

## SOCIOECONOMIC STUDY

**Social determinants of health in Slovakia**

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*Public Health Authority of the Slovak Republic, Bratislava, Slovakia. ginter.emil@mail-t.com.sk***Abstract****Objectives:** Substantial inequalities of health in various parts of Slovak Republic (SR) are observed.**Background:** Our aim was to analyse the combination of sociological and medical aspects of these inequalities.**Methods:** Sociological and mortality data from all 76 counties of SR were analysed by cluster analysis, ANOVA, multiple regressions, parametric and nonparametric tests.**Results:** In the sociologically weaker clusters the life expectancy was shorter, male and female premature cardiovascular mortality was higher and the male (not female) cancer mortality was higher than in sociologically better clusters.**Conclusion:** Social and economic conditions – low educational level, poverty, unemployment, social exclusion and poor housing – strongly influence the health of inhabitants in SR (*Fig. 3, Ref: 8*). Full Text (Free, PDF) [www.bmj.sk](http://www.bmj.sk).**Key words:** Slovakia counties, life expectancy, cardiovascular mortality, cancer mortality, sociology.

It is known that the idea, according to which the health of population is determined solely by the level of healthcare, is wrong. The most important factor that determines the health of population is the quality of people's lives. Hence it is the social and economic conditions (poverty, unemployment, social exclusion, and poor housing) that influence the health and life expectancy. At the start of the 21st century, the Slovak Republic (SR) is faced with substantial inequalities of health in its various parts (1). The aim of this paper is to analyse the combination of sociological and medical aspects of these inequalities.

**Methods**

The combination of sociological and mortality data analysis was based on three sources:

- 1) Gajdos P. Typologia regionalnej diferenciácie SR. 54–79. In: "Regional development in Slovakia" (Editors L. Falt'an and J. Pašiak) published by the Institute of Sociology of the Slovak Academy of Sciences (2).
- 2) Trends of mortality in various regions of SR published by the Institute of Health Information and Statistics (3).
- 3) Census of Slovak Republic 2001, published by the Institute of Statistics SR (4).

These data were analysed by cluster analysis, ANOVA, multiple regressions, parametric and nonparametric tests (statistical software STATISTICS 6,5).

**Results and discussion**

In 2004 the Institute of Sociology SAV (2) issued a complex view of the social situation in individual counties (total number 79) of Slovakia. The typology of counties was based on the overall characterization of respective counties according to the following factors: economic performance, employment rate, labour market, human potential – population situation, educational potential, migration, social situation, infrastructure within a given territory, settlements, urbanisation, and ecological situation.

Application of these data based on cluster analysis resulted in the definition of 8 clusters:

- 1) Very good as to all of indicators (four great towns-Bratislava, Košice, B. Bystrica, Zvolen)

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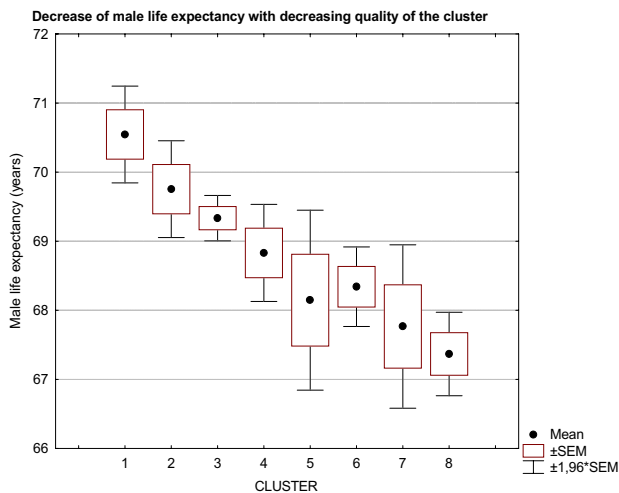


Fig. 1. Linear decrease in male life expectancy with decreasing quality of the cluster.

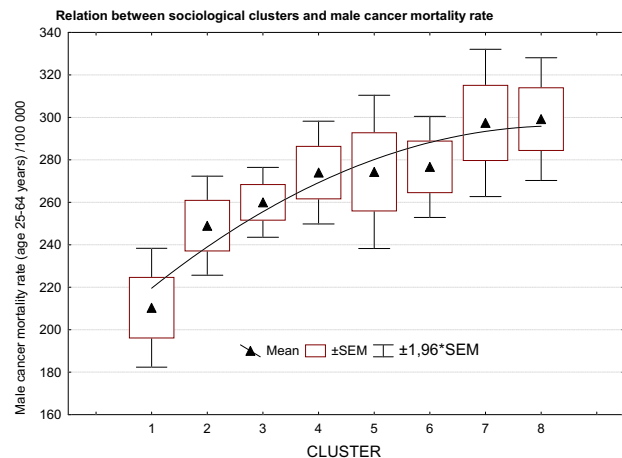


Fig. 3. Increase in standardized male cancer mortality (age group 25–64 years) with decreasing quality of the cluster.

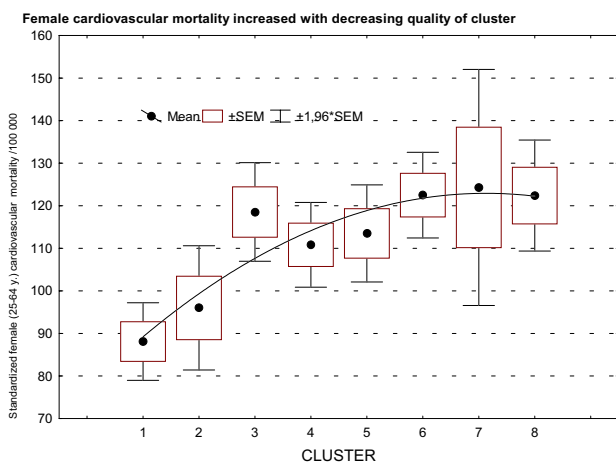


Fig. 2. Increase in standardized female cardiovascular mortality (age group 25–64 years) with decreasing quality of the cluster.

2) Good situation as to economic performance, employment rate, social situation, education and urbanization (west of SR: important economic centres as Trnava, Trenčín, Nitra, and Žilina and the developed counties around Bratislava and the Považie region)

3) Excellent ecological situation, good situation as to employment rate; an average infrastructure level and economic performance; a worse situation as to population index and education (mostly the newly formed counties of Western Slovakia)

4) This cluster does not have any significantly strong or weak points; average infrastructure level and employment rate. The social situation, employment rate and education level represent weak points (counties of this type are geographically scattered throughout the entire country, from Považská Bystrica to Michalovce)

5) This cluster has good ecological situation, character of settlement and population index, but insufficient informational infrastructure, economic performance and education index (north of SR)

6) Bad social situation; weaker education index, employment rate and economy; stronger character of settlement and migration index (mostly south of SR)

7) The only positive feature: good ecological situation. Negatives: economy, employment rate, social situation, education level and migration indexes, low information infrastructure (northern part of Eastern Slovakia and several counties of Central Slovakia – mostly small, newly created counties)

8) This cluster has no common positive feature. The weakest features: unemployment rate, social situation, economy, education index, urbanization rate, technical infrastructure. Lowest quality applies to the counties of Eastern Slovakia and the south of Central Slovakia.

Due to the fact that sociology and medicine are usually separated scientific branches, we considered the interconnection of the sociological view and medical aspect to be interesting and important. For this purpose we have used statistical data evaluating the life expectancy of men or women and their standardized mortality rates within their active years of life (25–64 years of age) in individual counties of SR (3) during a 5-year period (from 1996 to 2000), and the data of the 2001 Census in SR (4).

As expected, the percentage of people with only elementary or incomplete elementary education increases linearly with the decrease in the quality of sociological cluster ( $p < 0.001$ ): 13 % in cluster 1, about 20 % in clusters 3–4 and more than 28 % in cluster 8. The cluster 8 yields the highest concentration of gypsies and highest infant mortality ( $p < 0.001$ ).

Due to the fact that education is closely related to life expectancy (5–7) it was possible to assume that the chance to live

this long would be smaller in sociologically weaker clusters. This assumption has been confirmed in male population (Fig. 1). The chance of a boy born in the weakest region to live as long as a boy born in the most developed region is smaller and the difference represents three years ( $p < 0.001$ ). The female population yields a similar trend but the differences between clusters are smaller than in males. The inhabitants of SR from lower socio-economic groups, especially gypsies, tend to live considerably shorter than those having more favourable social position (8).

Standardized mortality rates for men and women in their active age (25 to 64 years) have a close relation to the quality of clusters due to two major causes, namely cardiovascular diseases and malignant tumours.

The female cardiovascular mortality rate within the last three clusters is higher than within the best cluster 1 by 40 % ( $p < 0.01$ ) (Fig. 2). Cluster 3 represents an exception within this continuity. It is characterized by excellent ecological situation but a lower level of education. According to our data obtained from multi-factorial analysis of the population of SR, it is the low level of education that has a decisive impact on the occurrence of early death related either to cancer or cardiovascular diseases, unlike the situation in ecology, ethnic minorities, religion or population rate. This is caused by bad lifestyles of people with low education: high prevalence of alcoholism, high number of smokers and low-quality nutrition (low consumption of protective substances from fruit and vegetables). It is also probable that here the low cultural level plays an important role too.

The male cancer mortality rate has increased with the decrease in the social level, and this increase is continuous (Fig. 3). In the two weakest clusters it was higher than in cluster 1 by 40 % ( $p < 0.01$ ). This difference cannot be explained by lower quality of the environment. The authors of the sociological study expressly state (2) that the only positive feature in clusters 7 and 8 is the good ecological situation. In females, such correlation was not observed.

These results show that in the counties with low level of education resulting in lower occupational class and lower socio-economic position, the people die at younger age and have a higher prevalence of premature death due to cardiovascular diseases (both males and females) and cancer (males only).

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