

4 SOCIO-ECONOMIC INEQUALITIES IN HEALTH AMONG SLOVAK ADOLESCENTS

ABSTRACT

The main aim of this paper is to explore socio-economic health differences during adolescence in Slovakia and discuss findings in comparison with Scottish and Dutch outcomes. Several dimensions of health (psychological health – GHQ-12, vitality and mental health scale of the RAND, experienced health complaints, chronic illness, use of prescribed and non-prescribed drugs, self-reported health, self-perceived vulnerability to illness) were tested for socio-economic health differences using three socio-economic indicators. Two of them are based on the socio-economic status of parents (highest education of parents, highest occupational group of parents) and one of them is based on the socio-economic status of adolescents (type of school they attend). The sample consists of 2616 adolescents (1370 boys, 1246 girls); mean age 15 years.

Adolescents from the highest occupational group of parents score significantly highly in terms of vitality, mental health, experienced health complaints, use of prescribed and non-prescribed drugs, self-reported health and self-perceived vulnerability to illness. Adolescents from the highest educational level attained by parents score significantly highly in terms of experienced health complaints, use of non-prescribed drugs, self-reported health and self-perceived vulnerability to illness. The type of school has a significant relation to mental health, experienced health complaints, use of prescribed and non-prescribed drugs, self-reported health and self-perceived vulnerability to illness. We did not confirm any socio-economic differences in psychological health and prevalence of chronic illness. Apart from the use of non-prescribed drugs, our findings are more unfavourable for lower socio-economic groups. Our findings confirmed poorer health of girls in comparison to boys. There are no gender differences with regard to socio-economic differences in health. Substantial inequalities in health according to SES can be found among Slovak adolescents.

Key-words

socio-economic health differences, socio-economic status, adolescents, Slovakia

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INTRODUCTION

Socio-economic differences in health have attracted a lot of attention since the Black Report was published (*Townsend and Davidson 1982*). A number of studies demonstrate the association of health with socio-economic status (SES), i.e. lower SES individuals or groups tend to have poorer health. Equity in health is one of the main aims of the WHO programme on health policy "Health for all" (*1990*). A review of the relevant literature is offered by Mackenbach (*1992*), Mackenbach and Kunst (*1997*), West (*1997*). In 1990 (*Wnuk-Lipinski and Illsley 1990a, Wnuk-Lipinski and Illsley 1990b*) the findings about socio-economic differences in health from non-market economies were published. Bulgaria (*Minev et al. 1990*), Czechoslovakia, Hungary (*Szalai 1986, Orosz 1990*), Poland (*Wnuk-Lipinski 1990, Dutch and Sokolowska 1990*) and the U.S.S.R. (*Mezentseva and Rimachevskaya 1990*) were included in this project. Kunst (*1997*) also focused on the West-Central comparison of socio-economic differences in health. Socio-economic differences in health in the former Czechoslovakia, that is in the Slovak and Czech Republics, were explored by Sobotik (*1992*), Sobotik and Drbal (*1992*), Sobotik and Rychtarikova (*1992*), Urban and Horna (*1992*), Bobak et al. (*1994*), Ginter et al. (*1995*). The surveys were concerned with socio-economic differences in health in adulthood. The findings about socio-economic differences in health in adulthood in Central or East Europe, particularly in Slovakia, in comparison to West Europe can be summarised as follows: socio-economic differences in health are similar or larger in Eastern and Central European countries in comparison with Western European countries. Lower socio-economic groups are more affected (*Kunst 1997*).

In the discussion about socio-economic differences in health, adolescence seems to be a very interesting issue. It seems to be that youth, in contrast to childhood (*Bor et al. 1993*) or adulthood (*Lahelma and Valkonen 1990, Ford et al. 1994, Kaplan et al. 1996, Power and Matthews 1997, Kunst 1997*), is characterised more by the absence than presence of class gradients in health. Social class differentials re-emerge quite dramatically after this relative equalisation in youth (*West 1988, West et al. 1990, Bor et al. 1993, Rahkonen et al. 1995, Tuinstra 1998*). The several explanations of socio-economic differences in health, particularly the absence of socio-economic health differences in adolescence (social causation, health selection, artefact/ buffer, latent differences) are discussed by West (*1991*), Stronks (*1997*), Tuinstra (*1998*).

However, adolescence is a "hot subject" in the socio-economic health differences debate, and we know nothing or very little about socio-economic health differences in Central European adolescents, particularly Slovak adolescents. Previous studies

on this subject are not known to us. Our paper will extend the discussion about socio-economic health differences in adolescence beyond the borders of Western European countries.

Our study is part of an international comparative longitudinal study “Comparing Social Patterns in Health between Western and Central Europe in Adolescence”. The Netherlands, Scotland and Slovakia have been participating in research into comparing social patterns in health in adolescence in the countries mentioned.

The Scottish participation in this project is based on “The Study of Youth and Health” (*West 1986*) which is a part of “The West of Scotland Twenty-07 study” (*Macintyre 1987, Macintyre et al. 1989*). It is longitudinal in design and involves 20-year follow-up of three age cohorts, 15, 35 and 55 years at the baseline. The sample of adolescents consists of 1009 respondents from Central Clydeside Conurbation (Glasgow City and 10 surrounding local government districts), mean age 15 years. The same or comparable indicators were used in Dutch study “Health in Adolescence” which is part of the “Longitudinal Study into Social Inequality and Health from Adolescence to early Adulthood” (*Tuinstra 1998*). Baseline data collection was performed in 1994/95 in the northern part of the Netherlands (n=2090, mean age 16,2). The Slovak study uses the same measurement instruments as the Scottish and Dutch studies. Our attention will be focused on following issues:

1. Are there any socio-economic health differences among Slovak adolescents?
2. Are there any gender differences in socio-economic health differences?

MATERIAL AND METHODS

Procedure and respondents

Data was collected in September and October 1998. The sample consists of 2616 first grade students of 31 secondary schools located in Kosice (a city in the eastern part of Slovakia; 240 000 inhabitants). The sample (52,4% boys, 47,6% girls, and mean age 15 years) was stratified according to gender and types of secondary schools; the proportion of the five educational levels of the regular Slovak school system was maintained as shown in Table 1.

Individual schools were selected at random. Respondents completed the questionnaire at school, in their classrooms under the guidance of the field workers. The response rate was 96,3%; the non-response was due to sick leave and other types of school absence. The average occurrence of missing values was 1,1%.

The data was gathered using self-reported questionnaires, which included several measures of SES and health.

Measures of SES

In our survey of socio-economic health differences we used two types of socio-economic indicators. The first one is based on parents: the highest occupational class of the parents and the highest education of parents. The second one is based on adolescents: the type of school they attend.

Highest occupational class of parents

This measure is based on asking adolescents about their father's and mother's current occupation, or their last occupation if they are currently unemployed. The obtained information was transformed into 9 categories of ISCO (1992, 1993). Finally, some categories were combined. According to the classification used, 27,7 % adolescents came from families belonging to occupational classes I. Legislators, senior officials and managers and II. Professionals; 50,1% adolescents came from families belonging to occupational classes III. Technicians and associate professionals, and IV. Clerks and V. Service workers and shop and market sales workers; and 22,3% adolescents came from families belonging to occupational classes VI. Skilled agricultural and fishery workers, and VII Craft and related trades workers, and VIII. Plant and machine operators and assemblers and IX. Elementary occupations.

Highest education of parents

This measure is based on asking adolescents about their father's and mother's successfully completed levels of education. The parents' educational level was classified as: I. university (21,8%), II. secondary high school (50,4%), III. vocational or primary school only (25,4%). We have combined the categories vocational education (24,1%) and primary school (1,2%).

Type of school

Adolescents were divided according to the type of school they attended into the three groups: grammar school students (21,8%), specialised secondary school students (42,4%), and apprentice school students (35,7%).

Education system in Slovak Republic is described in chapter 2.5.

Measures of health

Psychological health was measured by the Slovak version of the 12-item version of the General Health Questionnaire (GHQ), (Goldberg and Williams 1988). The GHQ is a self-reported questionnaire consisting of statements about aspects of well being such as worries, tension or sleeplessness. With each statement, the

current status of the respondent over the past four weeks is compared with his or her normal status by one of four response categories. Two methods of scoring are used; a Likert score (range 0-36) and a binary score (range 0-12). A higher score indicates worse psychological health. The latter score permits the identification of “cases”, or in other words a level of symptomatology of potential clinical relevance. According to Banks (1983), a cut-off point of 2/3 should be used as a criterion for identification of “cases” in adolescence.

Two subscales of the Slovak version of the RAND-36 (Van der Zee and Sanderman 1993) were used to measure **vitality and mental health**. The four items of the vitality scale focus on feelings of energy and fatigue. The scale of mental health has five items representing feelings of depression and nervousness. The respondents were asked to evaluate their feelings over the past four weeks. The scores were transformed following the prescribed formula (range 0-100). A higher score indicates better health status.

Experienced health complaints were measured by the Slovak version of shortened 13-item version of the VOEG (Dirken 1967, Jansen and Sikkel 1994). This questionnaire shows a valid and reliable picture of the current health status, expressed in physical health complaints (Furer et al. 1995). A 5-anchor scale expressing the frequency of suffering from the included health complaints during the last month were used in the Slovak version. A cut-off point of three times and more was used for dichotomization. The sum score of the VOEG, varying from 0-13, was examined. A higher score indicates an occurrence of more types of health complaints.

Chronic diseases were assessed by means of a questionnaire based on the Health Interview Survey of the Dutch Central Bureau for Statistics (1994) the questionnaire used in the Dutch study (Tuinstra 1998). This questionnaire was improved in accordance with the results of a pilot study and accessible data about the prevalence of chronic diseases in adolescence (Sobotik et al. 1994). The questionnaire in the present study provides a selection of fourteen chronic diseases which are most prevalent in adolescence. The respondents were asked whether or not they had suffered from any of these chronic diseases longer than three months. Adolescents were divided into two groups: no chronic diseases/ at least one chronic disease suffered.

The questionnaire of **medicines use** was created specially for the purposes of this study and was based on the questionnaire used in the Dutch sample (Tuinstra 1998). In this paper we examined only whether or not adolescents had used prescribed and non-prescribed drugs during the last two weeks.

Self-reported health was measured by asking the respondents to describe their health as excellent, very good, good, fairly good or bad. The variable was dichotomised (excellent, very good/ good, fairly good or bad). There are many studies confirming the relation between this scale and mortality and morbidity (*Appels et al. 1996*). Despite criticism of subjective health measures, in prospective studies self-assessed health has proved to be a powerful predictor of mortality, whereby the mortality of those who perceived their health as poor is higher than those who perceived their health as excellent or very good (*Mossey and Shapiro 1982, Kaplan and Camacho 1983*).

Self-perceived vulnerability to illness was measured by asking adolescents if they fall ill easier or not in comparison with others. This question allows us to describe adolescents' perception of their vulnerability to illness based on their own experience, but also their health concept or attitudes to health and illness.

The questionnaires are precise translations of the English and in particular the Dutch versions. The validity of the health indicators used was discussed by *Geckova et al. (1998a)*, *Pudelsky et al. (1999)* and *Javorsky et al. (2000)*.

Analysis

The analyses were done using the statistical software package SPSS, version 7.5.2. Two different analyses were used to test the distribution of the health measures between the socio-economic groups for both male and female adolescents. Logistic regression was done for the dichotomised health measures and the analysis of variance was used for continuous health measures. The analysis was computed separately for each SES and health indicator. SES and gender variables were entered simultaneously. We fitted two models: one exploring the main effect of SES, gender on health and the effect interactions between gender and socio-economic status on health and one without the effect of interactions on health.

RESULTS

Several socio-economic indicators based on both adolescents (type of school) and their parents (highest education of parents, highest occupational group of parents), were used to explore socio-economic health differences of Slovak adolescents. Gender differences in health and socio-economic health differences will also be discussed.

Socio-economic differences in health

There are several findings confirming socio-economic health differences among Slovak adolescents, as depicted in Table 13-14.

Table 13 Health – main effects, model without interaction effect (ANOVA)

	Main effect	Health measures (significance)			
		Mean GHQ (RAND)	Mean vitality health	Mean mental health (RAND)	Mean sum of complaints
Highest occup. group of parents	SES	0,228	0,009	0,007	0,009
	gender	0,000	0,000	0,000	0,000
Highest educ. of parents	SES	0,061	0,084	0,204	0,019
	gender	0,000	0,000	0,000	0,000
Type of school	SES	0,058	0,114	0,007	0,003
	gender	0,000	0,000	0,000	0,000

The highest occupational group of parents significantly contributes to the differences in vitality, mental health, experienced health complaints, use of prescribed and non-prescribed drugs, self-reported health and self-perceived vulnerability to illness. The highest education level of parents significantly contributes to the differences in experienced health complaints, use of non-prescribed drugs, self-reported health and self-perceived vulnerability to illness.

The type of school significantly contributes to the differences in mental health, experienced health complaints, use of prescribed and non-prescribed drugs, self-reported health and self-perceived vulnerability to illness. We did not confirm any socio-economic differences in psychological health and prevalence of chronic diseases.

Table 14 Health by SES and gender – main effects, model without interaction effect (Logistic regression)

	Main effect	Health measures (significance)					
		% of "cases" (GHQ)	% reporting chronic diseases	% reporting use of prescribed drugs	% reporting use of non-prescribed drugs	% reporting health "good", "fairly good" or "bad"	% reporting "to fall ill easier"
Highest occup. group of parents	SES	0,323	0,657	0,010	0,000	0,000	0,000
	gender	0,000	0,000	0,028	0,000	0,000	0,000
Highest educ. of parents	SES	0,098	0,976	0,204	0,003	0,000	0,001
	gender	0,000	0,000	0,018	0,000	0,000	0,000
Type of school	SES	0,588	0,553	0,000	0,000	0,000	0,000
	gender	0,000	0,000	0,002	0,000	0,000	0,000

Table 15 Description data of health indicators

		Highest occup. group of parents			Highest educ. of parents			Type of school			Total
		I-II	III-V	VI-IX	univer.	second.	vocat.	gramm.	second.	appren.	
Mean GHQ	m	9,6	9,3	9,2	9,7	9,4	8,8	9,6	9,6	9,0	9,3
	f	11,9	11,4	11,5	11,6	11,5	11,5	11,9	11,5	11,3	11,6
% of "cases" (GHQ)	m	27,3	20,6	26,3	29,7	21,4	23,1	22,2	24,8	23,9	23,9
	f	39,6	41,5	41,5	41,4	40,6	41,9	39,7	40,9	43,4	41,3
Mean vitality (RAND)	m	65,1	65,1	61,2	64,2	64,9	62,8	65,3	64,7	63,2	64,2
	f	57,8	58,0	56,7	57,7	58,3	56,6	59,2	57,0	57,5	57,7
Mean mental health (RAND)	m	67,9	68,4	65,5	67,5	67,9	67,3	68,2	68,7	66,3	67,6
	f	60,8	61,1	58,5	60,9	61,1	58,7	61,7	60,6	58,8	60,4
Mean sum of physical complaints	m	1,6	1,8	2,1	1,7	1,7	1,9	1,7	1,6	1,9	1,8
	f	2,7	2,8	3,0	2,7	2,8	3,1	2,7	2,8	3,1	2,9
% reporting chronic diseases	m	44,4	43,5	42,5	46,7	41,6	43,4	46,2	43,4	41,8	43,3
	f	49,8	54,8	51,8	48,9	54,7	51,8	49,2	50,8	58,7	52,6
% reporting use of prescribed drugs	m	15,4	15,8	22,6	14,5	17,4	18,8	13,2	13,2	22,5	17,2
	f	18,6	20,3	23,9	18,6	21,3	21,3	17,4	19,2	26,3	20,8
% reporting use of non-prescribed drugs	m	24,2	20,9	16,4	24,3	20,5	18,0	27,8	23,5	15,2	20,8
	f	36,6	36,5	25,7	38,7	34,6	28,4	37,4	35,8	27,1	33,7
% reporting health "good", "fairly good" or "bad"	m	26,7	31,6	33,6	26,2	30,2	38,0	24,2	28,6	36,6	31,1
	f	35,1	45,9	53,5	34,8	42,9	56,6	36,5	43,0	55,6	44,9
% reporting "to fall ill easier"	m	12,6	13,0	17,1	12,9	12,1	17,3	9,8	11,9	17,0	13,6
	f	12,9	19,7	27,8	15,6	18,3	25,4	13,2	18,2	27,8	19,7

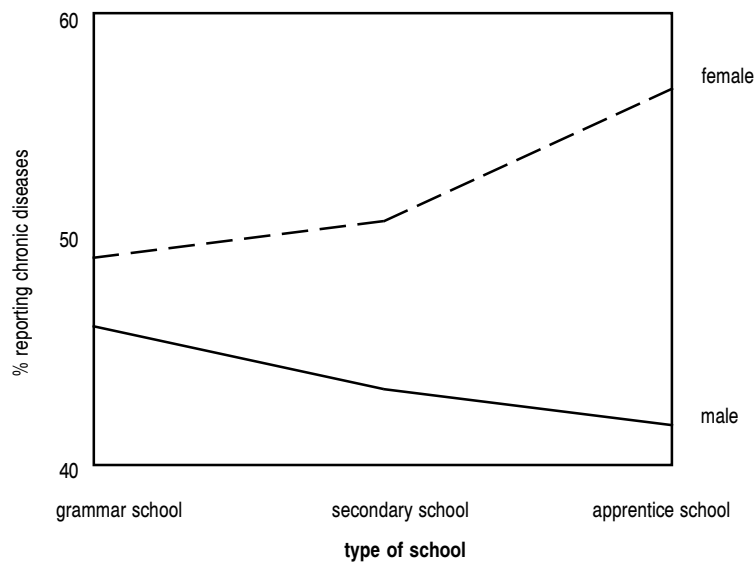
m male f female

As can be seen in Tables 15, our findings are more unfavourable for lower socio-economic groups, except for the use of non-prescribed drugs. Adolescents of lower SES (lower occupational group of parents, lower educational level of parents, lower type of school attend by adolescents) are characterised by significantly lower vitality and poorer mental health. They suffer from significantly more health complaints and use prescribed drugs significantly more frequently. They also significantly less frequently described their health as excellent or very good and significantly more frequently reported that they fall ill easier than others. On the other hand, adolescents from lower SES use non-prescribed drugs significantly less frequently.

Gender differences in SEHD

Our findings confirmed the poorer health of girls in comparison with boys. Girls scored higher in GHQ and they are also more frequently detected as a “case”. Scores on the vitality and mental health scale are lower among girls. Girls reported more physical complaints than boys. Prevalence of chronic diseases, use of prescribed and non prescribed drugs are higher among girls. Finally, girls less frequently describe their health as excellent or very good and more frequently consider they fall ill easier than others. The mentioned differences are statistically significant.

Figure 2 Interaction effect of type of school and gender on prevalence of chronic diseases



Significant interaction effects of SES and gender were not present, except for prevalence of chronic diseases. This means that the investigated socio-economic health differences are similar in male and female, or rather did not differ. However, there are significant interactions between gender and type of school in case of chronic diseases (main effects of SES and gender on health are significant). The socio-economic health differences are adverse in male in comparison to female. As can be seen in figure 2, prevalence of chronic diseases tends to decrease in lower types of schools in males, while in females it tends to increase.

DISCUSSION

Single socio-economic indicators are related to different types of sources and rewards. Education level determines access to information and ability to benefit from this information, while occupation contains this dimension and moreover also determines access to amenities and also benefits from performing some occupations, such as privileges, power, social and technical abilities (*Kunst 1997*).

People's own education, but also the education of their parents and partners influence their health indirectly. More educated people have more knowledge about healthy/ unhealthy life styles, use medical services more efficiently, and communicate with health staff better. In society a "good" education is a condition for obtaining a "better" job, and as a consequence of this, a "better" job is indeed also to obtain sufficient income to reach a certain quality level in somebody's life, including health.

The type of school indicates, but does not definitely determine at this age, socio-economic trajectory and future socio-economic position in society. It is one of the first selections, stratifying adolescents according to their abilities, knowledge, motivation and life orientation. To a certain extent, selection by school is determined also by social class of origin, including the education of the parents and SES of the family. The type of school is strongly correlated with the education of the father and mother.

The class structure of Slovak inhabitants from a representative sample in 1992 is as follows: 26,7% of I. Legislators, senior officials and managers and II. Professionals; 24,0% of III. Technicians and associate professionals, IV. Clerks and V. Service workers and shop and market sales workers; and 49,4% of VI. Skilled agricultural and fishery workers, VII. Craft and related trades workers, VIII. Plant and machine operators and assemblers and IX. Elementary occupations (*Buncak and Harmadyova 1993*). The proportions in the Slovak population according

to education is as follows: 11,3% of the population completed university education, 38,9% secondary education and 49,8% primary or vocational education (*Meseznikov and Ivantysyn 1999*). Figures show social stratification in the Slovak Republic, which differ from our sample, because the parents in our sample represent a specific age group and not the population as a whole.

In our survey of socio-economic health differences among adolescents we try to use not only SES indicators based on the SES of parents but also socio-economic indicators based on the SES of adolescents themselves, as well as the type of school they attend. The type of school seems to be a very sensitive socio-economic indicator in adolescence. Socio-economic health differences were confirmed in 6 out of 10 indicators of health used in this research, when type of school was used as socio-economic indicator. On the other hand it should be pointed out that the data collection was performed at the starting point of the adolescents' study. The type of school therefore indicates the direction and success or failure in the first socio-economic selection; the student was or was not accepted by such type of school, but the type of school does not present the influence of this school, or rather this type of education. In this case, type of school indicates life orientation (motivation), abilities, knowledge and traits important for a successful career, and predicts (but not definitely) the career of adolescents and their future position in the socio-economic stratification. Moreover the effect of health selection (healthier adolescents experience upward social mobility, less healthy ones downward mobility) should be considered. It is in the period after leaving school that immediate (conscious) health selection is most likely to occur. Equally, the effects of indirect health selection, via educational achievement for example, should be observable (*West et al. 1990*).

In our paper we investigated socio-economic health differences among Slovak adolescents. We focus on socio-economic health differences and gender differences in socio-economic health differences. Our findings confirm gender differences in health, but not in socio-economic health differences. Girls are characterised by significantly poorer health in comparison to boys, but socio-economic health differences are not different in girls and boys. As we mentioned earlier, youth, particularly Western European youth, is characterised more by the absence than presence of class gradients (*West 1988, West et al. 1990, Macintyre and West 1991, Glendinning et al. 1992, Ford et al. 1994, Rahkonen et al. 1995, Tuinstra 1998*). In contrast, Halldorsson et al. (2000) confirmed inequalities in health according to SES, as reported by parents, among adolescents in all the Nordic countries.

Similarly, our findings show that there is considerable evidence of socio-economic health differences among Slovak adolescents and the trends in these differences are, except for the use of non-prescribed drugs, more unfavourable for adolescents of lower SES. The choice of use of non-prescribed drugs is mostly up to adolescents themselves and they use mostly painkillers, vitamins, minerals and supportive symptomatic treatments of respiratory diseases (*Geckova et al. 2001b*). Maybe higher SES adolescents use more non-prescribed drugs to treat their health problems (painkillers, supportive symptomatic treatments of respiratory diseases), but also to maintain their health (vitamins, minerals), while lower SES ignore or use self-treatment less frequently due to more limited health education, poorer interest in their own health, or lack of money. From this point of view our findings confirm our hypothesis, but we are aware that this issue requires additional research. We have confirmed socio-economic health differences among Slovak adolescents in 7 from 10 health indicators using 3 different socio-economic indicators. We can hypothesise that if the absence of socio-economic health differences among Western European adolescents is caused by the effect of some protective factors, then we can suppose that such protective factors have no influence in Slovakia, or that they are not strong enough to diminish socio-economic health differences, or that the effect of those protective factors is too low, or the socio-economic health differences are too high. Real explanations for our findings require additional work. As far as we know, this is the first attempt to explore socio-economic health differences among Central European adolescents. Further analysis using different samples from different Central and East European countries, but also transcultural comparisons can contribute considerably to the explanation of the surprising presence of socio-economic health differences among Slovak adolescents. Attention should be also focused on factors, which can influence socio-economic health differences among adolescents, such as health-related behaviour and social support.