6.

CAUSE-SPECIFIC MORTALITY

Katalin Kovács–Péter Őri

MAJOR FINDINGS

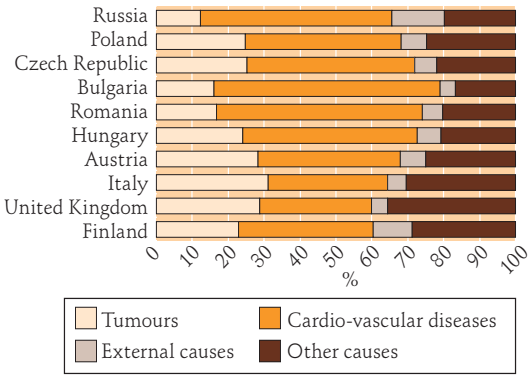
- Similarly to most countries of Europe, most deaths in Hungary are caused by diseases of the circulatory system. However, a considerable improvement can be observed in this field and the decrease of overall mortality in the past decades, which has been demonstrated in the previous chapter, goes back primarily to the diminishing of cardiovascular mortality. Nevertheless, cardiovascular mortality is still very unfavourable in international comparison.
- Social inequalities in mortality are similarly due mostly to social inequalities in cardiovascular mortality.
- As regards deaths from malignant tumours there was only a very slight improvement in the past two decades. In international comparison the situation in Hungary qualifies as deteriorating. It can even be called striking as regards cancers of the respiratory system.
- Mortality from infectious diseases has undergone favourable changes in Hungary but the overall weight of this cause of death is fairly small today.
- In the case of external causes of death improvement is conspicuous. As regards suicide, homicide, and accidental death the position of Hungary among the countries of Europe is not too favourable but in Eastern European comparison it is not too bad, and the tendencies are encouraging.
- The level of mortality connectable with the two most well-known risk factors, i.e., alcoholism and smoking is very high in Hungary.
- The Hungarian population did not follow the changes that had taken place in Western Europe in life-style and did not come nearer the traditionally healthier dietary habits of Southern Europe, either. In fact, the way of life is not fully a matter of choice in that it is influenced by numerous social factors such as the standard of living, working conditions, and environment.

Mortality in Hungary can be considered very high in European comparison, even compared to that in the former socialist countries of East Central Europe. The causes of this phenomenon have been extensively debated. The present chapter aims to contribute to finding an answer by analyzing mortality by cause of death.

The distribution of deaths by major groups of causes is very similar in the countries of Europe. Almost two thirds of all deaths are caused by the so-called degenerative illnesses (diseases of the circulatory system and cancers). Mortality in Hungary can be considered typical from this respect *(Fig. 1)*.

The differences in these proportions between the individual countries can be attributed partly to the differences in the weight of the individual causes of death within the mortality of a given country, partly to the 'competition' thereof. It is obvious that if the share of a cause of death diminishes within the population, that of other ones will inevitably grow. This depends partly on the sequence of risks in the life course. Traffic accidents having a great share among the external causes of death represent a greater risk in younger age-groups than degenerative diseases. Within this latter group cardio-vascular diseases appear at a younger age than most tumours.

Fig. 1. *Distribution of mortality by major causes of death in selected European countries, averages for the years 2005–2007 (percentages)*



Source: Authors' calculations based on the European Detailed Mortality Database.

In Hungary the importance of death from external causes (suicide, homicide, and accidents) is smaller than in Finland or Russia and corresponds to the proportions observed in the countries of Central Europe (Austria, Poland, and the Czech Republic).

The share of cardiovascular mortality is much lower in Hungary than in Bulgaria and Romania but significantly higher than in Italy, the United Kingdom or Germany. At the same time, while the latter countries are successful in the prevention and treatment of illnesses of the circulatory system as a result of a different way of life and nutrition and of a more effective health care, their percentage of deaths from tumours is substantially higher than in Hungary. Where cardio-vascular diseases present themselves early and the chances of survival are low, the rate of death from cancers is relatively lower.

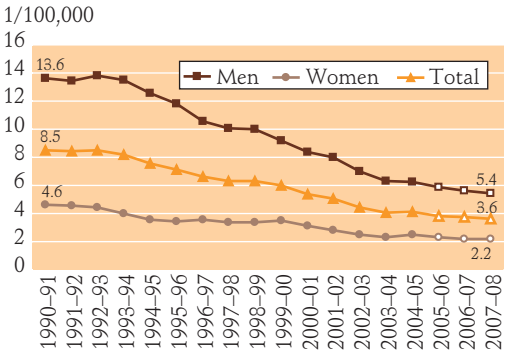
The actual weight and trend of the individual diseases can be judged by the development and comparison of the standardized death rates.

INFECTIOUS DISEASES

In the course of the epidemiological transition the role of the infectious diseases in mortality became insignificant in most developed countries.

Following the economic and political turn of 1989 in Hungary, mortality due to infectious diseases decreased, to a higher

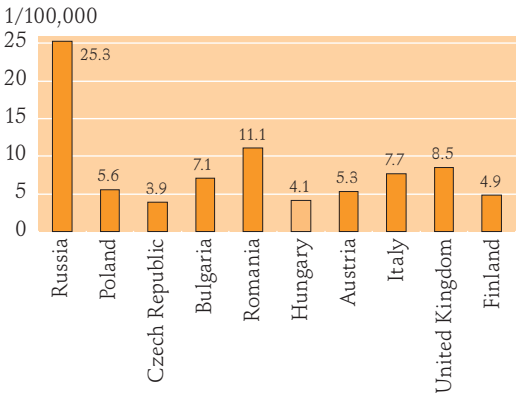
Fig. 2. *Mortality due to infectious diseases in Hungary, 1990–2008**
(standardized death rate, 2-year moving averages)



* The way of data collection on the causes of death changed in Hungary in 2005, so there is no unambiguous continuity among the data referring to certain causes of death. This fact is shown on all the affected diagrams to come. If necessary, we evaluate trends prior to and following that date separately.

Source: Authors' own calculations based on the KSH vital statistics *(Demográfiai táblázó).*

Fig. 3. *Mortality due to infectious diseases in selected European countries, 2005–2007 (standardized mortality rate, averages of the three years)*



Source: Authors' calculations based on the *European Detailed Mortality Database*

degree in the case of men than in the case of women, diminishing the difference between the two sexes in this respect *(Fig. 2)*.

This is the only major cause-of-death group in which mortality in Hungary can be considered favourable in international comparison.

With respect to mortality due to infectious diseases Hungary (together with the Czech Republic) is in a favourable situation not only as compared to the former socialist states but as compared to several countries of Western and Southern Europe, as well, and even precedes Finland representing Northern Europe, and the neighbouring Austria, too *(Fig. 3)*.

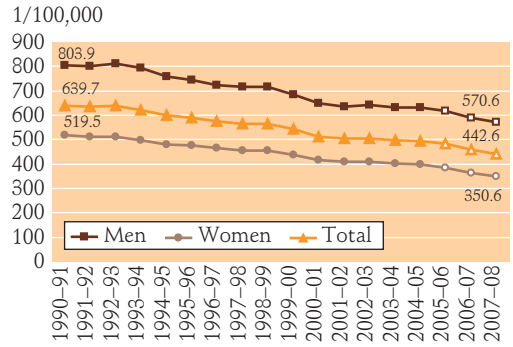
This fact can be attributed to several factors like the climate, the density of the population, the mobility of the people and hence that of the pathogenes, social differences, the use of health services, and the effectiveness of the health care system in prevention, fast reaction, correct diagnosis and treatment. The major cause of our favourable position as compared to Western European and several Eastern European countries is, however, that the level of AIDS mortality is remarkably low in European comparison, i.e., Hungary has avoided large-scale infection with HIV so far. It has to be emphasized, however, that AIDS in a European context represents a very small section in mortality and its absence can, therefore, not in fluence the otherwise high rate of Hungary.

DISEASES OF THE CIRCULATORY SYSTEM

Nearly half of all deaths in Hungary are caused by cardio-vascular diseases. This is by far the most important major cause-of-death group, its weight is almost hundred times as big as that of the infectious diseases, which – it is important to note – is the result of the epidemiological transition that took place in the wake of modernization.

The level of cardio-vascular mortality remained high in Northern and Western Europe even in the mid-20th century, whereas in Southern Europe it was traditionally low. The considerable improvement of adult and old-age mortality was, however, due to developments in this field in the 1970s and 1980s (cardio-vascular revolution), in the course of which mortality resulting from illnesses of the circulatory system dropped to half or even to one third of the former level in Northern and Western Europe. The improvement was slightly smaller in Southern Europe where the base level had been better in the first place. Besides the improvement of health care, a great role was played in this by the changes in the population's life style (by the spread of a health-conscious approach involving a change in the diet and more physical exercise).

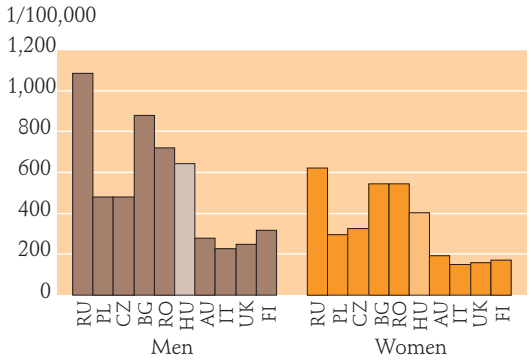
Fig. 4. *Cardiovascular mortality in Hungary, 1990-2008 (standardized death rate, 2-year moving averages)*



Source: Authors' calculations based on HCSO vital statistics

Examining Hungarian trends in the past nearly two decades more closely we can find that a considerable improvement of about 20 per cent has taken place in the cardiovascular mortality of both sexes, mostly beginning with the second half of the 1990s, and the process has not stopped yet. It can be attributed partly to the changes in the population's life style, but even more to the improvement of health care. The noticeable decline in general mortality can also be attributed first of all to the diminishing trend of cardiovascular mortality (see Chapter 5 of the present volume). In other words, the cardiovascular revolution reached Hungary, too, though one or two decades later than most Western and Northern European countries. The starting point is naturally not irrelevant. Consequently the evaluation of the present situation cannot rest merely on the favourable trends but has to be based on comparisons within the region and with other European countries *(Fig. 5)*.

Fig. 5. *Cardiovascular mortality in selected countries of Europe, 2005–2007 (standardized death rate, averages of the three years)*



Source: Authors' calculations based on the *European Detailed Mortality Database*

The Southern European and certain West European countries can boast of the best results as regards cardiovascular mortality, while Russia, Bulgaria and Romania are in the worst situation in this respect. Conditions in the Czech Republic and Poland are much more favourable, although their rate of mortality is still double the Italian level for both sexes.

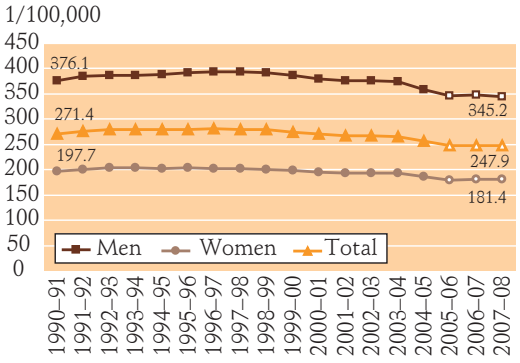
As a result of the recent improvements Hungary stands between the Czech–Polish

and Bulgarian–Romanian levels in the case of both men and women. The rate of women is much lower than that of men but is lagging behind the countries with more favourable conditions to the same degree.

CANCERS

Cancers constitute the second most important major cause-of-death group. Cancer mortality slightly increased in the first half of the 1990s, mostly among men, but a slow decrease could be observed around the turn of the 2000s in both sexes *(Fig. 6)*.

Fig. 6. *Cancer mortality in Hungary, 1990–2008 (standardized mortality rate, 2-year moving averages)*



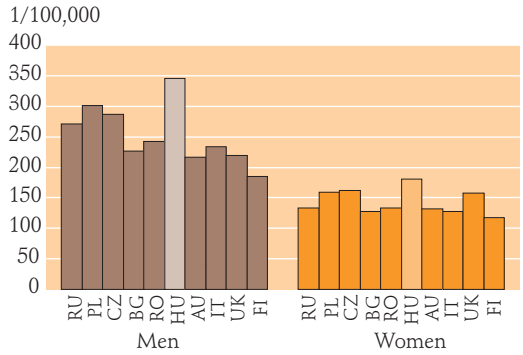
Source: Authors' calculations based on KSH vital statistics *(Demográfiai táblázó)*

However, in the past few years no further signs of improvement could be observed.

Mortality due to malignant neoplasm in Hungary is extremely dramatic today in European comparison *(Fig. 7)*.

It is higher than in any country examined both for men and women. It must be noted, however, that it is only slightly lower in the Czech Republic and Poland. The tragic Hungarian cancer mortality level is to a great extent due to the extremely great

Fig. 7. *Cancer mortality in selected countries of Europe, 2005-2007 (standardized mortality rate, averages of the three years)*



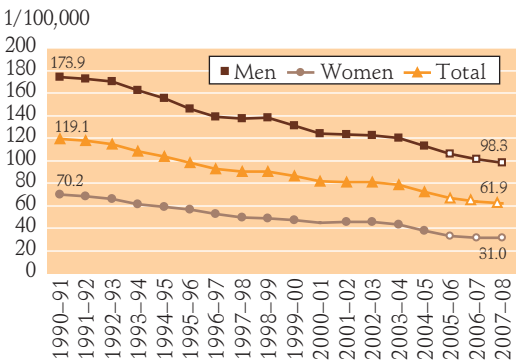
Source: Authors' calculations based on the *European Detailed Mortality Database*

number of deaths from cancers of the respiratory system, which calls attention primarily to the role of smoking.

EXTERNAL CAUSES OF DEATH

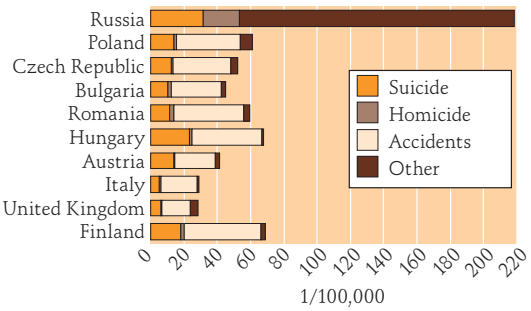
Mortality due to external causes of death (suicide, homicide, accidents) has decreased considerably in Hungary in both sexes since 1990 (by 30 and 50 per cent, resp.) (Fig. 8).

Fig. 8. *Mortality due to external causes in Hungary, 1990-2008 (standardized death rate, 2-year moving averages)*



Source: Authors' calculations based on KSH vital statistics *(Demográfiai táblázó)*

Fig. 9. *Major groups of external causes of death in selected European countries, 2005-2007 (standardized death rate, averages of the three years)*



Source: Authors' calculations based on the European *Detailed Mortality Database*

The pattern of the former socialist countries and the countries of Western Europe do not differ sharply in this respect *(Fig. 9)*.

The rates of mortality due to external causes in Hungary, Finland, and Poland, or those in Austria and Bulgaria are very similar. A considerable portion (about the quarter) of accidents is made up of traffic accidents, influenced by the level of motorization in a given country, by the technical condition of the vehicles, and by the morale of those on the road. As regards suicide, the sociological approach maintains that its level is determined by the reconcilability of social norms and the person's ability to follow them, as well as by the traditional patterns of solving problems. This may be the cause of the similarities in suicide rates of otherwise highly different countries like, e.g., Hungary and Finland.

In Hungary mortality due to external causes is high in European comparison but not really striking. Although suicide is still alarmingly frequent, the suicide rate differs from that of other European countries to a smaller degree than earlier.

As regards homicide, the Hungarian rate fits among the rates of the other European countries, though belongs to the higher ones (together with Bulgaria, Romania, and Finland shown in Fig. 9). Its tendency is fast improving, also.

THE ROLE OF SOME MAJOR FACTORS OF MORTALITY

In the analysis by causes of death certain groups of illnesses have an outstanding role as they may offer valuable information for the understanding of mortality conditions and their background. There are, namely, certain groups of illnesses that point to certain elements of lifestyle that are detrimental to health (e.g., smoking and alcohol consumption) and refer to the role of health care. The degree of mortality due to lung cancer indicates the role of smoking, while chronic liver diseases (e.g., liver cirrhosis) indicate the role of alcohol in mortality.

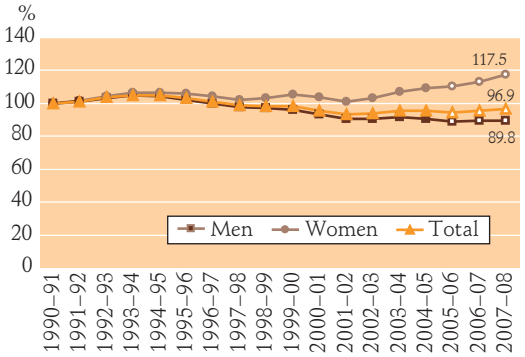
The efficiency of health care in a broad sense is reflected in the data of avoidable mortality. The latest approaches in research examine avoidable mortality in three distinct groups. The first one is that of *treatable diseases* that can be used as indicator of the efficiency of medicine. The group is made up of diseases that can be cured in a given country, with the available means of the local health care, with an average expenditure, and mostly by routine procedures (e.g., appendicitis and asthma). The group of *preventable mortality* is an indicator mostly of the efficiency of preventive medicine and consists of diseases that can be prevented by screening and vaccination (e.g., cervical cancer and breast cancer).

Ischemic heart diseases are a distinct group in themselves as they are influenced by several inseparable factors of a person's way of life and the efficiency of primary and secondary prevention.

Mortality connected with smoking grew in the early 1990s as compared to 1990 but this growing rate can be attributed to the smoking habits of earlier decades and air pollution resulting from industry and traffic. In the second half of the 1990s a decrease can be observed in the case of both sexes, then the rate of men increased slightly, and later stagnated. In the case of women, however, mortality due to smoking increased heavily during the 2000s, which calls attention to the growing popularity of smoking among women *(Fig. 10)*.

Mortality connectable to smoking reflects earlier data of the epidemics of smoking. (According to the most wide-spread opinion among researchers it refers to conditions about two decades earlier.) Consequently this type of mortality would remain high for a long time even if smoking could be repressed.

Fig. 10. *Mortality due to causes connected with smoking in Hungary, 1990–2008 (standardized mortality ratio, moving averages by two years. 1990/91=100)*

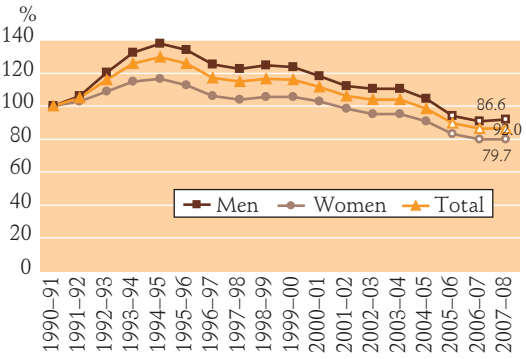


Source: Authors' calculations based on the KSH vital statistics *(Demográfiai táblázó)*

Mortality connectable with alcohol consumption strongly increased (by 40 per cent for men and by 20 per cent for women) during the economic and social crisis after 1989 in Hungary. From the mid-1990s this rate started to decrease at a varying pace. Recent data still indicate stagnation in this respect both as regards men and women *(Fig. 11)*.

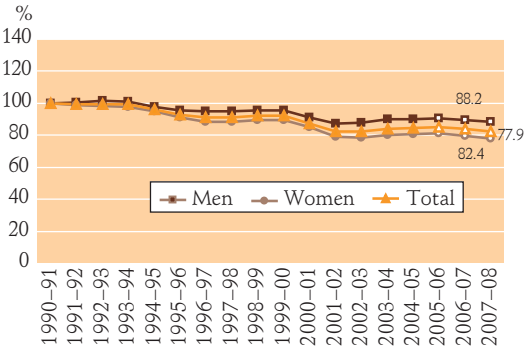
Fig. 12 shows the changes of treatable and preventable mortality taken together.

Fig. 11. *Mortality due to causes connectable with alcohol consumption in Hungary, 1990–2008 (standardized mortality rate, 2-year moving averages, 1990/91=100)*



Source: Authors' calculations based on KSH vital statistics *(Demográfiai táblázó)*

Fig. 12. *Avoidable mortality in Hungary, 1990–98 (standardized mortality ratio, 2-year moving averages, 1990/91=100)*



Source: Authors' calculations based on KSH vital statistics *(Demográfiai táblázó)*

Table 1. *Cause-specific mortality rates connectable with alcohol consumption. smoking and the role of health care. 2000–2002*

Countries	Mortality from chronic liver disease and cirrhosis (1)		Mortality from lung cancer in the age group 5–64 (1)		Treatable mortality (2)		Preventable mortality (2)		Mortality from ischemic heart disease (2)	
	Standardized mortality ratio. 1/100.000									
	Men	Women	Men	Women	Men	Women	Women	Women	Women	Women
Russia	ND	ND	67.1	6.7	ND	ND	ND	ND	ND	ND
Poland	23.9	7.3	72.0	20.9	135.5	102.6	124.4	27.2	130.3	37.6
Czech Republic	25.3	8.9	58.7	16.0	125.1	95.7	109.4	28.4	129.0	45.9
Bulgaria	25.5	5.9	60.9	9.5	220.0	154.7	90.1	17.6	140.1	54.8
Romania	55.9	25.7	69.5	12.6	274.6	203.6	145.1	43.7	164.1	71.7
Hungary	71.0	22.6	99.7	35.3	178.4	125.0	201.1	59.1	168.2	65.6
Austria	23.4	7.2	37.5	35.3	70.1	63.1	81.0	26.5	80.7	26.5
Italy	ND	ND	ND	ND	60.2	59.9	83.7	20.6	48.6	13.9
United Kingdom	14.6	7.5	28.9	18.9	71.2	74.1	60.4	30.7	96.4	33.5
Finland	26.0	9.6	25.0	9.6	69.2	57.5	61.4	19.4	111.6	26.9
Position of Hungary (3)	4/38	4/38	1/41	1/41	4/20	3/20	1/20	1/20	5/20	5/20

ND: no data

Source: (1) *Atlas of Health in Europe*. 2nd ed.. 2008. WHO (2008)
2) C. Newey. E. Nolte. M. MacKee. and E. Mossialos. *Avoidable Mortality in the Enlarged European Union*. (The data refer to the years 2000-2002.)
(3) Place 1 is considered the worst among the countries examined here. For example. as regards mortality caused by lung cancer Hungary ranks first in both sexes (1/41). which means that out of the 41 countries providing information on mortality from lung cancer the rate is the highest in Hungary.

Table 2. *Major risk factors of mortality in 2005*

Countries	Proportion of smoking adults		Proportion of overweight adults		Proportion of obese adults		Yearly alcohol consumption (litre, in pure alcohol)
	%						
	Men	Women	Men	Women	Men	Women	
Russia	61.3	15.0	ND	ND	ND	ND	8.9
Poland	37.0	23.0	ND	ND	ND	ND	6.7
Czech Republic	31.1	20.1	56.7	57.4	13.7	16.3	13.7
Bulgaria	43.8	23.0	50.1	42.3	11.3	13.5	5.0
Romania	33.2	10.3	45.8	38.1	7.7	9.5	7.4
Hungary	36.9	24.6	58.9	49.5	17.1	18.2	11.6
Austria	27.3	19.4	57.7	43.3	12.8	13.4	10.5
Italy	29.2	17.2	45.8	33.6	7.4	8.9	7.6
United Kingdom	26.0	23.0	ND	ND	ND	ND	9.3
Finland	24.4	18.9	55.5	41.3	14.6	14.1	8.2
Position of Hungary (1)	23/47	8/47	4/25	1/25	4/25	5/25	4/48

ND: no data

Source: Atlas of Health in Europe, 2008, WHO (2008)
(1) Place 1 counts as the worst among the countries involved.

A definite decrease can be observed in this field, especially in the years around the turn of the millennium.[1] It is probable that in this case the decrease of mortality was due to the improvement of medical technology and the growing availability of newly developed drugs rather than to the improvement of the environmental factors and the changes in the patients' life style.

Let us now examine the level of mortality connectable with alcohol consumption and from smoking, then treatable, preventable, and ischemic heart disease mortality in international comparison *(Table 1)*.

Table 2 will show the level of risk factors linked with these cause-of-death groups.

Hungarian male mortality connected with extensive alcohol consumption is the highest in Europe if we leave Russia (about which no data are available) out of consideration. In the case of women the situation is worse only in Romania. The Hungarian level is stunning also from a wider international perspective: Hungary is fourth from the bottom on a list of 38 countries. The level of the corresponding mortality rate of Romania is the only one comparable to that of Hungary. It is similarly surprising that mortality indicating excessive alcohol consumption is much higher in Hungary than what could be expected on the basis of the amount of alcohol consumed by the relevant international data *(Table 2)*.

Alcohol consumption in the Czech Republic is higher than in Hungary, and that of Austria and Germany is not much less, either. Mortality due to chronic liver disease and liver cirrhosis is still three times as high in Hungary as in these countries. In this respect attention has to be called to the role of illegally produced, bad quality alcoholic drinks.

The situation is similar in the case of adult mortality from lung cancer. In this respect the position of Hungary is even worse than that of Russia. In Hungary the rate of smoking women is high, too, though this phenomenon is not unique. The case is similar in Bulgaria, Poland, and the United Kingdom. As regards Hungary, it cannot, however, be established how great a role air pollution, i.e., the effect of industrialization in the previous decades plays in mortality from lung cancer.

As regards treatable and preventable causes of death, and mortality due to ischemic heart disease distinct Eastern (post-socialist) and Western patterns can be observed.

In the case of treatable causes of death the position of Hungary is slightly better than that of Bulgaria and Romania but worse than that of Poland and the Czech Republic, reflecting the quality and availability of health care in these countries.

Preventable mortality and deaths from ischemic heart disease in Hungary, i.e., the causes of death depending on the population's life style, indicate an unfavourable position within the Eastern European region (without Russia). There is a sharp contrast with Italy and just a scarcely smaller one with Austria. In the case of ischemic heart diseases, mortality among Romanian women is the only one that is higher than that in Hungary. Interestingly, our positions as regards smoking and registered alcohol consumption are not the worst in the region. Other risk factors have to be taken into account here, as well as the joint impact of all factors. As Table 2 indicates, the rate of overweight adult males in Hungary

[1] The indicator applied here differs slightly from the one used in international literature and does not contain deaths due to heart disease. Taking these into account would make the tendency even more marked.

is similar to that in beer-drinking nations like the Austrians and the Czechs with a better level of mortality but the rate of obesity is the highest in Hungary. This fact goes back to the favourable changes in the diet and in the general life style in other countries of Europe in the past decades and to the backwardness of Hungary in this respect. It is, however, obvious that the adoption of the Mediterranean diet, of the Western European habits of eating and leisure activities or exercise is not merely a matter of decision. Chapter 5 of the present volume reveals that two fifths of the Hungarian population, namely the most well-to-do layers, follow these cultural patterns and show mortality resembling the western pattern, too. The greater part of the population, lacking information and struggling defencelessly with financial problems is much more helpless and has no choice but living a life that leads to diseases and early death.

SOCIAL DIFFERENCES BY MAJOR CAUSE-OF-DEATH GROUPS

There are few international data available regarding the role of the various causes of mortality in the inequalities observable in overall mortality. It is, however, possible to compare the most serious mortality problem of the Hungarian society, namely the mortality of the middle-aged between 1990 and 2000 with those of three other countries with similar political, social, and economic background, namely with those of Poland, Lithuania, and Estonia. In addition, the data make it possible to evaluate the changes in inequalities over the last two decades.

In Hungary, male mortality due to infectious diseases decreased in the given period on all levels of education. The tendencies of Poland are similar but the ones in Estonia and Lithuania are different. In the latter two countries mortality due to infectious diseases increased considerably in the years after the change of regimes, especially among men with lower levels of education.

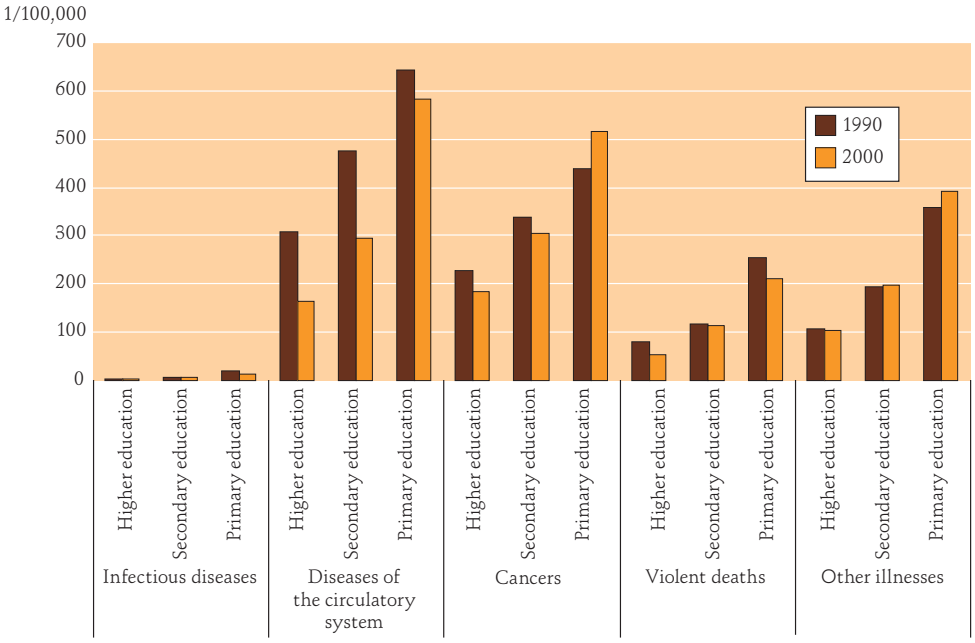
Similarly to the general level of mortality, its social inequalities are also shaped by the particularities of cardiovascular mortality. Cardiovascular mortality in Hungary decreased in all educational groups but not to the same degree. Since favourable changes were more significant among those with higher education, the differences grew larger in this respect *(Fig. 13)*.

In Poland a similar decrease can be observed as regards the diseases of the circulatory system for all educational groups, which is a more favourable trend than the Hungarian one. In the Baltic states the processes developed in the opposite direction. Mortality from circulatory diseases decreased only in the group with higher levels of education but increased among the less qualified.

As regards mortality from cancers, its rate decreased in Estonia and Poland in all the three educational groups, whereas in Lithuania it rose slightly among the less educated, while in Hungary the increase was considerable in the same group *(Fig. 13)* Consequently, both the unfavourable level of Hungarian mortality and the large social differences in mortality are influenced by cancer mortality (especially mortality from lung cancer).

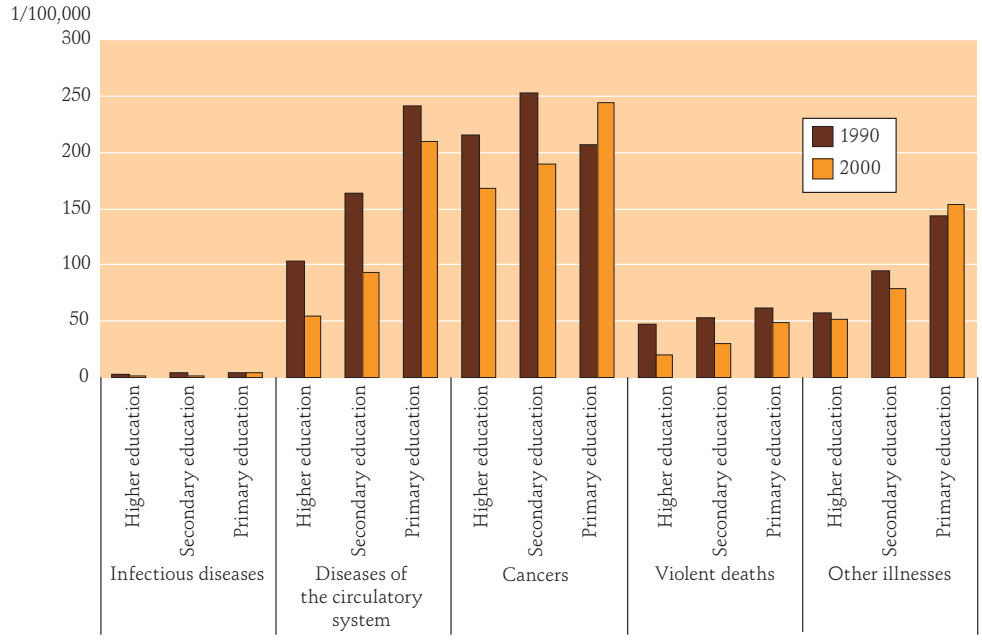
With respect to mortality due to external causes both the level and the social differences in this cause-of-death group show a relatively favourable picture for Hungary. Whereas in Estonia and Lithuania these

Fig. 13. *Mortality of Hungarian men aged 35–64 by level of education and by major cause-of-death groups around 1990 and 2000 (standardized mortality rates)*



Source: Leinsalu, M. et al. (2009)

Fig. 14. *Mortality of Hungarian women aged 35–64 by education and by major cause-of-death groups in Hungary around 1990 and 2000 (standardized mortality rates)*



Source: Leinsalu, M. et al. (2009)

causes of death represent a considerable portion of mortality, especially among less educated persons, and the social differences are growing, too, in Hungary and in Poland external mortality is low and the social differences are diminishing, though violent death among men on a low level of education today is still double the level of men with higher qualification *(Fig. 13)*.

The tendencies among women are basically the same, though at much lower levels of mortality. Special attention has to be paid to the slow decrease of mortality due to circulatory diseases and the increasing mortality from cancers among less educated women *(Fig. 14)*.

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HOMEPAGES

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http://data.euro.who.int/alcohol/ – Alcohol control database, WHO Regional Office for Europe

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