Cardiovascular disease mortality in Belgrade: trends from 1975–89

Hristina D Vlajinac, Benko J Adanja, Mirjana S Jarebinski, Sandra B Sipetic

Abstract
Study objective - To determine trends in cardiovascular disease mortality.
Design - This was a descriptive study analysing mortality data.
Setting - Belgrade, Yugoslavia.
Participants - The population of Belgrade in the age group 30–69 years was studied (about 760 000 inhabitants).

Measurements - Mortality rates were standardised directly using those of the “European population” as the standard, and regression analysis was undertaken.
Main results - Between 1975 and 1989 “all causes” mortality increased by 27% (95% confidence interval 18.5, 35.9) in men and by 19% (11.6, 27.1) in women. The increase in cardiovascular disease mortality was 7% (1.7, 11.5) for men and 4% (0.2, 7.8) for women. Mortality from ischaemic heart disease fell in both sexes by 32% (23.0, 41.0), but mortality from other heart diseases rose by 31% (22.0, 40.2) in men and 25% (16.2, 33.0) in women. In men the death rate for cerebrovascular disease increased by 37% (27.8, 46.8), but in women the rate fell by 0.4% (−0.8, 1.6). Mortality from the observed causes of death was higher in men than in women.

Conclusion - Cardiovascular mortality trends in Belgrade are similar to those in most eastern European countries. If the distribution of cigarette smoking and a “rich” diet in the Belgrade population is taken into account, a considerable decline in cardiovascular mortality trends cannot be expected in the near future.

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In most industrialised countries, mortality in general, and cardiovascular mortality in particular, have been falling since around 1970, after stagnating or increasing during the 1950s and 1960s. According to the same authors, however, countries in eastern Europe and a few in southern Europe, including Yugoslavia, have shown an increase in mortality from cardiovascular diseases.

Bearing in mind that an improvement in the quality of diagnosis and reporting of causes of death could be responsible for a spurious increase in cardiovascular disease mortality in particular, we decided to analyse mortality trends in the Belgrade population. In Belgrade the quality of diagnoses is more accurate than that in the country as a whole. The proportion of deaths associated with ill defined symptoms and conditions in Belgrade (codes 780–796, International Classification of Diseases (ICD) 8th revision and codes 780–799, ICD, 9th revision) averaged 5.8% (range 3.1–8.3%) for the period 1975–89. The same figures for the whole country were 11.7% (7.4–17.0%).

Methods
Routine national mortality data were used. The analysis was restricted to the Belgrade population aged 30–69 years (about 760 000 inhabitants) and to the period 1975–89.

Age adjustment of the yearly mortality rates was carried out by a direct method using five year intervals and the distribution of the “European population” as the standard.

Results
According to the data in table 1, cardiovascular diseases were the major cause of death in this group. In both sexes cardiovascular diseases accounted for more than 40% of all causes of death, and heart diseases were responsible for 74% and 66% of all cardiovascular disease deaths in men and women respectively (table 2).

In men, a decreasing trend in mortality was found only for ischaemic heart disease. During the same period an increasing mortality trend was observed for “all causes”, for all cardiovascular diseases, other heart diseases, and cerebrovascular disease (fig 1).

In women, a decline in the mortality trend...
Cardiovascular mortality in Belgrade

Table 2  Age standardised mortality (per 100 000) from all causes of death and from cardiovascular diseases in men and women aged 30-69 years in Belgrade, 1975-89

<table>
<thead>
<tr>
<th>Causes of death / ICD codes, 8th and 9th revision</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of deaths</td>
<td>Mortality rate</td>
</tr>
<tr>
<td>All causes (000/001-999)</td>
<td>2746</td>
<td>869.4</td>
</tr>
<tr>
<td>Cardiovascular diseases (390-458/459)</td>
<td>1111</td>
<td>365.8</td>
</tr>
<tr>
<td>Ischaemic heart disease (410-414)</td>
<td>430</td>
<td>140.2</td>
</tr>
<tr>
<td>Other heart diseases (393-398, 402, 404, 415-429)</td>
<td>392</td>
<td>129.9</td>
</tr>
<tr>
<td>Cerebrovascular disease (430-438)</td>
<td>208</td>
<td>68.1</td>
</tr>
</tbody>
</table>

Figure 1  Age standardised cardiovascular disease mortality (per 100 000) in men aged 30-69 years in Belgrade, 1975-89 for all causes of death; all cardiovascular diseases; other heart diseases; ischaemic heart disease; and cerebrovascular disease.

The trends since 1975 are summarised in table 3. Mortality trends generally follow the same pattern in men and women, with the exception of cerebrovascular disease.

Mortality for all causes as well as mortality for all observed disease groups was higher in men than in women. The sex differential was greatest for ischaemic heart disease mortality, which showed a male/female ratio of 2.3. There was a much smaller differential for cerebrovascular disease mortality — the ratio was at its greatest, 1.5, in 1989. Nevertheless, the ratio for cerebrovascular disease mortality seems to be growing. With regard to mortality from other diseases, the sex ratio did not change or changed only slightly between 1975 and 1989 (table 4).

Discussion

As in many eastern European countries, 1 total mortality in the Belgrade population increased between 1975 and 1989. Death rates from cardiovascular diseases as a whole also increased but this increase was smaller than that for total death rates, and, contrary to the findings in other European countries, this rise was not found for coronary heart disease. Mortality from ischaemic heart disease fell in both men and women. The fact that mortality from other heart diseases increased, however, suggests that some of the trends may have been influenced by changes in assessing the cause of death within the heart disease group — that is, it is possible that many deaths which had pre-
Figure 2  Age standardised cardiovascular disease mortality (per 100000) in women aged 30-69 years in Belgrade, 1975-89 for all causes of death; all cardiovascular diseases; ischaemic heart disease; and cerebrovascular disease.

Table 3  Trends in cardiovascular diseases: the percentage change in age standardised mortality in men and women aged 30-69 years in Belgrade, 1975-89

<table>
<thead>
<tr>
<th>Causes of death (ICD codes, 8th and 9th revision)</th>
<th>% change in temporal trend</th>
<th>95% confidence interval</th>
<th>Men</th>
<th>% change in temporal trend</th>
<th>95% confidence interval</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>All causes (000/001-999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>+ 66</td>
<td>1.7, 11.5</td>
<td></td>
<td>+ 4.0</td>
<td>0.2, 7.8</td>
<td></td>
</tr>
<tr>
<td>Ischaemic heart disease (410-414)</td>
<td>-31.9</td>
<td>22.8, 41.0</td>
<td></td>
<td>-32.2</td>
<td>23.0, 41.3</td>
<td></td>
</tr>
<tr>
<td>Other heart diseases (393-398, 402, 404, 415-429)</td>
<td>+31.1</td>
<td>22.0, 40.2</td>
<td></td>
<td>+24.6</td>
<td>16.2, 33.0</td>
<td></td>
</tr>
<tr>
<td>Cerebrovascular disease (430-438)</td>
<td>+37.3</td>
<td>27.8, 46.8</td>
<td></td>
<td>-0.4</td>
<td>-0.8, 1.6</td>
<td></td>
</tr>
</tbody>
</table>

Previously been attributed to ischaemic heart disease are now attributed to some other form of heart disease which would account for a substantial part of the decline. For myocardial infarction, the diagnosis of which should be more precise, a decreasing mortality trend is found in men (y = 128.54 - 1.47x), but in women a slight increase is observed (y = 43.81 + 0.20x).

It is also possible that cardiovascular disease mortality trends have been affected by a reassignment of cause of death between cardiovascular diseases and other certified causes, in particular respiratory and endocrinial and metabolic diseases, mainly diabetes. For these two groups of diseases, mortality increased strikingly (43.05 and 33.7% respectively), but
Cardiovascular mortality in Belgrade

as the total number of deaths ascribed to these diseases was small, the influence of possible reassignment on the cardiovascular mortality trend could not be a significant one.

Cerebrovascular disease mortality trends in the Belgrade population followed the pattern seen in some eastern European countries such as Bulgaria, Romania, and Czechoslovakia. Whether this trend can be explained by the varying frequency of the use of a general condition, such as essential hypertension, as a cause of death, remains unknown.

The proportion of cardiovascular diseases coded as essential hypertension was on an average of 4.2% (0.0–12.3%) for the period observed.

Substantial differences in the levels and trends of cardiovascular disease mortality in industrialised countries have no doubt been caused by a multitude of risk factors operating in each country.

There is limited information only about cardiovascular risk factors in the Belgrade population. According to a survey conducted in 1988 and 1989, the prevalence of cigarette smoking in Belgrade in people aged 18 and more years was very high – 44.3% (that is, 51.5% in men and 36.7% in women). The percentage of smokers in younger generations hardly changed at all in men but was rising in women. As smoking is one of the main risk factors for coronary heart disease, the increasing frequency of smoking in women may cause an increase in myocardial infarction mortality in this group. According to the same survey, 21.9% of men and 22.8% of women aged 30–69 years had a body mass index of 28 and more. National data about diet show that the calorie intake in our population is too high and that the structure of the diet, with a low intake of fruit, vegetables, milk and milk products, is unsatisfactory.

Since both a “rich” diet and cigarette smoking are the main population risk factors for cardiovascular diseases, we cannot expect any appreciable decline in cardiovascular disease mortality in the near future. Nevertheless, some improvement in mortality trends could be achieved through primary prevention in people at special risk of cardiovascular diseases and through prevention of recurrences and progression of disease.


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