Institut / Selbst. Abteilung / KKG / Nachwuchsgruppe:  
Institute of Health Economics and Health Care Management

FE-Nr.:  

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Titel des Highlights:  
Change in smoking-attributable morbidity, mortality and costs in Germany between 1993 and 2003

Keywords:  
Smoking, economics, costs, morbidity, mortality

Kernaussage des Highlights in einem Satz:  
Despite several tobacco control measures, the total health and economic impact of cigarette smoking continues to remain high in Germany.

Darstellung des Highlights:  
Despite various efforts to curb tobacco consumption about one third of the German population still are smokers. Smoking is not only damaging human health, but a substantial economic burden for the society, as well. To calculate cigarette smoking-attributable morbidity, mortality and cost-of-illness in Germany in 2003 we used an improved version of an earlier model which had produced the figures for 1993. Costs of cigarette smoking could thus be directly compared between 1993 and 2003.

In 2003, about 115,000 deaths and 1.6 million years of potential life lost (YPLL) can be attributed to cigarette smoking. The total smoking-attributable costs added up to €21 billion, of which 35.6% were direct and the remaining 64.4% were indirect. Direct costs include costs for inpatient and outpatient care, rehabilitation as well as prescribed drugs. Indirect costs are the productivity loss due to morbidity and premature deaths. Cardiovascular diseases were the main cost driver, accounting for half of the direct costs, followed by respiratory diseases and neoplasms. In contrast with direct costs, the main driver of indirect costs was neoplasms.

Compared to 1993, the proportion of cigarette smoking-attributable deaths to all deaths remained stable, whereas the number of YPLL was 5.1% higher. Smoking-attributable female deaths rose by about 45.3% between 1993 and 2003, which can be mainly explained by using a different data source for smoking prevalence. Up to now, especially female smoking-attributable mortality was underestimated. In contrast, smoking-attributable male
deaths decreased by 13.7%. This development is linked to a decrease in relative risks of cardiovascular diseases and fewer overall deaths compared with those in 1993. Real direct costs related to cigarette smoking increased by 35.8% during this decade. Indirect costs decreased by 7.1%, because smoking-attributable deaths in employable ages decreased. This study is the first which analyzed changes in smoking-attributable morbidity and mortality over a period of 10 years.

Sources:
Calculating morbidity, mortality and costs related to cigarette smoking

- Relative risks of mortality and morbidity of current and former smokers compared to non-smokers
- Cigarette smoking prevalence of current and former smokers in 2003 (by sex and age group)

Calculation of the smoking-attributable fractions for mortality and morbidity (SAF)

Calculation of smoking-attributable mortality and morbidity

**Direct medical costs**
- Outpatient care
- Acute hospitalization
- Rehabilitation
- Prescribed drugs

**Indirect costs**
- Work-loss days
- Early-retirement
- Mortality

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Cigarette smoking-attributable mortality in Germany 2003

114,647 cigarette smoking-attributable deaths

Males: 80,024
Females: 34,623

Cardiovascular diseases (37%)
Respiratory diseases (18%)
Perinatal diseases and burn deaths (0.3%)
Neoplasms (45%)

Cardiovascular diseases (47%)
Respiratory diseases (22%)
Perinatal diseases and burn deaths (1%)
Neoplasms (30%)

1.6 million years of potential life lost (294,000 below 65 years)

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## Smoking-attributable costs in Germany in 2003

<table>
<thead>
<tr>
<th>Category</th>
<th>Costs (Million €)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health care costs</strong></td>
<td></td>
</tr>
<tr>
<td>Outpatient Care</td>
<td>1,769</td>
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<tr>
<td>Acute Hospitalization</td>
<td>3,606</td>
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<tr>
<td>Rehabilitation</td>
<td>300</td>
</tr>
<tr>
<td>Prescribed Drugs</td>
<td>1,805</td>
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<tr>
<td><strong>Productivity loss</strong></td>
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<tr>
<td>Work-loss days</td>
<td>3,892</td>
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<tr>
<td>Early retirement</td>
<td>4,952</td>
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<tr>
<td>Mortality</td>
<td>4,701</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td>21,025</td>
</tr>
</tbody>
</table>

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Cigarette smoking-attributable costs in Germany 2003

Total cigarette smoking-attributable costs: 21 billion €

Health care costs:
- 7.5 billion €
  - Cardiovascular diseases (50%)
  - Respiratory diseases (25%)
  - Perinatal diseases and burn deaths (2%)
  - Neoplasms (23%)

Productivity loss:
- 13.5 billion €
  - Cardiovascular diseases (21%)
  - Respiratory diseases (29%)
  - Perinatal diseases and burn deaths (1%)
  - Neoplasms (49%)

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-10%  0%  10%  20%  30%  40%

Mortality  -1.6%
Proportion on all deaths  3.1%
Years of potential life lost  5.1%
Direct costs  35.8%
Indirect costs  -7.1%
Total costs  4.7%

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