NOADS

NHANES

Online Analyst for Dietary Supplements

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National Institutes of Health
Dietary Supplement Use Among US Adults exceeds 50% NHANES 99-00 (n=4862)
Widespread Usage of Dietary Supplement Raises Important Public Health Questions

❖ To what extent do supplements contribute to overall nutrient intakes?

❖ Do dietary supplements contribute additional nutrients to diets already deemed adequate or do they fill gaps?

❖ How do total usual nutrient intakes relate to related biomarkers and health outcomes?
Assessing Health Effects of Foods and Dietary Supplements and their Constituents

Intake → Exposure → Health Effects

- Bioavailability
- Health status & other factors

Measures of Food and DS → Composition of Foods and DS

Benefits

Harms

Biomarkers
Outcomes
Mechanisms
Total Usual Nutrient Intake

- Total usual nutrient intake = nutrient intake from food and from supplement sources
- Important to include dietary supplements in total nutrient intake:
  - For some nutrients, portion of intake from supplements may be large (e.g., Vitamin C)
  - Adequacy and excess likely to be underestimated if only food sources are considered
  - Some UL’s defined only for supplement-derived nutrient intake (e.g., Mg)
Dietary supplement use shifts the intake distribution curve for folate

Source: NHANES 2001-2002

Graph showing the intake distribution of folate from foods and supplements with 25th, 50th, and 75th percentiles.
Dietary supplement intake shifts the distribution curve for Vitamin C

NHANES III
Dietary supplement intake shifts the distribution curve for Vitamin C

Source: NHANES III
Challenges and Opportunities

Accounting for dietary supplements in intake assessment is a challenge:

- Consumption patterns are just beginning to be understood
- Definitions are not standardized across studies
Challenges and opportunities (cont)

- Supplements and infrequently consumed items affect usual intake differently:
  - Supplements *add* to food nutrient intake
  - Infrequently consumed items (e.g., spinach, lycopene) are either consumed or not.

- For estimation of usual intake, important to include nutrient intakes from both supplements and infrequently consumed food items
“Don’t tell me to improve my diet. I ate a carrot once and nothing happened!”
NHANES Data and Usual Nutrient Intake

- Dietary Supplements intake data are collected in the household interview over the past 30 days

- Food intake data are collected in the Mobile Exam Center (MEC) over the past 24 hours

Complex Data Files
NOADS

NHANES

Online Analyst for Dietary Supplements
Overall Goal of NOADS

To enable researchers and public health officials to analyze NHANES public use data files for tabulation of total usual nutrient intakes from food and supplements in a rapid, cost-effective and accurate fashion
Development of NOADS

- An user-friendly, accessible and intuitive web-based analysis tool for NHANES data
- A tool that runs in REAL TIME
- Employs the IOWA method for combining Food and Supplement intakes to estimate Total Nutrient Intake
- Applies proper sample weights
- Performs statistical analyses
- Can download results to WORD or EXCEL files
Overview

The ODS NHANES Online Analyst for Dietary Supplements (NOADS) is a tool to enable individuals to quickly analyze data on nutrient intake from dietary supplements and food. NOADS is based on the National Health and Nutrition Examination Survey (NHANES) public access data from the surveys conducted in 1999-2000 and 2001-2002. NOADS links to select variables from these NHANES surveys and provides the user the opportunity to generate data tables with descriptive statistics.

NOADS data tables are not preset groups of data but rather are generated in real time based upon the selections the user makes from a set of variables. In the background, NOADS automatically applies the appropriate statistical weights for the NHANES data set so that the resulting NHANES sample data are statistically representative of the U.S. population. If the user elects to analyze nutrient intake data from foods and dietary supplements combined, NOADS will use a daily usual intake estimate that incorporates nutrient contribution from food and supplement sources.

In addition to creating data tables of nutrient intake, the user can also analyze nutritional biomarker levels in blood and serum, or separately produce population-based prevalence of the use of supplements and relate these data to demographic and lifestyle variables.

Click here or at the top of the page to BEGIN ANALYSIS.
**NOADS: NHAMCS Online Analyst for Dietary Supplements**

Instructions: Please select the type of analysis you want to do, the years, source of nutrients, analysis variables, groups, statistics and any additional analysis you wish to perform. Then click on "Run Report" to see the results of your chosen analysis.

For more information about each step, click on the underlined words. For more information about the process behind the steps, click on the question mark next to each step.

Step by step instructions can be found in References by clicking on How to Use NOADS. If you are new to NOADS, you may want to print the How to Use NOADS page for a reference.

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**Step 1: Select Type of Analysis**

- Prevalence of Use
- Intake

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**Step 2: Select Years**

- 1999 & 2000
- 2001 & 2002
- Both Combined

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**Step 3: Select Source of Nutrients**

- Food
- Dietary Supplements
- Food & Dietary Supplements
Step 2: Select Years
- 1999 & 2000
- 2001 & 2002
- Both Combined

Step 3: Select Source of Nutrients
- Food
- Dietary Supplements
- Food & Dietary Supplements

Step 4: Select Analysis Variables
Note: To select multiple items, hold down the Ctrl key while selecting (Command for Macs).

Nutrients
- None
- B12 (mcg)
- Folate (mcg)
- Folate (DFE)

Biomarker
- None
- Serum B12 (pg/mL)
- Serum B12 (pmol/L)
- Serum folate (ng/mL)
- Serum folate (nmol/L)

Step 5: Select Group(s)

Primary Group
- None
- Gender
- Race/Ethnicity (4 categories)
- Age (4 categories)

Sub Group
- None
- Gender
- Race/Ethnicity (4 categories)
- Age (4 categories)
Prevalence of Use is the percent of the population that is using dietary supplements. Intake is the mean or median amount of usual intake of a nutrient. See FAQs in References for more information about calculation of usual intake by NOADS.

Step 1: Select Type of Analysis

- Prevalence of Use
- Intake
### Prevalence of B12 (mcg) intake from Dietary Supplements

**Grouped by: Gender**  
Subgrouped by: Age (4 categories)  
Combined 1999-2000 and 2001-2002 Data

Descriptive statistics for prevalence of B12 (mcg) intake from Dietary Supplements, grouped by Gender, subgrouped by Age (4 categories):

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age (4 categories)</th>
<th>Sample Size</th>
<th>Prevalence (%)</th>
<th>SE of Prevalence</th>
<th>95% CI for Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td>19-30</td>
<td>1,139</td>
<td>21.8</td>
<td>1.6</td>
<td>(18.6, 25.0)</td>
</tr>
<tr>
<td></td>
<td>31-50</td>
<td>1,594</td>
<td>34.8</td>
<td>1.5</td>
<td>(31.8, 37.8)</td>
</tr>
<tr>
<td></td>
<td>51-70</td>
<td>1,419</td>
<td>40.3</td>
<td>1.9</td>
<td>(36.5, 44.2)</td>
</tr>
<tr>
<td></td>
<td>71+</td>
<td>929</td>
<td>39.1</td>
<td>1.8</td>
<td>(35.4, 42.7)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5,081</td>
<td>33.6</td>
<td>1.0</td>
<td>(31.4, 35.7)</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>19-30</td>
<td>1,505</td>
<td>32.4</td>
<td>1.8</td>
<td>(28.7, 36.0)</td>
</tr>
<tr>
<td></td>
<td>31-50</td>
<td>1,762</td>
<td>42.5</td>
<td>1.4</td>
<td>(39.6, 45.5)</td>
</tr>
<tr>
<td></td>
<td>51-70</td>
<td>1,425</td>
<td>48.0</td>
<td>2.1</td>
<td>(43.7, 52.4)</td>
</tr>
<tr>
<td></td>
<td>71+</td>
<td>1,048</td>
<td>47.3</td>
<td>1.6</td>
<td>(44.0, 50.6)</td>
</tr>
</tbody>
</table>
### Pairwise comparisons for prevalence of B12 (mcg) intake from Dietary Supplements between the groups of Gender

<table>
<thead>
<tr>
<th>Gender Comparison</th>
<th>Sample Size</th>
<th>Difference in Prevalences</th>
<th>SE of Difference in Prevalences</th>
<th>95% CI for Difference in Prevalences</th>
<th>t-Test for Difference=0</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>10,821</td>
<td>-8.7</td>
<td>(-10.8, -6.7)</td>
<td>-8.7</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

### Pairwise comparisons for prevalence of B12 (mcg) intake from Dietary Supplements between the groups of Age (4 categories), within the groups of Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age (4 categories) Comparison</th>
<th>Sample Size</th>
<th>Difference in Prevalences</th>
<th>SE of Difference in Prevalences</th>
<th>95% CI for Difference in Prevalences</th>
<th>t-Test for Difference=0</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>19-30 31-50</td>
<td>2,733</td>
<td>-13.0</td>
<td>2.1</td>
<td>(-17.3, -8.7)</td>
<td>-6.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>19-30 51-70</td>
<td>2,558</td>
<td>-18.5</td>
<td>2.3</td>
<td>(-23.2, -13.8)</td>
<td>-8.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>19-30 71+</td>
<td>2,068</td>
<td>-17.2</td>
<td>2.4</td>
<td>(-22.2, -12.3)</td>
<td>-7.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>31-50 51-70</td>
<td>3,013</td>
<td>-5.5</td>
<td>2.0</td>
<td>(-9.6, -1.5)</td>
<td>-2.8</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>31-50 71+</td>
<td>2,523</td>
<td>-4.3</td>
<td>2.0</td>
<td>(-8.4, -0.1)</td>
<td>-2.1</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>51-70 71+</td>
<td>2,348</td>
<td>1.3</td>
<td>2.1</td>
<td>(-3.1, 5.7)</td>
<td>0.6</td>
<td>0.554</td>
</tr>
<tr>
<td>Female</td>
<td>19-30 31-50</td>
<td>3,267</td>
<td>-10.1</td>
<td>2.3</td>
<td>(-14.9, -5.3)</td>
<td>-4.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>19-30 51-70</td>
<td>2,930</td>
<td>-15.6</td>
<td>2.5</td>
<td>(-20.7, -10.6)</td>
<td>-6.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>19-30 71+</td>
<td>2,553</td>
<td>-14.9</td>
<td>2.4</td>
<td>(-19.8, -10.0)</td>
<td>-6.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>31-50 51-70</td>
<td>3,187</td>
<td>-5.5</td>
<td>2.9</td>
<td>(-11.4, 0.3)</td>
<td>-1.9</td>
<td>0.064</td>
</tr>
<tr>
<td></td>
<td>31-50 71+</td>
<td>2,810</td>
<td>-4.8</td>
<td>2.4</td>
<td>(-9.7, 0.1)</td>
<td>-2.0</td>
<td>0.056</td>
</tr>
<tr>
<td></td>
<td>51-70 71+</td>
<td>2,473</td>
<td>0.8</td>
<td>2.1</td>
<td>(-3.5, 5.0)</td>
<td>0.4</td>
<td>0.717</td>
</tr>
<tr>
<td>Total</td>
<td>19-30 31-50</td>
<td>6,000</td>
<td>-11.5</td>
<td>2.0</td>
<td>(-15.6, -7.4)</td>
<td>-5.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>19-30 51-70</td>
<td>5,488</td>
<td>-17.2</td>
<td>1.7</td>
<td>(-20.5, -13.8)</td>
<td>-10.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>19-30 71+</td>
<td>4,621</td>
<td>-16.8</td>
<td>1.9</td>
<td>(-20.6, -13.1)</td>
<td>-9.1</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Step 4: Select Analysis Variables

Note: To select multiple items, hold down the Ctrl key while selecting (Command for Macs).

Nutrients
- None
- B12 (mcg)
- Folate (mcg)
- Folate (DFE)

Biomarker
- None
- Serum B12 (pg/mL)
- Serum B12 (pmol/L)
- Serum folate (ng/mL)
- Serum folate (nmol/L)

Step 5: Select Group(s)

Primary Group
- None
- Gender
- Race/Ethnicity (4 categories)
- Age (4 categories)

Sub Group
- None
- Gender
- Race/Ethnicity (4 categories)
- Age (4 categories)

Step 6: Select Statistics

- Sample size
- Weighted size
- Mean
- Median
- Percentiles
- 95% confidence interval(s)
- Standard error(s)

Step 7: Select Additional Analysis

(Optional)

- Primary Group Pairwise
- Sub Group Pairwise
### Usual intake of B12 (mcg) from Food and Dietary Supplements

**Grouped by:** Gender  
**Subgrouped by:** Race/Ethnicity (4 categories)  
2001-2002 Data

Descriptive statistics for usual intake of B12 (mcg) from Food and Dietary Supplements, grouped by Gender, subgrouped by Race/Ethnicity (4 categories)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Race/Ethnicity (4 categories)</th>
<th>Sample Size</th>
<th>Weighted Size</th>
<th>Mean</th>
<th>SE of Mean</th>
<th>95% CI for Mean</th>
<th>Median</th>
<th>SE of Median</th>
<th>5th Pctl</th>
<th>SE of 5th Pctl</th>
<th>10th Pctl</th>
<th>SE of 10th Pctl</th>
<th>15th Pctl</th>
<th>SE of 15th Pctl</th>
<th>25th Pctl</th>
<th>SE of 25th Pctl</th>
<th>50th Pctl</th>
<th>SE of 50th Pctl</th>
<th>75th Pctl</th>
<th>SE of 75th Pctl</th>
<th>75th Pctl</th>
<th>SE of 75th Pctl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Non-Hispanic White</td>
<td>1,236</td>
<td>68,153,550</td>
<td>32.8</td>
<td>4.5</td>
<td>23.3, 42.3</td>
<td>7.5</td>
<td>0.4</td>
<td>1.0</td>
<td>0.2</td>
<td>1.8</td>
<td>0.2</td>
<td>2.8</td>
<td>0.2</td>
<td>4.1</td>
<td>0.2</td>
<td>7.5</td>
<td>0.4</td>
<td>14.4</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>Non-Hispanic Black</td>
<td>504</td>
<td>9,795,819</td>
<td>15.0</td>
<td>4.5</td>
<td>5.5, 24.5</td>
<td>4.8</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>0.6</td>
<td>n/a</td>
<td>1.2</td>
<td>n/a</td>
<td>2.0</td>
<td>n/a</td>
<td>4.8</td>
<td>n/a</td>
<td>9.2</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>Mexican American</td>
<td>550</td>
<td>7,590,671</td>
<td>15.1</td>
<td>2.7</td>
<td>9.3, 20.8</td>
<td>4.9</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>0.9</td>
<td>n/a</td>
<td>1.4</td>
<td>n/a</td>
<td>2.7</td>
<td>n/a</td>
<td>4.9</td>
<td>n/a</td>
<td>9.1</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>Other</td>
<td>157</td>
<td>8,249,480</td>
<td>10.5</td>
<td>1.1</td>
<td>8.1, 12.9</td>
<td>4.9</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>1.0</td>
<td>n/a</td>
<td>1.7</td>
<td>n/a</td>
<td>2.6</td>
<td>n/a</td>
<td>4.9</td>
<td>n/a</td>
<td>10.0</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pairwise comparisons for usual intake of B12 (mcg) from Food and Dietary Supplements between the groups of Race/Ethnicity (4 categories), within the groups of Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Race/Ethnicity (4 categories) Comparison</th>
<th>Sample Size</th>
<th>Weighted Size</th>
<th>Difference in Means</th>
<th>SE of Difference in Means</th>
<th>95% CI for Difference in Means</th>
<th>t-Test for Difference=0</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Non-Hispanic White vs. Non-Hispanic Black</td>
<td>1,740</td>
<td>77,949,369</td>
<td>17.8</td>
<td>6.9</td>
<td>(3.0, 32.6)</td>
<td>2.6</td>
<td>0.021</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic White vs. Mexican American</td>
<td>1,786</td>
<td>75,744,221</td>
<td>17.7</td>
<td>4.9</td>
<td>(7.3, 28.2)</td>
<td>3.6</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic White vs. Other</td>
<td>1,393</td>
<td>76,403,029</td>
<td>22.3</td>
<td>4.3</td>
<td>(13.1, 31.5)</td>
<td>5.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic Black vs. Mexican American</td>
<td>1,054</td>
<td>17,386,490</td>
<td>-0.1</td>
<td>4.8</td>
<td>(-10.3, 10.1)</td>
<td>-0.0</td>
<td>0.986</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic Black vs. Other</td>
<td>661</td>
<td>18,045,299</td>
<td>4.5</td>
<td>4.3</td>
<td>(-4.7, 13.6)</td>
<td>1.0</td>
<td>0.317</td>
</tr>
<tr>
<td></td>
<td>Mexican American vs. Other</td>
<td>707</td>
<td>15,840,150</td>
<td>4.5</td>
<td>2.3</td>
<td>(-0.3, 9.3)</td>
<td>2.0</td>
<td>0.062</td>
</tr>
<tr>
<td>Female</td>
<td>Non-Hispanic White vs. Non-Hispanic Black</td>
<td>1,867</td>
<td>82,797,415</td>
<td>22.8</td>
<td>3.6</td>
<td>(15.1, 30.5)</td>
<td>6.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic White vs. Mexican American</td>
<td>1,884</td>
<td>77,315,271</td>
<td>21.6</td>
<td>5.3</td>
<td>(10.2, 33.0)</td>
<td>4.0</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic White vs. Other</td>
<td>1,535</td>
<td>81,863,103</td>
<td>20.8</td>
<td>5.3</td>
<td>(9.5, 32.0)</td>
<td>3.9</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic Black vs. Mexican American</td>
<td>1,085</td>
<td>19,045,533</td>
<td>-1.2</td>
<td>4.5</td>
<td>(-10.7, 8.3)</td>
<td>-0.3</td>
<td>0.785</td>
</tr>
<tr>
<td></td>
<td>Non-Hispanic Black vs. Other</td>
<td>736</td>
<td>23,593,365</td>
<td>-2.1</td>
<td>3.2</td>
<td>(-8.9, 4.8)</td>
<td>-0.6</td>
<td>0.529</td>
</tr>
</tbody>
</table>
Evaluation Criteria

- Ease of Navigation
- Assessment of organization for ease of use
- Determine utility of NOADS as it exists and determine how it may be improved
- Solicit input on rank order of nutrients and statistical evaluation procedures to be added
Current Status of NOADS

- Prototype is developed for Folate and Vitamin B-12
- Evaluated at Experimental Biology Meeting in April and at this FNCE
- ODS Plans to expand nutrients included and relevant biomarkers and well as functionality