6.

SOCIAL DISPARITIES IN HEALTH

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MAJOR FINDINGS

- In 2009, the health of the different groups of Hungarian society varied considerably. Health is closely correlated with education and income. The lower the education or income, the more likely it is that health deteriorates. Taking a five-grade income chart as a basis, the health of people in the lowest two quintiles is especially poor.
- In the period between 2001 and 2009, the only social group in which health did not deteriorate was that of middle-aged persons with higher education. At the same time, the situation changed for the worse among those between 25 and 54 with primary education or less to an especially great degree.
- According to the latest health survey, in 2009 people reported to suffer from 2.8 health complaints on average. The most frequent of them was high blood pressure which 32.5 per cent of the respondents were aware of. Then came musculoskeletal disorders and mental health problems.
- Compared to men, women more often complained about chronic depression, anxiety, and high level of cholesterol and less frequently about diabetes, heart attack, and stroke.
- Controlled for age, there were no considerable social differences in the frequency of high cholesterol, bronchitis, stomach ulcer, and duodenal ulcer. Allergy was more characteristic of persons of higher social status. All the other complaints (symptoms) were, however, mentioned more often by those with lower social status.
- In the case of complaints more frequent among persons of lower social status, the level of education made a major difference as regards high blood pressure, chronic anxiety, and diabetes, whereas in the case of arrhythmia, cardiac infarction, and tumours it is the level of income that matters more. In the case of other diseases or issues both factors were influential. In the field of secondary prevention, taking blood pressure is the only method by which nearly all citizens were covered. Taking part in all other kinds of screening tests shows considerable social differences. As regards gynaecological screenings, the participation of women with lower education is significantly lower than the average. Participation in vaccination against influenza correlates with income, just like measuring cholesterol level. As regards the latter, the least well-to-do 40 per cent of the population is in an especially detrimental situation. The likelihood of testing blood-sugar level depends not so much on income but rather on education.

SELF-RATED HEALTH

Measuring health status by questionnaires is most frequently based on subjective assessment of health. The evaluation of health is, in fact, a rather complex analysis during which several facets of well-being known by the evaluators themselves are taken into account. Although the basis of this evaluation is subjective, by our current knowledge it still offers a complex and useful measure of health at population level with some restrictions. In follow-up surveys covering both self-rated health and the subsequent risks of death, a close correlation was found between the two (Idler–Benyamini 1997; Quesnel-Vallée 2007). This subjective evaluation of health does not lend itself to international comparison but the comparison of subsequent similar surveys within the same country shows actual trends.

According to the latest health survey[1], the proportion of those who think they are not in a good health is very high in Hungary. In 2009, 41.1 per cent of men and half of women above 16 rated their health as belonging to categories 3, 2 or 1, i.e. having only fair, poor or very poor health on a scale of five with 5 meaning 'very good' and 4 meaning 'good' (Table 1).

Table 1. ***Rate of persons in less than good health in Hungary among persons above 16, 2009, %***

Age groups	Men	Women
16–24	7.9	12.1
25–34	16.7	14.6
35–44	29.4	33.3
45–54	47.9	55.1
55–64	68.2	72.5
65–74	78.0	79.2
above 75	78.6	90.0
Total	**41.1**	**50.0**

Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

Table 2. ***Less than good health by education and income, age-standardized rates , %***

	Level of education				Income levels					
	up to 8 grades of primary school	voca-tional school	secondary school graduation	higher education	lowest	lower middle	middle	upper middle	high	total
Men	57.7	45.7	35.6	26.3	53.8	48.3	39.1	38.1	29.6	41.0
Women	61.8	56.4	46.9	31.1	60.2	52.3	48.5	47.4	38.7	49.9

Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

In this chapter, we focus on the impact of social differences on self-rated health. We will analyze health status and its changes by sex and two especially important social factors, namely the level of education and the financial position of the persons involved.

[1] This chapter is mostly based on data from the „KSH Európai Lakossági Egészségfelmérés" (ELEF) (Hungarian Central Statistical Office, European Health Interview Survey). The survey took place in October and November, 2009 on a sample of the population above 16 not living in institutional households.

Among men with at best primary education, 53 per cent complained about not satisfactory health, while this proportion among men with higher education was merely 27 per cent. However, it has to be taken into account that the answers given to this question greatly depend on the age of the respondents. As the age distribution of the population greatly differs among the different educational and income groups, pure proportions can be misleading. Table 2 shows, therefore, standardized values, calculated on the basis of crude rates characteristic of the various age-groups. A given group would produce such results only if its age composition were the same as that of the whole interviewed population.[2] According to the standardized rates, 57.7 per cent of men with the lowest level of education consider their health not satisfactory, while this rate is less than half of the previous one (26.3 per cent) among men with higher education. Standardized rates for women show a slighter difference by education than non-standardized ones, i.e., "only" twice as many women consider themselves to be in non-satisfactory health among the least educated as in the most educated group.

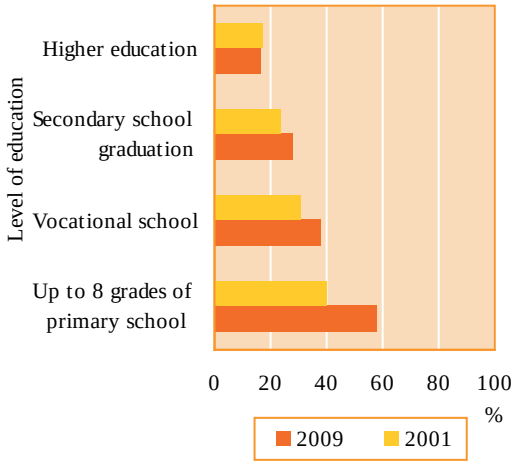
Analyzing health by the financial status of the respondents' families, 30 per cent of men belonging to the wealthiest quintile and 39 per cent of women in the same category did not find their health satisfactory. This rate slightly but unevenly rises with the deterioration of the financial background. There is a considerable difference between the richest quintile and the other categories but there is no significant difference between the middle and the upper middle quintiles. As regards both sexes, the two categories at the bottom again lag largely behind, with 50 to 60 percentages of them reporting non-satisfactory health. In the case of men, the chances of good health in the middle and lower middle quintiles are divided from the higher categories by a greater rift, whereas in the case of women, the highest and lowest quintiles are separated from the others the most (Table 2).

Comparing the recent results with earlier surveys, one finds that the general state of health slightly deteriorated between 2001 and 2009.[3] Viewing our data from a slightly different angle, self-rated health improved only among the middle-aged with higher education during these eight years, and even there not to a great extent, whereas the rating of those with at most primary education in the same age group dramatically deteriorated (Fig. 1). Among older generations, for whom we have comparative data for the age group 55–74, the deterioration is small and similar in all educational categories, except for those with higher education, whose self-rating was not really worse in 2009 than before (Fig. 2).

[2] For the present study, we calculated the rates for the whole population above 16 in order to make the results concerning the level of education and income comparable. At the same time, this method somewhat reduces the differences in health by the level of education , since the youngest age groups appear in the category of low education where the state of health is generally rather good.

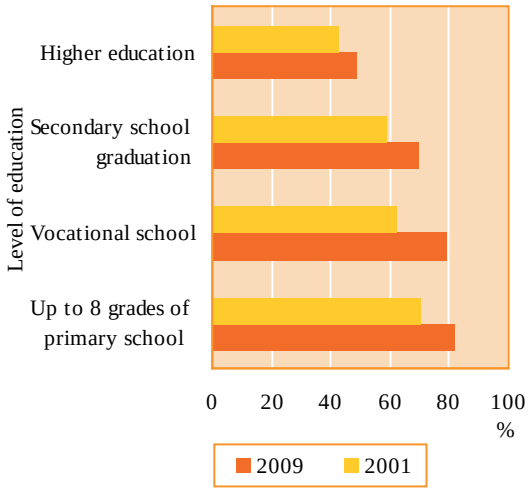
[3] The comparison was made between data from the panel survey Turning Points of the Life Course taken by the Demographic Research Institute HCSO in 2001 and data from the European Health Interview Survey of the Hungarian Central Statistical Office taken in 2009. The comparison was not done using exactly the same criteria as the other calculations presented in this chapter which are based on the latter source.

Fig. 1. ***Age-standardized rates of having less than good health in 2001 and 2009 by education in the age group 25–54***



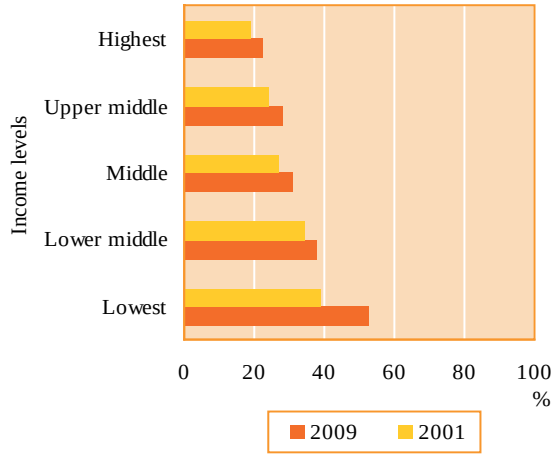
Source: Turning Points of the Life Course, demographic survey, Demographic Research Institute, 1st wave (2001), and Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

Fig. 2. ***Age-standardized rates of having less than good health in 2001 and 2009 by education in the age group 55–74***



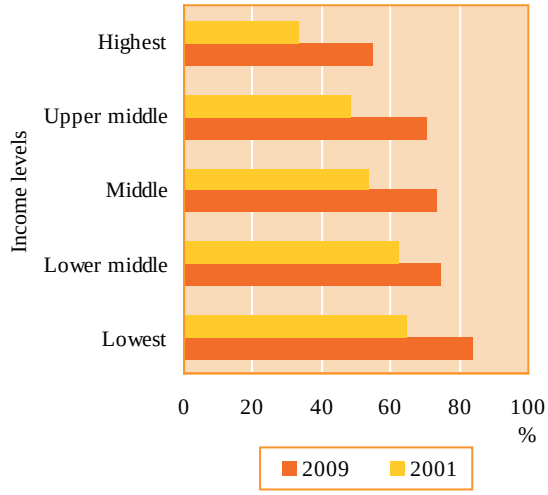
Source: Turning Points of the Life Course, demographic survey, Demographic Research Institute, 1st wave (2001), and Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

Fig. 3. ***Age-standardized rates of having less than good health in 2001 and 2009 by income in the age group 25–54***



Source: Turning Points of the Life Course, demographic survey, Demographic Research Institute, 1st wave (2001), and Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

Fig. 4. ***Age-standardized rates of having less than good health in 2001 and 2009 by income in the age group 55–74***



Source: Turning Points of the Life Course, demographic survey, Demographic Research Institute, 1st wave (2001), and Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

The analysis by income similarly indicates that the health of the middle-aged under the worst financial conditions deteriorated the most. According to the data for 2001 in Fig. 3, the lower the income, the higher the rate of those in non-satisfactory health. In 2009 the rates were only slightly worse in all income categories with the exception of persons in the lowest quintile, among whose the deterioration of health was outright dramatic. By 2009 the rate of being in non-satisfactory health in this relatively young age group had exceeded 50 per cent.

Among the elderly, the rate of those not satisfied with their health grew in all income categories. At the same time, a certain levelling took place among the quintiles (Fig. 4). The income gradient did not disappear but got toned down as a result of the fact that in higher income groups health evaluation worsened to a greater degree than among the poorer. Self-rated health surveys are, in fact, complex indicators of health status in general. At the same time, it is worth while examining the exact diseases or complaints leading to this highly unfavourable picture of health in contemporary Hungary.

COMPLAINTS AND DISEASES

The European Health Interview Survey database provides us with an opportunity to explore the range of various health problems.[4] This chapter reviews the data regarding all health complaints interviewed persons suffered from in their lifetime. Only 29 per cent of the respondents declared that they had no diseases or any health problems and they had never had any. Nearly 20 per cent mentioned one problem and another 12 per cent mentioned two, while the others more than that. The average number of problems was 2.8 (2.3 for men and 3.1 for women).

So what are the most common health complaints or diseases? To the question whether the person had suffered from a problem for a longer period or had had conditions known to be damaging to health, the most common answer (coming from nearly 30 per cent of the respondents) was high blood pressure (Table 3). Over one fifth of the respondents suffered from musculoskeletal disorders and more than 10 per cent had allergy, arrhythmia or high cholesterol level, and another 10 per cent suffered from neck pain or headache. At the bottom of the list of conditions cirrhosis of the liver can be found with a 1.2 per cent prevalence. It is probably the last category where data are the least reliable as the respondents did not necessarily admit their disease even though they were aware of it. Taking this possibility of bias into consideration, reporting about cirrhosis is more frequent than expected. This fact suggests that the reporting on other health problems must be near the actual situation, i.e., the respondents gave account of all health problems they were aware of. When evaluating these data, however, one must keep in mind that they refer to recognised health problems and not to the actual occurrences.

4 The survey listed a wide array of possible conditions and asked whether the respondents experienced them. It was also possible to indicate other complaints that were not included on the list.

Table 3. ***Frequency of reporting on having (or having had) illnesses and complaints , %[5]***

Complaints, illnesses	Total population (n=5054)	Men (n=2356)	Women (n=2695)
high blood pressure	*32.5*	*29.9*	*34.9*
backache	*31.2*	*30.6*	*31.8*
rheumatism, arthritis	24.7	19.5	29.3
arthrosis	*23.6*	*21.2*	*25.6*
strong headache	17.5	11.9	22.4
neck-ache	17.4	13.6	20.7
allergy	*16.4*	*13.7*	*18.7*
arrhythmia	*14.5*	*10.5*	*17.1*
high cholesterol level	*12.8*	*10.4*	*14.3*
chronic anxiety	*8.6*	*5.2*	*11.5*
diabetes	*8.3*	*8.6*	*8.1*
stomach ulcer or duodenal ulcer	*8.2*	*6.6*	*9.7*
osteoporosis	8.0	3.4	12.1
coronary issues, angina pectoris	*7.2*	*5.9*	*8.4*
asthma	*6.5*	*5.7*	*7.3*
chronic bronchitis	*6.4*	*5.1*	*7.4*
chronic depression	*6.2*	*3.7*	*8.4*
incontinence	5.2	3.5	6.8
other heart problems	4.5	3.8	5.0
cardiac infarction, heart attack	*4.2*	*4.4*	*4.1*
malignant tumour	*3.6*	*2.6*	*4.5*
other mental health problems	3.4	2.9	3.8
lasting conditions due to injuries or accidents	2.8	3.6	2.2
stroke	*2.8*	*2.9*	*2.6*
cirrhosis of the liver	1.2	1.0	1.4

Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

Frequencies in Table 3 represent life prevalence, therefore these rates could be expected to rise with age. However, the results are different in some cases. For example, asthma occurs almost evenly in all age groups (5–6 per cent), except for the age group 55–64 where it is much higher (around 10 per cent). Chronic bronchitis is getting slightly more frequent in parallel with the rise of age but its gradual growth is broken again by a sudden leap among those between 55 and 64.

[5] Table 3 contains all health complaints that were included in the European Health Interview Survey. The specific problems to be dealt with later in this study in detail are printed in italics.

The frequency of the majority of diseases or health issues rises, however, with age. For example, that of cardiac infarction and angina pectoris, which in this case equals the chance of survival, is strongly related to age, or even can be said to grow exponentially with age. The frequency of high blood pressure (and of stroke) also increases with age, from 4.1 and 0.2 per cent in the youngest age group to 70.8 and 6.7 per cent in the oldest, respectively. Arrhythmia is mentioned by 1.4 per cent in the former and by exactly one third in the latter age group. In the case of arrhythmia, a regular increase can be observed just like in the case of 'other heart problems' but the growth is not steady. Among those under 44 it remains below 1 per cent, whereas among people above 44 it grows dynamically from 3.6 to 14.8 per cent.

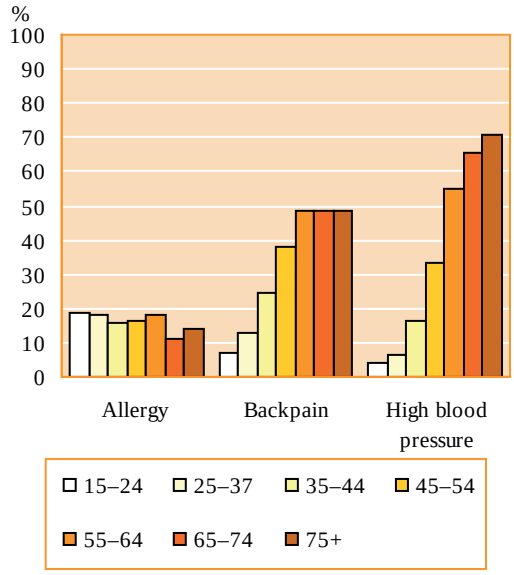
High cholesterol level can be found at 0.5 per cent of the age group 16–24 and at 25 per cent of those between 65 and 74. The rate rises steadily in parallel with age but in the oldest age group it falls back to 21 per cent. The rate of mentioning diabetes similarly grows in parallel with age (from 0.9 to 20.9 per cent) but is lower again in the highest age group. Osteoporosis shows a similar pattern.

Rheumatism, arthritis, and neck-ache are likely to occur in an evenly growing rate with age but backache differs a bit. It steadily grows from 6.8 per cent in the age group 15–24 to 48.6 per cent in the age group 45–54 but remains nearly on the same level in higher age groups, too.

The frequency of stomach and duodenal ulcer steadily increases with age (between 2.3 and 13.4 per cent). The occurrence of cirrhosis seems to be very low and rises above 1 per cent only in the age group 55–74.

Younger age groups make mention of malignant tumours in 0.3 per cent, whereas 8.4 per cent of the oldest age group spoke of it. Their frequency rises with age in the rest of the age groups.

Fig. 5. ***Three characteristic age-specific patterns: the rates of appearance of allergy, back-pain, and high blood pressure by age groups***



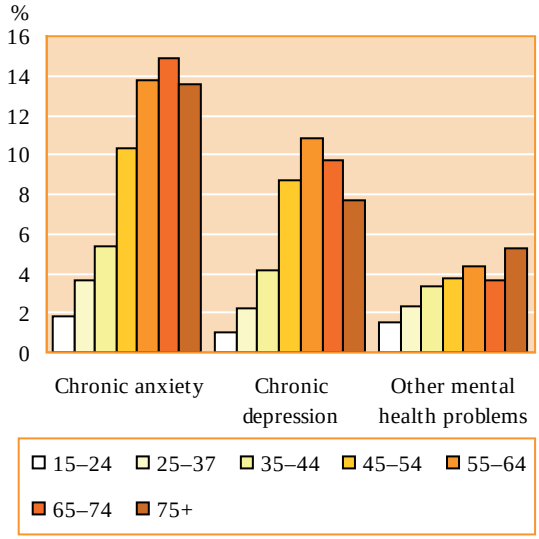
Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

The rate of strong headaches, however, does not increase with age. Although it is slightly less frequent in the age group 16–34, it fluctuates between 16 and 20 per cent among persons older than 35. Similarly, allergy does not become considerably more common with age. In fact, it is slightly more frequent among those between 15 and 64 than among those above 65.

Incontinence is very rare among the young but in the age group 45–54 it is already present with 3.3 per cent and its frequency gradually increases with age, reaching 20.5 per cent in the age group above 75.

Chronic anxiety and depression get more frequent with age but their frequency remains much the same in older age groups (Fig. 6).

Fig. 6. ***Frequency of occurrence of mental problems (chronic anxiety, chronic depression, other mental health problems) by age***



Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

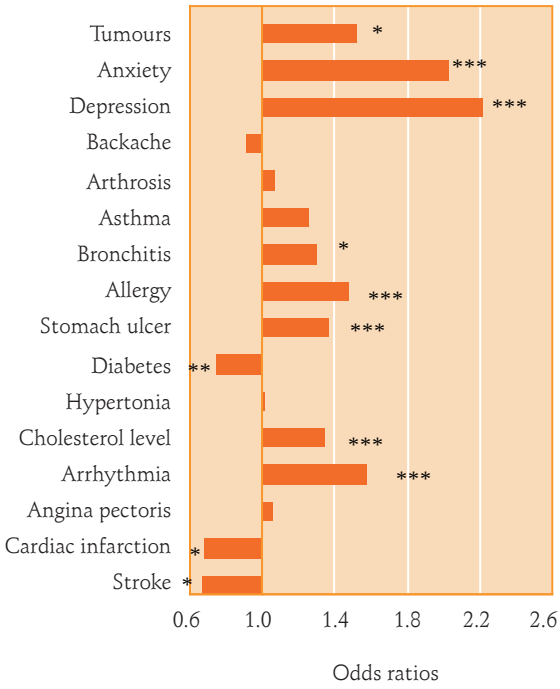
The rate of permanent health deterioration due to injuries and accidents among persons aged 16 to 24 is 0.2 per cent, while in the age group 75+ it is 5.6 per cent. Frequency grows gradually with age according to the expected pattern.

Thus in the case of most health complaints the rate increases in parallel with age, especially in those cases (asthma and backache excepted) whose social pattern we are going to analyze in detail later. Therefore, if wanting to examine the various complaints along the lines of gender and the two social factors on which we are focusing now, i.e., education and income, we have to take into account also their differences in age distribution. We also have to separate the often overlapping effects of sex, education and income. The results of the multi-variate analysis based on these criteria[6] are shown in Figs. 7, 8, and 9 as regards the most frequent health problems or the ones important from some other special point of view.

Controlling for the effects of age, education, and income, and comparing the frequency of complaints among men and women, one can find (Fig. 7) that men face a lower risk of backache and diabetes, as well as of becoming survivors of cardiac infarction and stroke. The results on backache, however, are not significant as indicated by the lack of asterisks in Fig. 7. All other complaints are more likely to appear among women but this can be established for sure only in the case of headache, chronic anxiety, chronic depression, allergy, and arrhythmia. It is less certain that women are more frequently informed about high cholesterol level or have stomach or duodenal ulcer and tumours (or are survivors of cancer). The high rate of healed breast cancers among middle-aged women may contribute to the last-mentioned result.

[6] In the course of multi-variate analyses the factors influencing the frequency of health issues (dependent variables) were examined in logistic regression models containing age, sex, education, and income as independent variables. Figs. 7, 8, and 9 show odds ratios resulting from the various models. Odds ratios compare frequencies in two groups. If the frequency is p1 in one of the groups, then the risk in this group is p1/(1-p1). In another group, in which the frequency is p2, the risk is p2/(1-p2). In this case the value of the odds ratio is p1/(1-p1):p2/(1-p2). In logistic regression analyses the value of these odds ratios can be calculated with respect to a so-called reference group. Odds ratios higher than 1 mean higher frequency than in the reference group, and values smaller than 1 mean less frequent incidence.

Fig. 7. ***Risk of the occurrence of certain complaints or diseases among women as compared to men, odds ratios controlled for age, education, and income (men=1)***



*: p < 0.05, **: p <0.01, ***: p< 0.001

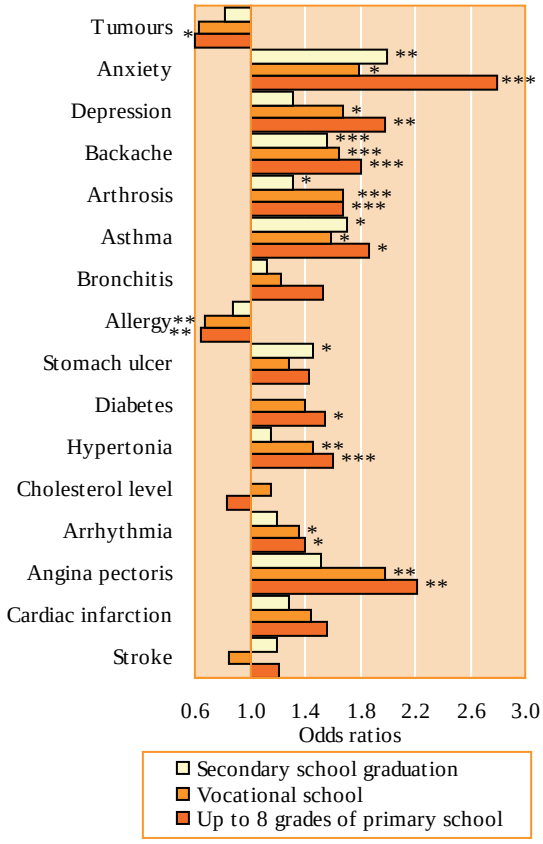
Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

Examining the risk of having complaints and diseases by education controlled for the influence of the other modifying factors considered here, e.g., sex, age, and income (Fig. 8), it becomes immediately striking that the chances of persons with higher education to be ill are higher only in the case of two diseases: allergy and cancer. If highly educated persons are taken as the reference group, these cases are represented in Fig. 8 with a value lower than „1" for other educational groups. In other words, persons without college or university diplomas suffer from allergy and cancer less frequently. In the case of those with at best eight grades of elementary school this relation is significant. Those with vocational training also have a significantly lower risk of suffering from allergy. Interpreting the results on cancer is, however, difficult since the label of 'cancer' covers different kinds of tumorous diseases and the results can be modified by the various chances of survival by cancer types and education.

In the cases of having and surviving cardiac infarction and stroke no statistically significant correlation can be found between the risks and education. There is a statistically weak correlation between education and arrhythmia but a very strong one between education and angina pectoris. Persons with at best eight grades of primary school have two times higher odds to suffer from it than those with higher education.

It is conspicuous that social differences are not always reflected in the frequency of complaints that are the very risk factors of cardiovascular diseases. There is a statistically strong correlation between education and high blood pressure: among those with eight grades of elementary school the risk is 60 per cent higher than among those with higher education. High cholesterol level is, however, not more frequently mentioned by the former than by the latter, which probably indicates only that persons with a lower level of education are less aware of that risk. Considering musculoskeletal disorders, a strong statistical correlation can be seen between having complaints and education. The risk of suffering from these problems among persons with vocational training is higher by 40 to 65 per cent and among those with at most eight grades of elementary school by 65 to 80 per cent, compared to the reference group. As regards respiratory problems, reporting on bronchitis shows no considerable educational differences but the chance of reporting on asthma is 60 to 80 per cent higher in all other educational groups compared to people with higher education.

Fig. 8. ***Risk of having certain diseases by education. Odds ratios controlled for sex, age, and income. (Persons with higher education = 1)***



*: p < 0.05, **: p <0.01, ***: p< 0.001

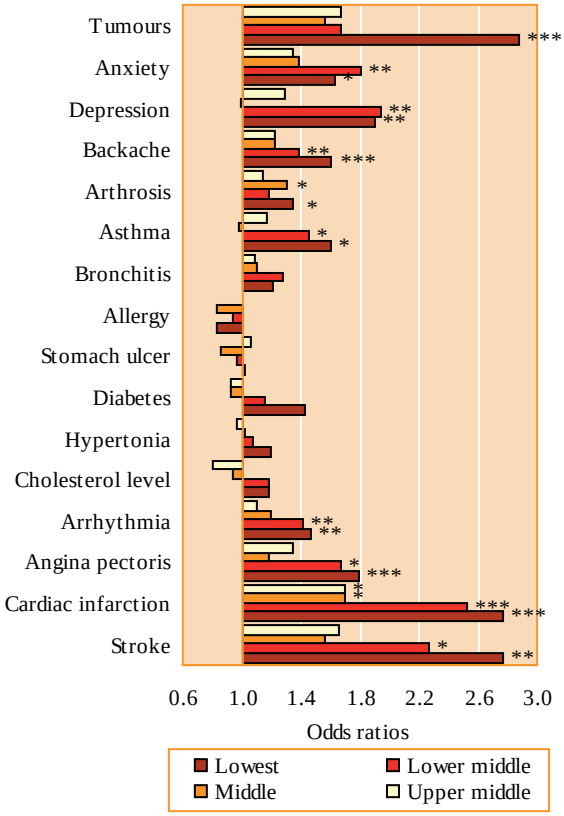
Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

The greatest differences can be found in the cases of mental health problems. The risk of suffering from chronic anxiety is by 160 per cent higher among the less educated as compared to those with higher education, and even those with vocational training complain by 80 to 100 per cent more frequently of experiencing this problem than those in the reference group. The occurrence of chronic depression differs less but those with the lowest education have a 100 per cent higher chance for suffering from depression than those with university or college degrees.

Analyzing risks by income (Fig. 9), the disadvantage of the lowest two quintiles on the income scale are the most conspicuous in the case of arrhythmia, angina pectoris, cardiac infarction, and stroke. The chance of these conditions to appear is by 40, 60, 150, and 120 per cent higher, respectively, in the lower middle income quintile and by 50, 80, 185, and 180 per cent higher in the neediest quintile than among those with the highest income. As regards cardiac infarction, not only the two lowest but also the middle quintile is much more endangered than the wealthiest one. To sum up, income seems to play the greatest role in the risk of cardiovascular diseases. However, there are no similar differences as regards reporting on risk factors leading to such diseases: the rate of persons informing the interviewers about high blood pressure, high cholesterol level, and diabetes is nearly the same in all groups. These results call attention to the question of awareness concerning these risk factors to be dealt with later. The rate of those in the lowest quintile who suffer from tumours is significantly higher than in the other categories but there are no significant differences among the rest of the income range. While in the case of most complaints and diseases it can be presumed that low income plays a casual role in the appearance of the problems in question, in the unique case of those suffering from cancer (who are in all probability the survivors) the relation can be the opposite, namely the burden of the disease and the costs of curing may contribute to a family getting into poor financial conditions.In the case of stomach and duodenal ulcer, chronic bronchitis, and allergy there are no significant differences in risks by income. However, musculoskeletal

complaints and asthma occur with a 40 to 60 per cent higher chance among persons in the lowest two income quintiles. Mental health problems show an even greater difference. Chronic anxiety and chronic depression similarly inflict persons in the lowest two income quintiles with a 60 to 80 per cent higher chance than the wealthiest.

Fig. 9. ***Risk of having certain diseases by income. Odds ratios controlled for sex, age and level of education. (Persons with higher education = 1)***



*: p < 0.05, **: p <0.01, ***: p< 0.001

Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

PARTICIPATION IN SCREENINGS, THE USEFULNESS OF BASIC METHODS OF PREVENTION

The considerable disadvantages of the less educated and the poorest can be partly attributed to their lack of knowledge about the healthy life style and partly to the lack of the financial means to realize their aspirations. Health care embracing the total population and offering uniform service for all can partly counterbalance these disadvantages. This last chapter, therefore, will examine a small but significant portion of health care, namely, secondary prevention. The usage of different secondary prevention options and their role in health maintenance will be analyzed in detail. The following short overview examines those important activities in secondary prevention about which information is available from the health survey. In particular, we are interested in which groups of the Hungarian society were covered by the most important screening procedures prior to 2009 and where the most important insufficiencies appear in this respect.

From the point of view of explaining social inequalities in health and mortality, the issue of non-equal knowledge about health, prevention and medical treatments comes more and more to the fore (Link, 2008). According to several approaches trying to explain the origin of these inequalities, the socially different spread of knowledge and the similarly different growth of the availability of new curative technologies are the basic factors of creating the inequalities in health and mortality. Besides being determined by personal financial means, availability is largely determined by the complexity of the service both as regards technology and accessibility (Rust et al, 2010). According to this approach, morbidity

and mortality will be influenced mostly by the simplest technologies available in the framework of general medical care. As regards medical technologies, this time only the utilization of prevention-type services will be considered.

Table 4. ***Age-standardized rate of persons who have never participated in certain screenings by education, %***

	Up to 8 grades of primary school	Vocational school	Secondary school graduation	Higher education	Total
			Men		
taking blood pressure	7.9	5.2	5.4	3.8	5.6
taking cholesterol level	50.8	41.2	34.4	29.1	40.0
taking blood-sugar level	41.8	33.9	27.5	24.7	32.6
screening for colon cancer**	86.5	88.6	86.4	87.7	86.1
vaccination against influenza	77.1	78.0	72.3	73.3	75.4
			Women		
taking blood pressure	3.7	4.2	4.8	3.4	4.0
taking cholesterol level	42.8	33.7	26.3	23.2	32.5
taking blood-sugar level	29.7	22.8	20.1	14.5	23.1
screening for colon cancer**	88.1	84.7	85.8	79.4	86.1
vaccination against influenza	77.6	72.8	68.8	74.8	73.0
cytological screening**	37.0	21.1	21.3	22.4	28.0
mammographic screening*	39.3	28.6	23.2	18.7	30.1

* aged 40 and above
**aged 45 and above
Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

The picture taking shape from the data of the National Health Survey on the situation in Hungary is highly uneven. The overwhelming majority of the respondents (a sample representing the total population aged 16 and older) is aware of their blood pressure having already been taken by a health personnel: 95 per cent of men and 96 per cent of women responded so. There were slight social differences among men as regards taking blood pressure. The respective rate in the lowest income quintile was 92 per cent, while it was 96 per cent in the wealthiest one. So the difference is negligible among men and completely insignificant among women (Table 5).

Recalling the taking of cholesterol level is much less general. 60 per cent of men and 68 per cent of women mentioned having taken part in such an examination in their lifetime and there were significant social differences in the rates, especially by education.

Participation in cytological screening among women is similarly widespread: 71 per cent mentioned having taken part. Differences by social status are significant: the rate of participation is 20 per cent higher

among women with higher education than among those with elementary schooling.

Mammographic screening is much less widespread than cytological screening. Only 51 per cent of the female respondents recalled taking part in such a screening, and the rates varied heavily by education.

From attendances in preventive tests the laboratory test for detecting colorectal tumours was the least frequently mentioned one.[7] Only 8 per cent of interviewed men and 10 per cent of women had ever taken such a test. The probability of participation considerably grows with age. Whereas in younger age groups it is merely 3 to 6 per cent, it is 17 per cent among women and 21 per cent among men in the oldest age group. The participation rate among the poorest men is especially low. In the case of women the probability of participation rises in parallel with social status.

Table 5. ***Age-standardized rate of persons who have never taken part in certain screening tests by household income, %***

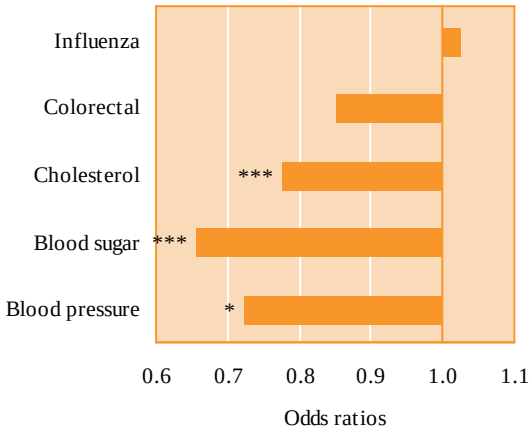
	Lowest quintile	Lower middle quintile	Middle quintile	Upper middle quintile	Highest quintile	Total
Men						
taking blood pressure	8.1	4.8	6.6	4.2	4.2	5.6
taking cholesterol level	48.7	43.6	38.1	36.8	35.1	39.8
taking blood-sugar level	37.2	37.8	29.1	31.6	30.8	32.6
screening for colon cancer**	87.6	84.9	86.5	86.9	87.5	87.2
vaccination against influenza	78.1	76.6	77.1	76.1	71.2	45.6
Women						
taking blood pressure	4.8	4.3	3.1	3.7	3.9	4.0
taking cholesterol level	42.8	34.9	31.7	29.8	24.1	32.6
taking blood-sugar level	29.8	23.1	22.5	24.7	16.1	23.1
screening for colon cancer**	90.4	86.9	89.1	84.9	89.1	86.1
vaccination against influenza	78.7	75.3	74.0	71.9	68.2	73.0
cytological screening**	28.2	33.3	29.2	23.6	25.3	28.0
mammographic screening*	41.9	34.9	28.2	28.5	24.8	30.1

* aged 40 and above
**aged 45 and above
Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

[7] *The ELEF asked about participation in a "scatological test to diagnose bleeding" which is only one type of colorectal screening, though it is the professionally recommended method of such a screening in Hungary.*

After eliminating the influence of age, education and income (Fig. 10), using the same method as in the previous chapter, it can be established that women are more conscious about taking blood pressure, cholesterol level and blood-sugar level. As regards vaccination against influenza, gender differences are not significant.

Fig. 10. ***Chances of women for not participating in a given form of prevention as compared to men (odds ratios, men = 1)***

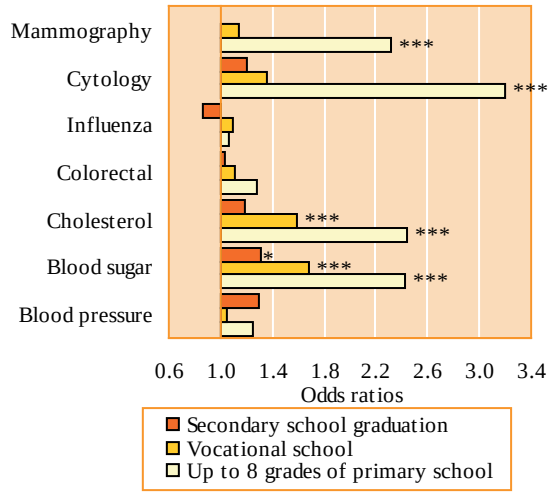


Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

Participation in screenings was also examined by education and income. Eliminating the effects of sex, age, and income, it becomes clear that education has no significant role in the cases of the less wide-spread colorectal tests and the moderately wide-spread vaccinations against influenza, just as regarding the almost general blood pressure measurement. The mentioning of the moderately wide-spread taking of the cholesterol level and blood-sugar level is, however, highly different by respondents' education. Secondary-school graduates had their cholesterol level taken almost to the same degree as persons with higher education but the participation of those with vocational training or elementary school was much lower (see Fig. 11).

The frequency of not participating in blood-sugar testing gradually rises as level of education drops. In the case of gynaecological screenings, the outstandingly high odds ratios of women with at most elementary education are conspicuous, i.e., this social group stays away from being screened especially frequently.

Fig. 11. ***Chances of not participating in a given form of prevention by level of education (odds ratios, persons with higher education = 1)***

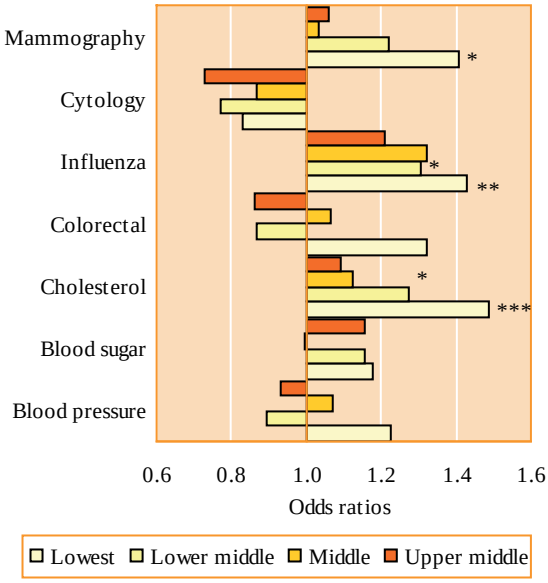


Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

After eliminating the effects of sex, age, and education, it seems that income influences participation in preventive screenings only in two cases. The poorest, mostly those in the lowest income quintile - but to a smaller extent also those in the lower-middle quintile, too - have a great risk of not having (or not being able to recall) their cholesterol level taken. Differences in income influenced also

vaccination against influenza, which mostly results from the income-related participation of women. It has to be mentioned that influenza vaccination is the only form of prevention in Hungary among the enlisted ones that is not for free, though some professions and age-groups are vaccinated without charge.

Fig. 12. ***Chances of not participating in a given form of prevention by income (odds ratios, highest income quintile = 1)***



Source: Hungarian Central Statistical Office, European Health Interview Survey, 2009, author's calculations.

To sum up, one can establish that blood pressure is routinely taken during regular family doctor visits, thus this procedure is widespread. Those who "stay away" from this procedure most probably belong to the youngest generations. Although the taking of the blood-sugar and cholesterol level is usually also connected to the general practice, since it is done on the advice of the family doctor, the patients generally have to go to a laboratory for completing this procedure at least twice, then back to the family doctor to consult about the result. Patients usually become aware of the fact that a risk factor might be present only in the last phase of the process. They must, therefore, be very conscious with regard to their health to go on with the whole process, as reflected by the strong discrepancy among persons on the various levels of education.

Vaccination against influenza is similarly available at the family doctor but for most people it is not free, which leads to differences in its use by income.

Gynaecological screening in Hungary is done by specialists and patients need a referral. The system of referring or inviting people for gynaecological screening has changed in Hungary several times in the past decades (Döbrőssy et al, 2012) and become largely confusing. The difficulties of getting one's bearings in the health care system may explain the high risk of staying away from screenings among women with a low level of education.

So the complexity of participating in screenings is heavily reflected in the rate of the persons reached and in the social pattern of participation. The most successful in this respect are the two forms of prevention available for patients visiting family doctors.

On the other hand, it can be presumed that the Hungarian population participated in certain types of screening tests to a greater degree than indicated by the survey (primarily in testing the blood-sugar and cholesterol level). But if the patient is not aware that such a screening took place or what its results were, the screening was useless, anyway. The significant educational disparities in cardiovascular mortality and the pattern of being aware of these diseases by the level of education revealed by the recent survey suggest that a similar pattern is likely to be present in the case of the risk factors as well. However, in the case of high blood-

sugar level and high cholesterol level we did not get a corresponding pattern. Comparing these results to the opposite pattern in the participation in preventive screenings we may arrive at the conclusion that staying away from screenings or not recalling the results of participation plays a significant role in the high level of mortality due to cardiovascular diseases and in the perpetuation of the strong social disparities in mortality due to these diseases.

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