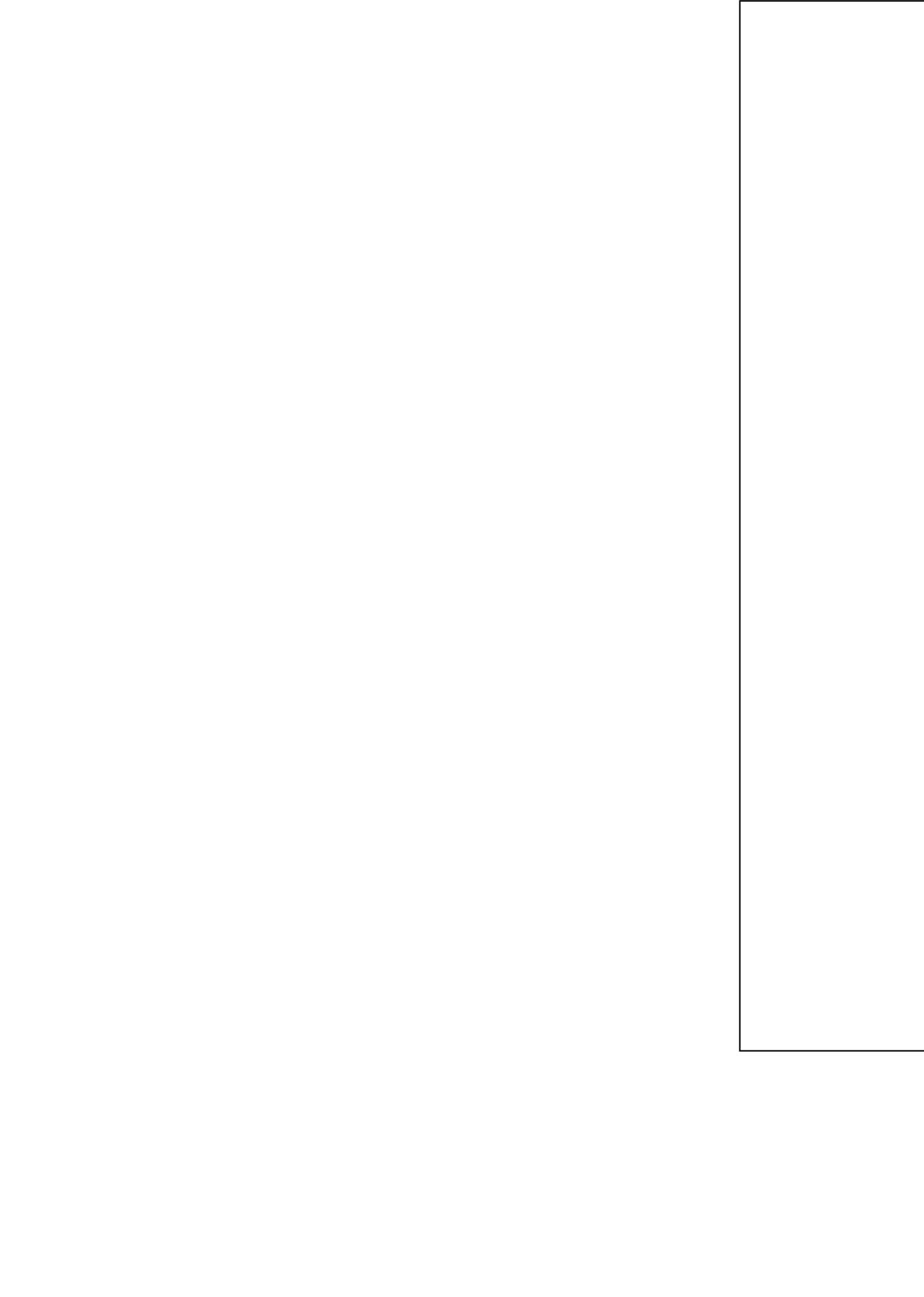


INEQUALITY IN HEALTH
AMONG SLOVAK
ADOLESCENTS



Rijksuniversiteit Groningen

INEQUALITY IN HEALTH AMONG SLOVAK ADOLESCENTS

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PREFACE

Research into inequalities in health has a long tradition in Western Europe, but in Central Europe this type of research has only recently started. Slovakia is one of the few countries, which is starting to co-operate in research into health inequalities among adolescents. The first findings indicate that adolescents from lower SES groups are, in terms of their health and well-being, disadvantaged in comparison with adolescents from higher SES groups. Financial conditions, material conditions, the education of their parents, but also the education of adolescents themselves all play an important role in their lives. Life style, access to health care, and the ability to benefit from health services also contribute to the observed inequalities in health. Practically speaking health inequalities mean shorter life expectancy, higher incidence of premature deaths, greater prevalence of short-term, as well as long-term health complaints, shorter life without health restrictions, lower levels of well-being, reduced quality of life, greater exploitation of medical services and reduced benefit from the health services exploited for those parts of the population, which fall within the disadvantaged social stratification. The fight for the reduction of health inequalities is a fight for every person's right to live a valuable life. But it is also a fight for everybody to take his or her own part of the responsibility for his or her own health, and it is also a fight for reduction of financial costs in health services. Countries participating in WHO programs, including Slovakia, have undertaken to diminish or decrease inequalities in health. To achieve this goal, participation of all branches of society is necessary.

In co-operation with the University at Groningen (The Netherlands) research into health inequalities in Slovakia will continue with a second wave of data-collection. This wave will give us both, longitudinal and cross-sectional data about health, attitudes, behaviour, social support, peer impact, school environment influence and socio-economic conditions of young people aged between 15 and 25 years. The aim is to answer the question as to what mechanism causes health inequalities, and in a more practical sense, what we can do for a healthier, more successful and happier life for each new generation.

ACKNOWLEDGEMENTS, OR HOW TO EAT AN ELEPHANT

At this moment there is only a small piece of my elephant still remaining, but when I started I could not believe that it would be possible to eat something like that. I am the first to emerge from the co-operation of University at Groningen with the Central European Universities; and behind me there is a group of four young people (Iveta Nagyová, Tomek Knurovski, Kriszta Szakall, Claudia Bara) working on very interesting projects, who still have pretty big portions on their plates. My elephant is almost eaten, however, and I have to say I enjoyed this meal after all. I feel the need to tell others the true story about eating the elephant. Doing this though, I feel I am a little bit at risk of losing my exceptional status.

At the beginning, it was Jitse van Dijk who persuaded me that in small pieces the elephant is the optimal nutrition dose for four years and tenaciously insisted on this statement till the end. It was really a hard task to maintain my presence at the dining table but I am very grateful to him for his steadfastness, tenacity and belief in my consumption abilities.

Then there were people, who are today the basis of the research institute we established in Kosice, the Kosice Institute of Society and Health - namely, Iveta Nagyová, Marcel Pudelský, and Zuzana Katreniaková. We exchanged „recipes“ for preparing elephant meat, discussed bon vivant experiences and mainly laughed a lot, which contributed to the fact, that my elephant diminished in size and the good mood was maintained. From the original small bon vivant group it has become today a group of people working on nearly ten projects in the field of health and its determinants and in the field of chronic disease and societal reintegration and during the course of four years they have published approximately fifty national and international research works.

Sometimes I took a pretty big portion of the elephant directly to Groningen and shared the meal with some willing banqueteers. Without my warming runs with Dr. Jolanda Tuinstra, the crystal ball of Prof. Johan W. Groothoff, the tireless electronic pigeons of Dr. Jitse P. van Dijk, the patient abacus of Drs. Roy Stewart and the miracle literary puzzles of Truus van Ittersum-Gritter, I can not imagine how I could have consumed some hard pieces of the above-mentioned-elephant. Each of them bit off a considerable portion.

The quality of gourmet art made by an apprentice is mostly directly dependent on the quality of the chefs. Preparing elephant delicacies under the guidance of promotor like Prof. Doeke Post and Prof. Johan W. Groothoff was not only instructive but also pleasant.

My thanks belongs also to the tasters - the members of the reading committee, Prof. P. P. Groenewegen, Prof. W. J. A. van den Heuvel and Prof. R. Minderaa for carefully reading and commenting on my thesis.

I can not mention all, who have contributed to the fact, that I have fallen in love with Groningen during the last four years, and the fact that despite of some trouble I can say today: it was a wonderful idea, that elephant. But I must try to name at least some of them: Dr. Hilde Uytterschaut, Drs. Willemijn Roggen, Dr. Berry Middel, Ria Molanus, Annemieke Brouwers, Tineke van der Wees, Dr. Boudien Krol, and Dorien Matthesius.

At the beginning I did not understand very well all the marvellous and complicated statistical analyses, which I have used at the end of my work. The feathers I pride myself in came only with the help of Drs. Roy Stewart, Prof. Róbert Hončariv, Dr. Csaba Török, and Dr. Ivan Žežula. Blank places in my knowledge of sociology were painted with the assistance of Dr. Igor Rac, while medicine was the responsibility of Dr. Marcel Pudelský. In the process of naming the people I bothered with my questions, I would also like to mention Assoc. Profs. Eva Šimová and Jan Ferjenčík.

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Among my guardian angels taking care of my comfort in my working conditions are Dr. Jitse P. van Dijk and during the last few months Assoc. Prof. Pavol Sovák. I pay tribute to both for the amount of invisible work which was necessary to make the elephant ready to be eaten in pieces.

Finally I would like to thank Prof. Alexander Feher, Dean of the Faculty of Science and Assoc. Prof. Ladislav Mirossay, Dean of the Medial Faculty at P. J. Šafarik University in Košice, who arranged the conditions for my work.

Looking back from this point of view, there is clearly a great team of people who have participated in eating my elephant and it is questionable whether I myself can even claim to have even nibbed at this elephant meat.

PREDHOVOR

Výskum triednych nerovností v zdraví má mnohoročnú tradíciu v Západnej Európe, ale v Strednej Európe sa ešte len rozbieha. Slovensko je jednou z mála krajín, ktoré sa zapojili do výskumu triednych nerovností v zdraví adolescentov. Prvé výsledky naznačujú, že adolescenti z nižších socio-ekonomických skupín sú, čo sa týka ich zdravia a duševnej pohody, v nevýhode v porovnaní s adolescentami z vyšších socio-ekonomických skupín. Finančná situácia, materiálne zabezpečenie, vzdelanie ich rodičov, ale i ich samých, hrá v ich životoch dôležitú rolu. Svoj podiel na existencii socio-ekonomických nerovností v zdraví má i životný štýl, prístup k zdravotníckym službám a schopnosť profitovať z poskytovaných služieb. V praxi triedne nerovnosti znamenajú kratšiu dĺžku života, vyšší výskyt predčasných úmrtí, vyšší výskyt krátkodobých ale i dlhodobých zdravotných problémov, kratšiu dĺžku života bez zdravotných obmedzení, nižšiu mieru duševnej pohody, nižšiu kvalitu života, väčšiu spotrebu zdravotníckych služieb a nižší profit z poskytovaných služieb v populácii, ktorá je v rámci socio-ekonomickej stratifikácie znevýhodnená. Zápas o redukciu triednych nerovností v zdraví je zápasom o právo každého človeka na plnohodnotný život, ale je i zápasom o prebratie osobnej zodpovednosti každého o svoje vlastné zdravie, a je i zápasom o zníženie nákladov v zdravotníctve. Krajiny participujúce na programoch Svetovej Zdravotníckej Organizácie, vrátane Slovenska, sa zaviazali odstrániť, prípadne zredukovať existujúce nerovnosti v zdraví. Dosiahnuť tento cieľ si vyžaduje spoluúčasť všetkých zložiek spoločnosti.

V spolupráci s Univerzitou v Groningene (Holandsko) bude výskum triednych nerovností v zdraví na Slovensku pokračovať druhou vlnou zberu dát. Táto vlna poskytne dlhodobé, ale i prierezové dáta o zdraví, postojoch, správaní, sociálnej opore, vplyve rovesníkov, vplyve školského prostredia a socio-ekonomických podmienkach mladých ľudí vo veku od 15 do 25 rokov. Cieľom je odpovedať na otázku, aké mechanizmy spôsobujú triedne nerovnosti v zdraví a v praktickom slova zmysle, čo môžeme urobiť pre zdravší, úspešnejší a šťastnejší život novej generácie.

POĎAKOVANIE, ALEBO ODPOVEĎ NA OTÁZKU, ČI JE MOŽNÉ ZJESŤ SLONA

Z môjho slona zostal už iba kúsok a mne samej sa na začiatku nechcelo veriť, že je možné niečo také skonzumovať. Som prvá, čo vzišla zo spolupráce Univerzity v Groningene s univerzitami v Strednej Európe a za mnou je skupina nadaných mladých ľudí (Iveta Nagyová, Tomek Knurowski, Kriszta Szakal, Claudia Bara) pracujúcich na veľmi zaujímavých projektoch, ktorí majú na tanieri ešte riadne veľké porcie práce. Môj slon je už temer zjedený a ja musím dodať, že mi dokonca chutil. Mám potrebu povedať tým ostatným ako to vlastne s tým jedením bolo. Tak trochu riskujem, že prídem o mýtus výnimočnosti.

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1 GENERAL INTRODUCTION TO THE STUDY

Inequalities in health have attracted a lot of attention since last century. It is impossible to review the amount of published literature. The aim in this section is to provide a very brief introduction to socio-economic health differences with regard to Central Europe and also to the explanation of socio-economic health differences. The aims of the study, the theoretical model, the research questions and the structure of the thesis are also included.

1.1. GENERAL BACKGROUND

Socio-economic health differences unfavourable for lower SES groups are present in almost all European countries and with some exceptions in all age groups (*Smith et al. 1990a, Mackenbach 1992, Mackenbach and Kunst 1997, West 1997, Kunst 1997*). Although equity in health is one of the main targets of the WHO strategy “Health for all” (1990, 1999), health inequalities are even increasing in many European countries (*Smith et al. 1990a*). Socio-economic health differences are ethically unacceptable and “it’s society’s moral duty to shape its social and health policy in such a way that in future, children who are worse off will be more likely to enjoy the same status of health and well-being that more fortunate children do today, so that they will have equal opportunities to live a healthy adult life.” (*Halldórsson et al. 1999, p. 47*). Reducing socio-economic health differences would also improve the health of the whole population and also means reduction of health care costs (*Gissler et al. 1998*).

Particular interest regarding health and socio-economic health differences should be focused on Central European countries characterised by enormous social, political and economic changes (*Gissler and Nanda 2000*). Transitional crisis is mostly related to an increase in income inequality, which may have a deteriorious effect on the population's health (*Kaplan et al. 1996*). This process should be noticeable already in adolescence. In 1991-1995 Tichy et al. (1996) monitored health and nutritional status of children particularly because they anticipated undesirable consequences of the transformation process on the population's health. This prognosis supposes that a decrease in the standard of living in a considerable part of the population leads to a decrease in nutritional status. The health consequences are undesirable changes in immunological, haematological and some other somatic indicators. According to Kunst (1997), socio-economic health differences 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). More recent findings supporting this conclusion come from Bulgaria (Balabanova 2000) and Russia (Maximova 2000).

There are several reasons for studying socio-economic health differences among adolescents. Firstly, health from childhood and adolescence extends in adulthood (Smith *et al.* 1990a). The differential degrees of deprivation in childhood could contribute to inequalities in health in later life (Smith *et al.* 1990a).

Secondly, many patterns of behaviour are established in adolescence, including health related behaviour such as eating habits, exercise activities, drug use and ways of responding to stress. Future adult health could therefore be improved by influencing the factors which determine health-related behaviour in adolescence (Power *et al.* 1998).

Thirdly, socio-economic health differences are age specific. A U-shaped relation between socio-economic health differences and age seems to be present. Youth, in contrast to childhood (van der Lucht 1992, Bor *et al.* 1993, van der Lucht and Groothoff 1995, Cesaroni *et al.* 2000, Humblet *et al.* 2000) or adulthood (Lahelma and Valkonen 1990, Ford *et al.* 1994, Kaplan *et al.* 1996, Kunst 1997, Power and Matthews 1997) is characterised more by the absence than presence of class gradients in health. Socio-economic health differences re-emerge quite dramatically after this relative equalisation in youth (West 1988, MacIntyre *et al.* 1989, West *et al.* 1990, Bor *et al.* 1993, Rahkonen *et al.* 1995, Tuinstra 1998). To study adolescents can help us to understand the determination of socio-economic health differences and to find out efficient reduction strategies.

Fourthly, youth is “5 minutes to 12” with regard to the final adult stratification. The 15-year-old cohort is ideally suited for exploring the relative importance of health selection and social causation and the processes involved, as young people move from their social class of origin to their achieved social class within a period of approximately 10 years (MacIntyre *et al.* 1989).

Fifthly, interventions are more effective the sooner they are implemented (Wadsworth 1997). Adolescence offers possibilities for intervention with the intention of reducing the health differences. The ultimate goal of studies into health differences is always the reduction of the differences, mostly by an improvement of the health status of the less privileged group. A better health status for the population as a whole can be reached in this way.

1.2. THEORETICAL BACKGROUND

There are several explanations of socio-economic health differences discussed in literature: **artefact, health selection, social causation** (*MacIntyre 1986, MacIntyre 1987, West 1988, West 1991, Mackenbach et al. 1994, Stronks 1997, Tuinstra 1998*). The mechanism of social causation is described in more detail by the hypotheses of **different vulnerability, different exposure** (*Blaxter 1990, Kooiker and Christiansen 1995, Ranchor et al. 1996a, Tuinstra 1998, Stronks et al. 1998, Call and Nonnemaker 2000*). Several authors try to explain the absence of socio-economic health differences among adolescents using the hypothesis of the **buffer effect** and the hypothesis of **latent differences** (*West et al. 1990, Van der Lucht and Groothoff 1995, Tuinstra 1998*). A short description of them follows.

1.2.1. Artefact

This approach suggests that the definition or measurement of either the social position or the health status produces the observed difference (*MacIntyre 1987*). This most radical version contends that there is no relation between class and health and what we observe is an artefact of the measurement. In a less radical version it means that the magnitude of the observed class gradients will depend on the measurement of both class and health (*MacIntyre 1997*). This can be particularly important in adolescence, when parent's SES becomes an increasingly invalid measure of SES, but adolescent's SES is not appropriate either. In this age group a high level of occupational mobility is experienced (*West 1988*). West et al. (1990) used a range of health indicators, from subjective assessment to objective physical measures and found very little evidence of socio-economic health differences in adolescence. Similarly MacIntyre and West (1991) explored the artefact explanation using several SES indicators, but did not confirm it. Despite their findings, it seems to be reasonable to explore socio-economic health differences among adolescents using different indicators of SES and health, and to take this hypothesis in to account in the explanation of the results.

1.2.2. Health selection

This view stresses the influence of health on socio-economic mobility. Its radical version states that health determines class position, and not vice versa. The less radical version describe health as a factor contributing to the achieved class position (*MacIntyre 1997*) or in other words healthier youngsters experience upward social mobility, less healthy ones downward mobility (*MacIntyre et al. 1989, Smith et*

al. 1990a, West et al. 1990). Health selection may proceed through success and failure in job market during adulthood - **intragenerational mobility**, but also through educational achievement during adolescence - **intergenerational mobility** (Stronks 1997). The validity of this hypothesis of health selection was discussed by West (1991), and MacIntyre (1986). To explain the relative importance of health selection and social causation a longitudinal design should be used (MacIntyre 1987).

1.2.3. Social causation

According to Hertzman (1999, p.85) "those whose circumstances most closely approximate the hospitable niche would enjoy the longest, healthiest lives and those whose lives diverge the most from it would live lives that were increasingly unhealthy and short". Lower SES in terms of smaller amounts of disposable money has objective consequences (less money means poorer living standard with regard to housing, nutrition, relaxation), but also subjective consequences (psycho-social stress). Poor people have reduced control over their life, experience a gap between themselves and those who are unaffected, and the tension originating from economic stress is also higher.

There are three broad approaches in research and policy formulation (MacIntyre 1987, MacIntyre 1986): life circumstances; life style; and knowledge, attitudes and values.

1.2.3.1. Life circumstances: the materialist explanation

There are life circumstances which influence health and are unequally distributed between social groups (MacIntyre 1986). Among them are occupation and its related work settings, unemployment, housing, and access to other amenities (inside toilet, baths, running hot water, car ownership). Social position may contribute to socio-economic health differences through stress or exposure to life events, chronic problems related to dealing with difficult situations, economic hardship (unpleasant neighbours, problems related to housing, income). Being <low SES> can affect disposable income, wealth, access to material resources (telephone, car), access to healthy food, use of time or housing and these changes could influence health either separately from or in interaction with stress, stigma or alterations in self-esteem (MacIntyre 1987).

Based on the materialistic explanation, interventions should include improvements in the circumstances in which a person lives and works (Macintyre 1997, Stronks 1997).

1.2.3.2. Life style: behavioural explanations

The behavioural explanation shifts the attention from external constraints to voluntarily chosen behaviours associated with health and differentially engaged in by different social groups (*MacIntyre 1987, Smith et al. 1990a*). Such types of behaviour are for example smoking, alcohol consumption, drug use, physical exercise, diet, engaging in risk activities, sexual and contraceptive practices. "The voluntary character of behaviour" may be a questionable issue in the case of socio-economic health differences. What people eat may depend less on their ideas about the value of fibre or the dangers of cholesterol, and more on accessibility and affordability of food (*MacIntyre 1987*). Moreover, the association between health related behaviour and health does not explain all the variations between these groups in health (*MacIntyre 1986*).

To reduce socio-economic health differences from this perspective we are encouraged to use culturally sensitive methods for encouraging changes in lifestyle.

1.2.3.3. Knowledge, attitudes and values

Knowledge, attitudes and values may contribute to socio-economic health differences directly, by having some more diffuse and general impact on health independently of behaviour. For instance coping strategies, locus of control, learned helplessness, sense of coherence may influence the way people respond to their lives and environments. But they may contribute also indirectly, by shaping the behaviours which are more proximate causes of health (*MacIntyre 1986*). Health knowledge (nutritional values of foodstuffs, advantages of breastfeeding, benefits and hazards of oral contraception), cultural or sub-cultural norms relating to health behaviour, or the importance of individual health may be examples of this indirect influence.

Materialistic and behavioural explanations can be seen as competing, but it seems to be that they interact in their contribution to socio-economic health differences (*MacIntyre et al. 1989*). The "knowledge" is usually conceptualised as mediating between social position and health, either by moderating the impact of life circumstances on health by causing the behaviours that influence health, or acting directly on health (*MacIntyre 1987*).

1.2.4. Different exposure and different vulnerability

According to Stronks (*1997*), SES influences health indirectly through more specific determinants of health and illness. This hypothesis of social causation supposes that people in lower socio-economic groups live in less favourable

circumstances and more frequently engage in health risk behaviour. The question is whether the uneven distribution of health determinants (hypothesis of different exposure) or differential health impact of these determinants (hypothesis of differential vulnerability) can explain the unequal distribution of health in the population (*Ranchor 1994, Kooiker and Christiansen 1995, Stronks 1997, Tuinstra 1998, Call and Nonemaker 2000*).

According to the hypothesis of **different exposure**, socio-economic health differences may be explained by the varying occurrence of health determinants among SES groups. Determinants of detrimental effects on health (health risk behaviour, long-term difficulties, life-events) occur more frequently, and determinants of protective effects on health (physical exercise, social support) occur less frequently in lower SES groups in comparison with higher SES groups.

The **differential vulnerability** model supposes that higher SES groups have some mechanism at their disposal which inhibits detrimental effects and stimulates the protective effects of health determinants. Lower SES groups are less well equipped to cope with stress (*Stronks 1997, Tuinstra 1998*).

1.2.5. Explanation of absence of socio-economic health differences in adolescence

The absence of socio-economic health differences in adolescence triggers debate about possible explanations. In the literature one can find an intensive debate about the two following hypotheses: the hypothesis of latent differences and the hypothesis of the buffer effect of youth subculture. The hypothesis of **latent differences** supposes the prelude of the differences in health in adolescents already being present, but not yet measurable with the current outcome measure of health. The prelude is visible in the unequal distribution of different determinants of health and disease among social groups. According to **buffer hypothesis**, favourable social circumstances and related compensation mechanisms form a buffer for youngsters against the health-damaging effects of an unhealthy lifestyle.

1.3. AIMS OF THE STUDY

The aim of this study is to document associations between social position and health. Whereas there is a long tradition of socio-economic health differences research in West Europe, we lack such information related to Central European adolescents. Moreover our aim is to move beyond documenting towards explaining these associations. Slovakia is rapidly changing, the unemployment rate is increasing fast and the living standard of the population is decreasing. Despite some promising

economic indicators the part of the population, which is affected by the transitional crisis is growing. The health care system is in a critical situation. A lot of people are disappointed: it takes a lot of time to restructure the economy, and this has direct negative consequences for a considerable part of the population. It takes time for people to find adequate coping mechanisms and learn to manage the new situation. Youth is more vulnerable, but also may be more flexible, so it is interesting to explore socio-economic health differences in this age group.

Figure 1 Theoretical model

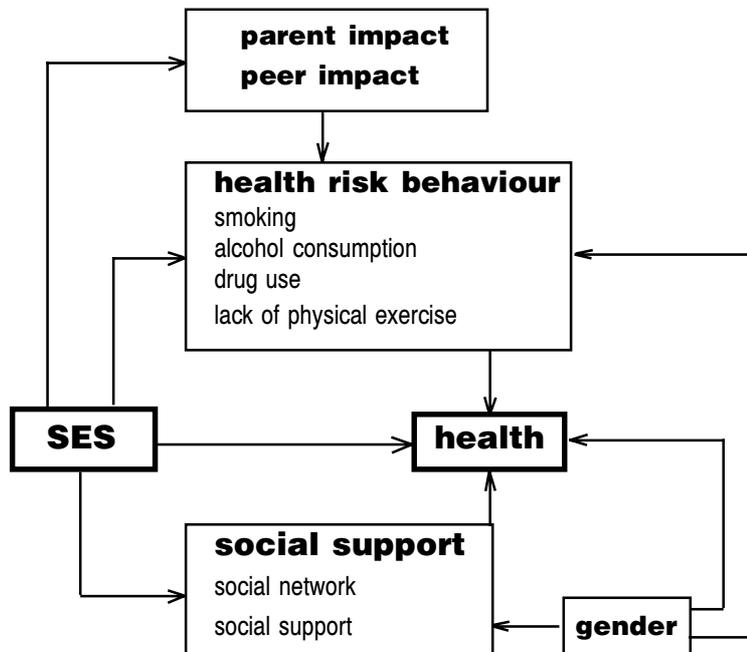


Figure 1 describes the theoretical model of this research. A similar model was explored in the Dutch population by Ranchor et al. (1990), Stronks (1997) and Tuinstra (1998). MacIntyre (1986) also recommended focusing attention on the whole area of psychosocial factors, and not only directly on the social effects on health. Interest has to be shifted from the material conditions of life to psychosocial factors (MacIntyre 1986).

SES and the **health** of adolescents are the basic elements of the theoretical model. **Health risk behaviour, social network, and social support** are three of the factors which are related to health and possibly unequally distributed among socio-economic groups. **Parent and peer impacts** are extra factors and we presumed

strong association with SES and health risk behaviour, not directly with health. **Gender** differences are expected to be present in health, health risk behaviour, and social support, so they are included in the model and will be checked for their influence and interaction effects.

Before studying the socio-economic context of health, we would like to know something about the health (self-reported health problems) of Slovak adolescents. This is particularly important because self-reported health indicators are used very rarely in Slovakia.

Secondly, there is a question if there are any socio-economic health differences among Slovak adolescents. According to the West European surveys (*West 1988, West et al. 1990, MacIntyre and West 1991, Rahkonen and Lahelma 1992, Rahkonen et al. 1995, Tuinstra 1998*) they should not be present, but we cannot generalise from West European findings to Central Europe without research. Findings from studies of socio-economic health differences among Central European adults are not very optimistic in any case: socio-economic differences are similar or larger.

Thirdly, more needs to be known about several factors (health risk behaviour, social support) which we suppose are related to health, but also to SES. In other words, we were looking for how SES influences health. So we explored socio-economic differences in these factors and interaction effects between SES and these factors. If we found such relationships, we could assume that SES influenced health through health risk behaviour or social support.

Parent and peer impact is a special issue, because they influence health indirectly through health risk behaviour. The influence of parents' and peers' smoking on adolescents' smoking behaviour with regard to SES were explored.

1.4. RESEARCH QUESTIONS

Health of Slovak adolescents

Screening of adolescents' health based on self-reported health measures was the first step in researching socio-economic health differences. The aim was to explore the socio-economic health differences with regard to the prevalence of self-reported health problems and gender differences in health among Slovak adolescents.

Socio-economic health differences among Slovak adolescents

Many papers dealing with socio-economic health differences between Western European adolescents have been published, but, as we know, findings on socio-economic health differences between adolescents from Central Europe have not been published yet. The countries of Central Europe are organised differently and we do not know if findings from Western European countries can be generalised to societies in Central Europe. The question is if there are any socio-economic health differences among Slovak adolescents. The possible gender differences in socio-economic health differences were also an issue of research interest.

Distribution of health risk behaviour in socio-economic stratification

A behavioural explanation of socio-economic health differences stresses the role of risky behaviour. We surmise that adolescents from lower SES groups behave more riskily and their behaviour is the reason of worse health in comparison to adolescents from higher SES. This hypothesis is based on the assumption that risky behaviour occurs more frequently in socio-economic disadvantaged groups. To test this assumption, socio-economic differences in health risk behaviour and attitudes towards health risk behaviour were explored.

Hypothesis of different exposure vs. hypothesis of different vulnerability

Our findings encourage us to explore the role of risky behaviour in explanation of socio-economic health differences deeper. The validity of the hypothesis of different vulnerability and the hypothesis of different exposure in explanation of socio-economic health differences through risky behaviour was tested.

The role of parents and peers

Smoking behaviour attracts a lot of attention due to its undesirable influence on health, high prevalence in the population and early onset. A lot of papers have

explored determinants of smoking behaviour particularly in adolescence with the intention to find out an appropriate prevention strategy. A huge amount of literature reports about socio-economic differences in smoking behaviour, parents' influence on the smoking behaviour of their offspring or peer impact on adolescents' smoking behaviour. Fewer papers attempt to put these determinants together and find the model explaining adolescents' smoking behaviour. Based on literature study and outcomes of our previous analyses we attempted to find such a type of model. We focused on the influence of SES, parents and peers on adolescent's smoking behaviour.

Contribution of social support

Social support may be a protective factor in terms of health and socio-economic health differences. It was the reason to explore the influence of social support on the health of adolescents. There is a question if there are any differences in the influence of social support on health among gender and socio-economic groups and if there are socio-economic differences in distribution of social support. The aim was to explore the contribution of social support in observed socio-economic health differences. The hypothesis of different vulnerability and hypothesis of different exposure in the explanation of socio-economic health differences through social support was explored as well.

1.5. STRUCTURE OF THE THESIS

In the introductory chapter we try to describe the most frequently discussed explanations of socio-economic health differences. Besides this, several specifics of socio-economic health differences research among Slovak adolescents were described. A short description of the theoretical model of this research was also provided. Chapter 2 describes research context, data collection, measurements, and analyses used.

At the present time a lot of attention is being focused on health in adolescence, but there is a lack of information about the health status of Slovak adolescents, especially about self-reported health problems. On the other hand, there is more than only one reason why attention should be focused on this period of human life and on a Central European country, as is described in chapter 3. This chapter deals with self-reported health problems of Slovak adolescents with regard to gender differences. The following chapter, chapter 4, discusses socio-economic differences in health among Slovak adolescents. Chapter 5 continues by testing the hypothesis of socio-economic differences in health risk behaviour and attitudes towards health

risk behaviour among Slovak adolescents. Attention is focused on smoking, alcohol consumption, drug use, lack of physical exercise and combinations of these types of health risk behaviour.

Chapter 6 deals with the influence of health risk behaviour and socio-economic status on the health of Slovak adolescents. The influence of smoking and alcohol consumption on health is explored with the aim of contributing to the explanation of socio-economic health differences present among Slovak adolescents. Two hypotheses, of different exposure and of different vulnerability, are explored.

Particularly in adolescence, the influence of parents and peers starts to be very important in the determination of adolescents' risky behaviour. We explore the model explaining the influence of SES, parents and peers on adolescents' smoking behaviour; in chapter 7 we describe our findings.

Chapter 8 explains the role of social support in determination of health and socio-economic health differences among Slovak adolescents with regard to adverse gender differences in health and social support. The influence of social support on health among gender and socio-economic groups of adolescents is explored in a sample of Slovak adolescents.

Finally, the last chapter of this thesis, chapter 9, concludes the findings of the empirical analyses and discusses the results, implications for future research and recommendations for health policy.

2 DATA SOURCE

This chapter presents the technical background to this study. It describes the research context, data collection procedure, sample, representativeness of the sample with regard to the Slovak adolescent population, measurements, and the statistical analyses used.

2.1. RESEARCH CONTEXT

Socio-economic differences in health among children (*van der Lucht and Groothoff 1990, van der Lucht 1992, van der Lucht et al. 1992, van der Lucht and Groothoff 1995*), adolescents (*Tuinstra 1998, Tuinstra et al. 1998*), adults (*Ranchor et al. 1990, Ranchor 1994, Ranchor et al. 1995, Ranchor et al. 1996a*) and elderly (*Miedema, Ranchor 1995, Ranchor et al. 1996b*) are one of the topics of the Northern Centre for Healthcare Research at Groningen University.

This study presents a part of an international comparative longitudinal research, in which the same instruments are used to compare social patterns in health between Western and Central Europe in adolescence (*Tuinstra et al. 1995*). The Netherlands, Scotland and Slovakia are participating in this research.

The Scottish participation 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*). The study has longitudinal design and involves a 20-year follow-up of three age cohorts, 15, 35 and 55 years at the baseline. Baseline data collection was performed in 1987/1988. 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 the Dutch study “Health in Adolescence” (*Tuinstra 1998*), which is a part of the “Longitudinal Study into Social Inequality and Health from Adolescence to Early Adulthood” (prof. Dr. D.Post, prof. Dr. W.J.A. van den Heuvel, prof. Dr. J.W. Groothoff). The baseline data collection was performed in 1994/1995 in the northern part of the Netherlands (n=2090, mean age 16,2).

The Slovak study follows the larger part of the Scottish and the Dutch study of adolescents (see chapter 2.3). The aim of these studies is to explore health and social patterns in health with regard to a specific period of life and determinants of health (health risk behaviour, peer and parent impact and social support).

Slovakia is a Central European country with a population structure not deviating from the Central European neighbour countries.

2.2. DATA COLLECTION PROCEDURES, SAMPLE, REPRESENTATIVENESS

Data was collected in September, October 1998. Students of the first year of 31 secondary schools (7 grammar schools, 13 specialized schools and 11 apprentice schools, some of them offering various types of educational programmes) located in Kosice filled in the questionnaires. The sample consists of 2616 Slovak adolescents, 1370 boys and 1246 girls. This represents a response rate of 96,3%. The non-response was due to sick leave and other types of school absence. The age range is from 13,8 to 17,3 years (mean 14,9 years, STD 0,62).

This sample was stratified according to gender and type of school; the proportion of the five educational levels of the regular Slovak school system was maintained (see table 1). Individual schools were selected at random. The sample can be considered as representative of the Slovak adolescent population.

The respondents completed the questionnaire at school, in their classroom, under the guidance of a researcher. A team of five researchers participated in data collection. Besides the questionnaire, each adolescent was asked to fill in an informed consent which allows us to include participation in a follow-up study.

Table 1 The distribution of adolescents in population and in the research sample (in %)

	population *			sample		
	male	female	total	male	female	total
Grammar school	20,1	27,8	23,9	19,4	24,5	21,8
Specialized school	31,4	46,1	38,6	38,0	47,3	42,4
Apprentice school, 4-years	14,7	6,1	10,5	15,1	10,7	13,0
Apprentice school, 3-years	30,6	17,6	24,2	24,5	16,3	20,6
Apprentice school, 2-years	3,2	2,3	2,8	2,9	1,3	2,1

* Distribution of students in first grade of post-elementary schools in Slovakia 1998 (Based on official statistical data - Institute of Information and Prognosis of Education, Bratislava)

The secondary schools are mostly centralised but students come from the whole wide region area. As can be seen in table 2-3, the Kosice region includes 14% of Slovak population and does not differ a lot from the rest of Slovakia with regard to health (life expectancy, live birth, neonatal mortality, infant mortality rate, mortality, natural growth) and SES (unemployment) indicators. One exception may be the capital city, Bratislava, located at the border with Austria, and therefore characterised by a low unemployment rate.

About 90% of the adolescents in our sample come from the Kosice region and 10% comes from other regions (e.g. Presov, Zilina). Only 60% of the sample are

inhabitants of Kosice – town, but this includes also its suburban parts. Kosice city has about 240 000 inhabitants. The remaining 30% come from smaller towns and villages in the Kosice region. We did not expect a significant difference of our sample in comparison to the Slovak adolescent population.

Table 2 Health indicators: Comparison of Kosice region with Slovak Republic

	Kosice region	Slovak republic
inhabitants	– male	370 216
	female	390 900
	total	761 116
average age	– male	32,95
	female	36,05
live expectancy	– male	68,80
	female	76,70
live birth	12,58	10,68
neonatal mortality	6,26	5,38
infant mortality rate	12,52	8,79
mortality	9,60	9,86
natural growth	2,98	0,82

Source: Statistický úrad Slovenskej Republiky (1998), Meseznikov and Ivantysyn (1999)

Table 3 Unemployment: Comparison of Kosice region with Slovak Republic

	unemployment in % to Dec.1998	
Slovak republic*		15,6
Regions		
Bratislava	West	5,06
Trnava	West	12,51
Trencin	West	10,81
Nitra	West	17,64
Zilina	Central	14,07
Banska Bystrica	Central	19,70
Presov	East	22,07
Kosice	East	20,76

Source: Krajska sprava statistickeho uradu Slovenske republiky v Kosiciach (1999)

* In December 1998: 428 209 people were unemployed in Slovak Republic. (Meseznikov and Ivantysyn 1999)

2.3. QUESTIONNAIRE

The questionnaire is based on the ones used in the Scottish (*West 1986, MacIntyre 1987, MacIntyre et al. 1989*) and the Dutch (*Tuinstra 1998*) studies. Measurements were translated into the Slovak language and used in a pilot study (*Geckova et al. 1998b*). Based on literature study and the findings of the pilot study, the questionnaire was improved to be more appropriate for the Slovak adolescent population. The

final version consists of 6 parts:

1. demographic and socio-economic indicators
2. health indicators
3. health risk behaviour and attitudes towards health risk behaviour
4. parental and peers influence
5. social network and social support
6. personality (self-esteem, decision-making style)

In this section, an overall picture will be given of the central measurements. Each chapter describes the several instruments in its own section entitled "Methods".

2.3.1. DEMOGRAPHIC AND SOCIO-ECONOMIC INDICATORS

The adolescents were asked to report date of birth and gender. Several socio-economic indicators were used: type of school, study programme (branch), highest completed education of father and mother, occupation of father and mother, proxy measures of SES (unemployment of parents, family structure, state benefit, available money per month).

Education

Adolescents reported about father's and mother's level of education in terms of successfully completed courses. The educational level was classified as: (1) university, (2) post secondary, (3) senior high school, (4) vocational, and (5) elementary or none.

Occupational group

The measure of parents' occupational class is based on asking adolescents about their father's and mother's current occupation, or their last occupation if they were currently unemployed. The obtained information was transformed into 9 categories of ISCO (1992, 1993): (1) legislators, senior officials and managers, (2) professionals, (3) technicians and associate professionals, (4) clerks, (5) service workers and shop and market sales workers, (6) skilled agricultural and fishery workers, (7) craft and related trades workers, (8) plant and machine operators and assemblers, and (9) elementary occupations.

Type of school

Children start attending school at 6 (+/- 1) years, and the general elementary programmes lasted 8 years. The year of data collection was the last one before transformation from 8-year into 9-year general elementary programmes. There are three main types of secondary education: apprentice programmes (2 or 3-year apprentice education without school leaving-examination and 4 or 5-year apprentice

education with school-leaving examination), specialised secondary schools (4-year programmes consisting of professional education with school-leaving examination) and grammar schools (4-year programmes preparing for university study, ending with school-leaving examination). The school-leaving examination is necessary for university study.

Adolescents were divided according to the type of school they attended into the three groups: grammar school students, specialised secondary school students, and apprentice school students.

Proxy measures of SES

The transformation process is strongly related to changes in socio-economic stratification. While socio-economic stratification is not stable, proxy measures of SES may be a reasonable way of checking the validity of the main socio-economic indicators like education, occupation and income. In this survey the following proxy measures were used: unemployment, family structure, number of siblings, state benefit, available money per month (earning and pocket money of adolescents).

2.3.2. HEALTH

Health was measured using several questionnaires and scales. We measured psychological health, vitality and mental health, experienced health complaints, chronic diseases, medical consumption (particularly prevalence of serious illness, injuries, physician visits and drug use), and also self-reported health and self-perceived vulnerability to illness.

Psychological health

Psychological Health was measured by the Slovak version of a 12-item version of the General Health Questionnaire (GHQ) (*Goldberg and Williams 1988*). The GHQ is a self-report 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 responses. Two methods of scoring are used, a Likert score (range 0-36) and a binary score (range 0-12) which permits the identification of “cases” or in other words a level of symptomatology of potential clinical relevance. A cut-off point of 2/3 was used as a criterion for identification of “cases”. The selection of a cut-off point of 2/3 (scoring 0-0-1-1) as a criterion for cases in our research was based on the study by Banks (*1983*). Politi et al. (*1994*) used scoring 0-1-2-3 and found cut-off 8/9 the most appropriate. Based on scoring rules of Politi et al. (*1994*) the occurrence of cases among Slovak adolescents is 50,2% in male and 64,7% in female, instead of 23,9% in male and 41,3% in

female when the criterion for case is based on Banks' (1983) suggestion. In comparison with the criterion of Banks (1983), the criterion of Politi et al. (1994) has high sensitivity (98,4%) and low specificity (62,5%).

Reliability, in terms of internal consistency is satisfactory (Cronbach alfa 0,82). Politi et al. (1994), Katreniakova (2001) reported similar findings (Cronbach alfa 0,81/0,80).

Politi et al. (1994), in their sample of 18-year old Italians, used principal component analysis with varimax rotation to describe GHQ-12 items and found two factors: general dysphoria consisting of 7 items related to anxiety and depression and social dysfunction including 5 items testing the ability to perform daily activities and cope with everyday problems. Our findings, described in table 4, are very similar.

Table 4 Psychological health – factor analyses

	Component	
	1	2
Could not concentrate	,269	,515
Lost sleep	,586	,137
Not playing a useful part	,126	,619
Could not make a decision	,057	,697
Felt under strain	,678	,177
Could not overcome difficulties	,714	,217
Not enjoying day-to-day activities	,288	,575
Could not face problems	,056	,617
Unhappy and depressed	,730	,145
Lost confidence	,714	,117
Felt worthless	,714	,104
Not feeling happy	,455	,378

RAND 36

The original name of the questionnaire was SF-36 (Ware and Sherbourne 1992), but at the present time different names are used: RAND 36-Item Health Survey 1.0, SF-36 Health Survey (MOS SF-36) and Health Status Questionnaire (HSQ) (Hutchinson et al. 1996). RAND 36-Item Health Survey 1.0 is a generic self-completed multi-dimensional questionnaire measuring the health-related quality of life (Hutchinson et al. 1996) and seems to be a sensitive instrument for use in a population sample (Van der Zee and Sanderman 1993, Van der Zee et al. 1996).

Two scales (vitality and mental health scale) and two items (self-reported health, self-perceived vulnerability to illness) from the general health scale were used in the present study.

Vitality and mental health

Two scales of the Slovak version of the RAND-36 (*Van der Zee and Sanderman 1993, Van der Zee et al. 1996*) were used to measure vitality and mental health. The four items of the vitality scale are focused 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.

Self-reported health

Self-reported health was measured by asking the respondents to describe their health as excellent, very good, good, fairly good or bad. This measurement is derived from an item of the RAND-36 (*Van der Zee and Sanderman 1993, Van der Zee et al. 1996*), the general health scale.

From international literature it is known that this question has a high predictable value for mortality and morbidity over long periods (*Kaplan and Camacho 1983, Kaplan et al. 1996, Appels et al. 1996, Jylhä et al. 1998*). "Perceived health incorporates a variety of physical, emotional, and personal components of health, which taken together comprise individual "healthiness"" (*Rahkonen et al. 2000, p.31*). As such, self-assessed health is a broad indicator of health-related well being (*Segovia et al. 1989*), and represents a robust, global summary measure of somebody's health status (*Manderbacka 1998*). Higher income, good child-parent relationship, higher interest and achievement in school, high self-esteem, not smoking, and being male were all positively and directly associated with higher self-ratings of health (*Vingilis et al. 1998*).

Self-reported vulnerability to illness

Self-reported vulnerability to illness is derived from an item of the RAND-36 (*Van der Zee and Sanderman 1993, Van der Zee et al. 1996*), the general health scale (gets sick a little bit easier than others). Adolescents were asked if they are more vulnerable to illness in comparison with other peoples (yes/no).

Long-term well-being (cheerfulness)

This measurement is derived from Nelson's "The Dartmouth COOP Functional Health Assessment Charts" (*Hutchinson et al. 1996*). The scale describes experienced feelings during the previous year. Respondents are asked to select one from 7 icons of faces which differ in intensity of smile. They should select that one which express their feelings during the last year the most. A higher score indicates lower long-term well-being or general quality of life.

Chronic diseases

Chronic diseases were assessed by means of a questionnaire based on the Health Interview Survey of the Dutch Central Bureau of Statistic (*CBS 1994*). This questionnaire was improved according to 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 the most prevalent in adolescence. The respondents were asked whether or not they had suffered from any of these chronic diseases for longer than three months. We examined the prevalence of the separate chronic diseases and also the average number of used categories per person.

Experienced health complaints

Experienced health complaints were measured by the Slovak version of a shortened 13-item version of the VOEG (*Jansen and Sikkel 1994*). In the Slovak version 5-anchor scales were used to describe the frequency of suffering of included health complaints during the last month. For dichotomization, the frequency “to suffer three times and more during the last month” were used as a cut-off point. Both the prevalence of 13 separate VOEG items, and the sum score of the VOEG varying from 0-13, were examined.

Medical consumption

The questionnaire of medical consumption was created especially for the purpose of this study and was based on the questionnaire used in the Dutch sample (*Tuinstra 1998*). A set of 6 questions examined prevalence of serious illnesses (surgery, hospitalisation, other serious illnesses), injuries which required health service treatment, visits to doctors and the use of prescribed and non-prescribed drugs.

Self-reported Anthropometric measures and BMI

Adolescents reported their height and weight. BMI indexes were computed using following Quetelet index: $BMI = \frac{\text{weight [kg]}}{(\text{height [m]})^2}$

The average height reported by boys was 173,2 cm and by girls 165,6 cm. The average weight reported by boys was 59,3 kg and by girls 53,2 kg. The average BMI in boys was 19,7 and in girls 19,4. Novakova and Sevcikova (*1994*) using the data of the nation-wide Slovak anthropometric survey of children and youth in 1991, report for 15-years old adolescents average height in male 170,5 cm, in female 163,2 and average weight in male 58,2 kg and in female 54,3 kg.

2.3.3. HEALTH RISK BEHAVIOUR AND ATTITUDES TOWARDS HEALTH RISK BEHAVIOUR

Four types of health risk behaviour, namely smoking, alcohol consumption, drug experience and lack of physical exercise, and attitudes toward two types of health risk behaviour (smoking, marijuana and hash use) were explored. Data were obtained through a questionnaire created on the basis of a Dutch study (*Tuinstra 1998*).

Smoking

The prevalence of the experience with smoking, intensity of smoking and attitudes towards smoking was measured using 3 items. Adolescents were asked if they had ever smoked (1- no, never, 2 – yes, I have tried, 3- sometimes I smoke, but not daily, 4 – I smoke daily now), how many cigarettes they smoked per day (1- I do not smoke, 2 – not more than one cigarette, 3- two to five cigarettes, 4- six to ten cigarettes, 5- eleven and more cigarettes) and what they think about their smoking in future (1- I think I will never start smoking, 2- I smoked in the past, but I have stopped, 3- I am just trying to stop smoking, 4- I think I will stop smoking, 5- I have no idea, 6- I think I will start smoking sometime, maybe later, 7- I think I will smoke all my life).

Alcohol consumption

Experience with alcohol consumption and frequency of alcohol consumption were explored by asking adolescents if they drank alcohol sometimes (1-no, never, 2-yes, but only low-alcohol drinks, 3-yes, sometimes I drink a glass of spirits) and how many times they had drunk alcohol during the previous month (1- not once, 2- once or twice, 3-three to five times, 4-six to ten times, 5-ten times and more).

Drug use

Adolescents were also asked if they had ever used marijuana or hash (1-no, never, 2-I have used it once, 3-I use it sometimes, no more than once a month, 4-I use it regularly, more than once a month).

Lack of physical exercise

The frequency of physical exercise longer than 20 minutes was measured using four alternatives: (1) I do not do sport, (2) less than 2-3 times per week, (3) at least 2-3 times per week and (4) more than 3-4 times per week. Physical education was excluded. Respondents were also required to list the sports in which they actively participated.

2.3.4. PARENT AND PEER IMPACT

The respondents were asked if their parents did sport weekly, smoked daily, drank alcohol at least once a week, or got drunk at least once a month. They could select one of the following alternatives: (1) no, (2) yes, mother, (3) yes, father, (4) yes, both parents.

The adolescents reported how many of their friends did sport weekly, smoked daily, drank alcohol at least once a week, got drunk at least once a month, or used marijuana or hash. The results were: (1) nobody, (2) several, (3) half of them, (4) majority, and (5) all of them.

2.3.5. SOCIAL SUPPORT

Adolescents were asked how many good friends they had (none, 1-2, 3-5, more than 5) and if they thought they had enough friends (yes/ no). We wanted to find out what type of peer contact occurred among adolescents. They could select one or more choice from the following list: a. dating, b. confidential friendship, c. membership to a group, d. friends among classmates, e. youth meetings, f. other, g. no significant contacts with peers.

The social network and social support were described by three questions. Firstly, adolescents were asked to write a list of important persons whom they considered as important in their life, whom they needed, without whom it would be difficult for them, whom they could rely on, and with whom they could talk or ask for help. Adolescents were asked to indicate one of them as the most important person. Secondly, adolescents were asked on whom they relied the most frequently when they needed to talk about serious topics. They should select only one person. Thirdly, adolescents were asked whom they could rely on, with whom they usually talked about, and whom they usually asked for help if they had the following five sets of problems: a. school, homework, b. people, relationships, c. serious resolutions about my future, d. health, health troubles, e. psychological problems.

2.3.6. PERSONALITY

Self-esteem

The measure of self-esteem employed the 10-item Rosenberg self-esteem scale (*Rosenberg 1965*). Respondents were asked to strongly agree, agree, disagree, or strongly disagree with 5 positive and 5 negative statements dealing with a favourable or unfavourable attitude toward oneself. The sumscore varies from 10 to 40;

a higher score means higher self-esteem.

The reliability of Slovak translation of this scale is sufficient (Cronbach alfa 0,71). Slightly higher internal consistency was reported by Katreniakova (2001) from a sample of school children (Cronbach alfa 0,74) and also Allgood-Merten et al. (1990) in a sample of 13-19 years olds (Cronbach alfa 0,88), Andrews and Brown (1993) in a sample of 15-25 years olds (Cronbach alfa 0,83).

Boys are characterised by significantly higher self-esteem in comparison with girls. Mean sum scores and standard deviation are described in table 5.

Table 5 Self-esteem in male and female (mean sum scores and standard deviation)

	M	STD	gender differences (t-test)
male	29,5	3,68	0,000
female	28,0	3,84	

Satisfaction with figure

Adolescents were asked how they were satisfied with their figure. This scale gives additional information about self-esteem, particularly one specific dimension of self-esteem which is very important in this age.

Satisfaction with the figure is significantly lower among girls in comparison with boys. Half of the girls in comparison to 1/5 of the boys were not satisfied with their figure. Findings are described in table 6.

Table 6 Satisfaction with figure (in %)

	male	female	gender differences (chi-square)
very satisfied	13,0	3,7	0,000
satisfied	53,5	43,9	
does not matter	11,8	5,0	
not satisfied	19,4	40,3	
very unsatisfied	2,3	7,2	

Decision-making style

The Adolescent Decision Making Questionnaire (Mann et al. 1989, Tuinstra 1998) is a self-reported questionnaire consisting of 30 items. Respondents could mark one of four responses to each item: (1) never true, (2) often true, (3) sometimes true, (4) always true. A high score represents a high level of the regarding subscale (self-confidence, vigilance, panic, evasiveness, complacency). There were three exceptional items for the subscale self-confidence which were reversed, because their negative formulation. Mean score and standard deviation of the subscale are described in table 7.

Table 7 Scores on the Adolescent Decision Making Styles

	male		female	
	M	STD	M	STD
self-confidence	2,8	0,60	2,7	0,58
vigilance	2,9	0,54	2,8	0,51
panic	2,0	0,61	2,1	0,60
evasiveness	1,8	0,62	1,7	0,55
complacency	1,9	0,52	1,7	0,44

2.4. STATISTICAL ANALYSES

In this study several techniques for analysing our data have been used. Most of them used statistical software package SPSS, version 7.5.2. Besides this LISREL version 8.3 software (*Jöreskog and Sörbom 1993*) was also used. In this section we will shortly list the analyses used. Further details of the analyses can be found in the section "Analysis" of the separate chapters.

Gender differences in health, described in chapter 3, were tested by t-test for continuous and chi-square for dichotomous variables. Logistic regression for the dichotomised categorical health measures and the analysis of variance for continuous health measures were used to test the socio-economic health differences in chapter 4. Two models were fitted, one without the interactions and one with interactions between gender and socio-economic status. In chapter 5, a Mann-Whitney test was used to explore gender differences in health risk behaviour and attitudes towards health risk behaviour, and Kruskal-Wallis test to test socio-economic differences in health risk behaviour and attitudes towards health risk behaviour. General linear models were used to explore the influence of health risk behaviour and socio-economic status on the health of adolescents, and logistic regression was used to explore the prevalence of smokers and alcohol consumers among socio-economic groups of adolescents in chapter 6. Support for the model of interrelation between SES, parental smoking, peers' smoking and adolescents' smoking behaviour, described in chapter 7, was provided using LISREL analyses (path analyses with one latent variable). Logistic regression for the dichotomised categorical health measures and the analysis of variance for continuous health measures were used to explore the influence of social support on health among gender and socio-economic groups of adolescents in chapter 8.

3 SELF-REPORTED HEALTH PROBLEMS OF SLOVAK ADOLESCENTS

ABSTRACT

This paper describes self-reported health problems among 2616 Slovak adolescents (boys 52,4%, girls 47,6%). Adolescents consider their health as very good in general. They often feel “vital” rarely feel depressed or nervous. On the other hand, the psychological health of more than 20% of the boys and 40% of the girls was unsatisfactory. Also a sizeable number of them suffered from separate physical complaints, chronic diseases or used medical services. Findings are more unfavourable for girls in comparison with boys. Our findings indicate that adolescence is not such a healthy period in human life. The Slovak Republic, a Central European country, does not differ in this respect from Western European countries.

Key Words

health status, self-reported health, health indicators, adolescents, Slovakia

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INTRODUCTION

Health is one of the most valuable aspects of human life. One of the ways to protect it is to investigate it and collect information about it for a single period of life. Adolescence in particular seems to be a very important period, because it is the time, when people are looking for, experimenting with and also establishing life style, attitudes, concepts, beliefs and habits, which may have long-term influences on health. Some unfavourable health processes can be reversible at this time. Surveys of adolescents' health are also interesting because there is disagreement among findings in two areas: those obtained by commonly used health indicators, such as mortality and morbidity and those obtained by self-reported health indicators, such as self-rated health, self-reported questionnaires of psychological health, physical health complaints, long-standing diseases, medical consumption and so on. According to the former, adolescence seems to be a very healthy period. However, research based on self-reported health indicators shows a considerably high prevalence of health problems. This means there are differences between the adolescents' own perception of their health and results of epidemiological studies based on mortality and morbidity.

Health is more than just a mortality or morbidity rate. Without doubt, the concept of health includes also feelings, worries, and the perceptions of adolescents related to health. So, self-reported health indicators seems to be more appropriate and more efficient in surveys of health status in adolescence, than health indicators based on medical records or medical statistics.

At present, a lot of attention is focused in international journals on the health of adolescence, especially in Western Europe, but there is a lack of information about the health status of Slovak adolescents. Also, self-reported health indicators are very rarely used in research carried out on the Slovak population. This means we know very little about the health of Slovak adolescents, especially about self-reported health problems. There is more than one reason why attention should be focused on this period of human life and on a Central European country.

Firstly, Member States of the World Health Organisation (WHO) in the European Region have adopted a strategy for Health for All. Its first "target" is focused on reducing the health differences between countries and between groups within countries (1990). Firstly however, we have to know how healthy Slovaks are and if there are any health differences between them. The findings of Ginter (1996, 1995) show poor health within the Central European population, particularly amongst the Slovak population. This is particularly apparent when compared to reported

health statistics within the West European population. Is it also a case of the next generation - which means adolescents?

Secondly, surveys of health should be a sufficient basis for health policy, but should also provide inputs for subsequent surveys to investigate socio-economic inequalities in health. Socio-economic differences are hardly present during adolescence, but they increase in early adulthood. Longitudinal research may shed more light on the origin of the socio-economic health differences and on the possibilities of slowing the unwanted increase in these differences.

Thirdly, it is commonly accepted that it is better to protect health than to cure diseases. Adolescence especially, is the period of human life, in which the basis of health protective behaviour is established and the first symptoms of future serious health problems can occur.

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 are participating. The aim of this study is to explore health and social patterns in health with regard to a specific period in life and also within an international context. The international character, particularly Slovak participation established possibilities of discussing findings in a Central-West European context. It is important particularly because Central European countries are organised in a different way and very little is known about the character and the size of socio-economic health differences in these countries. This Slovak study follows parts of Scottish and Dutch studies.

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-08 study" (*MacIntyre 1987, MacIntyre et al. 1989*). It is longitudinal in design and involves a 20-year follow-up of three age cohorts, 15, 35 and 55 years as 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. Comparable indicators were used in a Dutch study "Health in Adolescence" which is a 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).

Finally, gender comparison of self reported health problems are reported. The importance of the "gender" perspective in studies of adolescent health is highlighted also by findings of Goodman et al. (*1997*) and Gijsbers van Wijk and Kolk (*1997*).

METHODS

Procedure and respondents

Data were collected in September and October 1998 as a part of an international comparative longitudinal study "Comparing Social Patterns in Health between Western and Central Europe in Adolescence". The sample consists of 2616 first grade students of 31 secondary schools located in Kosice (52,4% boys, 47,6% girls, and mean age 15 years). This sample was stratified according to gender and type of secondary school; the proportion of the five educational levels of the regular Slovak school system was maintained. Individual schools were selected at random. We can consider our sample as representative of the Slovak adolescent population. Respondents completed the questionnaires at school, in their classrooms and under the guidance of the field workers. The response rate was 96,3%; the non-response was due to illness and other types of absence. The average occurrence of missing values was 0,5%.

Measures of health

The data were assessed by self-reported questionnaires, which included the following measures of health.

Self-reported health was measured by asking the respondents to describe his/her health as excellent, very good, good, fairly good or bad. There are a lot of studies confirming the relation between this scale, and mortality and morbidity (*Appels et al. 1996*).

Psychological Health was measured by the Slovak version of a 12-item version of the General Health Questionnaire (GHQ) (*Goldberg and Williams 1988*). The GHQ is a self-report 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 responses. Two methods of scoring are used, a Likert score (range 0-36) and a binary score (range 0-12) which permits the identification of "cases" or in other words a level of symptomatology of potential clinical relevance. According to Banks (*1983*) study, a cut-off point of 2/3 should be used as a criterion for cases in adolescence.

Two subscales of the Slovak version of the RAND-36 i were used to measure **vitality and mental health**. The four items of the vitality scale are focused 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 a better health status.

Experienced health complaints were measured by the Slovak version of a shortened 13-item version of the VOEG (*Jansen and Sikkkel 1981*). This questionnaire shows a valid and reliable picture of the current health status, expressed in physical health complaints. In the Slovak version 5-anchor scales were used to describe the frequency of suffering of included health complaints during the last month. For dichotomization, the frequency “to suffer three times and more during the last month” were used as a cut-off point. Both the prevalence of 13 separate VOEG items, and the sum score of the VOEG varying from 0-13, were examined.

Chronic diseases were assessed by means of a questionnaire based on the Health Interview Survey of the Dutch Central Bureau of Statistic (*CBS 1994*). This questionnaire was improved according to 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 the most prevalent in adolescence. The respondents were asked whether or not they suffered from any of these chronic diseases for longer than three months. We examined the prevalence of the separate chronic diseases and also the average number of used categories per person.

The questionnaire of **medical consumption** was created especially for the purpose of this study and was based on the questionnaire used in the Dutch sample (*Tuinstra 1998*). A set of questions examined prevalence of serious illnesses (surgery, hospitalisation, other serious illnesses), injuries, which required health service, visits to doctors and the use of prescribed and non-prescribed drugs.

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 carried out using the statistical software package SPSS, version 7.5.2. Boys and girls were analysed separately and possible gender comparisons were drawn. Distribution of the health measurements between the male and female adolescents were tested by a t-test (sum score of GHQ-12, average scores of vitality and mental health scales; dichotomous variables) or a Chi square test (other variables; categorical variables).

RESULTS

Self-Reported Health

On average, adolescents consider their health as very good. Boys (68,9%) and girls (55,1%) consider their health mostly as excellent or very good. Less than 5% of adolescents consider their health as fairly good or bad.

Table 8 Self-Reported Health (in %)

	Male	Female	Significance
Excellent	29,2	18,7	**
Very good	39,6	36,4	
Good	27,1	40,1	
Fairly good	3,1	4,1	
Bad	1,0	0,7	

** significance $p \leq 0.01$

* significance $p \leq 0.05$

There are significant differences between boys and girls in self-reported health. As Table 8 shows, boys evaluated their health more positively than girls.

Psychological Health

A sizeable number of Slovak adolescents were detected as a “cases” (a level of symptomatology of potential clinical relevance). The psychological health of 23,9% boys and 41,3% girls were not satisfactory (“cases”) in Slovakia. More than half of the adolescents detected as a “case” (48,1% - 79,1%) had been feeling unhappy or depressed, had felt constantly under strain, had suffered sleep deprivation and felt they could not overcome their difficulties. These items of GHQ-12 seem to be significant for being identified as a “case”. The first three of them were also indicated in a Dutch study (*Tuinstra 1998*). The mean score of GHQ-12 (Likert) was 9,34 in boys and 11,57 in girls.

There are significant differences between boys and girls in psychological health. The psychological health of boys was statistically significantly ($p \leq 0,01$) better when compared with girls in both methods of scoring and evaluation. Girls scored higher in GHQ and also they were most frequently detected as a “cases” and they scored significantly higher than boys in all items of the used questionnaire.

Vitality and Mental Health

Slovak adolescents may be described as often being full of energy (vital) and rarely depressed or nervous. Girls have significantly ($p \leq 0,01$) less favourable mean scores in vitality (boys 64,2, girls 57,7) and mental scales (boys 71,1, girls

64,6) in comparison to boys. Scores of vitality were lower than 60 in 37% of boys and 52% of girls and scores of mental health were lower than 60 in 35% of boys and 52% of girls.

Physical Health Complaints

Only 40% of the boys and 23% of the girls reported none of the listed complaints. A considerable number of adolescents reported two or more health complaints (boys 41,6%, girls 61,7%). Boys reported a mean of 1,76 health complaints and girls 2,86; the difference is significant.

Adolescents mostly suffer from headache and backache and also get up feeling tired and listless. More than 15% of the boys and 30% of the girls suffered three times or more during the last month from these complaints. Approximately half of the girls felt tired three times or more during the last month.

Table 9 Physical Health Complaints (in %)

	Male	Female	F/M	Significance
Stomach feel full and bloated	5,3	12,1	2,28	**
Get short of breath easily	10,4	12,8	1,23	*
Have pains in the chest or hear region	5,4	11,1	2,06	**
Bones and muscles ever ache	16,6	19,6	1,18	*
Feel tired	27,1	47,6	1,76	**
Headache	16,2	33,9	2,09	**
Backache	12,6	23,9	1,90	**
Upset stomach	3,9	4,8	1,23	
Feel dead legs	6,4	10,0	1,56	**
Get tired sooner	13,2	21,3	1,61	**
Feel dizzy	6,2	14,7	2,37	**
Feel listless	22,2	35,8	1,61	**
Get up feeling tired and unrest	30,7	38,8	1,26	**
Average number of used categories per person	1,76	2,86		**

** significance $p \leq 0.01$

* significance $p \leq 0.05$

Gender differences are demonstrated more in detail in Table 9. This table shows the patterns of statistically significant sex differences for 12 out of 13 symptoms reported. The prevalence of 9 pointed health complaints amongst girls is twice as high as it is in boys.

Chronic diseases

In our study, per male 0,7 chronic disease and per female 0,9 chronic disease were recorded; the difference is significant. Approximately half of the adolescents (boys 43,3%, girls 52,6%) suffered from at least one chronic disease. As Table 10 demonstrates, a sizeable number of adolescents suffered from chronic complaints of the back, hay fever, allergy, skin diseases, eczema and girls also from migraine.

Table 10 Chronic Diseases (in %)

	Male	Female	F/M	Significance
Asthma, COPD	1,0	2,2	2,2	*
Inflammation of frontal sinus	1,3	1,8	1,39	
Hay fever	14,6	12,4	0,85	
Allergy	11,5	14,2	1,23	*
Chronic complaints of the back	15,0	22,5	1,5	**
Rheumatoid arthritis	1,1	2,7	2,46	**
Epilepsy	0,1	0,6	6,00	**
Migraine	3,0	6,7	2,23	**
Skin diseases, eczema	7,2	11,0	1,53	**
Haemophilia	0,3	0,3	1,00	
Diabetes	0,4	0,6	1,5	
Inflammation of the bladder	0,4	1,0	2,5	
Hypertension	4,3	3,1	0,72	
Ulcer	0,1	1,0	10	**
Other	5,4	8,8	1,63	**
Average number of used categories per person	0,65	0,89		**

** significance $p \leq 0.01$

* significance $p \leq 0.05$

With the exception of hay fever, significantly more girls than boys suffered from all pointed chronic diseases. Girls suffered from migraine twice as frequently as boys did.

Medical consumption

Less than 10% of the adolescents experienced serious illness during the last year. Less than 20% of the adolescents used prescribed drugs and less than 30% of them used non-prescribed drugs. Less than 30% of adolescents were seriously injured during the last year. Approximately half of the adolescents had visited the doctor during the last two months.

Table 11 Medical Consumption (in %)

	Male	Female	Significance
Serious illness during last year	7,9	8,7	
Serious injury during last year	35,9	18,4	**
Visit of doctor during last two months	44,2	51,2	**
Prescribed drug use during last two weeks	17,2	20,8	*
Not prescribed drug use during last two weeks	20,8	33,7	**

** significance $p \leq 0.01$

* significance $p \leq 0.05$

According to medical consumption we – at least partially - confirmed poorer health in boys in comparison to girls. As can be seen in Table 11 twice as many boys than girls were seriously injured during the last year and the difference is significant. On the other hand, girls visited doctors and used drugs significantly more often.

Table 12 The list of most frequently used prescribed and non-prescribed drugs and purposes of medical consumption (in % male/ female)

group of used a prescribed drugs		group of used a non-prescribed drugs	
<ul style="list-style-type: none"> · antibiotics or chemotherapeutics (5/5) · supportive symptomatic treatments of respiratory diseases (3/4) · antihistaminic (2/3) · vitamins or minerals (2/3) · painkillers (3/2) 		<ul style="list-style-type: none"> · painkillers (8/20) · vitamins or minerals (7/7) · supportive symptomatic treatments of respiratory diseases (4/5) 	
purpose of visiting a doctor	purpose of using a prescribed drugs	purpose of using a non-prescribed drugs	
<ul style="list-style-type: none"> · medical check-up, examination or vaccination (16/19) · respiratory diseases (15/21) 	<ul style="list-style-type: none"> · respiratory diseases (10/14) · allergies (1/2) 	<ul style="list-style-type: none"> · respiratory diseases (9/12) · headache (4/10) 	

As is depicted in Table 12, the most frequently used group of prescribed drugs seems to be antibiotics or chemotherapeutics and the most frequently used group of non-prescribed drugs seems to be painkillers. Respiratory disease seems to be the main reason for an utilisation of medical services.

An interesting question is who advised adolescents to use non-prescribed drugs. Parents had advised children to use drugs in half of the cases and a quarter of adolescents had decided to take them for themselves. In 10% of case it was someone else who had given the advice. Findings show that parents play a very important role in health behaviour in both direct (they were advisors) and indirect (self-medication is probably related to parents norms and values) ways.

DISCUSSION

Findings indicate that in the Slovak population, as in other countries adolescence is not such a healthy period in human life, as it is usually considered. On the other hand the occurrence of self-reported health problems were similar or lower in comparison to West European adolescents, respectively Scottish and Dutch adolescents. In this paragraph the overview of similarities and differences in health between Central and Western European adolescents will be discussed along with gender differences in health.

Firstly, more Slovak adolescents (boys 68,9%, girls 55,1%) evaluated their health as excellent or very good when compared to Scottish (boys 57,1%; girls 50,6%) (*West et al. 1990*) and Dutch adolescents (boys 62,1%; girls 43,5%) (*Tuinstra 1998*). Also King et al. (1996) reported that more Slovak (boys 40%; girls 22%) than Scottish (boys 28%; girls 9%) adolescents evaluated their health as very good. King et al. (1996) reported that the number of respondents who felt very healthy went down with increasing age (11, 13, 15-year-old cohort) in the Slovak population.

Boys evaluated their health more positively than girls and a similar pattern of gender differences in self-rated health was reported in 24 European countries and Canada by King et al. (1996). West et al. (1990) and Glendinning et al. (1992) confirmed these findings in Scottish adolescents and Tuinstra (1998) in Dutch adolescents.

Secondly, a similar percentage of Dutch (boys 22,3%; girls 44,4%) (*Tuinstra 1998*) and a much lower percentage of Scottish (boys 10,4%; girls 18,5%) (*West et al. 1990*) adolescents were indicated as a “cases” (psychological health on level of potential clinical relevance). Our findings about the vitality and the mental health of Slovak adolescents are similar to Dutch findings (vitality: boys 62,57; girls 54,25; mental health: boys 72,10; girls 64,14) (*Tuinstra 1998*).

Significant gender differences in psychological health, vitality and mental health were confirmed using the same questionnaire in Dutch adolescents (*Tuinstra 1998*) and in the case of psychological health also in Scottish adolescents (*West et al. 1990, Glendinning et al. 1992*). Dzuka (*Dzuka et al. 1993, Dzuka 1994*) and also Geckova (1999) used a different questionnaire of well-being (Bern Questionnaire for psychological well-being) (*Dzuka et al. 1993, Dzuka 1994*) and confirmed gender differences unfavourable for girls.

Thirdly, Dutch adolescents (*Tuinstra 1998*) reported more health complaints (boys 3,02; girls 4,62) than Slovak adolescents. The three most prevalent physical

health complaints in the Slovak adolescent population, respectively: tiredness, headache and backache were most prevalent also in the Dutch adolescent population (Tuinstra 1998). According to King et al. (1996), it is only in Canada and Belgium that the prevalence of backache is higher than in Slovakia (boys 22%, girls 30%). If we consider that feeling listless – one of the most prevalent physical health complaints – may be interpreted as suffering from bad temper or being nervous, then the high prevalence of listlessness and backache appear to be something specific in Slovak adolescents. In Slovakia, the prevalence (suffered once or more a week during the previous 6 months) of bad temper (boys 62%, girls 74%) and nervousness (boys 57%, girls 73%) was the highest among the 24 investigated European countries and Canada (King et al. 1996).

Fourthly, a sizeable number of Slovak adolescents, but also Dutch adolescents (boys 32,8%; girls 43,3%) (Tuinstra 1998) suffered at least one chronic disease. In Dutch adolescents the prevalence of hay fever and in girls also of skin diseases and eczema was higher than 10% (Tuinstra 1998) like that it was in Slovak adolescents. Considerably more Slovak adolescents suffered from back complaints and less of asthma and COPD in comparison with Dutch adolescents. The prevalence of asthma and COPD was lower than 2% in Slovak adolescents. According to Sobotik et al. (1994) the prevalence of COPD in the appropriate age group (14-24 years old) is 3,3% in male and 0,7% in female and these numbers are very similar to our findings. Because of a great deal of similarities between and the unified history until recently of Czechs and Slovaks we can use his (Sobotik et al. 1994) data about the Czech population as approximate for the Slovak adolescent population. This approximation is interesting also because this data was based on physicians' records and equivalent data about the Slovak population at this age is not available. So per male 0,77 chronic disease and per female 0,78 chronic disease was recorded in the age group 14-24 years old. They are very similar to the findings of our study. In other words, our subjective health indicators should be considered as good health indicator in comparison with objective health indicators. Both, data based on self-reported questionnaires and data based on physicians' records confirm, dorsopathies (as a chronic diseases including chronic complaints of the back) and skin diseases as chronic diseases with the highest prevalence. It is also noteworthy that dorsopathies maintained the highest positions also in the next age group (25-34 years), in which the prevalence was more than doubled in comparison to younger age groups. Both data also confirm a higher prevalence of chronic diseases in females in comparison to males.

Significantly more girls in comparison to boys suffered from almost all single physical health complaints and chronic diseases also in the Dutch adolescent population (*Tuinstra 1998*). On the basis of an identical sample Pudelsky et al. (2000) confirmed that adolescents suffering from at least one chronic disease evaluate their health less positively when compared with their healthy peers and also used medical services, particularly visited a doctor and used medication more frequently than their healthy peers. To be suffering from at least one chronic disease is accompanied by broader health consequences in adolescence.

Sixthly, Slovak adolescents are characterised by a low use of medical drugs in comparison to other European countries (*King et al. 1996*). Only 12% boys and 22% girls used medical drugs for headache, only 9% boys and 21% girls used it for stomach-ache, the same number for sleep problems and 33% boys and 34% girls for cough or cold (*King et al. 1996*). This data is only partially comparable to our data, because King et al. (1996) did not differentiate between prescribed and non-prescribed drugs. Unfortunately we did not dispose by comparable Dutch or Scottish data.

Gender differences in medical consumption are not so homogenous. Boys are most frequently engaged in risky behaviour and also in sport activities, which can lead to more injuries in comparison with girls. On the other hand, girls more frequently report that they suffer from health complaints. That means they use medical services more frequently. Our findings, as well as the findings of Dengler and Roberts (1996) support this hypothesis. They examined the consumption of prescribed drugs and non prescribed drugs by adolescents and found girls as more frequent users in comparison with boys, particularly of prescribed drugs, non prescribed painkillers or cough or cold treatment (*Dengler and Roberts 1996*). But there are also some findings, which show that although girls tend to suffer from health complaints more frequently than boys, there are no significant differences in utilisation of medical services, particularly in frequency of contact with a physician (*Settertobulte and Kolip 1997*). In other words, girls suffer more frequently, but they seek medical aid as frequently as boys do.

Our findings can be concluded as following:

1. Adolescents are not so healthy as we usually suppose. Attention should be paid particularly to the following health problems: psychological health, tiredness, headache, backache, skin diseases and respiratory diseases.
2. The character of adolescent health problems would indicate undesirable health processes, which may lead to serious health problems (chronic

respiratory diseases, chronic diseases of musculo-skeletal system and so on), but they are, in this period of life, still preventable, reversible or at least they could be influenced in a more favourable way

3. The prevalence of self-reported health problems in the Central European adolescent population seems to be similar or lower in comparison to West European adolescent population.
4. Our findings, like those of many other studies, confirmed poorer health in girls in comparison with boys.

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

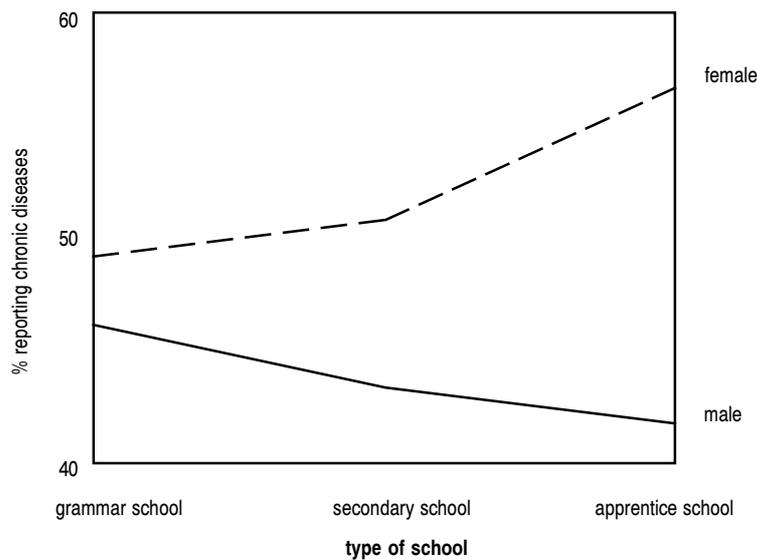
m male f female

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.

5 SOCIO-ECONOMIC DIFFERENCES IN HEALTH RISK BEHAVIOUR AND ATTITUDES TOWARDS HEALTH RISK BEHAVIOUR AMONG SLOVAK ADOLESCENTS

ABSTRACT

Socio-economic differences in the frequency of smoking, alcohol consumption, drug use, physical exercise, and attitudes toward smoking were explored in a sample of Slovak adolescents (1370 boys, 1246 girls, mean age 15 years).

Identification of socio-economic status was based on three indicators: the highest educational level of parents, the highest occupational group of parents, and the type of school the adolescents attended.

Health risk behaviour was strongly related to socio-economic status based on all three socio-economic indicators, although there were some exceptions mostly related to education as indicator of socio-economic status and to alcohol consumption experience and drug use experience. The pattern of socio-economic differences was unfavourable for lower socio-economic groups of adolescents, except for differences in frequency of alcohol consumption among females when highest education of parents was used as an indicator of socio-economic status. A higher education of parents were related to higher frequency of alcohol consumption among females.

There are socio-economic differences in health risk behaviour. Lower socio-economic groups of adolescents behave riskily more frequently in comparison with higher socio-economic groups of adolescents.

Key-words:

socio-economic differences, health risk behaviour, Slovak adolescents

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INTRODUCTION

Health risk behaviour (HRB) like smoking, alcohol consumption and (lack of) physical exercise, may produce a variety of undesirable health outcomes as early as in adolescence (*Rahkonen et al. 1993, Poikolainen et al. 1995, Oja 1997, Twisk et al. 1997, Geckova et al. 2000b, Holmen et al. 2000*). These behaviours are mostly established during adolescence and extend into adulthood (*Pietilä et al. 1995, Hemmingsson et al. 1999*). Unequal distribution of HRB among socio-economic groups may contribute to the explanation of actual or further socio-economic inequalities in health (*West 1988, West et al. 1990, Mackenbach 1992, Stronks 1997, Tuinstra 1998*). People with low socio-economic status (SES) may exhibit more HRB, and as a consequence suffer from worse health in comparison with high SES people. Several authors have confirmed socio-economic differences in HRB among adolescent (*Green et al. 1991, Pietilä et al. 1995, Bergström et al. 1996, Karvonen and Rimpela 1996, Lowry et al. 1996, Piko 2000*) but several do not (*Donato et al. 1994, Glendinning et al. 1994, Donato et al. 1995, Shucksmith et al. 1997, Tuinstra et al. 1998, Challier et al. 2000*). The highest occupational group of the parents, the highest educational level of the parents, and type of school were inversely related to daily smoking among Swedish adolescents (*Bergström et al. 1996*). No significant socio-economic differences were found with regard to physical activity (*Bergström et al. 1996*). High SES (father's occupation, mother's education, mother's employment status) of a family was connected with healthy habits (concerning smoking, drinking, physical exercise) among Finnish male adolescents (*Pietilä et al. 1995*). The highest occupational group of parents, family type and type of the adolescent's school were strongly related to smoking, alcohol use and (lack of) physical exercise among Finnish adolescents (*Karvonen and Rimpela 1996*). In the case of drinking, however, the adolescents whose fathers belonged to higher SES used alcohol to a somewhat greater extent than the others did. Prevalence of smoking, episodic heavy drinking and (lack of) physical exercise were inversely related to SES based on parent's education and family income among USA adolescents (*Lowry et al. 1996*). Scottish adolescents from lower (non-manual) social class households were most likely to smoke and to drink (*Green et al. 1991*). The type of school itself appeared to have a strong effect on the occurrence of smoking, drinking and drug using among Hungarian adolescents (*Piko 2000*). The school, its setting, organizational structures, activities and atmosphere may influence HRB in adolescents. Considerable influence may also be attributed to classrooms, which are important arenas for peer group formation and friendship relations.

On the other hand, Glendinning et al. (1994) did not find support for socio-economic differences (father's occupational class and parent's education) in smoking among Scottish adolescents. In a similar setting, Shucksmith et al. (1997) did not find adolescents' drinking behaviour related to SES based on the highest occupational group of parents or parents' education post-school education. The occupational class and education of parents were not associated with smoking and alcohol consumption among Italian adolescents either (Donato et al. 1994, Donato et al. 1995). Smoking, alcohol consumption and drug use were not found to be related to the highest occupational group of parents among French adolescents (Challier et al. 2000). Tuinstra et al. (1998) did not confirm consistent socio-economic differences in Dutch adolescents' smoking, alcohol consumption, drug use and (lack of) physical exercise.

There are larger numbers of adolescents with risky attitudes than adolescents with risky behaviour (Geckova et al. 2001f), and we can suppose that behaviour related to these attitudes will grow with age in these adolescents. Attitudes are the Number One target in preventive programmes.

In our article we try to explore whether there are any socio-economic differences in HRB among Slovak adolescents. SES indicators based both on parents (highest occupational group of parents, highest education of parents) and on adolescents (type of school), were used. We focus our attention on smoking, alcohol consumption, drug use, and lack of physical exercise. As well as these, socio-economic differences in attitudes toward smoking were also explored.

MATERIAL AND METHODS

Procedure and respondents

Data were collected in 1998. The school-based sample consisted of 2616 first year students of 31 secondary schools located in Kosice (52,4% boys, 47,6% girls, and mean age 15 years, STD: 0,62). Attending school is compulsory at this age. The sample was stratified according to gender and types of secondary schools, and the proportion of the five educational levels of the regular Slovak school system was maintained. Individual schools were selected at random. Our sample is representative of the Slovak adolescent population. The data were gained through self-reported questionnaires. 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 illness and other types of absence. The average occurrence of missing values was 1,1%.

Measures of SES

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

Highest education of parents

This measure is based on asking adolescents about their father's and mother's highest, successfully-completed level of education. 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 combined the categories of vocational education (24,1%) and primary school (1,2%) to minimise the problem of small denominators. The characteristic of the parent with the higher level of education was used for classification.

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 were currently unemployed. This information was then transformed into 9 categories of ISCO (1992, 1993). Finally, some categories were combined to minimise the problem of small denominators. According to the classification used, 27,7 % adolescents came from families belonging to the occupational classes I. Legislators, senior officials and managers and II. Professionals; 50,1% adolescents came from families belonging to the 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 the 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. The characteristic of the parent with the higher occupational class was used for classification.

Type of school

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

Measures of health risk behaviour

Data were obtained through a questionnaire created on the basis of a Dutch study (Tuinstra 1998). Four types of HRB were explored: smoking, alcohol

consumption, drug use and (lack of) physical exercise. In order to measure smoking experience and smoking frequency, the adolescents were asked if they had ever smoked cigarettes (1-no, never, 2-yes, I tried, 3-sometimes I smoke, but not daily, 4-I have been smoking daily for some time now); and how many cigarettes they smoke daily (1-I do not smoke, 2-not more than one cigarette per day, 3-two to five cigarettes per day, 4-six to ten cigarettes per day, 5-eleven to fifteen cigarettes per day, 6-sixteen and more). Experience with alcohol consumption and frequency of alcohol consumption were explored by asking adolescents if they drank alcohol sometimes (1-no, never, 2-yes, but only low-alcohol drinks, 3-yes, sometimes I drink a glass of spirits) and how many times they had drunk alcohol during the previous month (1- not once, 2- once or twice, 3-three to five times, 4-six to ten times, 5-ten times and more). Adolescents were also asked if they had ever used marijuana or hash (1-no, never, 2-I have used it once, 3-I use it sometimes, no more than once a month, 4-I use it regularly, more than once a month) and how often they did sports (1- daily, 2-at least 2-3 times per week, 3-less than 2-3 times per week, 4-I do not do any sport). Only sporting activities longer than 20 minutes were considered and physical education in school was disregarded.

Measures of attitudes toward health risk behaviour

Adolescents were asked to select one of seven statements describing their future smoking behaviour intentions. Choices were divided into three groups: 1-low risk (I think I will never start smoking. I smoked in the past, but I have stopped.), 2-medium risk (I'm just trying to stop smoking. I think I will stop smoking. I have no idea.) and 3-high risk (I think I will start smoking sometimes, maybe later. I think I will smoke all my life.).

ANALYSIS

The analyses were done using the statistical software package SPSS, version 7.5.2. Gender differences in HRB and attitudes towards smoking were explored using the Mann-Whitney test. Socio-economic differences in HRB and attitudes towards smoking were explored separately in boys and girls using the Kruskal-Wallis test. Analyses were computed for each indicator of SES (highest occupational group of parents, highest educational level of parents, type of school), HRB (smoking experience, smoking frequency, alcohol experience, alcohol consumption frequency, drug experience, sport frequency) and attitudes toward HRB separately.

RESULTS

Only 26,7% of boys and 42,0% of girls had had no experience with smoking, while the remaining adolescents had already tried smoking or smoked regularly.

One third of boys and one fifth of girls smoked daily. One third of adolescents reported they did not drink alcohol, but nearly one half reported they used to drink beer or wine and the rest of them reported they also used to drink a glass of spirits occasionally. During the previous month, 52,3% of the boys and 59,6% of the girls had not drunk alcohol; 33,5% of the boys and 31,6% of the girls had drunk alcohol once or two times; and 14,2% of the boys and 8,7% of the girls had drunk alcohol 3 times and more. Experiences with marijuana or hash were reported by 8,7% of the boys and 5,6% of the girls. 10,2% of the boys and 26,3% of the girls reported they did not do sport and 21,0% of the boys and 35,5% of the girls reported they did sport less than 2 or 3 times per week. Sufficient frequency of physical exercise was reported by 68,8% of the boys and 38,8% of the girls. 57,9% of the boys and 64,4 % of the girls reported a low-risk attitude towards smoking, while 10,1% of the boys and 6,7% of the girls reported a high-risk attitude towards smoking. Medium-risk attitudes towards smoking in the future were reported by one third of the adolescents. Our findings about smoking, alcohol consumption and drug use are more unfavourable among boys in comparison with girls. In contrast, findings about (lack of) exercise were more unfavourable among girls compared with boys. Mean scores of HRB and attitudes towards HRB are presented in Table 16.

Table 16 Gender differences in HRB and attitudes towards HRB

	mean score		sig.
	male	female	
smoking experience (1-4)	2,16	1,85	***0,000
frequency of smoking (1-6)	1,72	1,41	***0,000
alcohol consumption experience (1-3)	1,85	1,76	**0,002
frequency of alcohol consumption (1-5)	1,68	1,52	***0,000
drug-using experience (1-4)	1,12	1,07	**0,002
frequency of sporting (1-4)	2,11	2,77	***0,000
attitudes towards smoking (1-3)	1,52	1,42	***0,000

Significant socio-economic differences were found in smoking experience, frequency of smoking, and attitudes toward smoking, except for female when the highest education level of parents was used as an indicator of SES. The differences were also partially found in alcohol consumption experience (parent's occupation only in female), and frequency of alcohol consumption (parent's occupation, in female also parent's education, type of school). Prevalence of drug-using experience was related to type of school and in females also to the highest occupational group

Table 17 Socio-economic differences in health risk behaviour and attitudes toward health risk behaviour. Mean scores and significance of socio-economic differences in health risk behaviour

		smoking experience (1-4)		frequency of smoking (1-6)		alcohol consump. experience (1-3)		frequency of alcohol consump. (1-5)		drug-using experience (1-4)		frequency of sporting (1-4)		attitudes towards smoking (1-3)	
		m	f	m	f	m	f	m	f	m	f	m	f	m	f
highest educ. of parents	university	1,92	1,76	1,48	1,30	1,80	1,77	1,69	1,62	1,15	1,07	2,03	2,68	1,43	1,46
	secondary	2,24	1,86	1,76	1,42	1,86	1,77	1,69	1,50	1,11	1,07	2,14	2,77	1,53	1,39
	vocational	2,29	1,88	1,89	1,48	1,87	1,72	1,66	1,46	1,10	1,05	2,14	2,88	1,61	1,44
	sig.	0,000	0,374	0,000	0,130	0,321	0,204	0,610	0,043	0,797	0,802	0,204	0,024	0,003	0,243
highest occup. group of parents	high SES	2,04	1,68	1,61	1,27	1,78	1,61	1,60	1,38	1,08	1,04	1,91	2,62	1,37	1,28
	medium SES	2,10	1,80	1,63	1,36	1,83	1,77	1,65	1,53	1,10	1,06	2,11	2,77	1,51	1,41
	low SES	2,35	2,06	1,92	1,61	1,90	1,87	1,80	1,62	1,16	1,08	2,23	2,91	1,64	1,57
	sig.	0,000	0,000	0,003	0,000	0,117	0,000	0,013	0,000	0,054	0,149	0,000	0,000	0,000	0,000
type of school	grammar	1,72	1,64	1,29	1,19	1,81	1,76	1,69	1,58	1,12	1,04	2,05	2,70	1,36	1,37
	technical	2,07	1,81	1,52	1,34	1,81	1,72	1,65	1,48	1,07	1,06	2,13	2,74	1,47	1,40
	apprentice	2,46	2,08	2,11	1,73	1,89	1,82	1,71	1,52	1,16	1,10	2,13	2,90	1,64	1,51
	sig.	0,000	0,000	0,000	0,000	0,149	0,101	0,741	0,041	0,000	0,014	0,692	0,009	0,000	0,001

m male f female

of parents. Socio-economic differences in frequency of sporting were confirmed in both, males and females, when parent's occupation was used as an SES indicator, and in females when parent's education or type of school was used. Our findings are presented in Table 17.

Except for the frequency of alcohol consumption among females, when parent's education or type of school were used as SES indicator, the pattern of socio-economic differences in HRB was unfavourable for lower SES groups. Lower SES adolescents behave more riskily in comparison with higher SES adolescents. The pattern of socio-economic differences in alcohol consumption frequency among females is contrary: higher SES adolescents behave more riskily in comparison with lower SES adolescents. It should be pointed out however that this difference is of borderline statistical significance.

DISCUSSION

In this paper we explore the relationship between SES and smoking, alcohol consumption, drug use, (lack of) physical exercise and attitudes toward smoking among Slovak adolescents. With some exceptions, socio-economic differences unfavourable for lower SES groups were confirmed in explored HRB and attitudes towards HRB. Exceptions were mostly related to education as indicator of socio-economic status and to alcohol consumption experience and drug use experience. Contrary pattern of socio-economic differences in frequency of alcohol consumption were confirmed among females, when parent's education or type of school were used as SES indicator.

We have encountered similar findings also in West European studies. Socio-economic differences in smoking (*Green et al. 1991, Pietilä et al. 1995, Bergström et al. 1996, Karvonen and Rimpela 1996, Lowry et al. 1996, Piko 2000*), alcohol consumption (*Green et al. 1991, Pietilä et al. 1995, Karvonen and Rimpela 1996, Lowry et al. 1996, Piko 2000*), drug use (*Piko 2000*), lack of physical exercise (*Pietilä et al. 1995, Karvonen and Rimpela 1996, Lowry et al. 1996, Tuinstra et al. 1998*) are unfavourable for the lower SES group of adolescents. On the other hand some findings do not support the existence of socio-economic differences in smoking (*Glendinning et al. 1994, Tuinstra et al. 1998, Challier et al. 2000*), alcohol consumption (*Donato et al. 1994, Donato et al. 1995, Shucksmith et al. 1997, Tuinstra et al. 1998*), drug use (*Tuinstra et al. 1998*) and lack of physical exercise (*Bergström et al. 1996*). Exceptions from class patterning in alcohol consumption were reported also by West (1988), Mackenbach (1992) and Tuinstra et al. (1998).

There are several possible reasons for discrepancies in findings related to socio-economic differences in HRB among the mentioned studies. The reasons could be related to:

- a. the socio-cultural context: Cross-cultural studies of HRB among adolescents report great differences in the patterns of HRB and gender differences in HRB, but also in socio-economic differences in HRB between particular countries (*King et al. 1996, Hibbel et al. 1997, Currie et al. 2000*). The pattern of socio-economic differences will be more clear in those kinds of HRB, which are more prevalent in the explored population. Some of the countries are more "risky" compared with others regarding socio-economic differences.
- b. differences in measurements of SES used: it is very difficult to find comparable measurements of SES. In general it is very difficult to measure SES, particularly in Central Europe, because the socio-economic stratification is not clear and is rapidly changing.
- c. differences in the measurement of HRB used.
- d. differences in the samples (e.g. age, socio-demographic characteristic of sample)

As we have pointed out in previous papers, there are socio-economic differences in health unfavourable for lower SES groups among Slovak adolescents (*Geckova et al. 2000a, Geckova et al. 2001d*). Findings are similar when we use more than one indicator of SES and more than one health indicator. HRB is explored as a factor which can contribute to the presence of socio-economic health differences in adolescence. Smoking, alcohol consumption, drug use, lack of physical activity affect the health of Slovak adolescents in an unfavourable way (*Geckova et al. 2000b*). This means that HRB already affects health at this age. The onset of smoking and alcohol consumption is very early. According to Hibbell et al. (1997) 11% boys and 4% girls in Slovakia start smoking before they are 13 years old. Similarly, 58% boys and 45% girls drink alcohol and 16% boys and 7% girls experience drunkenness before reaching that age. When they are 15 years old it seems to be that there are also already-established socio-economic differences in HRB. To be a member of a particular SES group means not only to have better or restricted access to information, amenities, sources and power, but also to be a participant in a social environment with relevant norms, rules, pressures, life style and attitudes. A risky behaviour of low SES adolescents may be tolerated and encouraged by their social environment. De Vries (1995) investigated socio-economic differences in the determinants of adolescents' smoking behaviour, and

found that low-SES adolescents have a more positive (undesirable) attitude towards smoking. They experience greater pressure to smoke and perceive stronger social norms towards smoking from parents, relatives, friends and doctors. Generally, they live in general in a social environment in which more smoking goes on, and show lower self-efficacy in comparison to high-SES adolescents. Norman et al. (1999) found low-SES parents using smoking bans at home less frequently in comparison with high-SES parents. Ultimately, it seems to be that HRB is more frequent in low SES groups and contributes to bad health in low SES groups.

6 INFLUENCE OF HEALTH RISK BEHAVIOUR AND SOCIO-ECONOMIC STATUS ON HEALTH OF SLOVAK ADOLESCENTS.

ABSTRACT

The aim of this study was to investigate the role of health risk behaviour (smoking, alcohol consumption) in the explanation of socio-economic health differences among adolescents. Two hypotheses, one positing different exposure and the other different vulnerability, were explored.

Prevalence of health complaints among smokers vs. non-smokers, alcohol consumers vs. abstainers and among socio-economic groups of Slovak adolescents (n=2616, mean age 15 years) were explored.

Socio-economic disadvantage and the presence of health risk behaviour were associated with greater frequency of health complaints experienced by adolescents. Socio-economic differences unfavourable for lower socio-economic groups were found in smoking, but not in alcohol consumption. Socio-economic status and health risk behaviour interacted in their influence on health, when socio-economic status was based on the mother's characteristics. Analysis of confirmed interaction effects of socio-economic status and health risk behaviour on health revealed evidence for both our hypotheses, i.e. different exposure and different vulnerability. The evidence of different exposure seems to be stronger. Socio-economic health differences are non-significant among non-smokers and abstainers, but strongly significant among smokers and alcohol consumers. The influence of health risk behaviour on health is weaker in higher socio-economic groups.

Both hypotheses, of different exposure and of different vulnerability, seem to be valid for explanation of socio-economic health differences among Slovak adolescents.

Key-words:

smoking, alcohol consumption, socio-economic status, health, Slovak adolescents

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INTRODUCTION

While Scottish (*West 1988, West et al. 1990, MacIntyre and West 1991, Glendinning et al. 1992, Ford et al. 1994*), Finnish (*Rahkonen et al. 1995*), and Dutch (*Tuinstra 1998*) studies indicated relative equality in health among adolescents, more recent studies from Nordic countries (*Halldórsson et al. 2000*), USA (*Call and Nonemaker 2000*), and Slovakia (*Geckova et al. 2001d*) bring into the debate evidence of inequalities in health among adolescents which are unfavourable for lower socio-economic groups.

Socio-economic status (SES) influences health indirectly, through more specific determinants of health and illness (*Stronks 1997*). This hypothesis of social causation supposes that people in lower socio-economic groups live in less favourable circumstances and more frequently engage in health risk behaviour (HRB). The question is whether the uneven distribution of health determinants (hypothesis of different exposure) or differential health impact of these determinants can explain the unequal distribution of health in the population (*Ranchor 1994, Kooiker and Christiansen 1995, Stronks 1997, Tuinstra 1998, Call and Nonemaker 2000*).

According to the hypothesis of different exposure, socio-economic health differences may be explained by varying occurrence of health determinants among SES groups: Determinants of detrimental effects on health (HRB, long-term difficulties, life-events) occur more frequently, and determinants of protective effects on health (physical exercise, social support) occur less frequently in lower SES groups in comparison with higher SES groups.

The differential vulnerability model supposes that higher SES groups have some mechanism at their disposal which inhibits detrimental effects and stimulates protective effects of health determinants. Lower SES groups are less well equipped to cope with the stressors (*Stronks 1997, Tuinstra 1998*).

Kooiker and Christiansen (*1995*), Stronks et al. (*1998*), Ranchor et al. (*1996a*) explored these hypotheses in the adult population and found support for the hypothesis of different exposure, but not for the hypothesis of different vulnerability.

Call and Nonemaker (*2000*) studied the indirect and moderating effects of HRB (smoking, alcohol use, and marijuana use) on the relationship between SES and health outcomes among adolescents. The association between SES and health remained significant even when the influence of HRB was taken into account. Cigarette smoking and use of marijuana were associated with worse health, while use of alcohol was not. They did not confirm the variation in the influence of health risk behaviour on health within SES groups (*Call and Nonemaker 2000*).

Tuinstra (1998) examined whether adolescents in the lower SES group were more vulnerable to the negative consequences of maladaptive decision-making styles in comparison with adolescents in the higher SES groups, in terms of HRB. The hypothesis of different vulnerability was however not confirmed.

The present paper attempts to contribute to the explanation of socio-economic health differences among adolescents. In previous papers we confirmed socio-economic differences in both health and HRB among Slovak adolescents (Geckova et al. 2001d, Geckova et al. 2001e) and also the detrimental effect of HRB on the health of adolescents (Geckova et al. 2000b). Our attention has now shifted from description towards explanation of socio-economic health differences. The influence of HRB and SES on health will be explored with the aim of testing the hypothesis of different exposure and the hypothesis of different vulnerability. Significant socio-economic differences in both health and HRB are unfavourable for lower SES groups, and moreover a significant detrimental effect of HRB on health would be found if the first one, the hypothesis of different exposure, were valid. In the extreme case we would find socio-economic health differences only if HRB were present. If the hypothesis of different vulnerability is valid, we should find a lower influence of HRB on health in higher SES groups and a higher influence of HRB on health in lower SES groups. In the extreme case we should find a significant detrimental influence of HRB on health in lower SES groups, but not in higher SES groups.

Gender differences in health and HRB (Geckova et al. 2001b, Geckova et al. 2001f), confirmed among Slovak adolescents, were the reasons for treating gender as a covariant. Females are characterised by poorer health but lower incidence of smoking and alcohol consumption in comparison with males.

First we ascertain whether significant socio-economic differences in health unfavourable for lower SES groups of adolescents are present, and also whether significant detrimental influences of HRB on the health of adolescents are present. Research will be based on the following questions in line with our two hypotheses:

Different exposure: Are there significant socio-economic differences in occurrence of HRB unfavourable for lower SES groups of adolescents? Are there significant differences in socio-economic health differences between adolescents reporting and not reporting HRB?

Different vulnerability: Are there significant socio-economic differences in the influence of HRB on health among SES groups of adolescents?

METHODS

PROCEDURE AND RESPONDENTS

Data were collected in 1998. The sample consisted of 2616 first year students of 31 secondary schools located in Kosice (52,4% boys, 47,6% girls, and mean age 15 years). The sample 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. Individual schools were selected at random. Our sample is representative of the Slovak adolescent population. 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 2,7%. The data were obtained by means of self-reported questionnaires which included several measures of HRB, SES and health.

Measures of HRB (smoking, alcohol consumption)

Adolescents were asked how many cigarettes they smoked and how many times they had drunk alcohol during the preceding 4 weeks. Based on their answers to the first question they were divided into smokers (1 and more cigarettes per day) and non-smokers (I do not smoke) and based on their answers to the second question they were divided into consumers of alcohol (at least once during last 4 weeks) and abstainers (I did not drink during last 4 weeks).

Measures of SES

Two types of socio-economic indicators were used. The first one is based on the parents: the education of father, the education of mother, the occupational class of father, the occupational class of mother. The second one is based on the adolescents: the type of school they attend.

The adolescents reported about the level of education successfully completed by their fathers and mothers. Educational level was classified as: university (father 20,8%; mother 15,6%), secondary high school (father 36,6; mother 52,8%), vocational or primary school only (father 42,7%; mother 31,6%).

The measure of occupational class of parents is based on asking adolescents about the father's and mother's current occupation, or their last occupation if they are currently unemployed. The information obtained was transformed into 9 categories of ISCO (1992, 1993). Finally, some categories were combined.

The high SES group includes I. legislators, senior officials and managers and II. professionals (father 23,4%; mother 16,7%), the medium SES group includes III.

technicians and associate professionals, IV. Clerks and V. Service workers and shop and market sales workers (father 21,4%; mother 58,9%), and the low SES group includes VI. Skilled agricultural and fishery workers, VII. Craft and related trades workers, VIII. Plant and machine operators and assemblers and IX. Elementary occupations (father 55,2%; mother 24,4%).

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

Measures of Health

Health was measured by the Slovak version of a shortened 13-item version of the VOEG (*Dirken 1967, Jansen and Sikkel 1994*). This questionnaire shows a valid and reliable picture of current health status (*Furer et al. 1995*). It expresses the following physical health complaints: stomach feels full and bloated; get short of breath easily; pain in the chest and heart region; bones and muscles ever ache; feel tired; headache; backache; upset stomach; feel dead legs; get tired sooner; feel dizzy; feel listless; get up feeling tired and unrested. We used a 5-anchor scale expressing the frequency of suffering by included health complaints during the last month in the Slovak version. A cut-off point of three times and more was used in our study for dichotomization. Adolescents mostly suffer from headache, backache and tiredness (*Geckova et al. 2001b*). We examined the sum score of the VOEG, or in other words the sum of experienced health complaints.

ANALYSIS

The analyses were done using the statistical software package SPSS, version 7.5.2. Gender was treated as a covariant, while SES and health risk behaviour were treated as independent variables (fixed factors), and the sum of health complaints was treated as continuous dependent variable. The analysis (GLM) was computed separately for each SES indicator (the education of father, the education of mother, the occupational class of father, the occupational class of mother, type of school) and HRB indicator (smoking, alcohol consumption). Logistic regression was used to explore socio-economic differences in HRB.

RESULTS

Firstly, we explored the influence of SES and the influence of HRB on health separately. Parameters are described in Table 18.

Table 18 Influence of HRB and influence of SES on health of adolescents – parameter estimates (GLM)

Explored Models	Mean sum score VOEG	Adjusted R Square	sig	B	95% Confidence Interval lower upper			
Influence of SES								
a father's education	university	2,10	0,052	0,033	-0,267	-0,514	-0,021	
	secondary	2,22						0,147
	vocational	2,42						
b father's occup. group	high SES	2,07	0,050	0,058	-0,225	-0,458	0,008	
	medium SES	2,32						0,869
	low SES	2,35						
c mother's education	university	2,06	0,052	0,021	-0,334	-0,618	-0,051	
	secondary	2,23						0,040
	vocational	2,48						
d mother's occup. group	high SES	2,11	0,048	0,016	-0,369	-0,667	-0,070	
	medium SES	2,26						0,053
	low SES	2,51						
e type of school	grammar	2,22	0,054	0,007	-0,341	-0,588	-0,009	
	secondary	2,24						0,002
	apprentice	2,39						
Influence of HRB								
1 smoking	non-smokers	2,06	0,087	0,000	-1,065	-1,272	-0,859	
	smokers	2,95						
2 alcohol consump.	abstinents	1,87	0,094	0,000	-1,015	-1,195	-0,836	
	consumers	2,80						

Adolescents from lower SES groups experienced more health complaints. There are significant socio-economic health differences when father's education, mother's education, mother's occupational group and type of school are used as SES indicators. When father's occupational group alone is used as SES indicator, socio-economic health differences are not significant, and when father's education alone is used as SES indicator, socio-economic health differences are significant only between highest and lowest SES group of adolescents.

Smokers and alcohol consumers experienced significantly more health complaints. The models including SES (model a-e, see Table 18) explained about 5% of variance in health, while the models including HRB (model 1-2, see Table 18) explained about 9% of variance in health (adjusted R²).

The occurrence of smokers is higher in lower SES groups in both males and females. The occurrence of alcohol consumers in lower SES groups is higher among males, but lower among females. As can be seen in Table 19, significant socio-economic differences were confirmed in smoking, but not in alcohol

consumption. When SES is based on father's characteristics, socio-economic differences are significant only between high and low SES groups, but not between low and medium SES groups (model 1a, 1b, see Table 19).

Table 19 Socio-economic differences in HRB – parameter estimates (Logistic Regression)

Explored Models	% of smokers, consumers	Adjusted R Square	sig	B	95% Confidence Interval		
					lower	upper	
Smoking							
1a father's education	university	18,2		0,000	0,543	0,418	0,705
	secondary	26,4		0,229	0,884	0,724	1,080
	vocational	28,3	0,025	0,000			
1b father's occup. group	high SES	18,9		0,000	0,594	0,463	0,761
	medium SES	25,0		0,278	0,877	0,691	1,112
	low SES	27,5	0,024	0,000			
1c mother's education	university	20,0		0,000	0,571	0,427	0,763
	secondary	24,7		0,014	0,780	0,640	0,951
	vocational	29,2	0,022	0,001			
1d mother's occup. group	high SES	19,1		0,000	0,552	0,406	0,751
	medium SES	24,6		0,015	0,765	0,615	0,950
	low SES	29,5	0,021	0,001			
1e type of school	grammar	13,3		0,000	0,258	0,195	0,340
	secondary	20,7		0,000	0,438	0,359	0,534
	apprentice	38,8	0,063	0,000			
Alcohol consumption							
2a father's education	university	45,3		0,847	1,021	0,827	1,261
	secondary	42,2		0,489	0,939	0,786	1,122
	vocational	44,4	0,005	0,693			
2b father's occup. group	high SES	45,7		0,319	1,108	0,906	1,354
	medium SES	45,2		0,381	1,097	0,892	1,350
	low SES	42,9	0,005	0,504			
2c mother's education	university	46,1		0,453	1,097	0,861	1,397
	secondary	44,4		0,687	1,037	0,869	1,237
	vocational	43,3	0,006	0,753			
2d mother's occup. group	high SES	47,0		0,167	1,260	0,976	1,628
	medium SES	45,1		0,077	1,164	0,958	1,416
	low SES	41,2	0,007	0,127			
2e type of school	grammar	45,7		0,826	1,024	0,829	1,265
	secondary	41,8		0,133	0,731	0,731	1,042
	apprentice	46,2	0,007	0,190			

Main effect of gender on health is included into the all models. Gender is included into the all models as a covariant.

SES and gender explained about 2% of variance in smoking and about 0,6% of variance in alcohol consumption (adjusted R²). One exception is the type of school, which together with gender explains 6% of variance in smoking (model 1e, see Table 19).

With a similar aim, we explored models including the main effect of HRB and SES on health and also the interaction effect of HRB and SES on health. Parameters are described in Table 20.

The influence of HRB remained significant in all the models explored, while several SES indicators did not. The influence of father's education was not significant in either model, including smoking (model 1a*, see Table 20) and including alcohol consumption (model 2a*, see Table 20). The influence of father's occupational group and type of school was not significant in models including smoking (model 1b*, 1d*, see Table 20). Significant interaction effects between HRB and SES were confirmed in models including mother's education, mother's occupational group, smoking and alcohol consumption (model 1c*, 1d*, 2c*, 2d*, see Table 20).

The explored models explained 8-10% of variance in health status. The influence of HRB on health is stronger in comparison with the influence of SES on health (B, R square).

The influence of HRB is higher in lower SES groups of adolescents (skewness of curve). Socio-economic health differences are very low or absent in the groups of non-smokers and abstainers, but are present in the groups of smokers and alcohol consumers. This pattern, described in Figures 3-4, is only partially significant, as can be seen in Table 20. The interaction effect between abstainers and university education of mother and between abstainers and medium SES of mother is not significant.

Additional analysis confirmed this pattern. We searched for socio-economic health differences separately in the group of smokers, non-smokers, alcohol consumers and abstainers. We also explored the influence of HRB on health among SES groups of adolescents. The parameters can be seen in Table 21.

Socio-economic health differences are non-significant among non-smokers and abstainers, but strongly significant among smokers and alcohol consumers.

The influence of HRB, and of smoking in particular, is weaker (B-coefficients), or in one case (smoking when mother's occupational group is used as SES indicator) non-significant in higher SES groups.

Table 20 Influence of HRBr and SES on health of adolescents – parameter estimates (GLM)

Explored Models	Adjusted R Squared	sig	B	95% Confidence Interval		
				lower	upper	
a1*smoking non-smokers	0,086	0,000	-0,865	-1,175	-0,555	
smokers						
father's university		0,731	-0,094	-0,627	0,440	
educ. secondary		0,412	,164	-0,228	0,556	
vocational						
interact. non-smoker*university	0,750	0,079	-0,010	-0,697	0,502	
effects non-smoker*secondary			-0,412	-0,871	0,005	
b1*smoking non-smokers	0,081	0,000	-1,080	-1,364	-0,797	
smokers						
father's high SES		0,599	0,001	-0,135	-0,638	0,368
occup. medium SES		0,327	0,001	-0,234	-0,701	0,234
group low SES						
interact. non-smoker*high	0,965	0,001	0,013	-0,553	0,578	
effects non-smoker*medium	0,251	0,001	0,317	-0,225	0,859	
c1*smoking non-smokers	0,091	0,000	-1,609	-1,963	-1,255	
smokers						
mother's university		0,001	0,001	-1,601	-0,427	3,385
educ. secondary		0,000	0,001	-0,746	-1,134	-0,359
vocational						
interact. non-smoker*university	0,002	0,001	1,042	0,374	1,709	
effects non-smoker*secondary	0,001	0,001	0,791	0,337	1,246	
d1*smoking non-smokers	0,083	0,000	-1,501	-1,915	-1,088	
smokers						
mother's high SES		0,001	0,001	-1,049	-1,671	-0,427
occup. medium SES		0,006	0,001	-0,587	-1,010	-0,165
group low SES						
interact. non-smoker*high	0,004	0,001	1,043	0,336	1,751	
effects non-smoker*medium	0,023	0,001	0,578	0,080	1,076	
e1*smoking non-smokers	0,086	0,000	-1,138	-1,446	-0,829	
smokers						
type of grammar		0,386	0,001	-0,254	-0,830	0,321
school secondary		0,189	0,001	-0,258	-0,644	0,127
apprentice						
interact. non-smoker*grammar	0,489	0,001	0,226	-0,414	0,865	
effects non-smoker*secondary	0,473	0,001	0,167	-0,290	0,624	

Explored Models	Adjusted R Squared	sig	B	95% Confidence Interval	
				lower	upper
a2* alcohol abstinents consump. consumers father's university education secondary vocational interaction abstinents*university effects abstinents*secondary	0,095	0,000	-1,070	-1,348	-0,791
		0,079	-0,321	-0,679	0,038
		0,229	-0,188	-0,495	0,118
		0,745	0,080	-0,404	0,564
		0,727	0,073	-0,337	0,482
b2* alcohol abstinents consump. consumers father's high SES occup. medium SES group low SES interaction abstinents*high effects abstinents*medium	0,093	0,000	-1,079	-1,332	-0,827
		0,027	-0,383	-0,723	-0,043
		0,795	-0,047	-0,399	0,305
		0,292	0,246	-0,212	0,704
		0,947	0,016	-0,457	0,489
c2* alcohol abstinents consump. consumers mother's university education secondary vocational interaction abstinents*university effects abstinents*secondary	0,098	0,000	-1,403	-1,726	-1,080
		0,002	-0,660	-1,071	-0,249
		0,001	-0,533	-0,838	-0,228
		0,058	0,536	-0,019	1,091
		0,010	0,534	0,128	0,940
d2* alcohol abstinents consump. consumers mother's high SES occup. medium SES group low SES interaction abstinents*high effects abstinents*medium	0,095	0,000	-1,470	-1,851	-1,089
		0,000	-0,819	-1,257	-0,381
		0,001	-0,562	-0,903	-0,220
		0,020	0,700	0,111	1,289
		0,075	0,525	0,075	0,975
e2* alcohol abstinents consump. consumers type of grammar school secondary apprentice interaction abstinents*grammar effects abstinents*secondary	0,096	0,000	-1,072	-1,372	-0,773
		0,018	-0,432	-0,790	-0,074
		0,039	-0,321	-0,625	-0,016
		0,508	0,164	-0,320	0,647
		0,773	0,060	-0,347	0,467

Gender is included into the all models as a covariant

Figure 3 The interaction effect between influence of SES and smoking on health of adolescents

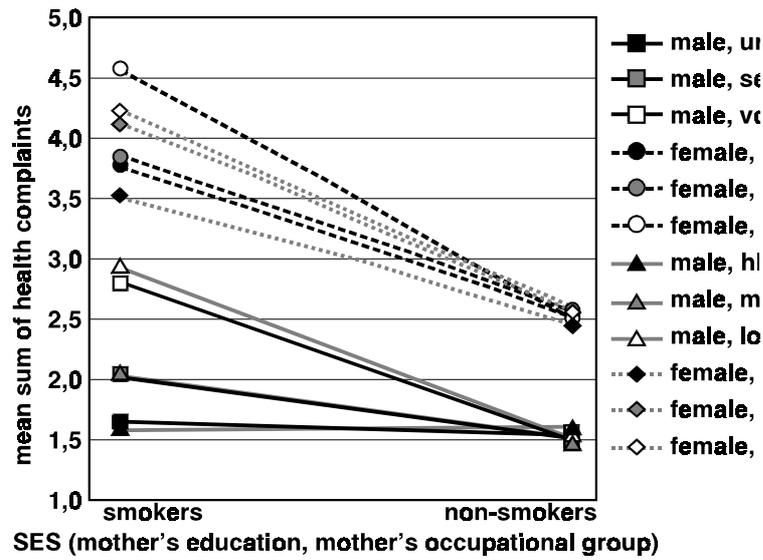


Figure 4 Interaction effect between influence of SES and alcohol consumption on health of adolescents

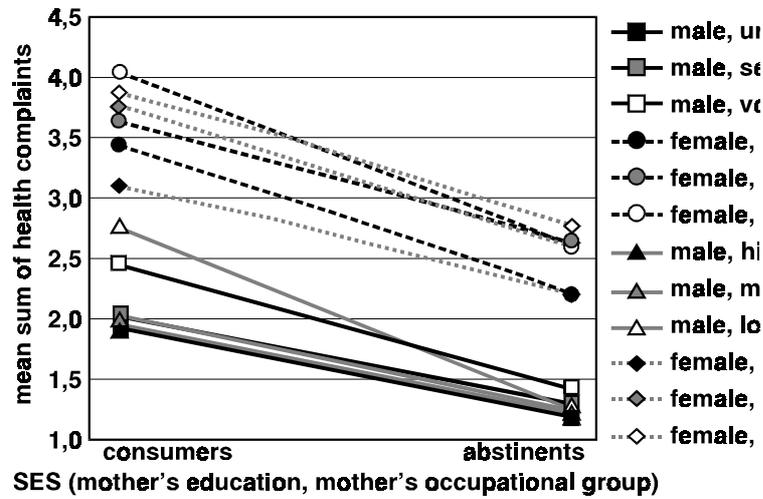


Table 21 Influence of SES and health risk behaviour on health of adolescents. Additional analysis – parameter estimates

		Adjusted R Squared	sig	B	95% Confidence Interval lower upper	
HYPOTHESIS OF DIFFERENT EXPOSURE						
non-smokers						
mother's education	university	0,046	0,968	0,006	-0,298	0,310
	secondary		0,733	0,040	0,188	0,268
	vocational					
mother's occup. group	high SES	0,044	0,910	-0,019	-0,343	0,306
	medium SES		0,891	-0,018	-0,272	0,236
	low SES					
smokers						
mother's education	university	0,127	0,003	-0,981	-1,630	-0,322
	secondary		0,001	-0,712	-1,140	-0,283
	vocational					
mother's occup. group	high SES	0,114	0,002	-1,081	-1,764	-0,397
	medium SES		0,015	-0,579	-1,044	-0,115
	low SES					
abstinents						
mother's education	university	0,048	0,387	-0,151	-0,494	0,191
	secondary		0,943	-0,009	-0,255	0,237
	vocational					
mother's occup. group	high SES	0,052	0,471	-0,133	-0,493	0,228
	medium SES		0,733	-0,047	-0,315	0,222
	low SES					
alcohol consumers						
mother's education	university	0,080	0,004	-0,657	-1,107	-0,207
	secondary		0,002	-0,534	-0,868	-0,200
	vocational					
mother's occup. group	high SES	0,067	0,001	-0,833	-1,313	-0,353
	medium SES		0,003	-0,570	-0,944	-0,196
	low SES					
HYPOTHESIS OF DIFFERENT VULNERABILITY						
mother's education: university						
smoking	non-smokers	0,069	0,034	-0,562	-1,082	-0,042
	smokers					
alcohol consump.	abstinents consumers	0,098	0,000	-0,867	-1,277	-0,458

		Adjusted R Squared	sig	B	95% Confidence Interval lower upper	
HYPOTHESIS OF DIFFERENT EXPOSURE						
mother's education: secondary						
smoking	non-smokers	0,078	0,000	-0,823	-1,106	-0,539
	smokers					
alcohol	abstinents	0,089	0,000	-0,871	-1,113	-0,629
consump.	consumers					
HYPOTHESIS OF DIFFERENT VULNERABILITY						
mother's education: vocational						
smoking	non-smokers	0,108	0,000	-1,605	-1,988	-1,222
	smokers					
alcohol	abstinents	0,101	0,000	-1,401	-1,753	-1,050
consump.	consumers					
mother's occupation: high SES						
smoking	non-smokers	0,046	0,113	-0,446	-0,998	0,105
	smokers					
alcohol	abstinents	0,070	0,000	-0,772	-1,200	0,343
consump.	consumers					
mother's occupation: medium SES						
smoking	non-smokers	0,086	0,000	-0,938	-1,216	-0,661
	smokers					
alcohol	abstinents	0,097	0,000	-0,949	-1,186	-0,712
consump.	consumers					
mother's occupation: low SES						
smoking	non-smokers	0,089	0,000	-1,481	-1,870	-1,044
	smokers					
alcohol	abstinents	0,096	0,000	-1,457	-1,927	-1,034
consump.	consumers					

DISCUSSION

The influence of HRB and SES on health was explored among Slovak adolescents with the aim of contributing to the explanation of socio-economic health differences among Slovak adolescents. The question is whether unequal distribution of HRB or differential health impact of HRB is the reason the socio-economic health differences observed among Slovak adolescents.

Youth, particularly Western European youth, is characterised more by the absence than presence of socio-economic health differences (*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, Geckova et al. (2001d) show that there is considerable evidence of socio-economic health differences among Slovak adolescents, and the trends in these differences are more unfavourable for adolescents of lower SES.

Smoking and alcohol consumption is related to poorer health among adolescents (*Rahkonen et al. 1993, Poikolainen et al. 1995, Twisk et al. 1997, Tynjälä et al. 1997, Boreham et al. 1999, Geckova et al. 2000b, Holmen et al. 2000*). Smoking, drinking of alcohol can influence health already in adolescence, but we should take in account also the possibility, that this behaviour is used as a coping mechanism with relation to existing psychosomatic problems. Particularly when cross-sectional data are only available and subjective health indicators are used, the reason of the association between the higher prevalence of health problems with the higher prevalence and frequency of smoking, drinking of alcohol can be a coincidence and not a causal relationship. To differ the causal relationship from the coincidence requires further research, using longitudinal data from second wave planned in 2002.

Our findings confirmed both a socio-economical disadvantage and a presence of HRB related to the worse health of adolescents.

There are significant socio-economic differences not only in health, but also in HRB. Socio-economic differences in smoking, unfavourable for lower SES groups of adolescents, were confirmed by *Green et al. (1991), Pietila et al. (1995), Bergström et al. (1996), Karvonen and Rimpelä (1996), Lowry et al. (1996), Geckova et al. (2001e), Piko (2000)*. But they were not confirmed by *Donato et al. (1994), Donato et al. (1995), Shucksmith et al. (1997), Tuinstra et al. (1998)*. Similarly, socio-economic differences in alcohol consumption unfavourable for lower SES groups of adolescents were confirmed by *Green et al. (1991), Pietila et al. (1995), Karvonen and Rimpelä (1996), Lowry et al. (1996), Piko (2000) and Geckova et al. (2001e)*. They were not confirmed by *Glendinning et al. (1994), Tuinstra et al. (1998), and Challier et al. (2000)*. Exceptions from class patterning in alcohol consumption were reported also by *West (1988), Mackenbach (1992) and Tuinstra et al. (1998)*.

There are significantly more smokers among adolescents from lower SES groups. Similar findings were not confirmed for alcohol consumption. Smoking,

which has a detrimental effect on health, occurred more frequently in lower SES groups and contributes to socio-economic health differences among adolescents. Our findings support the hypothesis of different exposure at least partially (for smoking).

Including the interaction effects of HRB and SES on health into the explored models we found a lot of evidence for both hypotheses about socio-economic health differences. Significant interaction was confirmed in the model including HRB and SES based on mother's characteristics. We confirmed socio-economic health differences among smokers and alcohol consumers, but not among non-smokers and abstainers. It is possible that the presence of HRB opens the gate for the detrimental influence of socio-economic disadvantage on the health of adolescents. The detrimental influence of HRB is weaker in the highest SES group of adolescents. Both mechanisms, different exposure and different vulnerability, are valid for explanation of socio-economic health differences, but the former explains it more strongly.

Most often in youth studies only father's SES has been investigated. According to some studies (*van der Lucht and Groothoff 1995, Rahkonen and Lahelma 1992*), but also to our findings, the socio-economic characteristics of the mother are of even more impact for health and HRB of children and adolescents than those of the fathers. Social role of mother includes monitoring of family members health symptoms, taking care about health of family members (*Gijsbers van Wijk and Kolk 1997*). Mother's education, including health education seems to be of higher importance in comparison to those of fathers. Our previous findings support this hypotheses: Adolescents talk the most frequently about selected problems, particularly health problems with mother (*Geckova et al. 2000e*).

A frequently discussed issue is the validity of SES indicators based on adolescent's own report. Tuinstra (*1998*) compared answers about the parents' education and occupation provided by adolescents and parents and found a high degree of agreement. The response rates were higher in adolescents' reports in comparison to parents' reports. Glendinning et al. (*1992*) confirmed the stability of the reported paternal social class composition over time.

7 INFLUENCE OF SOCIO-ECONOMIC STATUS, PARENTS AND PEERS ON SMOKING BEHAVIOUR OF ADOLESCENTS

ABSTRACT

The influence of socio-economic status, parents and peers on the smoking behaviour of adolescents is explored. The sample consisted of 2616 adolescents. Support for the model, in male and female separately, was provided using LISREL analyses. Peers' smoking is the strongest predictor of adolescents' smoking. Parents' smoking behaviour influences adolescents' smoking directly, but also indirectly through the influence on peers' smoking behaviour (selection of peer-friends). Socio-economic status influences adolescents' smoking indirectly through the influence on parents' and peers' smoking behaviour. Peers' smoking increases the probability of adolescent's smoking. Parental smoking increases probability of smoking among adolescent offspring and their peer-friends. There is greater prevalence of smoking among parents and peers of adolescents coming from families of lower socio-economic status. Our model is significant in both, male and female, and explains 42-51% of the variance in adolescents' smoking behaviour.

Key words:

socio-economic status, parent, peer, smoking, adolescence

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INTRODUCTION

Smoking behaviour attracts a lot of attention due to its undesirable influence on health and its considerable prevalence in the population. The prevalence of smoking among Slovak adolescents was explored by several transcultural studies (*King et al. 1996, Hibbel et al. 1997, Currie et al. 2000*). According to Hibbel et al. (1997), the prevalence of smoking is “average” among Slovak adolescents in comparison with other surveyed European countries. There are significant gender differences in smoking behaviour (*Geckova et al. 2001f*). The higher prevalence of smoking in males in comparison with females is reported almost in all Central European countries (*Currie et al. 2000*). The undesirable effect of smoking on health in adolescent age itself has been confirmed by *Tynjälä et al. (1997)*, *Geckova et al. (2000b)*, *Holmen et al. (2000)*. A wide range of factors has been investigated for their effect on adolescent’s smoking behaviour. In this article we focus on the effect of parents, peers and SES on adolescent’s smoking behaviour. In previous research we confirmed socio-economic differences in health risk behaviour of adolescents (*Geckova et al. 2001e*) and also significant parent and peer influence on health risk behaviour of adolescents (*Geckova et al. 2000d, Geckova et al. 2001a*). There are some indices for incorporation of SES into the model of parent and peer influence on adolescent’s smoking behaviour (*Green et al. 1991, Glendinning et al. 1994*). The relationship between smoking of adolescents and the smoking behaviour of their parents and peers was explored, as well as whether this relationship is influenced by SES (*Glendinning et al. 1994*). Adolescent’s smoking behaviour was strongly related to parents’ and peers’ smoking, but this relationship was independent of SES. Similar findings are presented in *Green et al. (1991)*: social class and parental smoking behaviour were independently associated with adolescent’s smoking behaviour.

A good deal of the literature supports the hypothesis of indirect influence of parents on health-risk behaviour of adolescents via peer influence (*Wills and Vaughan 1989, Glendinning et al. 1994, Rossow and Rise 1994, Blanton et al. 1997, Brook et al. 1997, Urberg et al. 1997*). From this literature we derived the following hypothesis:

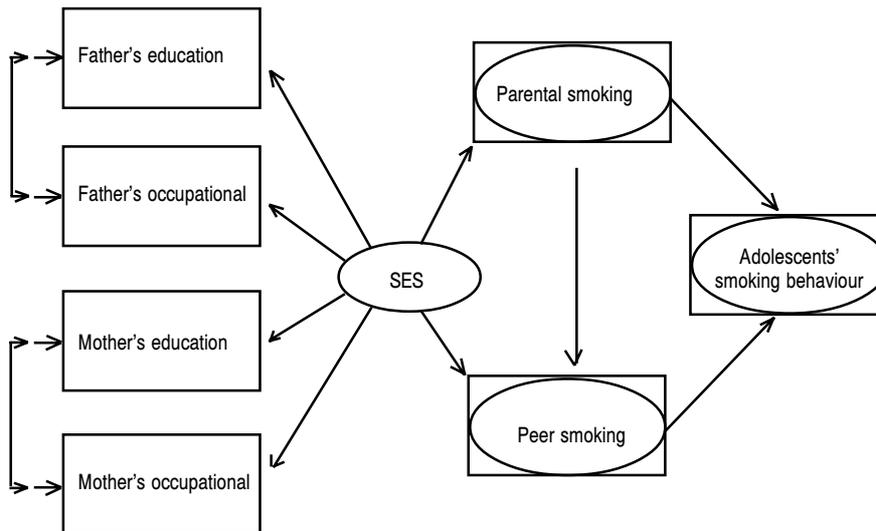
1. We suppose that peers’ smoking behaviour will be the strongest predictor of adolescent’s smoking behaviour.
2. We suppose that parents’ smoking behaviour influences adolescent’s smoking behaviour directly, but also indirectly through the influence on peers’ smoking behaviour (selection of peer-friends).

3. We suppose that SES influences adolescent's smoking behaviour indirectly through parents' and peers' smoking behaviour.

These hypotheses lead us to hypothetical model of relationships between SES, parents' smoking, peers' smoking and adolescent's smoking behaviour, which is described in Figure 5.

There is some indication that smoking behaviour may be determined differently in boys and girls (Flay et al. 1998, Simons-Morton et al. 1999). This was the reason to explore male and female separately.

Figure 5 The hypothetical model of influence of SES, and influence of parents and peers on adolescents' smoking behaviour



MATERIAL AND METHODS

Procedure and respondents

Data were collected in 1998. The sample consists of 2616 first grade students of 31 secondary schools located in the Kosice (52,4% boys, 47,6% girls, and mean age 15 years). The sample was stratified according to the gender and types of secondary schools.

Individual schools were selected at random. Our sample is representative for the Slovak adolescent population. 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 data were assessed by self-reported questionnaires, which included measures of SES, adolescent's smoking behaviour, parent and peer impact.

Measures of smoking behaviour

Adolescents were asked, how many cigarettes they smoked per day. They could select one of the following options: (1) I do not smoke, (2) Not more than one cigarette per day, (3) 2-5 cigarettes per day, (4) 6-10 cigarettes per day, (5) 11-15 cigarettes per day, (6) 16 and more cigarettes per day.

There are 74,5% of non-smokers in our sample (69,2% of male; 80,2% of female). The prevalence in the other 5 categories of smoking behaviour is lower than 10% (male/female: 9%/8%, 10%/6%, 7%/4%, 3%/1%, 2%/1%).

The frequency of smoking is significantly related to a lower level of psychological health, lower self-reported health, higher perceived vulnerability to illness, higher occurrence of health complaints, higher consumption of medical services and in male also higher occurrence of chronic disease (*Geckova et al. 2000b*).

Measures of parental smoking

The respondents were asked if their parents smoked daily. The categories were: (1) none (male: 47,3%, female: 49,2%), (2) one of the parents (male: 35,8%, female: 34,1%), (3) both parents (male: 17,0%, female: 16,7%).

Measures of peer smoking

The adolescents reported how many of their friends smoked daily. The categories were: (1) nobody (male: 25,6%, female: 27,8%), (2) several (male: 43,4%, female: 42,1%), (3) half of them (male: 10,4%, female: 9,7%), (4) majority (male: 14,8%, female: 15,7%), and (5) all of them (male: 5,8%, female: 4,8%).

Some studies used respondents' information about parent smoking behaviour (*Glendinning et al. 1994, Greenlund et al. 1995, Flay et al. 1998, Epstein et al. 1999, Horn et al. 2000, Donato et al. 1994, Bergström et al. 1996*), and some studies used self-reported information obtained from parents (*Blanton et al. 1997, Rossow and Rise 1994, De Vries 1995, Green et al. 1991*). West et al. (1999) use both, respondents' information and self-reported information about parents smoking behaviour and confirmed a high level of correspondence.

Measures of SES

Adolescents reported about father's and mother's level of education in terms of successfully-completed courses. The educational level was classified as: (1) university (father 20,8%, mother 15,6%), (2) post secondary (father 3,3%, mother 5,9%), (3)

senior high school (father 33,3, mother 46,9%), (4) vocational (father 40,4%, mother 26,7%), and (5) elementary or none (father 2,2%, mother 4,9%).

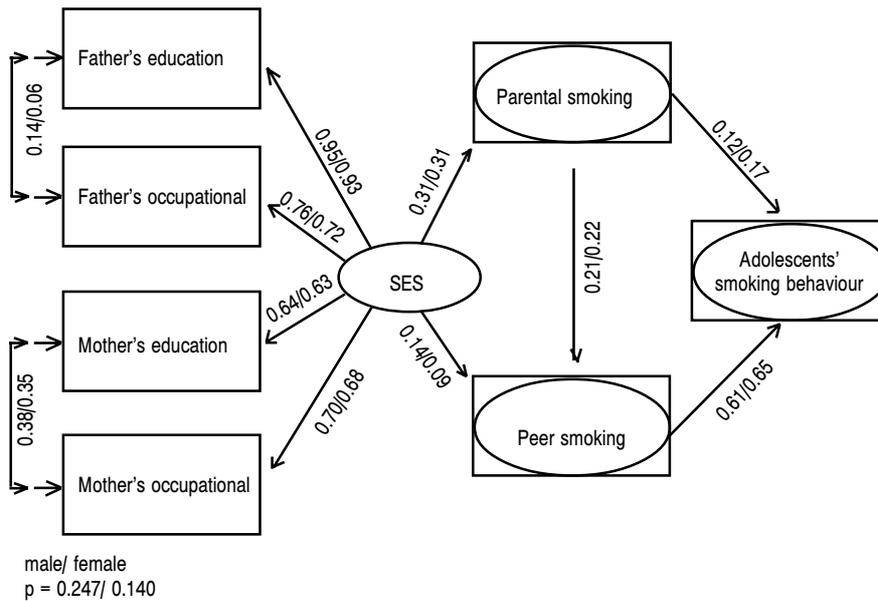
The measure of parents' occupational class is based on asking adolescents about their father's and mother's current occupation, or their last occupation if they were currently unemployed. The obtained information was transformed into 9 categories of ISCO (1992, 1993): (1) legislators, senior officials and managers (father 14,4%, mother 3,0%), (2) professionals (father 9,0%, mother 13,7%), (3) technicians and associate professionals (father 11,7%, mother 17,3%), (4) clerks (father 4,7%, mother 24,1%), (5) Service workers and shop and market sales workers (father 5,0%, mother 17,5%), (6) Skilled agricultural and fishery workers (father 9,3%, mother 5,0%), (7) Craft and related trades workers (father 29,9%, mother 6,0%), (8) plant and machine operators and assemblers (father 12,6%, mother 0,7%), and (9) elementary occupations (father 3,4%, mother 12,6%).

ANALYSIS

The LISREL technique combines two analyses: the factor analysis (the measurement model), and the path analysis - extension of regression analysis (the structural model). The first one, the measurement model, we used to construct the latent variable of SES. It was important for us, because we are interested more on the underlying concept than on the contribution of separate indicators/ dimensions of SES. The second one, the structural model, was used to explore both, the direct and indirect effect of SES, parents and peers on adolescent's smoking behaviour. Using LISREL, we were able to compare the direct and indirect effect.

A model of the inter-relation between SES, parental smoking, peers' smoking and adolescent's smoking behaviour was examined using path analysis with one latent variable. This latent variable, SES, consists of the following four indicators: father's educational level, father's occupational group, mother's educational level, and mother's occupational group. Parental smoking, peer smoking and adolescent's smoking behaviour were measured by one indicator. The main outcome variable is adolescent's smoking behaviour. All variables were treated as ordinal LISREL (version 8.3) software (*Jöreskog and Sörbom 1993*) was employed to examine the proposed model separately in male and female. We compared all the paths (SES@ parental influence, SES@ peers' influence, parental influence@ peers' influence, parental influence@ adolescent's smoking behaviour, peer's influence@ adolescent's smoking behaviour) between male and female model. Goodness of Fit Statistics (Chi square) were used to examine the significance of the models.

Figure 6 Path diagram for model of SES, parent, and peer influence on smoking (parameters are standardized)



RESULTS

Figure 6 represents the model, which fits our data the best.

Peers' smoking behaviour is the strongest predictor of adolescent's smoking behaviour. There is greater prevalence of smoking among adolescents reporting more smoking friends.

Parents influence adolescent's smoking behaviour directly, but also indirectly (parent on smoking: 0,14; standardised solution) through their influence on peers' smoking behaviour. Parental smoking increases the probability of smoking among their offspring, but also among their offspring's peer-friends. As we pointed out earlier, reporting more smoking peers is related to higher probability of an adolescent's smoking.

The direct effect of SES on adolescent's smoking behaviour was tested, but was found non-significant and excluded from the model. SES influences adolescent's smoking behaviour indirectly (SES on smoking: 0,15; SES on peer: 0,07; standardised solution) by means of both parents' and peers' smoking behaviour. There is a greater prevalence of smoking among parents and peers of adolescents from families of lower socio-economic status.

The influence of SES on peers' behaviour in females is the weakest ($\beta=0,10$; $SE=0,04$) but still significant.

Our model is significant (male: $p=0,247$; female: $p=0,140$) and explains 42% of the variance in adolescent's smoking behaviour in male and 51% in female. Gender differences in the explored paths were tested and found non-significant ($\chi^2 = 3,64$; $df=4$).

DISCUSSION

The model with relationships between SES, parents and peers was explored. The influence of peers's smoking is the strongest one. The parental smoking influences adolescent's smoking behaviour directly, but also indirectly via peers'smoking. SES influences adolescent's smoking behaviour indirectly via parental smoking and peers' smoking. There are no significant gender differences in the explored paths.

Significant influence of peers' smoking behaviour on adolescent's smoking behaviour is reported very frequently in literature (*Blanton et al. 1997, Brook et al. 1997, Urberg et al. 1997, Flay et al. 1998, Epstein et al. 1999, Horn et al. 2000, Geckova et al. 2001a*). Similarly with findings of several other authors (*Donato et al. 1994, Bergström et al. 1996, West et al. 1999*), our findings also indicated peers as a strongest predictor of adolescent's smoking behaviour.

The influence of parents on adolescent's smoking behaviour is also very frequently investigated. The majority of the authors confirm the influence of parents' smoking on adolescent's smoking behaviour (*Green et al. 1991, Rossow and Rise 1994, De Vries 1995, Greenlund et al. 1995, Brook et al. 1997, Flay et al. 1998, Geckova et al. 2000d*). On the other hand, *Donato et al. (1994)* consider the effect of parental influence on adolescent's smoking behaviour as modest or irrelevant, *West et al. (1999)*, and *Horn et al. (2000)* confirm its non-significance. However, several authors (*Bergström et al. 1996, Epstein et al. 1999*) have established significant influence of mother's smoking, but not father's smoking on adolescent's smoking behaviour.

Several findings indicate an indirect effect of parents on adolescent's smoking behaviour. Parental smoking, or parent-child relationship can influence adolescent's smoking behaviour indirectly through influence on an adolescent's selection of peers (*Rossow and Rise 1994, Blanton et al. 1997, Brook et al. 1997*). *Rossow and Rise (1994)* reported that parents contribute to the selection of peers whose behaviour is similar to parents' behaviour. *Urberg et al. (1997)* confirmed that parents-adolescent relationships influence the selection of peers. According to *Glendinning et al. (1994)* ASB is influenced by friends' smoking, and when the adolescents themselves

do not smoke then by parental smoking. Similarly according to Wills and Vaughan (1989), the influences of peers and parents interact: adolescents with low social support from adults are more vulnerable to peer pressure. When parents smoke, peer influence on smoking is higher (Wills and Vaughan 1989). According to Blanton et al. (1997) parents' smoking behaviour and the relationship between parents and adolescents influence the selection of peers and peers influence adolescent's smoking behaviour.

Our findings confirm both direct and indirect effects of parents on adolescent's smoking behaviour: parents' smoking behaviour is related to adolescent's smoking behaviour and the number of an adolescent's friends who smoke. We suppose that this indirect influence of parents represents parents' influence on peer selection, but unfortunately our data did not allow us to check this.

Several authors confirmed the direct effect of SES on adolescent's smoking behaviour (Green et al. 1991, Glendinning et al. 1994, De Vries 1995, Greenlund et al. 1995, Bergström et al. 1996, Karvonen and Rimpelä 1996, Tuinstra 1998, Epstein et al. 1999, Simons-Morton et al. 1999, Piko 2000, Geckova et al. 2001e), but some authors did not (Donato et al. 1994, Challier et al. 2000). Green et al. (1991), Glendinning et al. (1994) found the influence of parents and peers on adolescent's smoking behaviour independent from influence of SES on adolescent's smoking behaviour.

Our findings indicate an indirect effect of SES on smoking via parental and peer influence: when parental and peer influence on smoking is included in the model, the direct effect of SES on adolescent's smoking behaviour becomes non-significant. The indirect effect of SES on adolescent's smoking behaviour, mediated by its effect on parent's and peer's smoking behaviour, was significant.

Transitional crisis characterised by socio-economic and political changes related to constrains on both, individual but also societal level, contributed to undesirable trends in population life style (Puska 1997). There are specific conditions of health promotion in Central European countries, which require specific approaches. According to Puska (1997) focusing in smoking behaviour in Central and Eastern Europe "improving population lifestyle is an affordable and effective way to improve the health status of the population" (Puska 1997, p. 143-144).

8 INFLUENCE OF SOCIAL SUPPORT ON HEALTH AMONG GENDER AND SOCIO-ECONOMIC GROUPS OF ADOLESCENTS

ABSTRACT

We explored the influence of social support on health among gender and socio-economic groups with the aim of contributing to the explanation of socio-economic health differences among Slovak adolescents. The sample consisted of 2616 Slovak adolescents (52,4% male, 47,6% female, mean age 15 years). The data were assessed by a self-reported questionnaire including measures of social support, socio-economic status and health. There are significant gender differences in social support which are unfavourable for males. On the other hand, there are significant gender differences in health, unfavourable for females. Low social support is significantly related to worse health. There are significant socio-economic differences in both health and social support which are unfavourable for lower socio-economic groups. Three groups, females, adolescents from lower socio-economic groups, and also adolescents reporting low social support, less frequently consider their health as excellent or very good, suffer from more health complaints, report worse psychological health, vitality and mental health in comparison to males, to adolescents from higher socio-economic groups, and to adolescents reporting high social support. Males and adolescents from lower socio-economic groups more frequently reported low social support in comparison to females and adolescents from higher socio-economic groups. We did not confirm any significant differences in the influence of social support on health among gender and socio-economic groups of adolescents. Social support is related to health, and it is unequally distributed among gender and socio-economic groups. There are no significant differences in the influence of social support on health among gender and socio-economic groups.

Key words:

social support, socio-economic status, gender, health

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INTRODUCTION

Influence of social support on health attracts considerable research attention. Social support may have both direct and indirect effect on health.

Social support, including emotional, instrumental, informational and appraisal support may influence the health irrespective of exposure to stressors. According to Pratt (1991), there are several ways in which types of social support may protect the health of adolescents. Emotional support may reinforce self-esteem, a sense that one's person and body are worth caring for and protecting, and thereby encourage people to take control of their health and well-being by developing a health-promoting regimen. Instrumental support may facilitate health practices by helping to change intentions into actions. Informational support also comprises health education, providing guidelines for health behaviour, developing a coping style of seeking information and applying it in decisions on health care. Appraisal support may be behavioural guidance and may enhance people's motivation to protect their health.

The buffer hypothesis states that social support is especially important when the individual is exposed to life stress. Social support may buffer undesirable effects of stress on health (Koubekova 1997, Stronks et al. 1998, Peek and Lin 1999, Ystgaard et al. 1999).

Several authors have confirmed the health-protective influence of social support. Boyce et al. (1988) found that adolescent mothers reporting a richer, more differentiated social network were characterised by better outcomes in the field of lifestyle, school, promiscuity, role adaptation, and care for the baby. Cheever and Hardin (1999) supported the role of social support in preventing decline in adolescents' health assessment after traumatic events: when social support decreased, adolescents' health assessments worsened. Social support and psychological coping skills are statistically independent psychosocial resources, and they operate in a conjunctive manner to influence the relation between life stress and subsequent athletic injury among adolescents (Smith et al. 1990b). Life stress and low social support from the baseline level influenced subsequent health symptom scores (Ystgaard et al. 1999). Adolescents who reported not talking to anyone when they were upset, revealed higher levels of depressive symptoms than did adolescents who disclosed when upset (Schraedley et al. 1999). Parental social support influences the physical health of rural adolescents (Wickrama et al. 1997). Feelings of depression are lower among adolescents who feel involved at school and report warm and supportive relationships with family members; and feeling involved at school is

also associated with higher self-reported health status among adolescents (*Call and Nonnemaker 2000*). Social support makes significant contributions to the prediction of subsequent psychological distress (*DuBois et al. 1992, DuBois et al. 1994*). Using a cross-sectional design, *DuBois et al. (1992)* found social support from family members and friends to be correlated to lower levels of psychological distress, but support from school personnel not to be correlated significantly with psychological distress. Using a longitudinal design, they reported contrary findings. Higher initial reported levels of school personnel support were related to a reduced level of distress at follow-up, while social support from family members and friends was not (*DuBois et al. 1992*). Additional analysis revealed the buffer and compensatory role of social support. The number of major events was more strongly related to ratings of psychological distress among youth reporting low levels of support from school personnel. Ratings of support from school personnel were more strongly related to reduced psychological distress among youths who reported a low level of support from family (*DuBois et al. 1992*). Analysis of the reverse influence indicated a reciprocal pattern of stress and support linked to adaptation. Psychological distress was related significantly to increased daily hassles and reduced family support at follow-up, whereas grades were predictive of higher levels of support from friends (*DuBois et al. 1992*). Social support received from family members was associated prospectively with reduced levels of psychological distress (*DuBois et al. 1994*). Social support received from school personnel was particularly important for reducing psychological distress among socio-economic disadvantaged adolescents and adolescents who reported receiving relatively low levels of support from family members (*DuBois et al. 1994*).

Social support appears to be a salient factor affecting health. With regard to the buffer role of social support, its influence on health may be stronger among disadvantaged groups, who are exposure to stress, life events and daily hassles more than the others. Social support can contribute considerably to the explanation of socio-economic health differences. Additionally, due to differences in socialisation and different gender roles we can suppose adverse gender differences in health and social support. There is a huge amount of literature confirming worse health in females, but in case of social support, females seem to be advantaged in comparison with males.

The main aim of our paper is to explore the influence of social support on health among gender and socio-economic groups of adolescents. To establish a basis for our main analysis (research), we explored gender and socio-economic differences in health and social support of adolescents. The research aims to find answers to

the following questions:

1. Is there any significant influence of social support on the health of adolescents?
2. Are there any differences in the influence of social support on health among gender and socio-economic groups of adolescents?

MATERIAL AND METHODS

Procedure and respondents

The sample consisted of 2616 first grade students of 31 secondary schools located in Kosice (52,4% boys, 47,6% girls, and mean age 15 years). The sample 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 can be seen 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. Data were collected in September and October 1998. 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 2,1%.

Measures of social support:

Testing for the measure of social support investigated adolescents' perception of their opportunity for talking to somebody about the following five topics: school problems, relationship problems, decisions about the future, health problems, and psychological problems. Adolescents who reported that they have nobody to talk to about at least one of the five topics were indicated as having low social support. Using this criterion, 31% of the males and 22% of the females reported that they had low social support. In these groups, 14% of adolescents reported they have nobody to talk to about just one of the five topics and only 0,5% of adolescents reported they have nobody to talk to about all five topics. These adolescents mostly have nobody to talk to about psychological problems and relationship problems. A similar measure of social support was used by Peek and Lin (1999), Schraedley et al. (1999).

Measures of SES

Two types of socio-economic indicators were used. The first one is based on parents: father's education, mother's education, father's occupational class, and mother's occupational class. The second one is based on adolescents: the type of school they attend.

Adolescents reported about their **father's and mother's highest successfully-completed level of education**. Educational level was classified as: university (father 20,8%, mother 15,6%), secondary high school (father 36,6, mother 52,8%), vocational or primary school only (father 42,7%, mother 31,6%).

The measure of **occupational class of parents** is based on asking adolescents about their father's and mother's current occupation, or their last occupation if they were currently unemployed. The obtained information was transformed into 9 categories of ISCO (1992, 1993). Finally, some categories were combined. The high SES group includes I. legislators, senior officials and managers and II. professionals (father 23,4%, mother 16,7%), the medium SES group includes III. technicians and associated professionals, and IV. Clerks and V. Service workers and shop and market sales workers (father 21,4%, mother 58,9%), and the low SES group includes 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 (father 55,2%, mother 24,4%).

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

Measures of health

Self-reported health was measured by asking the respondents to describe their health as excellent (male 29,2%/ female 18,7%), very good (male 39,6%/ female 36,4%), good (male 27,1%/ female 40,1%), fairly good (male 3,1%/ female 4,1%) or bad (male 1,0%/ female 0,7%). We dichotomised the variable: (1) excellent, very good, (2) good, fairly good or bad health.

Experienced health complaints were measured by the Slovak version of the 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). We used a 5-anchor scale expressing the frequency of suffering from the included health complaints during the previous month in the Slovak version. A cut-off point of three times and more was used in our study for dichotomization. We examined the sum score of the VOEG, varying from 0-13. A higher score indicates more frequent occurrence of health complaints.

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 previous 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 binary score permits the identification of “cases”, or in other words a level of symptomatology of potential clinical relevance. A cut-off point of 2/3 was used as a criterion for identification of “cases” in adolescence (*Banks 1983*).

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 previous four weeks. The scores were transformed following the prescribed formula (range 0-100). A higher score indicates better health status.

ANALYSIS

The analysis was done using the statistical software package SPSS, version 7.5.2. Firstly, we explored the main effects of SES and gender on health using logistic regression and ANOVA. Secondly, we explored the main effect of SES and gender on social support using logistic regression. Finally, we explored changes in the main effects of social support on health, comparing the following models: a model without gender and SES (only the main effect of social support on health is included), a model without SES (only the main effects of social support and gender on health are included), and models with SES (including the main effect of social support, gender and also SES on health). Logistic regression and ANOVA were used. Our intention was to explore if there are significant differences in the effect of social support on health among gender and socio-economic groups of adolescents. Analysis was done separately for each of five socio-economic indicators (father’s education, mother’s education, father’s occupational group, mother’s occupational group, type of school) and each of the six health indicators (self-reported health, health complaints, psychological health, occurrence of “cases”, vitality, and mental health).

RESULTS:

Table 22 presents the percentages of reported good, fairly good or bad health, the mean sum of health complaints, the mean sum of GHQ-12, the percentage

indicated as a “case”, the mean sum of the vitality scale, and the mental health scale of RAND-36 compared with gender, socio-economic, and social support groups of adolescents.

Table 23 presents the percentages of reported low social support in gender and socio-economic groups of adolescents. Several gender and socio-economic health differences were confirmed among adolescents as can be seen in Table 24.

There are significant gender differences in health which are unfavourable for females. More females than males reported bad, fairly good or good health. Females suffer from more health complaints in comparison to males. Females report worse psychological health than males; more females than males were indicated as a “case”. Females reported worse vitality and mental health in comparison with males.

More males than females perceived low social support, or in other words, reported that they could not talk to anybody about at least one subject. Gender differences are significant.

Significant socio-economic differences in self-reported health were confirmed using all five types of socio-economic indicators. There are significant socio-economic differences in health complaints experienced and in psychological health when the mother’s educational level is used, and in health complaints, vitality and mental health when the mother’s occupational group is used as a socio-economic indicator. The type of school influences the health complaints experienced and the mental health of adolescents. These differences are unfavourable for lower SES groups, as can be seen in Table 22. There is some inconsistency in the findings related to the effect of the mother’s occupation group on the vitality and mental health of adolescents. Additional analysis revealed a significant difference between medium and low SES groups only, which fits the pattern of health disadvantage of lower SES groups.

Significant socio-economic differences in social support unfavourable for lower SES groups were also confirmed using all five types of SES indicators, as can be seen in Table 24. As Table 23 shows, adolescents reporting low social support more frequently considered their health as only good, fairly good or bad in comparison with adolescents reporting high social support. They suffer from more health complaints. “Low social support adolescents” reported worse psychological health, and they were also indicated as a “case” more frequently in comparison with adolescents reporting high social support. In addition, they reported lower vitality and worse mental health in comparison to “high social support adolescents”.

Table 22 Description of health indicators in compared gender, socio-economic and social support groups of adolescents.

	Percentage reporting bad, fairly or good health	Mean sum of health complaints (0-13)	Psychological health mean sum (0-12)	Psychological health percentage of "cases"	Mean sum of vitality scale (0-100)	Mean sum of mental health scale (0-100)
sum	37,7	2,29	10,40	32,2	61,08	64,14
gender						
male	31,1	1,76	9,34	23,9	64,19	67,58
female	44,9	2,86	11,57	41,3	57,71	60,39
father's education						
university	29,6	2,10	10,71	31,5	61,46	64,58
second, high school	35,7	2,22	10,38	34,6	61,71	64,53
vocat., primary only	43,0	2,42	10,26	31,0	60,20	63,53
mother's education						
university	27,6	2,10	10,62	32,0	61,70	65,00
second, high school	36,1	2,24	10,49	34,0	61,58	64,53
vocat., primary only	44,7	2,48	10,10	31,4	60,22	63,31
father's occup. group						
high SES	30,1	2,07	10,59	32,1	61,63	64,52
medium SES	37,7	2,32	10,65	34,8	61,13	63,44
low SES	39,5	2,35	10,27	31,7	60,58	61,10
mother's occup. group						
high SES	28,4	2,11	10,86	35,2	60,79	64,07
medium SES	37,3	2,26	10,33	30,4	62,01	65,01
low SES	44,6	2,51	10,36	32,9	59,29	62,24
type of school						
grammar school	30,8	2,22	10,81	31,5	62,00	64,75
technical school	36,2	2,24	10,63	33,3	60,63	64,39
apprentice school	43,8	2,39	9,88	31,4	61,05	63,42
social support						
low social support	44,7	2,72	11,46	42,6	56,99	60,15
high social support	35,1	2,14	10,03	28,6	62,68	65,57

Table 23 Description of social support in gender and socio-economic groups of adolescents

	% reported low social support
sum	26,8
male	31,1
female	22,3
father's education	
university	20,6
second. high school	24,0
vocat. or primary only	32,2
mother's education	
university	19,8
second. high school	24,2
vocat. or primary only	34,0
father's occupational group	
high SES	20,5
medium SES	20,9
low SES	30,4
mother's occupational group	
high SES	17,9
medium SES	24,9
low SES	33,3
type of school	
grammar school	17,7
technical school	22,2
apprentice school	38,1

Adolescents reporting that they have nobody to talk to about problems, are characterised by worse health: they less frequently consider their health as excellent or very good, suffer from more health complaints, and report worse psychological health, vitality and mental health (see Table 22). Differences are significant, as can be seen in Table 25.

Finally we explored if there are any differences in the effect of social support on health among gender and socio-economic groups of adolescents, comparing the main effect of social support on health in models including and not including the explored variables (gender, SES). Confidence intervals for beta were compared for continuous variables and confidence intervals for the odds ratio were compared for dichotomous variables. As Table 25 shows, we did not confirm any significant differences in the effect of social support on health among gender and socio-economic groups of adolescents. The effect of social support on health is independent of gender or SES.

Besides the main effect we also explored the interaction effect of social support and SES, all these interaction effects were not significant.

Table 24 Socio-economic and gender differences in health and social support among adolescents

		self-reported health 0/1	experienced health complaints 0-13	psycholog. health mean sum 0-36	psycholog. health "cases" 0/1	vitality 0-100	mental health 0-100	social support 0/1
father's educat.	SES	0,000	0,083	0,119	0,289	0,288	0,645	0,000
	gender	0,000	0,000	0,000	0,000	0,000	0,000	0,000
mother's educat.	SES	0,000	0,038	0,053	0,405	0,315	0,355	0,000
	gender	0,000	0,000	0,000	0,000	0,000	0,000	0,000
father's occup. group	SES	0,001	0,153	0,149	0,410	0,679	0,699	0,000
	gender	0,000	0,000	0,000	0,000	0,000	0,000	0,000
mother's occup. group	SES	0,000	0,040	0,153	0,147	0,011	0,008	0,000
	gender	0,000	0,000	0,000	0,000	0,000	0,000	0,000
type of school	SES	0,000	0,003	0,058	0,588	0,114	0,007	0,000
	gender	0,000	0,000	0,000	0,000	0,000	0,000	0,000

The significance of main effect of socio-economic status and gender on health. Models were fitted for each indicator of socio-economic status and each health indicator separately. ANOVA for continuous and logistic regression for dichotomous health indicators were used.

DISCUSSION

Gender and socio-economic differences in health and social support and then the influence of social support on health were explored among gender and socio-economic groups of adolescents. Finally, differences in the influence of social support on health between these groups were explored.

Our findings reinforce evidence of gender differences in social support which are unfavourable for males in comparison with females. Females reported experiencing higher levels of social support (*Schraedley et al. 1999*), and they were more likely seek help (*Rickwood and Braithwaite 1994*), spend more time thinking and being with peers (*Richards et al. 1998*) than did males, and these differences cannot be attributed to gender differences in health which are unfavourable for females (*Rickwood and Braithwaite 1994*).

As a result of socialisation and differences in gender roles we can find not only quantitative, but also qualitative differences in social support among adolescents (*Piko 1998, Felmlee 1999, Wilson et al. 1999, Bank and Hansford 2000*). *Piko (1998)* finds that girls received more emotional, informational and practical support,

Table 25 Differences in influence of social support on health among gender and socio-economic groups of adolescents. Parameters of main effect of social support on health

	B	S.E.	OR	95% CI for OR/B*	
				lower	upper
self-reported health					
model without gender and SES	-0,395	0,092	0,674	0,563	0,806
model without SES	-0,480	0,094	0,619	0,515	0,743
model with SES (father's education)	-0,450	0,096	0,638	0,528	0,770
experienced health complaints					
model without gender and SES	-0,562	0,109		-0,775	-0,349
model without SES	-0,689	0,106		-0,897	-0,481
model with SES (father's education)	-0,678	0,108		-0,890	-0,483
psychological health (mean sum)					
model without gender and SES	-1,420	0,238		-1,886	-0,954
model without SES	-1,694	0,232		-2,149	-1,238
model with SES (father's education)	-1,738	0,237		-2,203	-1,273
psychological health ("cases")					
model without gender and SES	-0,617	0,094	0,540	0,449	0,649
model without SES	-0,752	0,097	0,472	0,390	0,571
model with SES (father's education)	-0,767	0,100	0,464	0,382	0,564
vitality (mean sum)					
model without gender and SES	5,589	0,804		4,012	7,165
model without SES	6,395	0,792		4,843	7,947
model with SES (father's education)	6,429	0,809		4,843	8,014
mental health (mean sum)					
model without gender and SES	5,232	0,776		3,707	6,757
model without SES	6,129	0,760		4,638	7,620
model with SES (father's education)	6,031	0,778		4,506	7,556

* 95% CI for B were computed for continuous variables (ANOVA) and OR, and 95% CI for OR were computed for dichotomous variables (logistic regression)

Model without gender and SES: Main effect of social support on health

Model without SES: Main effect of social support and gender on health.

Model with SES: Main effect of social support, gender and SES on health.

Only parameters related to main effect of social support on health are included into the table.

while boys received more rational-material support. While emotional and informational support was more supportive for health among girls, rational-material support proved to be a more influential factor among boys (Piko 1998). According to Willson et al. (1999) females seek out, prefer, and are more receptive to emotional support, and males seek out, prefer, and are more receptive to instrumental support. Instrumental support was more beneficial to boys than emotional support

in reducing cardio-vascular reactivity.

Findings attracting attention are adverse gender differences in social support and health. Females are characterised by poorer health, but higher levels of social support in comparison with males. Similar findings were confirmed by Piko (1998): Females got more emotional and informational support, and reported more psychosomatic symptoms and psychological problems in comparison with males. It can be supposed that the higher amount of received social support among females is due to their poorer health in comparison with males. Rickwood and Braithwaite (1994) do not support this, however: gender differences in social support remain significant after symptoms of psychological distress were controlled.

As we pointed out earlier, there is a huge amount of literature supporting the health-protective influence of social support (Boyce *et al.* 1988, Smith *et al.* 1990b, DuBois *et al.* 1992, DuBois *et al.* 1994, Wickrama *et al.* 1997, Cheever and Hardin 1999, Schraedley *et al.* 1999, Call and Nonnemaker 2000). Ystgaard *et al.* (1999) found that males were protected by social support from family and peers when they were exposed to stressors, while females were not, and Schraedley *et al.* (1999) found that females' depressive symptoms were influenced by their level of social support, but males' were not. Piko (1998) reported that social support did not prove to be a strong correlate of health, either among boys or among girls. Our findings on the other hand confirm strong and consistent influence of social support on health among adolescents. Adolescents who reported low social support were characterised by worse health, e.g. worse self-reported health, more health complaints, worse psychological health, worse mental health, or higher incidence of depression.

More evidence offered by the literature supports absence (West 1988, West *et al.* 1990, MacIntyre and West 1991, Glendinning *et al.* 1992, Ecob *et al.* 1993, Ford *et al.* 1994, West *et al.* 1994, Rahkonen *et al.* 1995, West 1997, Tuinstra 1998) compared with presence (Halldórsson *et al.* 1999, Call and Nonnemaker 2000, Geckova *et al.* 2001d) of socio-economic health differences in adolescence. According to Stronks *et al.* (1998), socio-economic health differences may be explained by an uneven distribution of psychosocial stressors (differential exposure) as well as their differential health impact (differential vulnerability). Support has been found for the hypothesis of differential exposure (Stronks *et al.* 1998): There was higher exposure to stressors in lower socio-economic groups and this higher exposure contributed to the observed socio-economic inequalities in perceived health problems. Stronks *et al.* (1998) did not find consistent evidence for stressors having a stronger health impact in lower socio-economic groups, as is supposed in the differential vulnerability hypothesis.

In contrast to this, DuBois et al. (1994) reported that socio-economic disadvantage is related to higher vulnerability to life events and greater potential to benefit from social support received from adults in schools, which is more consistent with the hypothesis of differential vulnerability. Our findings do not confirm differential vulnerability in connection with social support, only varying distribution of social support among socio-economic groups of adolescents. We did not confirm any significant differences in the effect of social support on health among socio-economic groups of adolescents, but we confirmed strong and consistent socio-economic differences in social support among adolescents. Adolescents from lower socio-economic groups more frequently reported low social support.

In many studies of youth, only father's SES has been investigated. According to some studies (*van der Lucht and Groothoff 1995*), socio-economic characteristics of the mother are of even more impact for health and health related behaviour of children and adolescents than those of the father. The social role of the mother includes monitoring health symptoms of the family members, taking care about health of the family members (*Gijsbers van Wijk and Kolk 1997*). As we described elsewhere (*Geckova et al. 2000e*) adolescents most frequently talk about selected problems (school problems, relationship problems, decisions about future, health problems, psychological problems) with their mother. If mothers are an important source of social support, it can be supposed their socio-economic characteristic, particularly their educational level, including their health knowledge will be a more important factor influencing the adolescent's health in comparison with those of father. This issue requires additional work.

9 CONCLUSION, GENERAL DISCUSSION AND IMPLICATIONS

Health is undoubtedly one of the most important “treasures”, not only of the individual, but also of society. Particularly precious is the somatic, psychological and social health of youth, because it is the basic element of society’s future. Especially in terms of socio-economic health differences, it is extremely important to see the consequences not only in the somatic health, but also in the psychological, social and spiritual health of the young population. The concept of health, described simply in these terms, allows the population to attain an optimal quality of life, to be happy and to be productive members of society.

The literature about socio-economic health differences in West Europe is rich in findings, but less is known about inequalities in health among adolescents coming from Central and Eastern Europe. This study is more or less a “pioneer” study. The importance of the data generated by such a study is enormous for at least two reasons. Firstly, socio-economic health differences among Central European adolescents are an “unexplored area”. Secondly, the transitional crisis in Central European countries is deepening inequalities with health consequences for the whole population. Moreover, we not only describe the inequalities, but also contribute to the explanation of the observed socio-economic health differences through health risk behaviour and social support.

This project has produced a number of interesting findings. We would like to summarise and discuss the most important from them.

HEALTH OF ADOLESCENTS

Our findings indicate that adolescence is not such a healthy period in human life. The major health problems seem to be psychological health, tiredness, headache, backache, skin diseases and respiratory diseases. Findings are more unfavourable for girls in comparison with boys. The Slovak Republic does not differ in this respect from Western European countries. The mentioned health problems indicate undesirable health processes which may lead to serious health problems (chronic respiratory diseases, chronic diseases of musculoskeletal system etc.), but they are, in this period of life, still preventable, reversible or at least they could be influenced in a more favourable way.

SOCIO-ECONOMIC HEALTH DIFFERENCES AMONG ADOLESCENTS

Socio-economic health differences are not absent in Slovak adolescents. Based on most of the prevailing European literature, an absence of socio-economic health differences might be presumed; but the findings of Kunst (1997) show the lowest group is more affected in Central European countries. So, the presence of socio-economic health differences among adolescents may also be anticipated. Several socio-economic health differences unfavourable for lower SES groups were confirmed among Slovak adolescents. Socio-economic health differences among adolescents unfavourable for lower SES groups were confirmed also by Halldorson et al. (2000) in all Nordic countries, and Call and Nonemaker (2000) in the USA.

WHY ARE SOCIO-ECONOMIC HEALTH DIFFERENCES NOT ABSENT IN SLOVAKIA?

There are several possible explanations for differences in findings related to socio-economic differences between Slovak and West Europe, particularly Dutch and Scottish studies.

Firstly, there is a ten years gap between Scottish and Slovak data collection and three years gap between Dutch and Slovak data collection as can be seen in table 26. This time gap can be the source of differences, if the hypothesis of widening socio-economic health differences in Europe is correct.

Secondly, there are differences in way how SES was measured between studies. It is a question how to measure SES in countries differing so much in socio-economic stratification characteristics and if used SES indicators are comparable. Main health measures (psychological health, self-reported health, chronic diseases) used in Slovak, Dutch and Scottish studies are comparable.

Thirdly, we should consider cross-culture differences. Findings of Halldorsson et al. (2000) from Nordic countries and Call and Nonemaker (2000) from the USA may be a confirmation of widening socio-economic health differences, but also can be the result of cross-culture differences among societies.

Rahkonen and Lahelma (1992) suppose that a “developed welfare state may have had an equalising effect on the health of young people” (free school meals, check-ups by school nurses and physicians). And also West et al. (1990), Tuinstra (1998) suppose that absence of socio-economic health differences among Western European adolescents is caused by the effect of some protective, equalising factors: this is known as the buffer hypothesis. We can hypothesise that such factors either have no influence in Slovakia, or that they are not strong enough to diminish socio-economic health differences.

Table 26

Comparison of Slovak, Dutch and Scottish study

	Slovak	Dutch	Scottish
references	Geckova et al. (2001d)	Tuinstra (1998)	West (1986), MacIntyre (1987), West (1988), MacIntyre et al. (1989), West et al. (1990), MacIntyre and West (1991), West et al (1994)
study	"Inequalities in health among Slovak Adolescents", which is a part of an international comparative longitudinal study "Comparing Social Patterns in Health between Western and Central Europe in Adolescence"	"Health in Adolescence" (Tuinstra 1998), which is a part of the "Longitudinal Study into Social Inequality and Health from Adolescence to Early Adulthood"	"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)
data collected	Sep, Oct 1998	Nov 1995/Jan 1995 + Spring 1995	1987/1988
sample description	Students of 31 secondary schools located in Košice (eastern part of Slovakia). The sample 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.	4 northern provinces of the Netherlands. 18 secondary schools encompassing four educational levels of the regular Dutch secondary school system.	Central Clydeside Conurbation, Glasgow city and 10 surrounding local government districts
number of respondents	2616	1984	1009
male/female	52,4%/47,6%	51,6%/48,4%	47,8%/ 52,2%
mean age	14,9 years, STD: 0,62	16,2 years, STD 0,79	15 years

	Slovak	Dutch	Scottish
SES indicators	<p>Highest education of parents: classified into 4 levels of the regular Slovak school system, divided into 3 levels</p> <p>Highest occupational class of parents: transformed into 9 categories of ISCO, divided into 3 classes</p> <p>Type of school: divided into 3 levels</p> <p>Education of mother: classified into 4 levels of the regular Slovak school system, divided into 3 levels</p> <p>Education of father: classified into 4 levels of the regular Slovak school system, divided into 3 levels</p> <p>Occupational class of mother transformed into 9 categories of ISCO, divided into 3 classes</p> <p>Occupational class of father transformed into 9 categories of ISCO, divided into 3 classes</p>	<p>Highest education of mother and father separately: coded according International classification of Education (UNESCO 1976) and divided into 6 levels</p> <p>Occupational class of mother and father separately: coded according ISCO, transformed into prestige scores and divided into 6 groups</p>	<p>Highest educational level of father</p> <p>Head of the household occup. class</p> <p>Highest occup. class</p> <p>Mother's current occup. class</p> <p>Father's current occup. class</p> <p>Mother's old occup. class</p> <p>Father's old occup. class</p> <p>The British Register General's classification of occupation was used.</p> <p>Housing tenure</p> <p>Household income</p> <p>Car ownership</p> <p>Neighbourhood type</p>
Distribution based on SES indicators	<p>I. university: 21,8%</p> <p>II. secondary high: 50,4%</p> <p>III. vocational or primary only: 25,4%</p> <p>High SES (I.+II.): 27,7%</p> <p>Medium SES (III.-V.): 50,1%</p> <p>Low SES (VI.-IX.): 23,3%</p>	<p>SES indicator: mean/STD/range</p> <p>Father's education: 3,59/ 1,45/ 1-6</p> <p>Mother's education: 3,22/ 1,19/ 1-6</p> <p>Father's occup.class: 3,44/ 1,73/ 1-6</p> <p>Mother's occup.class: 3,61/ 1,56/ 1-6</p>	

	Slovak	Dutch	Scottish
Health indicators	<p>Psychological health: GHQ-12 (a Likert score, range 0-36/ a binary score, range 0-12, "cases" 2/3)</p> <p>Vitality and mental health: scales of RAND-36 (0-100)</p> <p>Self-reported health (excellent, very good/good, fairly good, bad): item of RAND-36</p> <p>Self-perceived vulnerability to illness: item of RAND-36</p> <p>Experienced health compl.: VOEG, range 0-13</p> <p>Chronic diseases: list of 11 most frequent chronic diseases, no chronic disease/ at least one chronic disease suffered</p> <p>Use of medicine: prescribed and non prescribed drugs during last two weeks</p>	<p>Psychological health: GHQ-12 (a Likert score, range 0-36/ a binary score, range 0-12, "cases" 2/3)</p> <p>Vitality and mental health: scales of RAND-36 (0-100)</p> <p>Self-reported health (excellent, very good/good, fairly good, bad): item of RAND-36</p> <p>Experienced health compl.: VOEG, range 0-13</p> <p>Chronic diseases: list of 11 most frequent chronic diseases, no chronic disease/ at least one chronic disease suffered</p>	<p>Psychological health: GHQ-12 (a Likert score, range 0-36/a binary score, range 0-12, "cases" 2/3)</p> <p>Self-reported health (good/ fairly good, bad)</p> <p>Symptoms/ illnesses: list of 15 conditions, no/at least one in previous 12 months</p> <p>Self-reported chronic illness: any longstanding illness, disability or infirmity</p> <p>Accidents</p> <p>Physical measures</p> <p>Respiratory functions</p> <p>Blood pressure</p> <p>Mortality</p> <p>Morbidity</p>
Statistical analyses	<p>Logistic regression for dichotomised health measures, analysis of variance for continuous health measures. The analysis were computed separately for each SES indicator. Two model were fitted: one with and one without interactions between gender and SES.</p>	<p>Logistic regression for dichotomised health measures, analysis of variance for continuous health measures. The analysis were computed separately for each SES indicator. Two model were fitted: one with and one without interactions between gender and SES.</p>	

Many of the changes which have happened in Central Europe during the last ten years are related to such a possible “buffer” mechanism. Previous “buffer mechanisms” do not work anymore and new ones are just establishing themselves, which means they do not work sufficiently yet. Youth is the most vulnerable part of population, so this population group might be expected to display undesirable health consequences of the transitional crisis more than the adult population (*Tichy et al. 1996*). Decreasing living standards may cause undesirable changes in life style including poor nutrition or risky behaviour. The youth can suffer not only from the lack of amenities, but also from experiences related to the gap between class groups. The consequence of such experiences can be stress, worse mental health or somatic symptoms.

WHICH ASPECTS OF HEALTH ARE INFLUENCED BY SES?

SES influences more general vulnerability or general resilience than specific illnesses (*Hertzman 1999, MacIntyre 1986*). Besides this, some of the health indicators are related more strongly and some of them less strongly to SES. The best known is height, as the only one indicator which remains unequally distributed also in studies indicating absence of health inequalities in adolescence (*West 1997*).

In a study performed by Halldorsson et al. (*1999*), well-being was more influenced by SES than somatic health (chronic illness, physical health complaints). *Rahkonen (1988)* found socio-economic health differences in chronic illness to be small and in self-reported health clearer in Finnish adolescents. We have confirmed socio-economic health differences in self-reported health, experienced health complaints, only partially in psychological health, but not in the occurrence of chronic illness. The absence of socio-economic health differences in the occurrence of limiting long-standing illness is also confirmed by *Rahkonen and Lahelma (1992)* among 15-24 years old Finns.

The effects caused by undesirable living conditions, and life style on health, in terms of chronic illness, require a certain period. Because of this delay, we expected in adolescence that well-being, self-reported health and experienced health complaints will be the most affected by socio-economic disadvantage.

ARE THE SOCIO-ECONOMIC HEALTH DIFFERENCES THE SAME AMONG MALE AND FEMALE?

One very important issue seems to be that of gender differences in health and socio-economic health differences. *West et al. (1999)*, and also others, emphasise that gender is a much more powerful discriminator than social class for health in its several dimensions. Socio-economic health differences in male and female

should be studied separately (*Rahkonen et al. 2000, Gijbers van Wijk et al. 1995*). The pattern of gender differences in socio-economic health differences is not clear, as the evidence is inconsistent across various health measures and life stages (*Mathews et al. 1999*). Koskinen and Martelin (*1994*), Stronks et al. (*1995*), MacIntyre and Hunt (*1997*), Valkonen (*2000*) reported considerably smaller health inequalities among women than among men. On the other side, Balabanova (*2000*) reported greater health inequalities among women as a consequence of their increasingly vulnerable position in Bulgaria. Our findings did not support the presence of gender differences present in socio-economic health differences among Slovak adolescents.

HEALTH RISK BEHAVIOUR

The most serious problem are diseases related to life style. Mortality and morbidity in this century is strongly related to nutrition, smoking, alcohol consumption, lack of physical exercise and smoking. Life style is mostly established during adolescence and then continues into adulthood (*Pietila et al. 1995, Hemmingsson et al. 1999*). During adolescence life style can be influenced most easily, and the best influence lies in preventing undesirable behaviour and its consequences. Our findings about the prevalence of risky behaviour are alarming, when the low age (15 years) of adolescents in our sample is taken into account. Only one third of the Slovak adolescent population does not display risky behaviour, i.e. they do not smoke, drink, have no experience with drugs and are engaged in sports (*Geckova et al. 2001f*). Apart from lack of physical exercise Slovak boys more frequently behave riskily in comparison with girls (*Geckova et al. 2001f*). It is important to mention also the coincidence of risky behaviour, which can lead to a cumulation of undesirable health consequences. If health has a high value for some people, it might be expected that they will exhibit not only one type of healthy behaviour, but that all dimensions of their behaviour will tend to express this health promoting attitude. And vice-versa, a low value of health will be expressed not only in one attitude and related behaviour, but in a whole package of attitudes related to health. We found smoking, alcohol consumption and use of drugs to be correlated (*Geckova et al. 2001f*). Similar findings are confirmed by Tuinstra (*1998*).

DOES RISKY BEHAVIOUR INFLUENCE HEALTH IN ADOLESCENCE?

The undesirable influence of risky behaviour on health in adults is well known, but health risk behaviour influences health already in adolescence (*Rahkonen et al. 1993, Poikolainen et al. 1995, Oja 1997, Twisk et al. 1997, Boreham et al. 1999, Holmen*

et al. 2000). Smoking, alcohol consumption, drug use and lack of physical exercise show a detrimental influence on health (*Geckova et al. 2000b*). The only one exception is physical exercise and prevalence of injuries: these occur more often in sporting adolescents than in non-sporting ones. Moreover, the undesirable influence of particular types of risky behaviour on health cumulates (*Geckova et al. 2000b*).

DETERMINANTS OF HEALTH RISK BEHAVIOUR

It is generally accepted that risky behaviour is multi-determined. Determinants of adolescents' smoking behaviour, reviewed in detail elsewhere (*Geckova et al. 2000g, Geckova et al. 2001b*), include individual, social and societal factors. Individual factors include knowledge, intentions, attitudes, health-related behaviour, personality and school-related variables. Social factors include smoking behaviour of parents, siblings, peers and significant adults, but also family characteristics, social support and socio-economic status. Societal factors include restriction on smoking, tobacco advertising, and the smoking behaviour of adolescents' role models. Our data allow us to explore influence of parents, peers and SES on adolescent's health risk behaviour.

ARE THERE ANY SOCIO-ECONOMIC DIFFERENCES IN THE PREVALENCE OF RISKY BEHAVIOUR AMONG ADOLESCENTS?

Health risk behaviour as a part of life style, which is mostly similar for members of one society, may play an important role in the explanation of actual or future socio-economic health differences (*West et al. 1990, Mackenbach 1992, Stronks 1997, West 1997, Tuinstra 1998*). People with low SES may behave less healthily and as a consequence they will be less healthy in comparison with high SES people. Juel *et al. (2000)*, using prospective data from a 12 years follow-up Danish National Cohort Study (DANCOS) found that nearly half of mortality differences between persons without education and persons with a higher education could be attributed to differences in health behaviour. Smoking, large alcohol consumption, lack of physical exercise and body mass index are related to mortality. Social inequality in mortality was attributed to health behaviour, but was not fully explained.

As we have described in more detail (chapter 5), there is an inconsistency in findings related to socio-economic differences in the prevalence of health risk behaviour. Several authors have confirmed an unequal distribution of risky behaviour among SES groups of adolescents (*Green et al. 1991, Bergstrom et al. 1996, Karvonen and Rimpela 1996, Lowry et al. 1996, Piko et al. 2000*), but several authors have not (*Donato et al. 1994, Glendinning et al. 1994, Donato et al. 1995, Shucksmith et al. 1997*,

Tuinstra et al. 1998, Challier et al. 2000). We have to take into account that patterns of health risk behaviour are different in different countries and that they change over time. Not so far back in history we could see an adverse pattern of socio-economic differences in health risk behaviour: it was the high SES group which used to smoke more. This pattern has changed and is still changing.

Particularly among adolescents it is important to look not only at the prevalence of risky behaviour, but also at the prevalence of attitudes towards risky behaviour. Attitudes may be a prelude of behaviour in future. We expect a huge increase in the prevalence of risky behaviour, and that is why it is extremely important to be able to indicate the group of adolescents prone to risky behaviour.

We found a higher occurrence of health risk behaviour and attitudes towards health risk behaviour related to lower SES among Slovak adolescents. The only exceptions occurred in alcohol consumption when SES is based on the highest educational level of parents or type of school. Our findings indicated an adverse pattern of socio-economic differences among females in comparison with males, particularly when SES is based on education. Such inconsistency was reported also by West (1988), Mackenbach (1992), Stronks (1997). Highly educated females may experience stress from their “double duties role”. Particularly in Central European countries, their role includes the duties of “professional” but also the duties of “housewife”. This can lead to higher self-confidence, which allows these females to do what they want. Our sample of high SES girls consists of daughters of these highly-educated mothers, who are their “role model”.

THE INFLUENCE OF PARENTS AND PEERS ON HEALTH RISK BEHAVIOUR

There is strong evidence of parental influence on adolescents’ health risk behaviour (*Geckova et al. 2000c*). If one or both parents smoke daily, the probability of having experience with smoking, the frequency of smoking and undesirable attitudes to smoking are higher as compared with families where neither parent smokes. Similarly, when one or both parents drink alcoholic beverages or are drunk at least once a month, the probability of having experience with alcohol consumption and the frequency of alcohol consumption is higher as compared with families where neither of the parents drinks. If one or both parents are engaged in sports every week, the frequency of physical exercise of adolescents is higher.

The influence of peers on adolescents’ risky behaviour was also confirmed (*Geckova et al. 2001a*). The more friends behave riskily (smoke daily, drink alcohol

weekly, get drunk at least once a month, use drugs, do not engage in sport weekly), the more likely it is that related risky behaviour occurs among adolescents. Males report significantly more friends who drink alcohol and engage in sports at least once a week in comparison with females.

An issue attracting a lot of research attention (*Resnick et al. 1997, Urberg et al. 1997, Sieving et al. 2000*) is the difference between peer influence (peer socialisation, peer pressure) and peer selection (social selection). Peer influence is meant in cases when the preference of smoking peers predicts an adolescent's smoking behaviour. Peer selection is an adverse process, when an adolescent with certain behaviour looks for friends in groups with similar behaviour. *Resnick et al. (1997)* show that both peer influence and peer selection contribute to adolescents' smoking behaviour. *Sieving et al. (2000)* confirmed peer influence but not peer selection. *Urberg et al. (1997)* reported that peer influence is moderate when peer selection is under control and when the direct measure of peers' smoking is provided.

Some of the researchers try to divide the influence of close friends or best friend, partner (*Donato et al. 1994, Bergström et al. 1996, Elder et al. 2000*) and peer groups (*Urberg et al. 1997*). *Urberg et al. (1997)* confirmed the influence of close friends on initiation of smoking and peer group on transition to regular smoking. The character of our study did not allow consideration of both differences between peer influence and peer selection and differences between influence of close friend and peer group

Flay et al. (1998), Mayhew et al. (2000) recommend distinguishing stages of adolescents' smoking behaviour in research into adolescents' smoking behaviour determinants, because the contribution of individual determinants or factors can be different in different stages. *Brook et al. (1997)* also stress developmental differences in adolescents' smoking behaviour determination. The measure of adolescents' smoking behaviour in our survey represents the intensity of smoking per day and did not permit identification of the stage of adolescent smoking behaviour.

The investigated model includes only parents' smoking behaviour, but adolescents' smoking behaviour is influenced by a variety of family-related variables. Any smoking family member can increase the probability of adolescent smoking behaviour due to role-model effect, but also due to the higher availability of cigarettes at home. Significant influence of siblings was confirmed by *Donato et al. (1994), Bergström et al. (1996), Abrams et al. (1999), Azevedo et al. (1999), Griffin et al. (1999), Unger and Chen (1999), West (1999), Horn et al. (2000)*.

Smoking socialisation or in other words restrictions on smoking, clear rules about smoking, parental approval, parental attitudes towards smoking of their

offspring can be stronger predictors of adolescent smoking behaviour than parents' smoking behaviour (*Donato et al. 1994, Abdelrahman et al. 1998, Clark et al. 1999, Griffin et al. 1999, Norman et al. 1999, Wakefield et al. 2000*).

Adolescent smoking behaviour can be influenced not only through parental smoking behaviour, but also through the characteristic of parent-child relationship and social support (*Wills and Vaughan 1989, DuBois et al. 1992, Rossow and Rise 1994, Wills and Cleary 1996, Brook et al. 1997, Ljfrak et al. 1997, Resnick et al. 1997, Urberg et al. 1997, Simons-Morton et al. 1999, Horn et al. 2000, Elder et al. 2000, Piko 2000*). According to Brook et al. (1997, p.182) "Difficulty in the parent-child relationship (disruptive family systems) was related to tobacco-prone personality characteristics. Adolescents with tobacco-prone personality attributes tend to select friends who smoked, and this behaviour, in turn, was related to their own smoking behaviour during adolescence. Adolescent smoking behaviour was related to young adult smoking behaviour."

HOW DOES SES INFLUENCE HEALTH RISK BEHAVIOUR, PARTICULARLY ADOLESCENTS' SMOKING BEHAVIOUR?

There is some evidence that a higher occurrence of smoking behaviour in lower SES groups contributes to socio-economic health differences among Slovak adolescents. It is hardly possible to understand the mechanism of health inequalities through smoking without taking into account the influence of parents and peers.

There is a lot of literature about peer influence on smoking, parental influence on smoking and also socio-economic differences in smoking. The strong influence of peers is usually confirmed, but in the case of parents and SES, findings are inconsistent. Mostly the influence of parents and peers on smoking and the influence of SES on smoking are explored separately. In some cases the interaction effect of SES and parents or SES and peers on adolescent smoking behaviour is explored. The studies of Green et al. (1991) and Glendinning et al. (1994) were an important background for our model of determination of adolescent smoking behaviour. They explored the influence of parents and peers on adolescent smoking behaviour in the context of socio-economic differences. They found the influence of parents and peers on adolescent smoking behaviour to be independent from the influence of SES on such behaviour. They confirmed interaction effects on adolescent smoking behaviour and the main effects of such behaviour. We had a similar starting point (chapter 6), but in our sample we confirmed the significant interactions, and the character of these interactions indicate an indirect effect of SES and parents on adolescent smoking behaviour through peers. Findings resulting from

exploring the model including the influence of SES, parents and peers on adolescent smoking behaviour confirmed our hypothesis. Peers' smoking behaviour influences adolescent smoking behaviour the most. Parents' smoking behaviour influences adolescent smoking behaviour directly, but also indirectly through the influence on peers' smoking behaviour. The indirect influence of parents can be explained by their influence on the selection of peer-friends. Rossow and Rise (1994) confirmed, that parents contributed to the selection of peers whose behaviour is similar to the parents' behaviour. Urberg et al. (1997) confirmed that parent-adolescent relationships influence the selection of peers. SES influences adolescent smoking behaviour only indirectly through the influence on parents' and peers' smoking behaviour.

HOW DOES RISKY BEHAVIOUR CONTRIBUTE TO SOCIO-ECONOMIC HEALTH DIFFERENCES AMONG ADOLESCENTS?

There are at least two hypotheses explaining how health risk behaviour may contribute to socio-economic differences among adolescents. The first one, the hypothesis of different exposure, predicts that adolescents of lower SES more frequently behave riskily and as a consequence suffer from more health complaints. The second one, the hypothesis of different vulnerability, searches for some mechanism which makes the higher SES group more resistant and the lower SES group more vulnerable to the detrimental effects of risky behaviour. Such mediator variables may be for example coping style, access to health care, access to protective sources like nutrition, sports, or more health information which leads the adolescents to smoke and drink in lower intensity.

Using dichotomised measures of smoking and alcohol consumption and 5 indicators of SES (father's and mother's occupational group, father's and mother's education, type of school) and experienced health complaints, we tried to find evidence supporting these hypotheses. Socio-economic status and health risk behaviour interacted in their influence on health only when SES was based on the mother's characteristics. Analysis of confirmed interaction effects revealed the evidence for both mechanisms, different exposure and different vulnerability. The former explains socio-economic health differences more strongly. Kooiker and Christiansen (1995), Stronks et al. (1998), Call and Nonnemaker (2000) found evidence to support the hypothesis of different exposure, but not for the hypothesis of different vulnerability.

SOCIAL SUPPORT

While smoking, alcohol consumption, drug use and lack of physical exercise are among risk factors, social support is one of the possible protective factors of health. It was supposed that social support would influence health and would be unequally distributed among socio-economic groups, and thus might contribute to the presence of socio-economic health differences among adolescents. Our findings confirmed this hypothesis. Social support is related to health, and it is unequally distributed among gender and socio-economic groups of Slovak adolescents. Females, adolescents from lower socio-economic groups and adolescents reporting low social support, report worse health in comparison to males, adolescents from higher socio-economic groups and adolescents reporting high social support. Males and adolescents from lower socio-economic groups more frequently report low social support in comparison to females and adolescents from higher socio-economic groups. There are no significant differences in the influence of social support on health among gender and socio-economic groups. Findings on social support give support to the hypothesis of different exposure, but not to the hypothesis of different vulnerability.

RECOMMENDATIONS FOR FUTURE RESEARCH

The results of this study are some recommendations for the design, sample, model and context of future research which could be helpful for anybody who would like to continue in research of socio-economic health differences in the Slovak Republic. To monitor socio-economic health differences and not just health is very important with regard to possible consequences of the transitional crisis in the Central European youth population. Youth is more vulnerable in comparison to adults, so we can assume that the health consequences of the transitional crisis will be become visible earlier among adolescents. On the other hand, youth is more flexible, so we can expect young people to lead the development of strategies for coping with new situations in society. Both a longitudinal and a cross-sectional design of research are of high relevance. A cross-sectional design permits the monitoring of socio-economic health differences related to the cohort effect (effect due to societal changes). A longitudinal design permits the monitoring of change in socio-economic health differences related to age. The baseline measurement was done in 1997/1998. The follow-up will take place in 2002/2003. The Dutch study (*Tuinstra 1998*) will also be repeated. The data collection of the comparable study will take place in 2001/2002 (*Matthesius 2001*). Some of our respondents have entered the labour market, become unemployed, continued in study, changed the

study programme (up/ down), become pregnant, had troubles with the law, become seriously ill, become abusers of drugs and what is the most important – become adult. So we are now interested in socio-economic health differences in early adulthood.

Because of decreasing societal buffer factors we expect, in a cohort study to find more and deeper socio-economic health differences than we found four years ago. In the same group, which is five years older now, we expect at least the age effect: socio-economic health differences are greater among adults compared with adolescents.

Moreover, it will be possible to explore predictors of this change in socio-economic health differences, which can help to explain this change and can show some effective interventions for reduction of socio-economic health differences.

The longitudinal data may also be very useful in research into health risk behaviour, one of the most important factors of health. Particularly in adolescence, when health risk behaviour is just establishing itself and may yet be preventable, it is of high significance. We collected various data at time 1 (SES, health, health risk behaviour, attitudes towards health risk behaviour, parental health risk behaviour, peer health risk behaviour, social support, self-esteem) and we will explore the change in health risk behaviour related to this data at time 2 (four years later). It will be interesting to see the consequence of the explored predictors on health risk behaviour four years later. The answer to this question may contribute to health promoting strategies focusing on life style change.

Another issue of high relevance with regard to future research is the widening of the sample in terms of age, region, minority and other special groups. We do not know how Slovak children, adults and the elderly are affected by SES, particularly in a situation of transitional crisis. The sample should, in an ideal case, be widened not only for age groups, but also across regions in the Slovak Republic, at-risk groups like immigrants, women, disabled, unemployed, minorities (the Roma population, but also the Hungarian and Ruthenian minorities are missing in our sample). Disadvantaged and neglected groups particularly require special interest (*Kotekova 1998, Koupilova et al. 2000*). Boths Czech and Slovak Republics have a substantial Roma population, the exact size of which is uncertain (3% in Czech, 10% in Slovak Republic, based on unofficial estimates). Evidence suggests that the health status of Roma is worse than that of the non-Roma population in the Czech Republic and Slovakia. The Romany minority has traditionally had, with very few exceptions, a low SES. Since 1989 many Roma families have fallen further into

poverty and social exclusion. There is evidence that health inequalities are generally increasing in the transition countries, as gaps in health between groups with different education levels, income or marital status are widening (*Koupilova et al. 2000*).

The issue of unemployment should be treated from at least two perspectives: 1. consequences of parental unemployment on adolescent health and 2. unemployment of young adults themselves. Olafsson and Svensson (*1986*) discussed unemployment-related lifestyle changes and health disturbances in adolescents and children. "Children and members of families of unemployed are the silent sufferers – they are never registered. A child born into a family facing unemployment has a reduced chance of creating a healthy and meaningful life. In that case their ill-health cannot be labelled self-inflicted" (*Olafsson and Svensson 1986, p. 1105*). The high rate of young unemployed, particularly school leavers, seems to be specific for Central European countries, at least Slovakia and the Czech Republic. Based on official statistics, 32,2% of the unemployed in 1998 were younger than 24 years (*Meseznikova and Ivantysyn 1999*). Unemployment, especially in this case, is extremely risky with regard to health (*Buchtova 1994, 2000*).

To explore socio-economic health differences among Slovak adolescents, a methodology of such research needs to be developed. Sometimes the methodology used in West Europe cannot simply be "copied", because the situation in Central Europe is not the same. A good example are SES indicators, because of the different social stratification of the Central European countries (*Wnuk-Lipinski and Illsley 1990a-b*). Methodology and measurement used in West Europe need translation and adaptation to Central European conditions. Several measurements well known in West Europe have been adapted and established for the Slovak adolescent population. New ones were developed for the purposes of this study. Work on methodology should continue.

With regard to the hypothesis of health selection, intergenerational social mobility should be explored. More than half of the adolescents in this study have not changed their position in socio-economic stratification when their SES (type of school) is compared to their parents' SES (education, occupation). About 15% of adolescents have experience upward intergenerational mobility. Downward intergenerational mobility has been experienced by 30% of adolescents approximately. Figures are described in Table 27.

Table 27 Mobility of respondents in relation to the education or occupational group of parents (in %)

	Highest education of parents	Highest occupational group of parents
Upward mobility	15,8	14,3
Stable mobility	57,8	55,4
Downward mobility	26,4	30,4

Upward mobility in this table means the percentage of adolescents attending grammar school while their parents belong to medium or low SES or completed secondary specialized school and lower education + the percentage of adolescents attending specialised secondary schools while their parents belong to low SES or completed apprentice school or lower education.

Stable mobility in this table means the percentage of adolescents attending grammar school whose parents belong to high SES or completed university education + the percentage of adolescents attending apprentice school whose parents belong to low SES or completed vocational school or lower.

Downward mobility in this table means the percentage of adolescents attending specialised secondary school while their parents belong to high SES or completed university education + the percentage of adolescents attending apprentice school while their parents belong to medium or high SES or completed specialized secondary school or higher education.

The role of psychosocial stress-related factors should be explored more thoroughly. Our model did not include stressors (long-term difficulties, life-events, perceived economic stress) and some important factors modifying the impact of stressors on health (coping style, locus of control, sense of coherence).

We should look in more detail at grandparents and their specific role in Central European families. They substitute the roles of parents who are absent, and they do this in a different way from the parents. This can be extremely important for adolescents, when the parent-child relationship may be affected by developmental processes.

There should be focus not only on the level of the individual, but also on a higher level, for example the level of school environment, the municipality and the community, because it seems to be extremely important not only for the explanation of socio-economic health differences, but also for their reduction. Information should be collected about the environment where at-risk adolescents live, to help find protective and risk factors of health and socio-economic health differences on this environmental level.

For example, on the individual level, we confirmed the very strong influence of peers' smoking on adolescents' smoking behaviour. School environments differ in the "occurrence" of smoking peers influencing adolescents, but also in the power of these peers to influence adolescent smoking behaviour. This is a first step in looking for factors which make some environment healthier.

Concluding this chapter, we recommend further research on socio-economic health differences:

- ⊖ both cross-sectional and longitudinal design
- ⊖ wider sample in terms of age, region, minority and other special groups
- ⊖ extending the model, add new variables
- ⊖ socio-environmental context

POLICY RECOMMENDATIONS

Socio-economic health inequalities are ethically unacceptable. The main reason for research into inequality is to find efficient reduction strategies. We agree with Kunst (1997) that even a modest reduction of socio-economic health inequalities can save a lot of human misery. But, as we know, a societal problem will not reach the political agenda because of its size. Over 30 years ago, Bachran and Baratz published their agenda-building model with barriers (Bachran and Baratz 1970). The most important one is that society should admit there is a problem. There are people who are in favour of the problem reaching the agenda from society's subconscious, and others who want to keep it there. In all different stages of the political process both groups are active. Other authors (Lowi 1963, Cobb et al. 1976, Cobb and Elder 1983) distinguish circumstances for a problem which are favourable for its reaching the agenda and others which are not. Redistributive problems have difficulty reaching the agenda; other complicating factors are the complex nature of the problem and the absence of a clear, simple solution.

The aim of the rest of this chapter is to discuss policy recommendations, particularly in the field of education, health care, preventive care, government, and municipalities.

1. Education

Adolescents are influenced by at least three main sources of education: 1. family, mainly parents, 2. school and 3. society including youth subculture. The target of reduction strategies should be at least adolescents themselves and significant adults. The group of significant adults consists of parents, teachers, health professionals, social workers, municipality workers and other people who have

influence on adolescents. Lester et al. (2000) explored health authority employees' opinions on method of working effectively towards greater equity. This study identified a need for more information or training to enable staff to deal with issues of health inequality in their day to day work. The presence of socio-economic health differences should be part of the education and the training of these people. Professionals should know how SES influences health and quality of life and how they can contribute in their daily practice to the reduction of inequity which is unacceptable from an ethical point of view, and which is at the same time detrimental for society as a whole. The solutions can be sometimes very simple and very cheap, based on a clear awareness of mechanisms producing inequalities.

There is a lot of criticism on school education systems; this criticism stresses the transfer of a lot of general information, and at the same time points to the shortcomings in the main role of school education: to teach children to manage their own life in adulthood. Teaching them to be responsible for their own health and how to maintain their health and an optimal quality of life is that part of education which can be improved a lot. There are efforts to improve this and implement more health education at least partially in some samples. We think, and our findings support this idea, that much more work in much more complex design should be done in this field.

2. Health care

Equal access to the health care system is guaranteed by law in Slovakia. The question then is whether apart from this formal equal access, in practice the access to health care system is really equal. There are doubts at least whether the benefits from the health care system are equally divided over different socio-economic groups (Stronks 1997). Differences in health care, but also preventive care may arise from unequal use of available services caused by differences in the accessibility of services or individual preferences, but also from unequal effectiveness of services on the user or provider side. Despite the fact that health care is not the most important determinant of socio-economic health inequalities, reduction strategies may identify it as a major channel for improvements.

The monitoring of health, of inequalities in health, but also of inequalities in the access to the health care system is required. Particularly the issue of benefits from the health care system needs to be monitored and improved.

Lester et al. (2000, 2001) describes the way how health authorities may contribute to diminishing of health inequalities. The health authority involved (Bro Taf Health Authority) declares to assess all future proposals for their likely impact on

health inequalities particularly for vulnerable groups (children, elderly, ethnic minorities), to consult widely with partners in public health to develop strategies to reduce health inequalities, to act as an advocate for population (leading and informing debate with other agencies), to co-operate with national and local government to reduce health inequalities.

Our findings support the importance of health promotion. The situation in Slovakia is similar to that described by Walker et al. (2000): Adolescents would like to discuss their health concerns with health professionals, but few GPs offer teenagers health promotion. Walker et al. (2000) describe a project with a possible intervention. Adolescents were invited for a short (20 min) consultation with a GP. The issue was how to promote their own health. Adolescents who accepted this invitation (41%), considered this visit very useful and the majority of them prepared a plan to maintain their own health. Diet, exercise and smoking were the most frequently discussed issues.

3. Government, municipalities

As was pointed out earlier in the "general introduction", one of the possible explanations of the socio-economic health differences among Slovak adolescents (which are "not absent" in contrast to Western Europe - see chapters 1+4) is that the system of "buffers" from the previous period does not work anymore, but new ones do not work yet. This part will required multisectoral co-operation. Such co-operation assumes that the topic is on the political agenda of the various participants.

Our findings indicate health risk behaviour as a strong contributor to socio-economic health differences. Health risk behaviour is a part of life style, a part of leisure time activities and is related to health education, access to healthy alternatives in the environment and health promotion programmes integrated in normal adolescent life.

The most effective seem to be the community-based health programmes, but their implementation is often associated with difficulties. In the ideal case, health is a topic which is deliberated upon in every policy field of a municipality. In this approach health is not a sectoral issue, but health policy is an intersectoral policy which has consequences for nearly all other policy fields.

OVERALL CONCLUSION

Inequalities in health among Slovak adolescents were explored in terms of several research questions. Self-reported health problems, socio-economic health differences, socio-economic differences in health risk behaviour, validity of the

hypotheses of different exposure and different vulnerability in the explanation of socio-economic health differences, the influence of parents and peers on adolescents, and the school environment and social support in the explanation of socio-economic health differences were explored. Our findings can be concluded as follows.

1. Slovak adolescents, female more than male, suffer from a considerable number of self-reported health problems.
2. There are significant socio-economic health differences, unfavourable for lower socio-economic groups of adolescents in Slovakia. We did not confirm gender differences in socio-economic health differences.
3. Health risk behaviour and positive attitudes towards health risk behaviour occurred more frequently in lower socio-economic groups of adolescents.
4. Both explanations for socio-economic health differences, different exposure and different vulnerability, seem to be valid for the explanation of socio-economic health differences through health risk behaviour, but the first one, the explanation of different exposure, explains the differences more convincingly.
5. Peers' smoking influences adolescents' smoking behaviour the most. Parental smoking influences adolescent's smoking both directly and indirectly through the influence on peers' smoking, and SES influences adolescents' smoking only indirectly through its influence on parental and peers' smoking.
6. Low social support is related to poorer health and occurred more frequently in lower socio-economic groups of adolescents. Findings support the hypothesis of different exposure, but not the hypothesis of different vulnerability.

SUMMARY

The presence of socio-economic health differences (SEHD) has been confirmed in almost all European countries. During early childhood SEHD are deep; they persist during childhood and with the onset of adolescence they diminish, only to emerge again in early adulthood. After this period SEHD deepen during adulthood and then diminish again towards the end of life. Central European countries are more vulnerable to the deepening of SEHD because of the ongoing transformation in these countries. This process, connected with income inequality, has an undesirable impact on the health of the population.

The first chapter of this thesis focuses on the main hypothetical questions concerning findings related to SEHD. Namely, are SEHD an artefact, are they due to health selection, or to social causation? Three main theoretical streams in the framework of the social causation hypothesis are described: life conditions (materialistic hypothesis), life style (behavioural hypothesis) and the hypothesis on knowledge, attitudes, and values are discussed more in detail. Particular attention is focused on the hypothesis of varying exposure and the hypothesis of varying vulnerability as explaining the presence of SEHD, as well as to the buffer hypothesis and the hypothesis of latent differences as explaining the absence of SEHD in adolescence.

The aim of the study is to explore the relationship between the position in the socio-economic stratification and health among Slovak adolescents. By monitoring self-reported health problems and through the examination of the presence of SEHD, an attempt is made to explain the presence of SEHD through mediating factors like health risk behaviour and social support. Particular attention is focused on parents' and peers' influences on health risk behaviour.

Data were collected in September and October 1998. The sample consists of 1370 boys and 1246 girls, students of the first grade in 31 secondary schools located in Kosice (a city in the eastern part of Slovakia; 240 000 inhabitants) in the age group between 14 and 17 years (average age 15 years). Data related to the following six fields were collected: demographic and socio-economic characteristics (occupation and education of parents, adolescent's type of school), health (psychological health, vitality, mental health, health complaints, chronic disease, self-reported health, self-reported vulnerability to illness, use of medical services), health risk behaviour (smoking, alcohol consumption, drug use, lack of physical

exercise) and attitudes towards health risk behaviour, parents' and peers' influences on health risk behaviour, social network, social support and personality (self-esteem, decision making style).

The health of adolescents was explored using self-reported health indicators, which have so far been used very rarely in Slovakia, despite the fact that these indicators are very important in the period of life when the more classic health indicators like mortality and morbidity are not able to describe the health situation of respondents adequately. Chapter 3 shows that Slovak adolescents, both boys and girls, suffer from a considerable amount of self-reported health problems. Slovak adolescents do not differ with this respect from West European adolescents. Girls report health problems more frequently than boys. The attention should be focused on psychological health, a high prevalence of tiredness, headache, backache, skin diseases and respiratory diseases. The character of health problems among adolescents indicates possible undesirable health processes which can later lead to serious chronic diseases (respiratory disease, musculo-skeletal diseases), but which at this age are still preventable, reversible or at least susceptible to change in a desirable direction.

In Chapter 4, the relationship between SES and health is the central issue. Adolescents from lower socio-economic groups (occupation and education of parents, adolescent's type of school) suffer from more health complaints, evaluate their health less favourably, and report easily falling ill more frequently than the others. They also more frequently use prescribed medicines, less frequently use non-prescribed medicines, and are characterised by lower vitality. These characteristics are not related to parents' education, or the adolescents' type of school or mental health, nor are they related to parents' education in comparison to those of adolescents from higher SES groups. Socio-economic differences were not confirmed in psychological health and the occurrence of chronic diseases. Gender differences in SEHD are not present.

SEHD unfavourable for lower SES groups were confirmed among Slovak adolescents, but not in Dutch or Scottish adolescents. The differences in findings can be explained by differences in the influence of protective mechanisms and depth of class inequalities in health in countries with different socio-economic situations. The influence of protective factors is either absent or is not enough strong to diminish class inequalities, which can be deeper in Central Europe in comparison with Western Europe.

The behavioural hypothesis of SEHD stresses the role of smoking, alcohol consumption, drug use and lack of physical exercise on the presence and depth of health inequalities. According to this hypothesis people of lower SES groups behave more riskily and as a consequence their health is worse in comparison with people of high SES. Chapter 5 of this study confirms the association between SES (occupation and education of parents, adolescent's type of school) with health risk behaviour, although there are some exceptions mostly with regard to parents' education as an SES indicator, and alcohol consumption or drug use. The prevalence of health risk behaviour is higher in lower socio-economic groups of adolescents. An exception exists in alcohol consumption among girls when SES was based on parents' education: daughters of parents with higher education consume alcohol more frequently. Socio-economic differences in the prevalence of health risk behaviour among adolescents were not confirmed in the related Dutch study. The literature related to this issue is characterised by inconsistency in the findings. The reason for this could be differences in the sample or the methods, but also socio-cultural differences.

Only one third of the adolescents in the sample did not behave riskily, or in other words did not smoke, did not consume alcohol, had no experience with drug use and practised sport at optimal frequency. The occurrence of smoking, alcohol consumption and experience with drug use are related. Apart from the lack of physical exercise, boys behave more riskily in comparison with girls. The undesirable influence of health risk behaviour on adolescents' health, namely psychological health, vitality, mental health, self-reported health, self-perceived vulnerability to illness, health complaints, chronic disease and the use of medical services, was confirmed. There is only one exception: sporting, which is related to a higher prevalence of injuries.

Health risk behaviour significantly contributes to the presence of SEHD. A mechanism explaining SEHD can be as follows: higher occurrence of risk behaviour in lower SES groups (different exposure), but also varying influence of risk behaviour on health among socio-economic groups (different vulnerability). The validity of these hypotheses is explored in Chapter 6. The effect of SES (occupation and education of mother) and the effect of risky behaviour (smoking, alcohol consumption) on health significantly interact: SEHD occurred among smokers and alcohol consumers, but not among non-smokers and non-drinkers. The influence of health risk behaviour was weaker in higher socio-economic groups and stronger in lower socio-economic groups of adolescents. The character

of the confirmed interactions supports both hypotheses (different exposure, different vulnerability), but the hypothesis of different exposure is more strongly supported.

The occurrence of risky behaviour among parents (smoking, alcohol consumption, lack of physical exercise), but also the occurrence of risky behaviour among friends (smoking, alcohol consumption, drug use, lack of physical exercise) increases the probability of corresponding behaviour among adolescents. Smoking is one of the most frequently explored health determinants; it has a strong relationship with serious civilisation diseases, a high prevalence and early onset. Peer influence, parental influence and the influence of SES on adolescent smoking are usually explored separately. The model explaining the combined influence of these factors on adolescent smoking is explored in Chapter 7. The influence of friends' smoking on adolescents' smoking was the strongest. Adolescents reporting more smokers among their friends smoke more frequently. Parents' smoking behaviour increases the probability of smoking among adolescents both directly and indirectly through the influence of friends' smoking behaviour. SES was related to adolescent smoking only indirectly through its influence on parents' and peers' smoking behaviour. Lower SES was related to a higher prevalence of smokers in both groups, parents and peers.

Parents, particularly the mother, are the most important source of social support, as is depicted in Chapter 8. The importance of peers is increasing, particularly among girls. Most frequent peer contacts were friendship, intimate friendship and group activities. Girls more frequently report intimate friendship; boys more frequently report group activities, mostly sport- oriented. Boys more frequently than girls report low social support, namely having nobody to talk to about their problems. Low social support occurred more frequently in low SES groups of adolescents and was related to worse health. Adolescents reporting that they had nobody to talk to about problems also featured worse self-reported health, more health complaints, worse psychological health, vitality and mental health. These findings support the hypothesis of differing exposure, but not the hypothesis of differing vulnerability. Despite the fact that the majority of studies use SES indicators based on fathers' characteristics, our findings related to socio-economic differences in health and health risk behaviour indicated that mothers' socio-economic characteristics are of the same or higher importance in comparison with those of the fathers.

The last chapter (Chapter 9) discusses the most important findings, and recommendations are made regarding research and policy implications for education,

health care and government. An attempt is made to answer the questions about the extent to which adolescence is a healthy period of life; and why SEHD are not absent among Slovak adolescents, as might be expected. Further questions discussed focus on the aspects of health which are related to SES, and the differences in SEHD which can be expected in the comparison of males and females. Next, the prevalence of health risk behaviour among Slovak adolescents and the influence of health risk behaviour on health in adolescence itself are discussed, as well as the possible determinants of health risk behaviour. Finally, the mechanism governing the way health risk behaviour and social support contribute to the presence of SEHD is dealt with.

Several recommendations are made for further research: to continue this research and at the same time to include both cross-sectional and longitudinal data; and also to take care to set up a wider sample with regard to age, region and minorities; and finally, to extend the model by adding new variables and also including the socio-environmental context.

The influence of socio-economic characteristics on health and quality of life, but also the mechanism of reduction of SEHD, should not be absent in the education of people who can be of great help in the reduction of SEHD in their professional life, such as teachers. More attention should be focused on prevention, in terms of increasing people's readiness to take personal responsibility for their own health and quality of life. Monitoring of health and SEHD can provide important information for preparing appropriate health promotion programs. The most efficient seem to be community-based programs which require the co-operation of all sectors in society: the health care sector, the education system, and the municipality.

SAMENVATTING

De aanwezigheid van sociaal-economische gezondheidsverschillen (SEGV) is bevestigd in bijna alle West Europese landen. Gedurende de vroege kinderleeftijd zijn de SEGV groot; ze blijven gedurende de kinderleeftijd aanwezig en met het begin van de adolescentiefase verdwijnen ze. Na deze periode komen de SEGV gedurende het begin van de volwassenheid weer tevoorschijn om te verdwijnen aan het eind van het leven. Centraal Europese landen lijken kwetsbaarder voor vergroting van de SEGV vanwege het transitieproces in deze landen. Dit proces, nauw verbonden met inkomensongelijkheid, heeft een ongewenste invloed op de gezondheid van de bevolking. De vraag die dan opkomt is of het in West Europese landen voorkomende, boven geschetste patroon van SEGV ook zo voorkomt in Centraal Europese landen. Dit proefschrift spitst zich toe op de aan- dan wel afwezigheid van SEGV en bepaalde determinanten ervan bij adolescenten in Slowakije.

In het eerste hoofdstuk worden de belangrijkste hypothesen weergegeven, die de bevindingen met betrekking tot SEGV verklaren. SEGV kunnen een gevolg zijn van selectie op basis van gezondheid, of ze kunnen een sociale oorzaak hebben; tenslotte kunnen SEGV worden beschouwd als een artefact. Drie theoretische hoofdlijnen met betrekking tot de sociale veroorzaking van SEGV worden nader belicht: de leefomstandigheden (de materialistische hypothese), de leefstijl (de gedragshypothese) en de hypothese waarin kennis, normen, en waarden centraal staan. Verder is aandacht besteed aan de hypothese van de verschillen in blootstelling en de hypothese van verschillen in kwetsbaarheid met betrekking tot de aanwezigheid van SEGV; voorts wordt stilgestaan bij de buffer hypothese en de hypothese van de latente verschillen die de afwezigheid van SEGV gedurende de adolescentiefase kunnen verklaren.

Het doel van het onderzoek is het verband na te gaan tussen de sociaal-economische positie en de gezondheid van Slowaakse adolescenten. Door middel van een inventarisatie van zelf gerapporteerde gezondheidsproblemen, en door het onderzoek naar de aanwezigheid van het voorkomen van SEGV is een poging ondernomen dat voorkomen van SEGV te verklaren met behulp van mediërende factoren zoals gezondheidsgedrag en sociale steun. Voorts is aandacht besteed aan de invloed van ouders en vrienden op het gezondheidsgedrag.

De data werden verzameld in september en oktober 1998. De steekproef bestond uit 1370 jongens en 1246 meisjes, allen leerling van de eerste klas van het

vervolgonderwijs na de lagere school, waar men tot 14 jaar verblijft. Deze scholen zijn gelegen in Kosice, een stad in Oost-Slowakije met 240.000 inwoners. De leeftijd in de groep varieert van 14 tot 17 jaar met als gemiddelde 15 jaar. Met betrekking tot de volgende zes terreinen werden data verzameld: demografische en sociaal-economische gegevens (beroep en opleiding beide ouders, schooltype adolescent), gezondheid (psychische gezondheid, vitaliteit, mentale gezondheid, gezondheidsklachten, chronische ziekten, zelf gerapporteerde gezondheid, zelf gerapporteerde vatbaarheid voor ziekte, gebruik van de gezondheidszorg), gezondheidsgedrag (roken, alcohol consumptie, gebruik van drugs, gebrek aan beweging) en attitudes ten opzichte van gezondheidsgedrag, de invloed van ouders en vrienden op gezondheidsgedrag, sociaal netwerk, sociale steun en persoonlijkheid (zelfwaardering, beslissingsstijlen).

De gezondheid van adolescenten werd onderzocht met behulp van zelfgerapporteerde gezondheidsindicatoren. Tot op dit moment is het gebruik van dit type indicatoren in Slowakije zeldzaam, hoewel ze erg belangrijk zijn in een fase van het leven, waar de meer klassieke gezondheidsindicatoren zoals ziekte en sterfte niet in staat zijn om een adequate beschrijving te geven van de gezondheidstoestand van dit deel van de populatie. In hoofdstuk 3 wordt aangetoond dat Slowaakse adolescenten, zowel jongens als meisjes, lijden onder een forse hoeveelheid zelf gerapporteerde gezondheidsproblemen. Hierin verschillen Slowaakse adolescenten niet van West Europese adolescenten. Meisjes vermelden meer frequent gezondheidsproblemen dan jongens, met name daar waar het gaat om psychische gezondheid, het voorkomen van moeheid, hoofdpijn, rugpijn, huidziekten en ademhalingsproblemen. De aard van de gezondheidsproblemen bij adolescenten is een aanwijzing voor mogelijk onwenselijke processen met betrekking tot gezondheid, die later kunnen leiden tot serieuze chronische ziekten (longziekten, ziekten van het bewegingsapparaat), maar op deze leeftijd nog te voorkomen zijn, of op zijn minst om te buigen in een gewenste richting.

In hoofdstuk 4 is het verband tussen sociaal-economische status (SES) en gezondheid het centrale onderwerp. Adolescenten, afkomstig uit lagere sociaal-economische groepen – gemeten naar beroep en opleiding van de ouders en het schooltype dat de adolescent bezoekt – hebben meer last van gezondheidsklachten, waarden hun eigen gezondheid als minder gunstig, en vermelden vaker ziek te worden dan de overigen. Ze gebruiken, in vergelijking met adolescenten afkomstig uit hogere sociaal-economische groepen, eveneens vaker geneesmiddelen op recept, minder vaak geneesmiddelen niet op recept en verder hebben ze vaker een lagere vitaliteit. Dit laatste is alleen gerelateerd aan het beroep van de ouders. De mentale

gezondheid, die niet gerelateerd is aan het opleidingsniveau van de ouders, is eveneens minder bij adolescenten, afkomstig uit lagere sociaal-economische groepen. Sociaal-economische verschillen konden niet worden gevonden voor het psychische gezondheid betref en het voorkomen van chronische ziekten. Geslachtsgebonden verschillen met betrekking tot SEGV komen niet voor.

Voor lage SES groepen ongunstige SEGV werden gevonden bij Slowaakse adolescenten, maar niet bij Nederlandse of Schotse adolescenten. De verklaring voor deze verschillen in bevindingen wordt gezocht in de verschillen in invloed van beschermende mechanismen en de diepte van de klasse verschillen in gezondheid in landen met een verschillende sociaal-economische situatie. De invloed van beschermende factoren is ofwel afwezig, ofwel niet sterk genoeg om de effecten van klasseverschillen, die in Centraal Europa mogelijk groter zijn dan in West Europa, tegen te gaan.

De gedragshypothese met betrekking tot SEGV richt de aandacht vooral op de invloed van roken, alcoholconsumptie, gebruik van drugs en een gebrek aan beweging op het voorkomen en de mate van de gezondheidsverschillen. De suggestie is dat mensen uit lage sociaal-economische groepen meer riskant gedrag vertonen, en als gevolg een slechtere gezondheid hebben in vergelijking met mensen uit hogere sociaal-economische strata. Het onderzoek in hoofdstuk 5 bevestigt het positieve verband tussen lage SES (beroep en opleiding ouders, schooltype dat adolescent bezoekt) en riskant gezondheidsgedrag: het voorkomen van riskant gezondheidsgedrag is hoger in groepen adolescenten met een lagere sociaal-economische status. Er zijn enkele uitzonderingen die in hoofdzaak betrekking hebben op het opleidingsniveau van de ouders als SES indicator, zoals alcoholconsumptie en gebruik van drugs: dochters van ouders met een hogere opleiding drinken vaker alcohol. Socio-economische verschillen in het voorkomen van riskant gezondheidsgedrag onder adolescenten werd niet gevonden in de Nederlandse studie. De literatuur met betrekking tot dit onderwerp is inconsistent. De redenen daarvoor kunnen zijn gelegen in de steekproef en de gehanteerde methode, maar ook in sociaal-culturele verschillen.

Slechts eenderde van de onderzochte adolescenten vertoonde geen riskant gezondheidsgedrag; met andere woorden: rookte niet, gebruikte geen alcohol, had geen ervaring met drugs en sportte met een optimale frequentie. Het voorkomen van roken, alcoholgebruik en ervaring met drugsgebruik zijn verwant. Met uitzondering van het tekort aan fysieke inspanning gedragen jongens zich riskanter in vergelijking met meisjes. De onwenselijke invloed van riskant gezondheidsgedrag op de gezondheid van de adolescent waar het gaat om psychische gezondheid,

vitaliteit, mentale gezondheid, zelf-gerapporteerde gezondheid, zelf waargenomen kwetsbaarheid met betrekking tot ziekten, gezondheidsklachten, chronische ziekten, en het gebruik van de gezondheidszorg werd bevestigd. Er is slechts één uitzondering, bewegen; dat is gerelateerd aan een hoger voorkomen van ongevallen.

Risikant gezondheidsgedrag draagt significant bij aan de aanwezige SEGV. Het mechanisme dat SEGV verklaart kan als volgt worden gedacht: er is een hoger voorkomen van risikant gezondheidsgedrag in lagere sociaal-economische strata (verschil in blootstelling), maar er is ook een verschillende invloed van risikant gezondheidsgedrag op de gezondheid van verschillende sociaal-economische strata (verschillende kwetsbaarheid). De houdbaarheid van deze beide hypothesen werd onderzocht in hoofdstuk 6. Het effect van SES (beroep en opleidingsniveau van de moeder) en het effect van risikant gezondheidsgedrag (roken, alcoholgebruik) op gezondheid hangen op significante wijze samen: bij rokers en alcoholgebruikers zijn SEGV aanwezig, maar niet bij niet-rokers en niet-drinkers. De invloed van risikant gezondheidsgedrag was sterker bij adolescenten afkomstig uit lagere sociaal-economische strata. De aard van de bevestigde interacties steunt beide hypothesen (verschil in blootstelling, verschil in kwetsbaarheid), maar de hypothese van het verschil in blootstelling wordt sterker gesteund.

Het voorkomen van risikant gezondheidsgedrag bij ouders (roken, alcoholgebruik, gebrek aan beweging), en ook het voorkomen van risikant gezondheidsgedrag bij vrienden (roken, alcoholgebruik, drugsgebruik, gebrek aan beweging) neemt de kans op zulk gedrag bij adolescenten toe. Roken is de meest frequent onderzochte gezondheidsdeterminant; het komt veel voor, en er wordt vroegtijdig mee begonnen. De invloed van vrienden, de invloed van ouders en de invloed van SES op het rookgedrag van adolescenten worden gewoonlijk afzonderlijk onderzocht. Het model, dat de invloed van deze factoren gezamenlijk verklaart, vormt het onderwerp van hoofdstuk 7. De invloed van het rookgedrag van vrienden op het rookgedrag van adolescenten bleek het sterkst. Adolescenten die weergeven dat ze meer rokende vrienden hebben, roken zelf ook vaker. Door het rookgedrag van de ouders neemt de kans op roken door de adolescent toe, zowel direct als indirect door de invloed van het rookgedrag van de vrienden. SES bleek slechts indirect gerelateerd aan het rookgedrag van de adolescent door de invloed op het rookgedrag van de ouders en de vrienden. Lagere sociaal-economische strata waren gerelateerd aan een hoger voorkomen van rokers bij zowel ouders als bij vrienden.

Ouders, in het bijzonder de moeder, zijn de belangrijkste bron voor sociale steun, zoals wordt geschetst in hoofdstuk 8. Het belang van het hebben van vrienden is groot, in het bijzonder bij meisjes. De meest frequent voorkomende

vriendschapscontacten zijn vriendschap, intieme vriendschap en groepsactiviteiten. Meisjes melden vaker intieme vriendschap; jongens melden vaker groepsactiviteiten, meestal sport. Jongens vermelden vaker dan meisjes een laag niveau van sociale steun in termen van het hebben van niemand om mee over problemen te praten. Een laag niveau van sociale steun komt vaker voor bij adolescenten uit lage sociaal-economische groepen en is gerelateerd met een slechtere gezondheid. Meer gepreciseerd: adolescenten die melden dat ze niemand hebben om mee over problemen te praten, vermelden ook een slechtere zelf vermelde gezondheid, meer gezondheidsklachten, slechtere psychische gezondheid, vitaliteit en mentale gezondheid. Deze bevindingen steunen de hypothese van de verschillen in blootstelling, maar niet de hypothese van verschillen in kwetsbaarheid. Onze bevindingen met betrekking tot SEGV en riskant gezondheidsgedrag wijzen in de richting dat de SES-indicatoren van de moeder van hetzelfde of een groter belang zijn in vergelijking met die van de vader, niettegenstaande het feit dat in de meerderheid van de onderzoeken SES-indicatoren van de vader worden gebruikt.

In het laatste hoofdstuk, hoofdstuk 9, komen de belangrijkste bevindingen aan de orde; tevens worden aanbevelingen met betrekking tot verder onderzoek gedaan en verder beleidsaanbevelingen met betrekking tot onderwijs, gezondheidszorg en de overheid. Er wordt een poging ondernomen om de vragen te beantwoorden in hoeverre de adolescentiefase een gezonde periode van iemands leven is en waarom SEGV niet afwezig zijn bij Slowaakse adolescenten, zoals verwacht mocht worden. Voorts wordt ingegaan op die aspecten van gezondheid die aan SES zijn gerelateerd, alsmede de verschillen in SEGV, die in de vergelijking tussen meisjes en jongens verwacht mogen worden. Vervolgens is ingegaan op het voorkomen van riskant gezondheidsgedrag bij Slowaakse adolescenten en de invloed daarvan op gezondheid, als ook op de mogelijke determinanten van riskant gezondheidsgedrag. Tot slot wordt stil gestaan bij het mechanisme dat achter de invloed schuil gaat van riskant gezondheidsgedrag en sociale steun op SEGV.

Verskillende aanbevelingen worden gedaan voor verder onderzoek. Dit lopende onderzoek zou voortgezet moeten worden, waarbij het tegelijkertijd zowel een cross-sectionele als een longitudinale opzet dient te krijgen. Verder dient gezorgd te worden voor een uitgebreider steekproef met betrekking tot leeftijd, regio en minderheden. Tot slot moeten nieuwe variabelen aan het model worden toegevoegd, en meer aandacht dienen te worden besteed aan de invloed van de sociale omgeving.

De invloed van sociaal-economische kenmerken op gezondheid en kwaliteit van leven, maar ook het mechanisme om SEGV terug te dringen, moet een plaats krijgen in de opleiding van mensen die van grote betekenis kunnen zijn bij het

terugdringen van SEGV bij de uitoefening van hun professie, zoals onderwijzers. Meer aandacht dient te worden besteed aan preventie, in termen van het nemen van een toegenomen verantwoordelijkheid voor het eigen leven en de kwaliteit van leven. Het systematisch volgen van gezondheid en SEGV kan belangrijke informatie brengen die nodig is om passende gezondheidsvoorlichtingsprogramma's te vervaardigen. Het meest efficiënt lijken in dat kader de gemeenschapsprojecten, waarbij samenwerking van alle maatschappelijke sectoren is vereist: de gezondheidszorg, de scholen en de (gemeentelijke) overheid.

SÚHRN

Existenciu socio-ekonomických nerovností v zdraví potvrdzujú výskumy vo všetkých krajinách Európy. V rannom detstve sú socio-ekonomické rozdiely výrazné, pretrvávajú počas detstva a rannej puberty a s nástupom adolescencie sa vytrácajú, aby sa znovuobjavili v rannej dospelosti a prehĺbili počas dospelosti a znovu vytratili na sklonku života. Stredo-európske krajiny sú citlivejšie na prehlbovanie socio-ekonomických nerovností, pretože prebiehajúca transformácia v týchto krajinách, spojená sa nerovnosťami v príjmoch má nežiadúci dopad na zdravie populácie.

Úvodná kapitola je venovaná hlavným hypotézam vysvetľujúce zistenia týkajúce sa socio-ekonomických nerovností v zdraví, menovite hypotéze artefaktu merania, selekcie zdravím a sociálneho zapríčinenia. Podrobnejšie sa venuje trom teoretickým prúdov v rámci hypotézy sociálneho zapríčinenia, a to zapríčineniu životnými okolnosťami (materialistická hypotéza), zapríčineniu životným štýlom (behaviourálna hypotéza) a zapríčineniu rozdielmi vo vedomostiach, postojoch a hodnotách. Zvláštna pozornosť je venovaná hypotéze odlišnej expozície a odlišnej citlivosti objasňujúcich prítomnosť triednych nerovností v zdraví a hypotéze nárazníka a latentných rozdielov, vysvetľujúcich absenciu triednych nerovností v zdraví u adolescentov.

Cieľom štúdie je preskúmať vzťah medzi pozíciou v socio-ekonomickej stratifikácii a zdravím v skupine slovenských adolescentov. Autorka postupuje od monitoringu subjektívnych zdravotných ťažkostí adolescentov, cez overenie existencie socio-ekonomických nerovností v zdraví až po pokus objasniť prítomnosť týchto nerovností pomocou sprostredkujúcich faktorov ako sú rizikové správanie a sociálna opora. Zvláštnu pozornosť venuje vplyvu rodičov a rovesníkov na rizikové správanie.

Dáta boli zozbierané v septembri a októbri 1998. Vzorku tvorilo 1370 chlapcov a 1246 dievčat, študentov prvého ročníka 31 stredných škôl lokalizovaných v Košiciach (mesto vo východnej časti Slovenska, 240 000 obyvateľov) vo veku 14 až 17 rokov (priemerný vek 15 rokov). Zbierané boli informácie týkajúce sa nasledovných šesť oblastí: demografická a socio-ekonomická charakteristika (vzdelanie a zamestnanie rodičov, typ školy), zdravie (subjektívna pohoda, vitalita, duševné zdravie, subjektívne zdravotné ťažkosti, chronické ochorenia, celkové hodnotenie zdravia, náchylnosti k chorobe, užívanie zdravotníckych služieb), rizikové správanie (fajčenie, konzumovanie alkoholu, skúsenosť s užívaním drog,

nedostatok športovej aktivity) a postoje k rizikovému správaniu, vplyv rodičov a rovesníkov na rizikové správanie, sociálna sieť, sociálna opora a osobnosť (sebaúcta, štýl rozhodovania).

Zdravie adolescentov bolo skúmané s využitím subjektívnych zdravotných indikátorov, ktoré sú v slovenských podmienkach zriedkavo používané, pritom veľmi dôležité v období, keď klasické objektívne indikátory ako sú mortalita, morbidita nedostatočne zachytávajú zdravotnú situáciu respondentov. Slovenskí, ale i holandskí adolescenti, chlapci i dievčatá, trpia značným množstvom subjektívnych zdravotných ťažkostí. Slovenskí adolescenti sa v tomto smere nelíšia od západoeurópskych adolescentov. Výskyt zdravotných ťažkostí je častejší v skupine dievčat, v porovnaní so skupinou chlapcov. Pozornosť si vyžaduje najmä miera subjektívnej pohody adolescentov, vysoký výskyt symptómov únavy, bolesti hlavy, bolesti chrbta, kožné ochorenia a choroby dýchacích ciest. Charakter zdravotných ťažkostí adolescentov naznačuje možné nepriaznivé procesy, ktoré neskôr môžu viesť k vážnejším chronickým ochoreniam (chronické choroby dýchacieho a muskulo-skeletálneho systému), no v tomto období sú ešte preventabilné, reverzibilné, alebo prinajmenšom ovplyvnitelné v žiadúcom smere.

Adolescenti z nižších socio-ekonomických skupín (zamestnanie a vzdelanie rodičov, typ školy adolescenta) trpia vyšším počtom subjektívnych zdravotných ťažkostí, hodnotia svoje zdravie menej priaznivo, častejšie sa cítia náchylnejší k ochoreniu v porovnaní so svojimi rovesníkmi, užívajú viac liekov na lekárske predpis (nesúvisí so vzdelaním rodičov) a menej liekov bez predpisu, a vyznačujú sa nižšou mierou vitality (nesúvisí so vzdelaním rodičov a typom školy) a duševného zdravia (nesúvisí so vzdelaním rodičov) v porovnaní so svojimi rovesníkmi z vyšších socio-ekonomických skupín. Triedne rozdiely v zdraví sme nepotvrdili v miere subjektívnej pohody a výskytu chronických ochorení. Chlapci a dievčatá sa nelíšia vo výskyte triednych nerovností v zdraví.

Výskyt socio-ekonomických nerovností v zdraví v neprospech nižších socio-ekonomických skupín bol potvrdený u slovenských adolescentov, ale nie u holandských a škótskych adolescentov. Rozdiely v zisteniach je možné vysvetliť rozdielmi vo vplyve ochranných faktorov a hĺbke triednych nerovností v zdraví u adolescentov z krajín s odlišnou socio-ekonomickou situáciou. Vplyv ochranných faktorov buď absentuje, alebo je nedostatočný na potlačenie triednych rozdielov, ktoré môžu byť v Strednej Európe hlbšie v porovnaní so Západnou Európou.

Behaviorálna hypotéza výskytu socio-ekonomických rozdielov v zdraví zdôrazňuje podiel fajčenia, konzumovania alkoholu, užívania drog a nedostatku

fyzickej aktivity na výskyt a hĺbku nerovností v zdraví. Podľa tejto hypotézy ľudia z nižších socio-ekonomických skupín sa správajú rizikovejšie, čoho dôsledkom je horšie zdravie v porovnaní s ľuďmi z vyšších socio-ekonomických skupín. Presentovaná štúdia potvrdila súvislosť socio-ekonomického statusu (zamestnanie a vzdelanie rodičov, typ školy adolescenta) s výskytom rizikového správania adolescentov i keď s niektorými výnimkami, týkajúcimi sa väčšinou vzdelania rodičov ako indikátora socio-ekonomického statusu a výskytu užívania alkoholu, respektíve skúsenosti s užívaním drog. Výskyt rizikového správania bol vyšší v nižších socio-ekonomických skupinách adolescentov. Výnimku tvoril výskyt konzumovania alkoholu v skupine dievčat, keď bol socio-ekonomický status určený na základe vzdelania rodičov. Dcéry vzdelanejších rodičov konzumovali alkohol častejšie.

Socio-ekonomické rozdiely vo výskyte rizikové správania adolescentov neboli potvrdené v príbuznej holandskej štúdií. Odborná literatúra je v tejto oblasti charakteristická inkonzistenciou zistení. Dôvodom môžu byť odlišnosti vo vzorkách, metodike, ale i socio-kultúrne odlišnosti.

Iba tretina skúmaných adolescentov sa nesprávala riskantne, teda nefajčili, nekonzumovali alkohol, nemali skúsenosti s užívaním alkoholu a športovali v optimálnej miere. Výskyt fajčenia, konzumovania alkoholu a skúsenosti s užívaním drog navzájom súvisel. S výnimkou športovania sa chlapci správali rizikovejšie v porovnaní so skupinou dievčat. Potvrdený bol nepriaznivý vplyv skúmaného rizikového správania na zdravie adolescentov (subjektívnu pohodu, vitalitu, duševné zdravie, subjektívne zdravie, subjektívna náchylnosť k chorobám, zdravotné ťažkosti, chronické choroby, využívanie zdravotníckych služieb). Výnimku bolo iba športovanie, ktoré súviselo s vyšším výskytom úrazov.

Rizikové správanie sa významne podieľa na potvrdených socio-ekonomických nerovnostiach v zdraví. Vyšší výskyt rizikového správania v nižších socio-ekonomických skupinách (odlišná expozícia), ale i odlišný dopad rizikového správania na zdravie v socio-ekonomických skupinách (odlišná citlivosť) môžu byť mechanizmami vysvetľujúcimi triedne nerovnosti v zdraví. Vplyv socio-ekonomického statusu (zamestnanie, vzdelanie matky) a rizikového správania (fajčenie, konzumovanie alkoholu) na zdravie významne interagoval: Socio-ekonomické rozdiely v zdraví sa vyskytovali v skupinách fajčiarov a konzumentov alkoholu, no absentovali v skupinách nefajčiarov a abstinentov. Vplyv rizikového správania na zdravie adolescentov bol slabší vo vyšších socio-ekonomických skupinách a silnejší v nižších socio-ekonomických skupinách absolventov. Charakter potvrdených interakcií podporuje obe skúmané hypotézy (odlišná expozícia/ odlišná

citlivosť), i keď hypotézu odlišnej expozície výraznejšie.

Výskyt rizikového správania rodičov (fajčenie, konzumovanie alkoholu, športovanie) ale tiež výskyt rizikového správania u rovesníkov-priateľov (fajčenie, konzumovanie alkoholu, športovanie, skúsenosť s užívaním drog) zvyšoval pravdepodobnosť výskytu relevantného rizikového správania u adolescentov.

Fajčenie patrí k jedným z najčastejšie skúmaných determinánt zdravia pre svoj úzky vzťah s najzávažnejšími civilizačnými chorobami, vysoký výskyt v populácii a nízky priemerný vek, v ktorom s fajčením ľudia začínajú. Vplyv rovesníkov, vplyv rodičov a vplyv socio-ekonomického statusu na výskyt fajčenia u adolescentov sú obvykle skúmané osobitne. Autorka sa pokúsila overiť model, vysvetľujúci výskyt fajčenia u adolescentov spolupôsobením týchto troch faktorov. Najsilnejší vplyv na výskyt fajčenia u adolescentov mal výskyt fajčenia medzi ich priateľmi. Adolescenti, ktorí uviedli vyšší výskyt fajčiarov v skupine svojich priateľov častejšie sami fajčili. Výskyt fajčenia u rodičov zvyšoval pravdepodobnosť fajčenia u svojich adolescentných potomkov a to priamo i nepriamo skrze vplyv na výskyt fajčiarov v skupine priateľov svojich detí. Socio-ekonomický status súvisel s fajčením adolescentov iba nepriamo skrze vplyv na výskyt fajčiarov medzi rodičmi a priateľmi adolescentov. Nižší socio-ekonomický status súvisel s vyšším výskytom fajčiarov v oboch skupinách.

Rodičia, obzvlášť matka, patrili k najdôležitejším zdrojom sociálnej opory adolescentov. Vplyv rovesníkov zdá sa rásť, najmä u dievčat. K najčastejším rovesníckym kontaktom patrilo kamarátstvo, dôverné priateľstvo a skupinové rovesnícke aktivity. Dievčatá inklinovali viac k dôverným priateľstvám, chlapci k skupinovým rovesníckym aktivitám, väčšinou športového charakteru. Chlapci častejšie ako dievčatá udávali nízku mieru sociálnej opory (nemali sa s kým porozprávať o problémoch). Nižšia miera sociálnej opory sa vyskytovala častejšie v nižších socio-ekonomických skupinách adolescentov a súvisela s vyšším počtom zdravotných ťažkostí. Adolescenti, ktorí uviedli, že sa nemajú s kým rozprávať o problémoch, menej priaznivo posudzovali svoje zdravie, trpeli vyšším počtom subjektívnych zdravotných ťažkostí, nižšou mierou subjektívnej pohody, vitality a duševného zdravia. Zistenia podporujú hypotézu odlišnej expozície, ale nie hypotézu odlišnej citlivosti.

Napriek tomu, že väčšina štúdií používa indikátory socio-ekonomického statusu založené na socio-ekonomických charakteristikách otca, naše výsledky týkajúce sa socio-ekonomických nerovností v zdraví, rizikovom správaní ale i sociálnej opore naznačujú, že význam socio-ekonomických charakteristik matky môže byť väčší

v porovnaní s charakteristikami otca.

Záverečná kapitola je venovaná diskusii najzávažnejších zistení, odporúčaniam vzhľadom k ďalším výskumom a významu zistení pre opatrenia v oblasti školstva, zdravotníctva a verejnej správy.

Autorka sa pokúsila v diskusii zodpovedať do akej miery je adolescencia obdobím plného zdravia, prečo triedne nerovnosti v zdraví neabsentujú v skupine slovenských adolescentov, ktoré aspekty zdravia súvisia s pozíciou v socio-ekonomickej stratifikácii, aké odlišnosti v triednych nerovnostiach v zdraví je možné očakávať pri porovnaní mužov a žien, aký je výskyt rizikového správania a jeho vplyv na zdravie už v období adolescencie, aké sú determinanty rizikového správania a akým spôsobom participuje rizikové správanie a sociálna opora na výskyte socio-ekonomických nerovností v zdraví.

Autorka odporúča v ďalších výskumoch zahrnúť prierezové i longitudinálne dáta, rozšíriť vzorku vzhľadom na vek respondentov, región a skladbu z hľadiska minoritných skupín. Tiež doporučuje rozšíriť skúmaný model o ďalšie premenné a zahrnúť socio-environmentálny kontext.

Vplyv socio-ekonomických charakteristík na zdravie a kvalitu života, ale i mechanizmy redukcie socio-ekonomických nerovností by nemali podľa autorky absentovať pri vzdelávaní ľudí, ktorí pri výkone svojho povolania môžu napomôcť redukcii nerovností. Viac pozornosti je potrebné venovať prevencii v zmysle podpory preberania osobnej zodpovednosti za vlastné zdravie a kvalitu života. Monitoring zdravia, ale i nerovností v zdraví môže priniesť dôležité informácie potrebné pre prípravu vhodných prevenčných programov. Najúčinnnejšie sa zdajú komunitné prevenčné programy, ktoré ale vyžadujú spoluprácu všetkých sektorov: zdravotníctvo, školstvo, verejná správa.

APPENDICES

List of published articles related to project

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CURRICULUM VITAE

Andrea Geckova was born November 26, 1972 in Michalovce (Slovak Republic). After graduation from secondary school (Grammar school of Pavol Horov in Michalovce), she started her studies at the Philosophical Faculty of P. J. Šafarik University in Košice, with a final examination in Psychology in 1995. At the same time she completed her subsidiary Pedagogy course (Department of Pedagogy, Philosophical Faculty of P. J. Šafarik University in Košice). In the two years following she worked as a psychologist at the Institute for children with emotional and behavioural disorder (1995-1997), where she is still a member of the school council. In addition to this she worked as a lecturer at the Department of Psychology in the Philosophical Faculty (1996-1997) and at the Department of Social Medicine in the Medical Faculty (1995-1999) of P. J. Šafarik University in Košice. She delivered lectures on developmental psychology, educational psychology, social psychology and an introduction to psychology, and ran a social abilities improvement course and a communication techniques course for the nurses training programme, mostly for students of psychology and nursing. Apart from this, she continues to participate in lectures in the study programme of the University of the Third Age in Kosice. Since August 1997, she has been a PhD student at the University of Groningen (The Netherlands) and P. J. Šafarik University in Košice (Slovak Republic). At the present time she is working as a researcher at the Department of Humanities, Faculty of Science, P. J. Šafarik University in Košice. Her research work is focused on inequality in health among Slovak adolescents and young adults. Apart from this, her previous research work has been focused on 'Educational problem behaviour, well-being and family environment of apprentice youth'. Furthermore, she is participating in the establishment of a bachelor degree course on „Information and communication technologies for work with health and socially disadvantaged people“ at the Faculty of Science of Šafarik's University in Košice.

NORTHERN CENTRE FOR HEALTHCARE RESEARCH (NCH) AND PREVIOUS DISSERTATIONS

The Northern Centre for Healthcare Research (NCH) was founded in 1986 as a research institute of the University of Groningen (RUG), The Netherlands. Researchers from both the Medical and Social Faculty, with various professional backgrounds, are members of the NCH. These include medical sociologists, medical doctors, psychologists and human movement scientists. Research of the NCH is aimed at optimising quality of life of patients and quality of healthcare, and focuses on (a) determinants of health and illness, (b) consequences of illness, (c) the effects of medical treatment and decision making, and (d) the evaluation of health services and various types of interventions. At the time that this thesis is published, the NCH comprises five research programmes.

Until 1998, the NCH covered two research programmes, i.e. Determinants of Health and Medical Decision Making and Evaluation of Healthcare. The first programme was reformulated in 1996 and was continued as Disorder, Disability and Quality of Life (DDQ). Hence, previous dissertations in this area are listed as part of the present DDQ-programme. The second programme was subdivided in 1998 into two new programmes, i.e. Public Health and Public Health Services Research and Rational Drug Use.

Dissertations published earlier within the second programme are listed retrospectively under these new headings. In 1998, two new programmes, The Outcome and Evaluation of Interventions in Patients with Motor Problems and Process and Effects of Movement Programs, were formulated and officially integrated in the NCH in January 1999. The accomplished dissertations since the start of the programmes in 1998 are included in the list. In 2000 the Department of General Practice joined the NCH and together with the Rational Drug Use group initiated a new research programme, i.e. Implementation of Evidence Based Medicine in the Medical Practice.

More information regarding the institute and its research can be obtained from our internet site: <http://www.med.rug.nl/nch>

Public Health and Public Health Services Research

Lucht F van der (1992) *Sociale ongelijkheid en gezondheid bij kinderen.*

PROMOTOR: prof dr WJA van den Heuvel. REFERENT: dr JW Groothoff

Engelsman C & Geertsma A (1994) *De kwaliteit van verwijzingen.*

PROMOTORES: prof dr WJA van den Heuvel, prof dr FM Haaijer-Ruskamp, prof dr B Meyboom-de Jong

Puttger PHJ (1994) *De medische keuring bij gebruik van persluchtmaskers.*

PROMOTORES: prof dr D Post, prof dr WJA Goedhard. CO-PROMOTOR: dr JW Groothoff

Dekker GF (1995) *Rugklachten-management-programma bij de Nederlandse Aardolie Maatschappij B.V.: ontwerp, uitvoering en evaluatie.*

PROMOTORES: prof dr D Post, prof WH Eisma. CO-PROMOTOR: dr JW Groothoff

Mulder HC (1996) *Het medisch kunnen: technieken, keuze en zeggenschap in de moderne geneeskunde.*

PROMOTOR: prof dr WJA van den Heuvel

Mink van der Molen AB (1997) *Carpale letsels: onderzoek naar de verzuimaspecten ten gevolge van carpale letsels in Nederland 1990-1993.*

PROMOTORES: prof dr PH Robinson, prof WH Eisma. CO-PROMOTOR: dr JW Groothoff. REFERENT: dr GJP Visser

Tuinstra J (1998) *Health in adolescence: an empirical study of social inequality in health, health risk behaviour and decision making styles.*

PROMOTORES: prof dr D Post, prof dr WJA van den Heuvel. CO-PROMOTOR: dr JW Groothoff

Dijkstra A (1998) *Care dependency: an assessment instrument for use in long-term care facilities.*

PROMOTORES: prof dr WJA van den Heuvel, prof dr ThWN Dassen

Wijk P van der (1999) *Economics: Charon of Medicine?*

PROMOTORES: prof dr WJA van den Heuvel, prof dr L Koopmans, prof dr FFH Rutten. REFERENT: dr J Bouma

Hospers JJ (1999) *Allergy and airway hyperresponsiveness: risk factors for mortality.*

PROMOTORES: prof dr D Post, prof dr DS Postma, prof dr ST Weiss

Goossen WTF (2000) *Towards strategic use of nursing information in the Netherlands.*

PROMOTORES: prof dr WJA van den Heuvel, prof dr ThWN Dassen,
prof dr ir A Hasman

Pal TM (2001) *Humidifiers disease in synthetic fiber plants: an occupational health study.*

PROMOTORES: prof dr JGR de Monchy, prof dr D Post, prof dr JW Groothoff

Dalen IV van (2001) *Second opinions in orthopaedic surgery: extent, motives, and consequences.*

PROMOTORES: prof dr JR van Horn, prof dr PP Groenewegen, prof dr JW Groothoff

Beltman H (2001) *Buigen of barsten? Hoofdstukken uit de geschiedenis van de zorg aan mensen met een verstandelijke handicap in Nederland 1945-2000.*

PROMOTORES: prof dr D Post, prof dr AThG van Gennep

Dijkstra GJ (2001) *De indicatiestelling voor verzorgingshuizen en verpleeghuizen.*

PROMOTORES: prof dr D Post, prof dr JW Groothoff

Bijsterveld HJ (2001) *Het ouderenperspectief op thuiszorg; wensen en behoeften van ouderen ten aanzien van de thuis(zorg)situatie in Friesland*

PROMOTORES: prof dr D Post, prof dr B Meyboom-de Jong. REFERENT: dr J Greidanus

Middel LJ (2001) *Assessment of change in clinical evaluation*

PROMOTOR: prof dr WJA van den Heuvel. REFERENT: dr MJL de Jongste

Dijk JP van (2001) *Gemeentelijk gezondheidsbeleid. Omvang en doelgerichtheid*

PROMOTORES: prof dr D Post, prof dr M Herweijer, prof dr JW Groothoff

Disorder, Disability and Quality of Life

Sanderman R (1988) *Life events, mediating variables and psychological distress: a longitudinal study.*

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PROMOTORES: prof dr WJA van den Heuvel, prof dr FN Stokman.
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 PROMOTORES: prof dr WJA van den Heuvel, prof dr AP Buunk.
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