Evidence of Use of Dietary Supplements by the Elderly: Current Usage Patterns: Who and What?

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Supplement Use in the Elderly

• What do we know?
  – How many elders are using supplements?
  – Is supplement use increasing among the elderly?
  – Are they taking multivitamin preparations or single nutrients?
  – What are the characteristics of users vs. non-users?
  – What about herbal/other supplements?
NHANES III, 1988-94 (60+ y)

N: Male, NHW=1826, NHB=596, MA=609; Female, NHW=2135, NHB=659, MA=568
NHANES III, 1988-94 (all ages)

Multi-nutrient Supplement Use (%) by Older Adults in Beaver Dam, WI (1988-90, 65-86 y)

- Supplement users (43-86 y) were more likely than non-users to:
  - have higher education
  - be physically active
  - drink < 91 g alcohol/wk
  - be never smokers
  - have lower BMI
  - have better nutrient intakes from diet

Supplement Use (%) by Rural Elders in North Carolina (70 + y)

- Supplement users were more likely than non-users to:
  - have better diets
  - be female
  - be married

Massachusetts Hispanic Elders Study (1992-96, 60 + y)

- Non-Hispanic white: n=164
- Puerto Rican or Dominican: n=492
NHANES III, 1988-94 (40 + y)
# Supplements Used (% of Users)

Supplement Use (%) by Older Adults in the Slone Survey (1998-99, 65+ y)

Baltimore Longitudinal Study of Aging 1993-1999 (60 + y)
Calcium from Supplements
NHANES III, 1988-94 (60 +y)

% below 924 mg/d*

- Males
  - NHW 73 58
  - NHB 87 80
  - MA 77 64
- Females
  - NHW 86 64
  - NHB 91 86
  - MA 88 75

* Healthy People 2010 calcium objective
Calcium Supplement Use in a NE US Medicare HMO, (65 +y)

Factors associated with calcium use:
- history of fracture
- been told they have osteoporosis
- using bone medication
- higher dairy intake

Calcium and vitamin D Supplement Use (%) by Rural Elders in North Carolina (70 + y)

Dietary Intake by supplement use:

**Calcium:**
- Users: 572 mg
- Non-users: 498 *

**Vitamin D**
- Users: 603 mg
- Non-users: 506 *

* *p<0.05

Supplement Use in the Normative Aging Study: Men, (60 + y)

1987-89 n=630
1990-99 n=913
Supplement Use in the Framingham Studies, Men, 60 + y

- Any
- Multivitamins
- Multivitamins + Minerals

Cohort 1988-89: 25.5%
Offspring 1991-95: 32.7%
Offspring 1995-99: 42.7%
Supplement Use in the Framingham Studies, Women, 60 + y

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Any</td>
<td>33.1</td>
<td>44.6</td>
<td>59.2</td>
</tr>
<tr>
<td>Multivitamins</td>
<td>13</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Multivitamins + Minerals</td>
<td>7</td>
<td>16</td>
<td>22</td>
</tr>
</tbody>
</table>
Individual Vitamin/Mineral Use in the Framingham Studies
Men, 60 + y

Cohort 1988-89
- 13
- 11
- 3
- 2

Offspring 1991-95
- 15
- 2
- 8
- 3

Offspring 1995-99
- 20
- 30
- 13
- 6
- 3

Legend:
- Green: Vitamin C
- Purple: Vitamin E
- Blue: Calcium
- Pink: Vitamin B12
- Black: Vitamin D
Individual Vitamin/Mineral Use in the Framingham Studies
Women, 60 + y

Cohort 1988-89
- Vitamin C: 13
- Vitamin E: 11
- Calcium: 16
- Vitamin B12: 2
- Vitamin D: 2

Offspring 1991-95
- Vitamin C: 19
- Vitamin E: 16
- Calcium: 24
- Vitamin B12: 5
- Vitamin D: 3

Offspring 1995-99
- Vitamin C: 41
- Vitamin E: 39
- Calcium: 26
- Vitamin B12: 10
- Vitamin D: 5
Characteristics Associated with Supplement Use, Framingham Offspring 1995-99

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI &lt;= 25</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>&gt;25</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>Alcohol users</td>
<td>64%</td>
<td>46%</td>
</tr>
<tr>
<td>non-users</td>
<td>52%</td>
<td>35%</td>
</tr>
<tr>
<td>Smoking past</td>
<td>65%</td>
<td></td>
</tr>
<tr>
<td>never</td>
<td>55%</td>
<td></td>
</tr>
<tr>
<td>current</td>
<td>47%</td>
<td></td>
</tr>
</tbody>
</table>
Trend in Supplement Use

![Graph showing trend in supplement use from 1988-89 to 1998-99 for males and females with linear models for each gender.](image-url)
Herbal/Other Supplement Products Reported in NHANES III
(3.6% Reported Any Use)

<table>
<thead>
<tr>
<th>Product</th>
<th>N</th>
<th>Product</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecithin</td>
<td>127</td>
<td>Fiber</td>
<td>18</td>
</tr>
<tr>
<td>Garlic</td>
<td>117</td>
<td>Anabolic mixtures</td>
<td>18</td>
</tr>
<tr>
<td>Amino Acids</td>
<td>102</td>
<td>Kelp</td>
<td>17</td>
</tr>
<tr>
<td>Fish/other oils</td>
<td>52</td>
<td>Co-enzyme Q10</td>
<td>16</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>44</td>
<td>Choline/inositol</td>
<td>15</td>
</tr>
<tr>
<td>Ginseng</td>
<td>36</td>
<td>Acidophilus</td>
<td>13</td>
</tr>
<tr>
<td>Bee pollen</td>
<td>23</td>
<td>Wheat bran</td>
<td>14</td>
</tr>
<tr>
<td>Psyllium</td>
<td>23</td>
<td>Brewers yeast</td>
<td>12</td>
</tr>
<tr>
<td>Aloe vera</td>
<td>18</td>
<td>Goldenseal</td>
<td>11</td>
</tr>
</tbody>
</table>

Characteristics Associated With Herbal/Other Supplement Use in NHANES III

- Female
- 45-75 y
- “Other” ethnicity (than white, black or Hispanic)
- West region
- Education > 12 y
- Higher income
- Divorced
- Greater alcohol use
- Former smoker
- > 5 Fruit and vegetable servings/d
- Exercise reported
- Overweight/obese
- Good/excellent self reported health

Herbal/other Supplement Use (%) by Older Adults in the Slone Survey (1998-99, 65+ Y)

Use of Herbal Products by Adults in Minneapolis (1999, N=376)

- 61.2% reported some use in past 12 m
- Users were more likely to:
  - Be female
  - Use vitamin supplements
  - Have higher education

<table>
<thead>
<tr>
<th>Products used</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ginseng</td>
<td>31%</td>
</tr>
<tr>
<td>Echinacea</td>
<td>28%</td>
</tr>
<tr>
<td>Garlic</td>
<td>25%</td>
</tr>
<tr>
<td>Ginkgo</td>
<td>21%</td>
</tr>
<tr>
<td>St John’s wort</td>
<td>18%</td>
</tr>
<tr>
<td>Ginger</td>
<td>17%</td>
</tr>
<tr>
<td>Ephedra</td>
<td>12%</td>
</tr>
<tr>
<td>Goldenseal</td>
<td>10%</td>
</tr>
<tr>
<td>Kava</td>
<td>6%</td>
</tr>
<tr>
<td>Saw palmetto</td>
<td>4%</td>
</tr>
</tbody>
</table>

Summary

• Supplement use
  – Increasing rapidly
  – Currently more than 40% men and 50% women

• More users
  – Are women
  – Are non-Hispanic white
  – Have higher SES
  – Have better diets
  – Participate in other positive health behaviors

• Herbal/other supplement use
  – Poorly defined
  – Growing rapidly
Conclusions

• Those most in need of supplements are not using them as frequently as those already practicing good health behaviors
• African Americans and some Hispanic groups may benefit from greater supplement use
• Among specifically recommended supplements for elders, calcium use is widespread but use of vitamin D and vitamin B12 remain low
• We know very little about the possible effects of rapidly increasing use of herbal/other supplements
Research Needs

• Prevalence and patterns of use of herbal/other supplements

• Continued monitoring of vitamin/mineral supplement use
  – Improved data on dose and length of use

• Better understanding of implications for dietary assessment and research on diet and health
  – Effects of individual vs. multiple nutrients and of interactions
  – Confounding with dietary intake

• Methods to improve communication
  – appropriate supplement use for elders most likely to benefit
  – potential risks, particularly for new, untested supplements