**Supplemental Material**

**Impact of fluoride on associations between free sugars intake and dental caries in U.S. children**

Melissa M. Melough, Sheela Sathyanarayana, Fatemeh Vida Zohoori, Hanna C. Gustafsson, Elinor L. Sullivan, Donald L. Chi, Steven M. Levy, Christy M. McKinney

**Supplemental Table 1.** Distributions of energy (in kilocalories) and free sugars intakes (in percentage of total energy intake) among U.S. children 2-19 years of age, NHANES 2013-2016

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **% consumers** | **Mean** | **SE** | **Minimum** | **Maximum** |
| **Energy** | 100.0% | 1838 | 21 | 264 | 6364 |
| **Free Sugars (all)** | 100.0% | 16.4 | 0.17 | 0.0 | 61.5 |
| **Added Sugars** | 99.9% | 13.9 | 0.18 | 0.0 | 61.4 |
| **SSBs** | 92.4% | 6.8 | 0.17 | 0.0 | 57.7 |
| **Desserts** | 59.9% | 1.6 | 0.05 | 0.0 | 21.9 |
| **Candy & Sugars** | 63.5% | 1.6 | 0.06 | 0.0 | 34.0 |
| **Coffee & Tea** | 16.3% | 0.6 | 0.08 | 0.0 | 60.1 |
| **Other added** | 99.6% | 3.4 | 0.09 | 0.0 | 21.9 |
| **Other Free Sugars** | 93.7% | 2.6 | 0.10 | 0.0 | 35.0 |
| **100% fruit juice** | 52.0% | 2.1 | 0.10 | 0.0 | 34.6 |
| **Other non-added** | 83.6% | 0.5 | 0.02 | 0.0 | 16.0 |

SSB, sugar-sweetened beverage.

**Supplemental Table 2.** Interaction coefficient estimates for the interactions of free sugars intake with water fluoride concentrations in models of dfs and DMFS counts among U.S. children1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **dfs among children ages 2-8** | | **DMFS among children ages 6-19** | |
|  | **Estimated Interaction Coefficient (SE)** | **P-value** | **Estimated Interaction Coefficient (SE)** | **P-value** |
| **Free Sugars (all)** | **-0.56 (0.22)** | **0.01** | -0.01 (0.13) | 0.91 |
| **Added Sugars** | **-0.51 (0.19)** | **0.01** | -0.05 (0.11) | 0.57 |
| **SSBs** | -0.24 (0.13) | 0.05 | -0.03 (0.07) | 0.65 |
| **Desserts** | 0.19 (0.14) | 0.16 | 0.11 (0.08) | 0.18 |
| **Candy & Sugars** | -0.23 (0.16) | 0.15 | -0.10 (0.08) | 0.22 |
| **Coffee & Tea** | -0.04 (0.32) | 0.91 | -0.04 (0.10) | 0.70 |
| **Other added** | -0.26 (0.23) | 0.27 | -0.13 (0.11) | 0.23 |
| **Other Free Sugars** | 0.01 (0.12) | 0.96 | -0.11 (0.09) | 0.19 |
| **100% fruit juice** | 0.03 (0.11) | 0.77 | -0.11 (0.08) | 0.18 |
| **Other non-added** | -0.45 (0.26) | 0.08 | -0.38 (0.21) | 0.07 |

SSB, sugar-sweetened beverage.

1Models included terms for sex, age, head of household education (high school or less, some college or Associate in Arts, college grad or above), race (Hispanic, Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian, Other or Multiracial), time since last dental visit (>1 year, 6 months to 1 year, <6 months, never), water fluoride concentration, percentage of energy from the given free sugar category, and interaction of free sugar with water fluoride concentration. Interaction coefficients represent the dependence of the sugar-caries relationship on fluoride concentration, with negative coefficients suggesting a reduced DMFS or dfs count associated with a given free sugar intake as fluoride concentration is increased.

p-values <0.05 shown in bold.