**Supplementary Information**

**Table S1. UKB code, ICD-9 and ICD-10 codes for identification of dementia and its major subtypes**

**Table S2. Spearman correlation of three types of sugary beverages intake in UK Biobank (N=187,994)**

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**Figure S1. Flowchart of participant inclusion**

**Figure S2. Hazard ratios (HRs) for sugary beverages intake and incident dementia stratified by polygenic risk score (N=187,994)**

**Table S1. UKB code, ICD-9 and ICD-10 codes for identification of dementia and its major subtypes**

|  |  |  |
| --- | --- | --- |
| **Source** | **Code (UKB code or ICD code)** | **Censoring date** |
| **Self-reported sources** | UKB code: 20002 |  |
| **Primary care data** | UKB code:130806-130843, 131036-131039 | 31 May 2016 (England, TPP); 31 May 2017 (England, version); 31 March 2017 (Scotland); 31 Aug 2017 (Wales). |
| **Hospital inpatient data** | ICD-9: 3331, 33311, 290, 04611, 3334, 294, 29282, 293, 2911, 2912  ICD-10: F00, F01, F02, F03, F051, F106, G30, G31, I673, A810 | 28 February 2021 (Hospital Episode Statistics for England); 28 February 2021 (Scottish Morbidity Record); 28 February 2018 (Patient Episode Database for Wales); |
| **Death register** | UKB code: 40000  ICD-10: F00, F01, F02, F03, F051, F106, G30, G31, I673, A810 | 28 February 2021(England & Wales); 28 February 2021 (Scotland); |

**Table S2. Spearman correlation of three types of sugary beverages intake in UK Biobank (N=187,994)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Artificially Sweetened Beverage** | **Sugar Sweetened Beverage** | **Natural Sweet Juice** |
| **Artificially Sweetened Beverage** | 1 | 0.11 | -0.03 |
| **Sugar Sweetened Beverage** | 0.11 | 1 | 0.07 |
| **Natural Sweet Juice** | -0.03 | 0.07 | 1 |

**Table S3. Hazard ratios (HRs) for the association of total sugary beverage intake and dementia (N=187,994)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **By sugar sweetened beverage categories** | | | | **By sugar naturally sweet juice categories** | | | |
|  |  | **None** | **0~1 unit/d** | **1~2 unit/d** | **>2 unit/d** | **None** | **0~1 unit/d** | **1~2 unit/d** | **>2 unit/d** |
| n |  | 152074 | 21839 | 9146 | 4935 | 95151 | 70315 | 17607 | 4921 |
| Female (%) | | 69473 (45.7) | 9070 (41.5) | 3850 (42.1) | 2106 (42.7) | 40628 (42.7) | 32876 (46.8) | 8415 (47.8) | 2580 (52.4) |
| Age at baseline (mean (SD)) | | 56.59 (7.85) | 55.13 (7.98) | 54.13 (8.00) | 53.22 (7.97) | 55.87 (7.96) | 56.70 (7.85) | 56.31 (7.89) | 55.59 (8.03) |
| Total Energy, kJ (mean (SD)) | | 8684.31 (2462.10) | 8562.20 (2434.02) | 8548.91 (2398.49) | 8738.86 (2609.45) | 8359.16 (2519.52) | 8852.89 (2346.76) | 9236.18 (2275.64) | 9849.10 (2527.42) |
| Townsend deprivation index (%) | | |  |  |  |  |  |  |  |
|  | High | 50452 (33.2) | 7169 (32.8) | 3099 (33.9) | 1862 (37.7) | 33568 (35.3) | 21155 (30.1) | 5897 (33.5) | 1962 (39.9) |
|  | Medium | 50807 (33.4) | 7249 (33.2) | 3098 (33.9) | 1479 (30.0) | 30063 (31.6) | 25311 (36.0) | 5873 (33.4) | 1386 (28.2) |
|  | Low | 50815 (33.4) | 7421 (34.0) | 2949 (32.2) | 1594 (32.3) | 31520 (33.1) | 23849 (33.9) | 5837 (33.2) | 1573 (32.0) |
| Highest education (%) | |  |  |  |  |  |  |  |  |
|  | Below high school | 86189 (56.7) | 13594 (62.2) | 5736 (62.7) | 3155 (63.9) | 59875 (62.9) | 37978 (54.0) | 8593 (48.8) | 2228 (45.3) |
|  | College or above | 65885 (43.3) | 8245 (37.8) | 3410 (37.3) | 1780 (36.1) | 35276 (37.1) | 32337 (46.0) | 9014 (51.2) | 2693 (54.7) |
| White ethnicity (%) | | 146480 (96.3) | 21028 (96.3) | 8872 (97.0) | 4775 (96.8) | 91480 (96.1) | 68238 (97.0) | 16911 (96.0) | 4526 (92.0) |
| Physical activity (%) | |  |  |  |  |  |  |  |  |
| pac (%) | High | 50963 (33.5) | 7246 (33.2) | 3136 (34.3) | 1660 (33.6) | 31536 (33.1) | 23538 (33.5) | 6098 (34.6) | 1833 (37.2) |
|  | Medium | 23077 (15.2) | 3491 (16.0) | 1529 (16.7) | 895 (18.1) | 15192 (16.0) | 10511 (14.9) | 2579 (14.6) | 710 (14.4) |
|  | Low | 78034 (51.3) | 11102 (50.8) | 4481 (49.0) | 2380 (48.2) | 48423 (50.9) | 36266 (51.6) | 8930 (50.7) | 2378 (48.3) |
| Ever smoked (%) | | 65074 (42.8) | 9460 (43.3) | 4095 (44.8) | 2320 (47.0) | 43571 (45.8) | 28532 (40.6) | 6918 (39.3) | 1928 (39.2) |
| Current alcohol drinker (%) | | 142573 (93.8) | 20360 (93.2) | 8439 (92.3) | 4421 (89.6) | 88261 (92.8) | 66554 (94.7) | 16529 (93.9) | 4449 (90.4) |
| Bodyweight status (%) | |  |  |  |  |  |  |  |  |
|  | Underweight | 56668 (37.3) | 5810 (26.6) | 2042 (22.3) | 976 (19.8) | 31125 (32.7) | 25982 (37.0) | 6617 (37.6) | 1772 (36.0) |
|  | Normal weight | 90864 (59.7) | 15694 (71.9) | 6987 (76.4) | 3904 (79.1) | 61526 (64.7) | 42384 (60.3) | 10520 (59.7) | 3019 (61.3) |
|  | Overweight | 4542 (3.0) | 335 (1.5) | 117 (1.3) | 55 (1.1) | 2500 (2.6) | 1949 (2.8) | 470 (2.7) | 130 (2.6) |
| Hypertension (%) | | 35880 (23.6) | 5836 (26.7) | 2673 (29.2) | 1523 (30.9) | 23711 (24.9) | 16842 (24.0) | 4187 (23.8) | 1172 (23.8) |
| Heart diseases (%) | | 6354 (4.2) | 1003 (4.6) | 443 (4.8) | 292 (5.9) | 4275 (4.5) | 2929 (4.2) | 693 (3.9) | 195 (4.0) |
| Cancer (%) | | 11637 (7.7) | 1495 (6.8) | 621 (6.8) | 341 (6.9) | 7033 (7.4) | 5342 (7.6) | 1340 (7.6) | 379 (7.7) |
| Diabetes (%) | | 5004 (3.3) | 1336 (6.1) | 729 (8.0) | 503 (10.2) | 4596 (4.8) | 2332 (3.3) | 492 (2.8) | 152 (3.1) |
| AHEI (mean (SD)) | | 24.54 (11.45) | 24.30 (11.30) | 24.14 (11.44) | 23.65 (11.64) | 24.52 (11.53) | 24.23 (11.30) | 24.83 (11.37) | 25.58 (11.76) |

**Table S4. Hazard ratios (HRs) for the association of total sugary beverage intake and dementia (N=187,994)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Person-Years** | **Events** | **Model 1\*** | | **Model 2\*\*** | | **Model 3\*\*\*** | |
|  | **HR (95% CI)** | P-value | **HR (95% CI)** | P-value | **HR (95% CI)** | P-value |
| None | 540766 | 424 | Ref |  | Ref |  | Ref |  |
| 0~1 unit/d | 599538 | 442 | 0.91 [0.79, 1.04] | 0.154 | 0.92 [0.81, 1.06] | 0.253 | 0.92 [0.81, 1.06] | 0.25 |
| 1~2 unit/d | 337406 | 234 | 0.93 [0.79, 1.09] | 0.373 | 0.94 [0.80, 1.11] | 0.462 | 0.95 [0.80, 1.11] | 0.49 |
| >2 unit/d | 313286 | 251 | 1.25 [1.07, 1.47] | 0.005 | 1.23 [1.05, 1.45] | 0.009 | 1.25 [1.06, 1.46] | 0.007 |

\* Model 1 was adjusted for age, age-square and sex.

\*\* Model 2 was additionally adjusted for Townsend deprivation index, education level, physical activity, smoking, alcohol intake, total energy intake, and alternative healthy eating index (AHEI).

\*\*\* Model 3 was further adjusted for body weight status.

**Table S5. Hazard ratios (HRs) for the association of sugary beverages intake and Alzheimer’s disease and vascular dementia (N=187,994)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Person-Years** | **Alzheimer's disease** | | | **Vascular dementia** | | |
|  | **Events** | **HR (95% CI)** | ***P*-value** | **Events** | **HR (95% CI)** | ***P*-value** |
| **Sugar-sweetened beverage** | | |  |  |  |  |  |
| None | 1262674.7 | 270 | Ref |  | 114 | Ref |  |
| 0~1 unit/d | 335688.9 | 72 | 1.02 [0.79, 1.33] | 0.876 | 34 | 1.12 [0.76, 1.64] | 0.571 |
| 1~2 unit/d | 126220.9 | 28 | 1.25 [0.84, 1.85] | 0.268 | 12 | 1.20 [0.66, 2.18] | 0.554 |
| >2 unit/d | 66411.5 | 20 | 2.02 [1.27, 3.19] | 0.003 | 5 | 1.05 [0.43, 2.58] | 0.918 |
| **Artificially-sweetened beverage** | | |  |  |  |  |  |
| None | 1448057.6 | 323 | Ref |  | 125 | Ref |  |
| 0~1 unit/d | 208716.5 | 35 | 0.96 [0.68, 1.37] | 0.828 | 25 | 1.69 [1.10, 2.61] | 0.017 |
| 1~2 unit/d | 87221.6 | 21 | 1.61 [1.04, 2.52] | 0.035 | 10 | 1.85 [0.97, 3.54] | 0.062 |
| >2 unit/d | 47000.4 | 11 | 1.82 [1.00, 3.34] | 0.051 | 5 | 1.90 [0.77, 4.68] | 0.16 |
| **Natural sweet juices** | | |  |  |  |  |  |
| None | 904274 | 203 | Ref |  | 82 | Ref |  |
| 0~1 unit/d | 669843.8 | 146 | 0.88 [0.71, 1.09] | 0.245 | 56 | 0.87 [0.61, 1.22] | 0.411 |
| 1~2 unit/d | 169406.6 | 26 | 0.65 [0.43, 0.97] | 0.037 | 22 | 1.40 [0.87, 2.26] | 0.163 |
| >2 unit/d | 47471.7 | 15 | 1.42 [0.84, 2.42] | 0.194 | 5 | 1.16 [0.47, 2.90] | 0.743 |

**Table S6. Association\* of sugary beverages intake with brain structure in participants aged over 60 years at baseline (N=4,207)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **N** | **Difference\* in z-score\*\* [95% confidence interval]** | | | | | |
| **Total brain volume** | **Volume of white matter** | **Volume of grey matter** | **Volume of white matter hyperintensities** | **Volume of Whole-hippocampus** | **Volume of grey matter in Hippocampus** |
| **Sugar-sweetened beverage** | | | | | | | |
| None | 2997 | Ref | | | | | |
| 0~1 unit/d | 104 | -0.00 [-0.07, 0.06] | 0.02 [-0.06, 0.09] | -0.02 [-0.08, 0.04] | 0.07 [-0.00, 0.14] | -0.03 [-0.10, 0.05] | -0.02 [-0.09, 0.05] |
| 1~2 unit/d | 854 | -0.02 [-0.13, 0.08] | -0.04 [-0.16, 0.09] | -0.00 [-0.10, 0.09] | -0.02 [-0.14, 0.10] | -0.04 [-0.16, 0.08] | -0.09 [-0.21, 0.02] |
| >2 unit/d | 252 | -0.05 [-0.21, 0.11] | -0.03 [-0.22, 0.17] | -0.05 [-0.20, 0.10] | 0.07 [-0.11, 0.25] | -0.01 [-0.19, 0.18] | -0.16 [-0.33, 0.02] |
| **Artificially-sweetened beverage** | | | | | | | |
| None | 3584 | Ref | | | | | |
| 0~1 unit/d | 68 | -0.01 [-0.10, 0.07] | 0.01 [-0.09, 0.11] | -0.03 [-0.11, 0.05] | 0.09 [-0.01, 0.18] | 0.06 [-0.03, 0.16] | -0.00 [-0.09, 0.09] |
| 1~2 unit/d | 405 | 0.05 [-0.09, 0.18] | 0.08 [-0.09, 0.24] | 0.01 [-0.12, 0.13] | -0.05 [-0.21, 0.10] | 0.04 [-0.11, 0.20] | 0.02 [-0.13, 0.17] |
| >2 unit/d | 150 | -0.01 [-0.21, 0.19] | 0.03 [-0.21, 0.27] | -0.04 [-0.23, 0.14] | -0.03 [-0.25, 0.19] | 0.17 [-0.06, 0.40] | 0.05 [-0.16, 0.27] |
| **Natural sweet juice** | | | | | | | |
| None | 1900 | Ref | | | | | |
| 0~1 unit/d | 103 | 0.01 [-0.05, 0.06] | -0.01 [-0.08, 0.05] | 0.02 [-0.03, 0.07] | -0.05 [-0.11, 0.01] | -0.01 [-0.07, 0.05] | -0.00 [-0.06, 0.06] |
| 1~2 unit/d | 1782 | -0.07 [-0.16, 0.02] | -0.16 [-0.27, -0.06] | 0.03 [-0.05, 0.12] | -0.08 [-0.17, 0.02] | -0.07 [-0.17, 0.03] | -0.09 [-0.18, 0.01] |
| >2 unit/d | 422 | -0.07 [-0.24, 0.09] | -0.05 [-0.25, 0.15] | -0.07 [-0.22, 0.08] | -0.02 [-0.20, 0.16] | -0.01 [-0.20, 0.18] | -0.18 [-0.36, -0.01] |

**Table S7. Hazard ratios (HRs) for sugary beverages intake and incident dementia in subgroups of participants (N=187,994)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subgroups** | | **SSB** | | **ASB** | | **NSJ** | |
| **HR (95% CI)** | ***P*-interaction** | **HR (95% CI)** | ***P*-interaction** | **HR (95% CI)** | ***P*-interaction** |
| **Age** | **Age <= 60** |  | 0.41 |  | 0.71 |  | 0.19 |
|  | 0~1 unit/d | 0.89 [0.64, 1.24] |  | 1.06 [0.73, 1.54] |  | 0.77 [0.58, 1.02] |  |
|  | 1~2 unit/d | 1.05 [0.67, 1.63] |  | 1.58 [1.01, 2.47] |  | 0.91 [0.58, 1.41] |  |
|  | >2 unit/d | 0.86 [0.47, 1.60] |  | 0.96 [0.47, 1.96] |  | 1.89 [1.10, 3.25] |  |
|  | **Age > 60** |  |  |  |  |  |  |
|  | 0~1 unit/d | 1.04 [0.89, 1.21] |  | 1.21 [1.00, 1.46] |  | 0.85 [0.75, 0.97] |  |
|  | 1~2 unit/d | 1.10 [0.86, 1.40] |  | 1.34 [1.01, 1.78] |  | 0.97 [0.78, 1.19] |  |
|  | >2 unit/d | 1.54 [1.14, 2.08] |  | 1.35 [0.90, 2.03] |  | 0.98 [0.67, 1.43] |  |
| **Sex** | **Female** |  | 0.47 |  | 0.82 |  | 0.33 |
|  | 0~1 unit/d | 0.97 [0.80, 1.17] |  | 1.18 [0.93, 1.49] |  | 0.84 [0.71, 0.98] |  |
|  | 1~2 unit/d | 1.16 [0.89, 1.52] |  | 1.57 [1.15, 2.15] |  | 0.88 [0.68, 1.14] |  |
|  | >2 unit/d | 1.19 [0.83, 1.70] |  | 1.28 [0.80, 2.05] |  | 0.91 [0.58, 1.42] |  |
|  | **Male** |  |  |  |  |  |  |
|  | 0~1 unit/d | 1.06 [0.86, 1.30] |  | 1.17 [0.92, 1.49] |  | 0.84 [0.70, 1.01] |  |
|  | 1~2 unit/d | 0.96 [0.67, 1.38] |  | 1.23 [0.86, 1.78] |  | 1.06 [0.80, 1.40] |  |
|  | >2 unit/d | 1.65 [1.08, 2.53] |  | 1.19 [0.70, 2.03] |  | 1.57 [1.03, 2.41] |  |
| **Townsend deprivation index** | **High Townsend deprivation index** | | 0.21 |  | <0.001 |  | 0.15 |
|  | 0~1 unit/d | 0.97 [0.76, 1.23] |  | 1.56 [1.20, 2.02] |  | 0.83 [0.67, 1.02] |  |
|  | 1~2 unit/d | 0.84 [0.57, 1.25] |  | 1.70 [1.17, 2.46] |  | 1.00 [0.73, 1.37] |  |
|  | >2 unit/d | 1.18 [0.75, 1.84] |  | 1.54 [0.92, 2.59] |  | 1.79 [1.20, 2.69] |  |
|  | **Moderate Townsend deprivation index** | | | |  |  |  |
|  | 0~1 unit/d | 1.02 [0.80, 1.31] |  | 1.27 [0.95, 1.69] |  | 0.84 [0.68, 1.03] |  |
|  | 1~2 unit/d | 1.59 [1.14, 2.20] |  | 1.15 [0.70, 1.87] |  | 0.86 [0.61, 1.21] |  |
|  | >2 unit/d | 1.31 [0.79, 2.17] |  | 2.00 [1.19, 3.37] |  | 0.94 [0.51, 1.73] |  |
|  | **Low Townsend deprivation index** | |  |  |  |  |  |
|  | 0~1 unit/d | 1.05 [0.82, 1.33] |  | 0.75 [0.53, 1.05] |  | 0.85 [0.70, 1.04] |  |
|  | 1~2 unit/d | 0.90 [0.60, 1.35] |  | 1.31 [0.87, 1.96] |  | 1.01 [0.73, 1.39] |  |
|  | >2 unit/d | 1.63 [1.02, 2.60] |  | 0.23 [0.06, 0.94] |  | 0.55 [0.24, 1.24] |  |
| **Education** | **Without college/university degree** | | 0.59 |  | 0.58 |  | 0.68 |
|  | 0~1 unit/d | 1.03 [0.87, 1.22] |  | 1.10 [0.90, 1.35] |  | 0.83 [0.72, 0.96] |  |
|  | 1~2 unit/d | 0.99 [0.76, 1.30] |  | 1.32 [0.99, 1.76] |  | 1.02 [0.81, 1.29] |  |
|  | >2 unit/d | 1.39 [1.01, 1.91] |  | 1.25 [0.83, 1.88] |  | 1.07 [0.69, 1.64] |  |
|  | **College/University degree and above** | |  |  |  |  |  |
|  | 0~1 unit/d | 0.97 [0.75, 1.24] |  | 1.37 [1.02, 1.84] |  | 0.85 [0.69, 1.05] |  |
|  | 1~2 unit/d | 1.31 [0.91, 1.86] |  | 1.63 [1.06, 2.49] |  | 0.86 [0.62, 1.17] |  |
|  | >2 unit/d | 1.22 [0.71, 2.09] |  | 1.18 [0.58, 2.37] |  | 1.30 [0.83, 2.03] |  |
| **Smoking status** | **Never smoking** |  | 0.05 |  | 0.28 |  | 0.49 |
|  | 0~1 unit/d | 0.98 [0.80, 1.19] |  | 1.12 [0.87, 1.44] |  | 0.83 [0.70, 0.98] |  |
|  | 1~2 unit/d | 1.36 [1.03, 1.79] |  | 1.75 [1.26, 2.41] |  | 1.06 [0.82, 1.36] |  |
|  | >2 unit/d | 1.10 [0.71, 1.71] |  | 1.25 [0.73, 2.13] |  | 1.02 [0.65, 1.59] |  |
|  | **Ever smoking** |  |  |  |  |  |  |
|  | 0~1 unit/d | 1.04 [0.86, 1.26] |  | 1.22 [0.98, 1.54] |  | 0.85 [0.72, 1.00] |  |
|  | 1~2 unit/d | 0.82 [0.59, 1.16] |  | 1.15 [0.81, 1.63] |  | 0.85 [0.64, 1.12] |  |
|  | >2 unit/d | 1.57 [1.11, 2.22] |  | 1.23 [0.77, 1.97] |  | 1.33 [0.87, 2.03] |  |
| **Drinking status** | **Non-current drinker** | | 0.21 |  | 0.5 |  | 0.76 |
|  | 0~1 unit/d | 1.50 [1.01, 2.23] |  | 0.97 [0.57, 1.68] |  | 0.90 [0.61, 1.32] |  |
|  | 1~2 unit/d | 1.32 [0.73, 2.39] |  | 1.27 [0.64, 2.51] |  | 1.14 [0.64, 2.02] |  |
|  | >2 unit/d | 1.60 [0.82, 3.13] |  | 0.62 [0.20, 1.95] |  | 0.91 [0.36, 2.27] |  |
|  | **Current drinker** |  | 0.86 |  | 0.48 |  | 0.25 |
|  | 0~1 unit/d | 0.96 [0.83, 1.11] |  | 1.21 [1.01, 1.44] |  | 0.83 [0.74, 0.94] |  |
|  | 1~2 unit/d | 1.07 [0.85, 1.34] |  | 1.42 [1.10, 1.84] |  | 0.93 [0.76, 1.14] |  |
|  | >2 unit/d | 1.32 [0.98, 1.77] |  | 1.37 [0.95, 1.99] |  | 1.22 [0.88, 1.69] |  |
| **Weight** | **Normal Weight** |  |  |  |  |  |  |
|  | 0~1 unit/d | 0.97 [0.76, 1.22] |  | 1.04 [0.74, 1.45] |  | 0.84 [0.69, 1.02] |  |
|  | 1~2 unit/d | 0.99 [0.67, 1.45] |  | 1.14 [0.65, 1.97] |  | 0.78 [0.56, 1.09] |  |
|  | >2 unit/d | 1.16 [0.66, 2.02] |  | 0.87 [0.32, 2.32] |  | 0.84 [0.47, 1.51] |  |
|  | **Overweight** |  |  |  |  |  |  |
|  | 0~1 unit/d | 1.03 [0.87, 1.23] |  | 1.23 [1.01, 1.49] |  | 0.84 [0.72, 0.97] |  |
|  | 1~2 unit/d | 1.14 [0.88, 1.47] |  | 1.49 [1.14, 1.94] |  | 1.07 [0.85, 1.34] |  |
|  | >2 unit/d | 1.42 [1.04, 1.94] |  | 1.32 [0.90, 1.93] |  | 1.37 [0.96, 1.98] |  |

**Table S8. Sensitivity analyses for the association of sugary beverages intake and dementia (N=187,994)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **SSB** | | **ASB** | | **NSJ** | |
|  | **HR (95% CI)** | ***P*-value** | **HR (95% CI)** | ***P*-value** | **HR (95% CI)** | ***P*-value** |
| **Further adjusting for comorbidities** | | | | | | |
| None | Ref |  | Ref |  | Ref |  |
| 0~1 unit/d | 1.02 [0.89, 1.17] | 0.787 | 1.18 [0.99, 1.39] | 0.059 | 0.84 [0.75, 0.95] | 0.004 |
| 1~2 unit/d | 1.13 [0.92, 1.40] | 0.248 | 1.43 [1.12, 1.81] | 0.004 | 0.96 [0.80, 1.16] | 0.703 |
| >2 unit/d | 1.45 [1.11, 1.91] | 0.007 | 1.24 [0.87, 1.77] | 0.229 | 1.20 [0.88, 1.63] | 0.245 |
| **Further adjusting for total sugar** | | | | | | |
| None | Ref |  | Ref |  | Ref |  |
| 0~1 unit/d | 0.99 [0.86, 1.14] | 0.873 | 1.23 [1.04, 1.46] | 0.014 | 0.80 [0.71, 0.90] | <0.001 |
| 1~2 unit/d | 1.09 [0.88, 1.35] | 0.447 | 1.55 [1.22, 1.96] | <0.001 | 0.89 [0.74, 1.08] | 0.242 |
| >2 unit/d | 1.35 [1.02, 1.78] | 0.036 | 1.39 [0.98, 1.98] | 0.067 | 1.05 [0.77, 1.44] | 0.738 |
| **3 types of beverages being mutually adjusted** | | | | | | |
| None | Ref |  | Ref |  | Ref |  |
| 0~1 unit/d | 1.01 [0.88, 1.16] | 0.918 | 1.23 [1.04, 1.45] | 0.017 | 0.82 [0.73, 0.93] | 0.001 |
| 1~2 unit/d | 1.10 [0.89, 1.36] | 0.389 | 1.50 [1.18, 1.91] | 0.001 | 0.93 [0.77, 1.13] | 0.484 |
| >2 unit/d | 1.37 [1.04, 1.81] | 0.025 | 1.32 [0.93, 1.89] | 0.125 | 1.16 [0.85, 1.58] | 0.352 |

**Figure S1. Flowchart of participant inclusion**

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**Figure S2. Hazard ratios\* (HRs) for sugary beverages intake and incident dementia stratified by polygenic risk score (N=187,994)**

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\* Intaking none as reference for each PRS subgroup.