Obesity at age 50 to 64 and risk of subsequent hospitalisation with pneumonia

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Obesity and Risk of Subsequent Hospitalization with Pneumonia among Persons Aged 50 to 64

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Background
Hospitalizations for pneumonia have increased by 20%-50% in the aging Western populations during the past ten years (1,2,3) and the prevalence of obesity is also rapidly increasing at the present time (4). Obesity may be associated with risk of pneumonia, but available data are sparse and conflicting.

Aims
To examine the impact of overweight and obesity on the risk of hospitalization with pneumonia.

Methods
We followed 49,627 persons from the Danish Diet, Cancer and Health Cohort Study, who were aged 50-64 and free of hospital-diagnosed comorbidity at baseline (1993-1997). We used Cox regression analyses to compute hazard ratios (HRs) of first-time hospitalization with pneumonia among participants with normal weight (BMI 22.5-24.9), overweight (BMI 25.0-29.9), moderate obesity (BMI 30.0-34.9) and moderate to severe obesity (BMI ≥ 35.0), controlling for smoking and alcohol intake.

Results
A total of 1,128 men and 1,068 women had a pneumonia-related hospitalization during a median follow-up period of 11.9 years and 12.0 years, respectively. This corresponds to incidence rates of 4.3 and 3.4 per 1,000 person-years. Compared with men of normal weight, adjusted HRs for pneumonia were 1.1 (95% CI 1.0-1.3) among overweight men, 1.5 (95% CI 1.2-1.8) among men with moderate obesity, and 2.2 (95% CI 1.6-3.1) among men with moderate to severe obesity. For women the associations were weaker with adjusted HRs of 0.9 (95% CI 0.7-1.0) among overweight women, 0.9 (95% CI 0.7-1.1) among women with moderate obesity, and 1.2 (95% CI 0.9-1.7) among women with moderate to severe obesity.

Conclusions
Obesity is associated with a higher risk of hospitalized pneumonia, particularly among men.

Table 1
Hazard ratio (HR) of hospitalization with pneumonia, with 95% confidence intervals, according to body mass index (BMI) among men.

<table>
<thead>
<tr>
<th>BMI category (kg/m²)</th>
<th>Unadjusted HR (95% CI)</th>
<th>Adjusted HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI &lt; 22.5</td>
<td>1.50 (1.2-1.9)</td>
<td>1.4 (1.1-1.7)</td>
</tr>
<tr>
<td>BMI = 22.5-24.9</td>
<td>1.0 (ref.)</td>
<td>1.0 (ref.)</td>
</tr>
<tr>
<td>BMI = 25.0-29.9</td>
<td>1.1 (0.9-1.2)</td>
<td>1.1 (1.0-1.3)</td>
</tr>
<tr>
<td>BMI = 30.0-34.9</td>
<td>1.5 (1.2-1.8)</td>
<td>1.5 (1.2-1.8)</td>
</tr>
<tr>
<td>BMI = 35+</td>
<td>2.2 (1.6-3.1)</td>
<td>2.2 (1.6-3.1)</td>
</tr>
</tbody>
</table>

*Adjusted for smoking and alcohol intake

Table 2
Hazard ratio (HR) of hospitalization with pneumonia, with 95% confidence intervals, according to body mass index (BMI) among women.

<table>
<thead>
<tr>
<th>BMI category (kg/m²)</th>
<th>Unadjusted HR (95% CI)</th>
<th>Adjusted HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI &lt; 22.5</td>
<td>1.2 (1.1-1.5)</td>
<td>1.2 (1.0-1.4)</td>
</tr>
<tr>
<td>BMI = 22.5-24.9</td>
<td>1.0 (ref.)</td>
<td>1.0 (ref.)</td>
</tr>
<tr>
<td>BMI = 25.0-29.9</td>
<td>0.9 (0.7-1.0)</td>
<td>0.9 (0.7-1.0)</td>
</tr>
<tr>
<td>BMI = 30.0-34.9</td>
<td>0.8 (0.7-1.0)</td>
<td>0.9 (0.7-1.1)</td>
</tr>
<tr>
<td>BMI = 35+</td>
<td>1.2 (0.9-1.7)</td>
<td>1.2 (0.9-1.7)</td>
</tr>
</tbody>
</table>

*Adjusted for smoking and alcohol intake