The association of nut consumption with cardiovascular mortality and risk of heart disease: the Women’s Health Study

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BACKGROUND

Nut consumption

Lipids Lower insulin resistance Improved endothelial function Lower risk of heart disease

OBJECTIVE

We sought to examine whether frequency of nut consumption is associated with cardiovascular (CVD) mortality in a large cohort of women.

METHODS

Study Population

Participants from the Women’s Health Study who
1) Reported nut consumption in the food frequency questionnaire
2) Did not have established coronary heart disease at baseline

Exposure: nut consumption (peanuts, tree nuts & other nuts)

Standardized questionnaire Categories: never, 1-3/month, 1/week, ≥2 times/week

Outcome: CVD mortality

Adjudicated by the WHS Endpoint Committee
Secondary analysis: CHD (coronary heart disease) incidence

Statistical Analysis

Multivariate adjusted Cox proportional regression models to estimate HRs and 95% CIs

RESULTS

Sample size: 39,167 women
Mean age: 54.6 ± 7.1 years
Follow-up: 19 years
959 CVD deaths and 1,774 incident CHD events occurred

Table 1. Baseline characteristics of 39,167 participants in the Women’s Health Study according to frequency of nut consumption

<table>
<thead>
<tr>
<th>Category</th>
<th>Never (n=18,817)</th>
<th>1-3/month (n=8,046)</th>
<th>1/week (n=7,193)</th>
<th>≥2/week (n=5,111)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>54±7</td>
<td>55±7</td>
<td>55±7</td>
<td>56±7</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td>26±5</td>
<td>26±5</td>
<td>26±5</td>
<td>26±5</td>
</tr>
<tr>
<td>Never smoker (%)</td>
<td>51</td>
<td>52</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>Ex-smoker (%)</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td>Current smoker (%)</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Physical activity (Met-hr/wk)</td>
<td>14±18</td>
<td>14±18</td>
<td>14±18</td>
<td>15±18</td>
</tr>
<tr>
<td>Post-menopausal (%)</td>
<td>52</td>
<td>55</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>Family history of MI (%)</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Hypertension (%)</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Hyperlipidemia (%)</td>
<td>29</td>
<td>29</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Diabetes Mellitus (%)</td>
<td>2.6</td>
<td>2.4</td>
<td>2.7</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Dietary Variables

aHEI score excluding nuts

<table>
<thead>
<tr>
<th>Alcohol (g/day)</th>
<th>51±10</th>
<th>51±10</th>
<th>51±10</th>
<th>52±10</th>
</tr>
</thead>
<tbody>
<tr>
<td>4±8</td>
<td>5±9</td>
<td>5±9</td>
<td>5±10</td>
<td></td>
</tr>
</tbody>
</table>

Total cholesterol (mg/dL)

<table>
<thead>
<tr>
<th>LDL cholesterol</th>
<th>124±34</th>
<th>125±34</th>
<th>124±35</th>
<th>125±34</th>
</tr>
</thead>
</table>

Adjusted for age, age squared, smoking, alcohol (g/day), and physical activity, premenopausal status (yes or no), family history of myocardial infarction in parent <60 years-old (yes or no), marital status, red meat consumption and the alternate healthy eating index score excluding nuts

DISCUSSION

Nut consumption was not found to be related to CVD mortality, but was associated with a lower risk of CHD incidence

Limitations

Nut consumption is self-reported
Residual confounding cannot be excluded
Cohort consists of female health professionals, may not be generalizable to other populations

Strengths

Large sample size
Adequate follow-up (19 years)
Extensive incorporation of lifestyle factors
Standardized ascertainment of CHD events and CVD mortality

CONCLUSION

Our study found that nut consumption was not related to CVD mortality in apparently healthy women but was associated with a lower risk of coronary heart disease in women.