |  |  | **3.87 (2.43-6.14)1** | **2.78 (1.65-4.70)3** |

Significant values are in bold. RR = relative risk, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age, total energy intake, diuretic use, history of hypertension, history of chronic renal failure, alcohol intake, fluid intake, meat intake, seafood intake, purine-rich vegetables, animal protein intake and dairy food intake. 3 Adjusted for age, menopausal status, race, diabetes mellitus, hypertension, diuretic use, alcohol intake, organ meat intake and estimated glomerular filtration rate

Supplementary Table 13: Risk estimates for developing gout based on weight change

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Choi et al.  (2005) | Men | Weight change (lbs) from age 21y - -10 or more | Self-report | RR (95%CI) | 0.74 (0.45-1.24)1 | 0.73 (0.44-1.22)5 |
|  |  | -10 to -5 |  |  | 1.13 (0.67-1.92)1 | 1.16 (0.68-1.97)5 |
|  |  | -4 to +4 |  |  | 1.00 (ref)1 | 1.00 (ref)5 |
|  |  | +5 to +9 |  |  | 0.89 (0.60-1.32)1 | 0.86 (0.58-1.27)5 |
|  |  | +10 to +19 |  |  | 1.24 (0.91-1.69)1 | 1.14 (0.84-1.56)5 |
|  |  | +20 to +29 |  |  | **1.57 (1.15-2.14)1** | **1.39 (1.02-1.90)5** |
|  |  | +30 or more |  |  | **2.47 (1.86-3.28)1** | **1.99 (1.49-2.66)5** |
|  |  | Weight change since baseline - -10 or more | Self-report | RR (95%CI) | 0.68 (0.45-1.02)2 | **0.61 (0.40-0.92)6** |
|  |  | -10 to -5 |  |  | 1.12 (0.82-1.53)2 | 1.09 (0.79-1.49)6 |
|  |  | -4 to +4 |  |  | 1.00 (ref)2 | 1.00 (ref)6 |
|  |  | +5 to +9 |  |  | 1.09 (0.86-1.38)2 | 1.05 (0.83-1.32)6 |
|  |  | +10 to +19 |  |  | **1.49 (1.18-1.89)2** | **1.36 (1.08-1.72)6** |
|  |  | +20 to +29 |  |  | 1.38 (0.91-2.10)2 | 1.22 (0.81-1.85)6 |
|  |  | +30 or more |  |  | **2.09 (1.25-3.52)2** | **1.72 (1.02-2.91)6** |
| Maynard et al.  (2012) | Women | Weight change between age 25y and baseline – <6.8kg | Self-report for age 21y, measured at baseline | RR (95%CI) | 1.00 (ref)3 | 1.00 (ref)7 |
|  |  | 6.8-16.2kg |  |  | **2.10 (1.07-4.12)3** | 1.54 (0.77-3.08)7 |
|  |  | ≥16.3kg |  |  | **4.20 (2.26-7.79)3** | **2.05 (1.06-3.96)7** |
| Roubenoff et al.  (1991) | Men | Weight gain >1.88kg/m2 from cohort entry to age 35y | Measured at baseline, self-reported later | RR | 2.074 | - |
|  |  | Weight gain >2.7kg from cohort entry to age 35y | Measured at baseline, self-reported later |  | 1.874 | - |

Significant values are in bold. RR = relative risk, CI = confidence interval. 1 Adjusted for age and weight at 21 years 2 Adjusted for age and weight at baseline (1986). 3 Adjusted for age. 4 Adjusted for age and hypertension. 5 Adjusted for age, total energy intake, diuretic use, history of hypertension, history of chronic renal failure, alcohol intake, fluid intake, meat intake, seafood intake, purine-rich vegetable intake, animal protein intake, dairy food intake and weight at age 21 years. 6 Adjusted for age, total energy intake, diuretic use, history of hypertension, history of chronic renal failure, alcohol intake, fluid intake, meat intake, seafood intake, purine-rich vegetable intake, animal protein intake, dairy food intake and weight at baseline (1986). 7 Adjusted for age, menopausal status, race, diabetes mellitus, hypertension, diuretic use, alcohol intake, organ meat intake and estimated glomerular filtration rate. 8 Adjusted for age, sex, alcohol intake, blood pressure, cholesterol and treatment for hypertension and hypercholesterolaemia

Supplementary Table 14: Risk estimates for developing gout based on diabetes mellitus

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Bhole et al. (2010) | Men | Blood glucose  (per 10mg/dl) | Measured | RR (95%CI) | 1.01 (0.97-1.05)1 | 0.99 (0.95-1.03)2 |
|  | Women | Blood glucose  (per 10mg/dl) | Measured |  | 1.05 (1.00-1.10)1 | 1.02 (0.98-1.07)2 |
| Chen et al. (2012) | Men | Diabetes mellitus | Record-linkage | HR (95%CI) | 0.82 (0.65-1.03)1 | 0.85 (0.67-1.07)3 |
|  | Women | Diabetes mellitus | Record-linkage |  | **1.62 (1.17-2.24)1** | 1.15 (0.83-2.30)3 |
|  | Women | Diabetes mellitus in postmenopausal women | Record-linkage |  | **1.65 (1.18-2.30)1** | 1.27 (0.90-1.79)3 |
|  | Women | Diabetes mellitus in premenopausal women | Record-linkage |  | 1.18 (0.29-4.90)1 | 0.51 (0.12-2.13)3 |
| Chen et al. (2013) | Men | Hyperglycaemia in men | Record-linkage | HR (95%CI) | 1.13 (0.99-1.30)1 | 0.97 (0.84-1.12)4 |
|  | Women | Hyperglycaemia in women >50 years | Record-linkage |  | 0.98 (0.74-1.30)1 | 0.78 (0.59-1.04)4 |
|  | Women | Hyperglycaemia in women ≤50 years | Record-linkage |  | 0.64 (0.34-1.18)1 | 0.48 (0.25-0.91)4 |

Significant values are in bold. RR = relative risk, HR = hazard ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age, education level, body mass index (BMI), alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 3 Adjusted for age, obesity (BMI≥27), hypertension, hyperlipidaemia, diabetes mellitus, alcohol drinking and cigarette smoking. 4 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status

Supplementary Table 15: Risk estimates for developing gout based on dyslipidaemias

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max Adjustment)** |
| Bhole et al.  (2010) | Men | Blood cholesterol  (per 10mg/dl) | Measured | RR (95%CI) | 1.03 (0.99-1.07)1 | 1.03 (0.99-1.06)2 |
|  | Women | Blood cholesterol  (per 10mg/dl) | Measured |  | 1.00 (0.96-1.05)1 | 0.99 (0.95-1.04)2 |
| Chen et al.  (2012) | Men | Hyperlipidaemia | Record-linkage | HR (95%CI) | **1.81 (1.61-2.04)1** | 1.12 (0.99-1.26)3 |
|  | Women | Hyperlipidaemia | Record-linkage |  | **2.77 (2.16-3.57)1** | **1.70 (1.32-2.19)3** |
|  | Women | Hyperlipidaemia (postmenopausal) | Record-linkage |  | **2.36 (1.80-3.09)1** | **1.59 (1.20-2.09)3** |
|  | Women | Hyperlipidaemia (premenopausal) | Record-linkage |  | **4.34 (2.37-7.96)1** | 1.79 (0.96-3.35)3 |
| Chen et al.  (2013) | Men | High triglycerides | Record-linkage (initially measured) | HR (95%CI) | **1.99 (1.74-2.27)1** | **1.39 (1.21-1.60)4** |
|  | Women | High triglycerides (>50 years) | Record-linkage (initially measured) |  | **1.82 (1.38-2.41)1** | **1.37 (1.02-1.83)4** |
|  | Women | High triglycerides (≤50 years) | Record-linkage (initially measured) |  | **1.87 (1.09-3.22)**1 | 1.36 (0.75-2.33)4 |
|  | Men | Low high density lipoproteins | Record-linkage (initially measured) |  | 1.14 (1.00-1.30)1 | 0.94 (0.82-1.07)4 |
|  | Women | Low high density lipoproteins  (>50 years) | Record-linkage (initially measured) |  | 1.20 (0.91-1.59)1 | 0.99 (0.74-1.32)4 |
|  |  | Low high density lipoproteins  (≤50 years) | Record-linkage (initially measured) |  | 0.95 (0.63-1.45)1 | 0.84 (0.55-1.30)4 |
| Prior et al.  (1987) | Men | Cholesterol (mmol/l) | Measured | OR (95%CI) | **1.62 (1.20-2.16)** | - |
|  |  | Triglycerides (mmol/l) | Measured |  | **1.57 (1.21-2.01)** | - |

Significant values are in bold. RR = relative risk, HR = hazard ratio, OR = odds ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age, education level, BMI, alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 3 Adjusted for age, obesity (BMI≥27), hypertension, hyperlipidaemia, diabetes mellitus, alcohol drinking and cigarette smoking. 4 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status.

Supplementary Table 16: Risk estimates for developing gout based on renal disease

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Chen et al. (2013) | Men | Renal insufficiency (CKD stage 3/eGFR <60ml/min/1.73m2) | Record-linkage (initially measured) | HR (95%CI) | **2.42 (2.01-2.92)1** | **1.66 (1.37-2.01)2** |
|  | Women | Renal insufficiency (CKD stage 3/eGFR <60ml/min/1.73m2) (>50 years) | Record-linkage (initially measured) |  | **2.56 (1.88-3.48)1** | **1.79 (1.31-2.46)2** |
|  | Women | Renal insufficiency (CKD stage 3/eGFR <60ml/min/1.73m2) (≤50 years) | Record-linkage (initially measured) |  | 2.70 (0.98-7.44)1 | 1.80 (0.65-5.03)2 |
| Choi et al. (2005) | Men | Chronic renal failure | Self-report | - | - | **3.61 (1.60-8.14)3** |
|  |  | Chronic renal failure and no diuretic use | Self-report | - | - | **4.60 (1.88-11.25)3** |
| Wang et al. (2015) | Men | Chronic kidney disease | Physician diagnosis or self-report | HR (95%CI) | **2.07 (1.37-3.14)1** | **1.88 (1.13-3.13)4** |
|  | Women | Chronic kidney disease | Physician diagnosis or self-report | HR (95%CI) | **1.95 (1.19-3.22)1** | **2.31 (1.25-4.25)4** |
| Tan et al. (2017) | Men | eGFR ≥90ml/min per 1.733m2 | Diagnostic code from physician visit, emergency room visit or hospitalisation | HR (95%CI) | 1 (ref) | 1 (ref) |
|  |  | eGFR 60-89ml/min per 1.733m2 |  | HR (95%CI) | **1.5 (1.2-1.8)5** | **1.6 (1.3-1.9)4** |
|  |  | eGFR 45-59ml/min per 1.733m2 |  | HR (95%CI) | **3.1 (2.5-3.8)5** | **2.9 (2.3-3.64** |
|  |  | eGFR 39-44ml/min per 1.733m2 |  | HR (95%CI) | **5.0 (4.0-6.1)5** | **4.4 (3.5-5.5)4** |
|  |  | eGFR 15-29ml/min per 1.733m2 |  | HR (95%CI) | **6.7 (5.1-8.8)5** | **5.5 (4.1-7.4)4** |
|  |  | Chronic dialysis |  | HR (95%CI) | **4.9 (2.0-12.0)5** | **3.6 (1.5-9.1)4** |
| Tan et al. (2017) | Women | eGFR ≥90ml/min per 1.733m2 | Diagnostic code from physician visit, emergency room visit or hospitalisation | HR (95%CI) | 1 (ref) | 1 (ref) |
|  |  | eGFR 60-89ml/min per 1.733m2 |  | HR (95%CI) | **1.3 (1.1-1.6)5** | **1.4 (1.1-1.7)4** |
|  |  | eGFR 45-59ml/min per 1.733m2 |  | HR (95%CI) | **2.3 (1.9-2.9)5** | **2.1 (1.7-2.7)4** |
|  |  | eGFR 39-44ml/min per 1.733m2 |  | HR (95%CI) | **4.0 (3.3-5.0)5** | **3.5 (2.7-4.4)4** |
|  |  | eGFR 15-29ml/min per 1.733m2 |  | HR (95%CI) | **7.0 (5.4-9.0)5** | **5.6 (4.2-7.4)4** |
|  |  | Chronic dialysis |  | HR (95%CI) | **4.3 (1.8-10.5)5** | **3.1 (1.2-7.7)4** |

Significant values are in bold. HR = hazard ratio, RR = relative risk, CI = confidence interval. CKD = chronic kidney disease, eGFR = estimated glomerular filtration rate, CKD-Epi = Chronic Kidney Disease Epidemiology Collaboration. 1 Adjusted for age. 2 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status. 3 Adjusted for age, total energy intake, meat intake, seafood intake, purine-rich vegetable intake, dairy food intake, alcohol intake, animal protein intake and fluid intake. 4 Adjusted for baseline age, hyperuricemia, general obesity, hypertriglyceridemia, low HDLs, HTN, hyperglycemia, renal insufficiency, smoking and alcohol drinking status 5 Unadjusted

Supplementary Table 17: Risk estimates for developing gout based on hypertension

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure**  **Ascertainment** | **Outcome**  **Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Bhole et al. (2010) | Men | Hypertension | Measured | RR (95%CI) | **2.39 (1.73-3.29)1** | **1.59 (1.12-2.24)2** |
|  | Women | Hypertension | Measured |  | **2.91 (1.74-4.88)1** | **1.82 (1.06-3.14)2** |
| Burke et al. (2015) | Men | Hypertension | Self-reported, physician diagnosed | HR (95%CI) |  | 1.33 (0.84-2.098 |
|  | Women | Hypertension | Self-reported, physician diagnosed | HR (95%CI) |  | **1.64(1.02-2.64)8** |
| Chen et al. (2012) | Men | Hypertension | Record-linkage | HR (95%CI) | **1.74 (1.54-1.95)1** | **1.32 (1.17-1.48)3** |
|  | Women | Hypertension | Record-linkage |  | **2.11 (1.59-2.79)1** | **1.34 (1.02-1.77)3** |
|  | Women | Hypertension  (postmenopausal women) | Record-linkage |  | **1.76 (1.32-2.34)1** | 1.23 (0.92-1.65)3 |
|  | Women | Hypertension  (premenopausal women) | Record-linkage |  | **3.53 (1.92-6.50)1** | 1.70 (0.91-3.18)3 |
| Chen et al. (2013) | Men | Hypertension | Record-linkage | HR (95%CI) | **1.46 (1.27-1.69)1** | **1.19 (1.03-1.37)4** |
|  | Women | Hypertension (>50 years) | Record-linkage |  | 1.17 (0.86-1.58)1 | 1.00 (0.73-1.36)4 |
|  | Women | Hypertension (≤50 years) | Record-linkage |  | 1.51 (0.92-2.47)1 | 1.26 (0.75-2.11)4 |
| Choi et al. (2005) | Men | Hypertension | Self-report | RR (95%CI) | **3.07 (2.64-3.56)1** | **2.31 (1.96-2.72)5** |
| Grodzicki et al. (1997) | Men | Hypertension | Record-linkage | RR (95%CI) | **3.93 (1.60-9.70)** | - |
| Hochberg et al. (1995) | Men | Incident hypertension | Self-report | RR (95%CI) | **3.78 (2.18-6.58)** | **3.20 (1.80-5.68)6** |
|  |  | Incident hypertension (white cohort) | Self-report |  | **3.80 (1.79-7.93)** | - |
|  |  | Incident hypertension (black cohort) | Self-report |  | **3.00 (1.20-7.50)** | - |
|  |  | Systolic blood pressure (black cohort) | Self-report |  | **1.70 (1.15-2.52)** | - |
| Pan et al. (2015) | Men | Hypertension | Self-reported, physician diagnosed | HR (95%CI) |  | **1.67 (1.33-2.09)8** |
|  | Women | Hypertension | Self-reported, physician diagnosed | HR (95%CI) |  | **2.08 (1.66-2.60)8** |
| Prior et al. (1987) | Men | Systolic blood pressure | Measured | OR (95%CI) | **1.03 (1.02-1.05)** | - |
|  |  | Diastolic blood pressure | Measured |  | **1.05 (1.03-1.07)** | - |
| Roubenoff et al. (1991) | Men | Hypertension | High BP self-report or antihypertension meds | RR (95%CI) | **2.70 (1.45-5.13)** | - |
|  |  | Hypertension with no use of diuretics | Self-report |  | 0.44 (0.10-1.84) | - |

Significant values are in bold. RR = relative risk, HR = hazard ratio, OR = odds ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age, education level, body mass index (BMI), alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 3 Adjusted for age, obesity (BMI≥27), hypertension, hyperlipidaemia, diabetes mellitus, alcohol drinking and cigarette smoking. 4 Adjusted for baseline age, hyperuricaemia, general obesity, hypertriglyceridemia, low high density lipoproteins, hypertension, hyperglycaemia, renal insufficiency, smoking and alcohol drinking status. 5 Adjusted for age, BMI, total energy intake, diuretic use, history of hypertension, history of renal failure, alcohol intake, fluid intake, meat intake, seafood intake, purine-rich vegetable intake, animal protein intake and dairy food intake. 6 Adjusted for ethnicity, baseline BMI and hypertension as a time-dependent covariate. 7 Adjusted for sex, race, BMI, alcohol intake and categorical estimated glomerular filtration rate. 8 Adjusted for age and race

Supplementary Table 18: Risk estimates for developing gout based on diuretic use

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome**  **Measure** | **Risk Value**  **(Min adjustment)** | **Risk Value**  **(Max adjustment)** |
| Bhole et al. (2010) | Men | Diuretic use | Self-report | RR (95%CI) | **4.31 (3.06-6.08)1** | **3.41 (2.38-4.89)2** |
|  | Women | Diuretic use | Self-report |  | **3.23 (2.13-4.91)1** | **2.39 (1.53-3.74)2** |
| Burke et al. (2015) | Men | Diuretic use in patients >65y | Self-reported, physician diagnosed | OR (95%CI) | 1.58 (0.89-2.81)6 |  |
|  | Women | Diuretic use in patients >65y | Self-reported, physician diagnosed | OR (95%CI) | 1.83 (1.12-2.98)6 |  |
| Choi et al. (2005) | Men | Diuretic use | Self-report | RR (95%CI) | **3.37 (2.75-4.12)1** | **1.77 (1.42-2.20)3** |
| Grodzicki et al. (1997) | Men | Diuretic use  (and raised diastolic  blood pressure) | Reported by GP | RR (95%CI) | **6.25 (2.40-16.70)** | - |

Significant values are in bold. RR = relative risk, HR = hazard ratio, OR = odds ratio, CI = confidence interval. 1 Adjusted for age. 2 Adjusted for age, education level, BMI, alcohol consumption, history of hypertension, diuretic use, blood glucose and cholesterol levels and menopausal status (women only). 3 Adjusted for age, BMI, total energy intake, diuretic use, history of hypertension, history of renal failure, alcohol intake, fluid intake, meat intake, seafood intake, purine-rich vegetable intake, animal protein intake and dairy food intake. 4 Adjusted for age, sex, race, BMI, estimated glomerular filtration rate, time-varying blood pressure (and heart failure for loop diuretics) 5 Adjusted for age, sex, BMI, estimated glomerular filtration rate 6 Unadjusted

Supplementary Table 19: Risk estimates for developing gout based on psoriasis and psoriatic arthritis (PsA)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome**  **Measure** | **Risk Value**  **(Self-reported Psoriasis)\*** | **Risk Value**  **(Confirmed Psoriasis diagnosis)\*** | **PSA\*** |
| Merola et al. (2015) | Men | Psoriasis & PsA | Self-report confirmed with Psoriasis Screening Tool (PST) | HR (95%CI) | **1.79 (1.30-2.47)** | **2.72 (1.75-4.25)** | **5.60 (2.49-12.6)** |
|  | Women | Psoriasis & PsA | Self-report confirmed with Psoriasis Screening Tool (PST) | HR (95%CI) | **1.63 (1.17-2.27)** | 1.40 (0.90-2.19) | **4.28 (1.77-10.4)** |
|  | Both | Psoriasis & PsA | Self-report confirmed with Psoriasis Screening Tool (PST) | HR (95%CI) | **1.71 (1.36-2.15)** | **1.95 (1.02-3.75)** | **4.95 (2.72-9.01)** |

\*Adjusted for BMI, alcohol intake, physical activity, smoking status, hypertension, type-2 diabetes, diuretic use, asprin use, daily average intakes of total energy, total vitamin C, coffee, total meats, seafood, total dairy foods, free fructose. Analysis for women were also adjusted for menopausal status and postmenopausal hormones use.

Supplementary Table 20: Risk estimates for developing gout based on anti-diabetic medication

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Article** | **Gender** | **Exposure** | **Exposure Ascertainment** | **Outcome**  **Measure** | **Risk Value**  **(min adjustment)** | **Risk Value**  **(max adjustment)** |
| Wijnands et al. (2015) | Men | Non-insulin anti-diabetic drugs (NIADs) | Medical records | HR (95%CI) | **1.19 (1.13-1.26)1** | **0.61 (0.58-0.66)2** |
|  | Women | Non-insulin anti-diabetic drugs (NIADs) | Medical records | HR (95%CI) | **2.23 (2.07-2.41)1** | **1.01 (0.92-1.11)2** |
| Niu et al. (2017) | Men | Pioglitazone | Anatomical Therapeutic Chemical Classification System defined daily dose | HR (95%CI) |  | **0.80 (0.75-0.85)3** |
|  | Women | Pioglitazone | Anatomical Therapeutic Chemical Classification System defined daily dose | HR (95%CI) |  | **0.83 (0.78-0.88)3** |

1 Adjusted for age 2 Adjusted for age, smoking, alcohol consumption, postmenopausal status/oophorectomy, BMI, eGFR, HTN, kidney transplant, low dose asprin, statins, ciclosporin, loop diuretics, thiazide diuretics 3 Adjusted for age, sex, comorbidities