MULTILEVEL ANALYSIS OF HEALTH RISK BEHAVIOUR IN CZECH TEENAGERS

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ABSTRACT

The health risk behaviour (HRB) of teenagers, especially substance abuse, is one of the most serious problems of today's public health arena. The aim of this paper is to assess the extent of the multiple health-risk behaviours within the teenage population and to analyse the role of the individual and family structure as well as educational and geographic factors in the combination of their risk behaviours (frequency of smoking, alcohol intoxication and lifetime cannabis use). The data for this paper come from an on-line survey among elementary school students in 19 selected schools in Prague and 18 other elementary schools throughout Czechia. Family composition and relationship with the adolescent's mother were confirmed as significant variables associated with risk behaviours. Adolescents coming from two-parental families had a significantly lower prevalence rate of all three HRB than students living with only one parent or in zero-parent families. Respondents who declared the highest satisfaction with the relationship with their mother had the lowest prevalence of all three HRB characteristics. Regarding leisure time activities, going out with friends clearly increased the risk of HRB, and having specific hobbies reduced the risk of HRB's. The strongest association revealed was the one between the co-occurrence of health risk behaviours and going out with friends. Significant associations with the aggregate municipality characteristics were confirmed only in the case of marijuana use. It is thus mainly the family and peer domain where the prevention and health policies have to focus.

Keywords: health risk behaviour, teenagers, family and individual factors, school environment, municipality characteristics

1. Introduction

Health risk behaviour of children and youth, especially substance abuse, is one of the most serious problems of today's public health arena in the developed countries (Musick et al. 2008; Miller and Plant 2002; Plant and Miller 2001; Young et al. 2005; Skelton and Valentine 1998 etc.). Thanks to a long-term endeavour of the European public health institutions, there is enough information about the scope of this problematic issue. Various surveys frequently investigate the prevalence, multiple occurrence, perception etc. of smoking, alcohol consumption and illicit drug use among the European children and teenagers. The European School Project on Alcohol and Other Drugs (ESPAD) is one of these, particularly known as an effective source of statistical evidence about teenage life styles and health risk behaviours. ESPAD collects comparable data on tobacco, alcohol, and drug use among 15–16-year old students.

From monitoring of the trends in the long-range data, it is obvious that Czech teenagers regularly score very high on the majority of the variables surveyed by the ESPAD study (Spilková, Dzúrová 2012a, b). It is primarily striking when it comes to the use of illicit drugs, mainly marijuana. The proportion of those who never tried marijuana in their lifetime is steadily decreasing (from 65% in 1999 to 55.3% in 2011), there is an obvious increase between those who experiment with drugs (the category of having used marijuana one to two times from 11.9% in 1999 to 17.1% in 2011; similarly those trying marijuana three to five times from 6.4% in 1999 to 8.1% in 2011). Also the prevalence of smoking is constantly higher than the European average. Despite the fact that the proportion of non-smoking teenagers is very slowly increasing between 1999 and 2011 (from 55.4% to 57.1%), the teenagers smoking 11 to 20, or twenty and more cigarettes daily, in Czechia increased (from 5.3% in 1999 to 5.5% in 2011, resp. from 3.2% to 3.4%). Czech teenagers at all times keep the first place in the alcohol consumption, however, there is a certain improvement in this situation as monitored by ESPAD. The proportion of teenagers who never drank alcohol increased in all the types of beverages monitored (for beer from 36% in 1999 to 47.9% in 2011; for wine from 47.5% to 77.9%; and for spirits from 43.3% to 61.6%).

There is a number of studies analysing these international data for a particular health risk problem (Kokkevi et al. 2007a, 2007b, 2008; Hibell et al. 2009), however, the works aimed at co-occurrence of the health risk behaviours are relatively scarce (Ledoux et al. 2002; Pape et al. 2009; Nyári et al. 2005). Kážmér et al. (2014) investigated the multiple-health risk behaviour forms on the sample of Czech teenagers from the ESPAD 2007. They found that various forms of health risk behaviours are mutually interconnected and there are strong associations between the three considered forms of risk behaviour (tobacco smoking, alcohol consumption and marijuana use). According to Kážmér et al. (2014: 24), heavy

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episodic drinking teenagers had about five times higher odds of being also tobacco smokers or marijuana users, the connection between tobacco smoking and marijuana use was even stronger and nearly twice as high. Smoking and alcohol pertain to the major mortality causes of the adult population worldwide (Sovinová et al. 2008; Bobak et al. 2005; Nemtsov 2001), their high occurrence in teenagers is thus an indicator of the future "prospects" of the healthy societies. The multiplication of risk behaviours, however, requires a special alertness, because of the highly complex and extremely serious character of this issue.

Since many official campaigns and anti-tobacco, anti-smoking or anti-drug measures proved to be rather ineffective (Spilková, Dzúrová 2012a, b), most of the current attention is on the new effective measures of substance misuse and its prevention. There is a sound scientific evidence that multiple risk as well as protective factors contribute to substance use (alcohol, tobacco and drugs) at the individual, family, school, and community levels (Jessor 1991; Vakalahi 2001; Pickett, Pearl 2001). Besides the personal and social factors, geographic factors (such as the community size, urban density; land use mix etc.) also play a role in risk behaviour occurrence (Atav, Spencer 2002; Pacione 2003; Taylor, Repetti 1997 etc.). It is therefore necessary to indulge in multi-level analyses of the complex issues such as the health risk behaviour, because only the multi-level modelling approach allows to evaluate the role of both individual, family or school-level and the effects of area determinants in the Czech teenage population.

The aim of this paper is to assess the extent of the multiple health-risk behaviour within the teenage population and to analyse the role of individual and family structure as well as school and geographic factors on the combination of their risk behaviours (frequency of smoking, alcohol intoxication and lifetime cannabis use). First, the data collection for the research presented in this paper is explained, together with the variables used for the following statistical analysis. Results of the descriptive and multilevel modelling analysis are then presented and discussed in the context of the knowledge stemming from the foreign literature. Concluding remarks bring forward the issue of a complex preventive strategy including not only the risk behaviours, but also a change in leisure activities and family cohesion.

2. Methods

2.1 Data

The limitations of the above mentioned international data sources and cross-country studies lie in the fact that more complex information about the family background or the peer groups and school environment of the surveyed teenagers is missing. In order to obtain the information from as much levels of the teenager's life as possible we turned to our own questionnaire survey. This survey was conducted as an on-line survey among elementary school students in 19 selected schools in Prague and other 18 elementary schools throughout the country, from October 2014 to March 2014. When selecting the schools in Prague their neighbourhood type has been taken into consideration so that they represented different built environments (blocks of flats in housing estates, new family houses in the suburbia, row houses, old city apartment houses, newer apartment houses, family houses and semi-detached houses). The schools out of Prague were selected to represent areas with unaltered state of risk behaviour trend, areas with the biggest changes in the trends and areas with changes from positive situation to negative and vice versa.

The questionnaires have been filled usually during the lessons of computer education. The written consent of the school director has been arranged beforehand in all the cases. Students were given a unique code ensuring the anonymity of individual data. After entering this school-code, the on-line survey form opened and was ready to fill out on their computers. Only students aged 14–15 years has been selected for the analysis. Altogether, 1025 usable responses were received (528 boys and 497 girls).

2.2 Measures

The following three types of health risk behaviours (HRBs) were assessed for the consequent analysis.

Smoking

"***How frequently do you smoke cigarettes now?***" Answering options were: "Daily", "At least once a week, but not daily", "Less frequently than once a week" and "I do not smoke". Those reporting other option than not smoke were considered as current smokers – risk tobacco users.

Alcohol drinking

In the questionnaire students were asked about excessive consumption of alcohol*:* "***At what age (if ever) did you first got drunk*?**" Answering options were: "Never" or giving age. Those reporting other option than never drunk were coded as cases of health risk behaviour.

Marijuana use

In the questionnaire students were asked: "***At what age (if ever) did you first*** **used marijuana?**" Answering options were: "Never" or giving age. Those reporting other option than never used marijuana were coded as cases of health risk behaviour.

The above measures were used to determine the prevalence of the single health risk behaviour among surveyed teenagers. Subsequently, respondents were classified as

having none, one, two or three types of considered health risk behaviours to evaluate the level of comorbidity. The dependent variable was thus represented by the co-occurrence of the risk behaviours (0 – none, to 3 – all the three risk behaviours together).

As independent variables, various measures on individual, family and peer level, as well as the geographic determinants, were chosen. The family level was represented by the information about family composition, economic affluence of the family, education attainment of mother and relationship with mother as perceived by the teenager.

In the questionnaire students were asked: "***Which of the following people live in the same household with you?***" According to this, students were categorized into three separate family composition classes: 0 – lives with both own-biological parents, 1 – lives with one biological parent and 2 – lives with no biological parent.

Perceived family affluence score was measured by the question: "***How well off is your family compared to other families in your country?***" Respondents answered on a five point ordinal scale from 1 very rich to 5 very poor.

Based on the question "***What is the highest level of schooling your mother completed?***" the level of education was classified into 3 groups: 1 – elementary school, 2 – high school and 3 – university degree.

Student satisfaction with the quality of his/her relationships to mother was measured by question: "***How satisfied are you usually with your relationship to your mother?***" The original five point ordinal scale was: 1 very good to 5 very bad.

In the questionnaire students were asked about leisure time activities during week period: "***How do you spend your leisure time (the activity you're doing at least once a week)***". Leisure-time types were: Sports, social networks and internet, computer games, special hobbies, spending time in shopping malls, going out with friends and boredom (0 – no, 1 – yes).

Perceived self-rated health was measured on a 4-point scale ranging from very good to very poor (the question was: "***How is your health in general***?") and was categorized as "Good" (Very good / good) or "Poor" (Poor / very poor).

The geographic determinants used in the analysis were: (i) population size of the municipality/city part (1 – lowest through 9999; 2 – 10,000 through 49,999 and3 – all the others); (ii) type of built environment (1 – blocks of flats in housing estates, 2 – new family houses in the suburbia, 3 – row houses, 4 – old city apartment houses, 5 – newer apartment houses, 6 – older family houses), (iii) unemployment rate (1 – lowest through 4.9%, 2 – 5% through 9.9%; 3 – all the municipalities with unemployment rate above 10%); (iv) polarity between the capital city of Prague and the rest of the country (1 – Prague; 0 – other cities); and (v) geographic location (15 cities and 9 city parts of the capital city of Prague).

2.3 Ethical considerations

The research progress followed the ethical guidelines proposed by the Czech government, thus all procedures were performed in compliance with relevant laws and institutional guidelines which appropriate institutional committees have approved. The written consent of the school director was arranged beforehand as a necessary condition for carrying out the survey. The study was carried out as an anonymous survey whereby all students participated voluntarily.

2.4 Statistical analysis

Data were analysed using Stata 13 software (Stata Corp., College Station, USA).

First, associations between the explanatory variables (gender, family characteristics, SRH, leisure time activities, and municipality characteristics) and HRB score were examined in descriptive analysis using the chi-square test.

Next, taking into account clustering of individuals within geographical communities, the analysis was done using multilevel modelling. We have used multilevel mixed-effects ordered logistic regression accounting for ordinal categorical outcome using meologit command in Stata 13. The analysis has been done in several stages of adjustment. Firstly we estimated crude effects of individual risk factors on HRB, secondly we looked at sex interactions with individual risk factors and we did not identify any important statistically significant interactions in our data. Third we tested the role of each risk factor in age-sex adjusted models, and finally we used fully adjusted model including risk factors that remained significant, and age and sex used as a priori risk factors. The results are then presented only for first crude and final fully adjusted models.

3. Results

A total of 1,025 students (age 14–15 years) were analysed in the study. Tables 1–3 present HRB prevalence rates by different risk factors. Statistically significant associations ($p < 0.05$) are highlighted in bold. Table 1 provides a description of the sample according to prevalence rates of daily smoking, alcohol consumption and marijuana use by gender and family characteristics. Results show that almost a quarter of adolescents (22.3%) reported smoking one or more cigarettes per day, almost half of teenagers (44.6%) reported experiencing excessive consumption of alcohol and 24.8% had used cannabis during their adolescent life. Higher rates of smoking were found for girls (25.8%) than for boys (19.3%) ($p = 0.014$). Gender difference in excessive consumption of alcohol and marijuana use has not been confirmed. Family composition and relation with mother were shown as variables

significantly associated with risk behaviours. Adolescents from two-parents families had significantly lower prevalence rate of all three HRB than those living with only one parent or in no parent families. Respondents who reported the highest level of satisfaction with the relationship with their mother had the lowest prevalence of all three HRB characteristics.

Table 2 describes prevalence rates of health-risk behaviours by self-rated health (SRH) and leisure time activities. SRH has been considered an important marker of smoking and alcohol use. Higher prevalence of all three HRBs was associated with poor self-rated health. Further, seven types of leisure time activities were assessed. Going out with friends (have a group of friends) significantly increased the risk of HRB. On the other hand, having specific interests or hobbies reduced the risk of HRBs.

Table 3 shows the association between prevalence of three health-risk behaviours and four selected municipality characteristics. The only significant associations were identified in the case of marijuana use. Marijuana use has been- associated with community population size ($p = 0.032$), unemployment rate ($p = 0.038$), and characteristics of the metropolitan position of Prague ($p = 0.018$).

The effects of municipality characteristics became non-significant in multivariable multilevel analysis, and thus final fully adjusted model includes only individual characteristics. Going out with friends, going to after-school clubs and completeness of family show the strongest association with HRBs although age, self-rated health, mothers education, doing sports and working with computer were also significantly associated with HRBs.

Tab. 1 Prevalence of health-risk behaviours by gender and family characteristics (in %).

		Smoking		**Alcohol consumption**		**Marijuana use**	
		Without risk	With risk	Without risk	With risk	Without risk	With risk
Gender							
Girls	N	369	128	285	211	375	122
	%	74.2%	25.8%	57.5%	42.5%	75.5%	24.5%
Boys		426	102	281	244	394	131
		80.7%	19.3%	53.5%	46.5%	75.0%	25.0%
Pearson Chi-Square		**0.014**		0.206		0.881	
Family composition							
Both biological parents		81.3%	18.7%	60.1%	39.9%	79.6%	20.4%
One biological parent		71.8%	28.2%	46.2%	53.8%	68.0%	32.0%
No biological parent		47.4%	52.6%	52.6%	47.4%	47.4%	52.6%
Pearson Chi-Square		**< 0.001**		**< 0.001**		**< 0.001**	
Family affluence							
Very good		71.1%	28.9%	34.2%	65.8%	60.5%	39.5%
Good		76.5%	23.5%	53.1%	46.9%	71.7%	28.3%
Average		79.0%	21.0%	58.3%	41.7%	78.8%	21.2%
Not good		74.2%	25.8%	53.9%	46.1%	69.7%	30.3%
Poor		73.7%	26.3%	42.1%	57.9%	63.2%	36.8%
Pearson Chi-Square		0.632		0.026		0.010	
Mother's education							
Elementary		68.0%	32.0%	42.9%	57.1%	67.3%	32.7%
Middle		77.6%	22.4%	55.6%	44.4%	75.7%	24.3%
University		79.4%	20.6%	57.3%	42.7%	75.4%	24.6%
Pearson Chi-Square		0.209		0.172		0.420	
Relationship with mother							
Very good		81.2%	18.8%	57.2%	42.8%	78.5%	21.5%
Good		79.4%	20.6%	59.9%	40.1%	76.1%	23.9%
Average		60.0%	40.0%	44.3%	55.7%	60.9%	39.1%
Bad		31.3%	68.8%	18.8%	81.3%	37.5%	62.5%
Very bad		75.0%	25.0%	33.3%	66.7%	66.7%	33.3%
Pearson Chi-Square		**< 0.001**		**< 0.001**		**< 0.001**	
Total		795	230	570	455	772	253
		77.6%	22.4%	55.4%	44.6%	75.2%	24.8%

Tab. 2 Prevalence of health-risk behaviors by SRH and leisure time activities.

	Smoking		Alcohol consumption		Marijuana use	
	Without risk	With risk	Without risk	With risk	Without risk	With risk
Self Rated Health						
Good (N)	760	211	544	423	734	234
%	78.3%	21.7%	56.3%	43.7%	75.8%	24.2%
Poor (N)	35	19	22	32	35	19
%	64.8%	35.2%	40.7%	59.3%	64.8%	35.2%
Pearson Chi-Square – Asymp. Sig	**0.021**		**0.026**		0.068	
Leisure time activities						
Sport						
No	71.7%	28.3%	53.9%	46.1%	70.4%	29.6%
Yes	80.0%	20.0%	56.1%	43.9%	77.3%	22.7%
Pearson Chi-Square – Asymp. Sig	**0.004**		0.553		**0.019**	
Social networks and internet						
No	77.8%	22.2%	56.1%	43.9%	72.9%	27.1%
Yes	77.5%	22.5%	55.3%	44.8%	75.9%	24.1%
Pearson Chi-Square – Asymp. Sig	0.914		0.820		0.352	
Computer games						
No	73.7%	26.3%	54.4%	45.6%	73.0%	27.0%
Yes	82.3%	17.7%	56.6%	43.4%	78.0%	22.0%
Pearson Chi-Square – Asymp. Sig	**< 0.001**		0.482		0.066	
Hobby group (dancing, playing musical instruments, scientific group, …)						
No	75.6%	24.4%	51.0%	49.0%	71.8%	28.2%
Yes	80.7%	19.3%	62.7%	37.3%	80.8%	19.2%
Pearson Chi-Square – Asymp. Sig	0.056		**< 0.001**		**< 0.001**	
Spending time in shopping malls						
No	79.9%	20.1%	58.5%	41.5%	76.1%	23.9%
Yes	71.7%	28.3%	47.6%	52.4%	73.1%	26.9%
Pearson Chi-Square – Asymp. Sig	**0.004**		**0.001**		0.318	
Going out with friends						
No	88.4%	11.6%	71.1%	28.9%	84.2%	15.8%
Yes	73.4%	26.6%	49.4%	50.6%	71.8%	28.2%
Pearson Chi-Square – Asymp. Sig	**< 0.001**		**< 0.001**		**< 0.001**	
Boredom						
No	78.9%	21.1%	55.3%	44.7%	75.6%	24.4%
Yes	74.1%	25.9%	55.7%	44.3%	74.2%	25.8%
Pearson Chi-Square – Asymp. Sig	0.097		0.924		0.634	

Tab. 3 Prevalence of health-risk behaviors by municipality characteristics (in %).

	Smoking		Alcohol consumption		Marijuana use	
	Without risk	With risk	Without risk	With risk	Without risk	With risk
Type of built environment						
Blocks of flats in housing estates	79.1%	20.9%	52.0%	48.0%	73.5%	26.5%
New family houses in the suburbia	77.8%	22.2%	56.8%	43.2%	78.9%	21.1%
Row houses	84.3%	15.7%	68.1%	31.9%	81.4%	18.6%
Old city apartment houses	73.0%	27.0%	52.7%	47.3%	75.7%	24.3%
Newer apartment houses	78.4%	21.6%	50.5%	49.5%	71.1%	28.9%
Older family houses	73.4%	26.6%	59.8%	40.2%	75.0%	25.0%
Pearson Chi-Square – Asymp. Sig	0.380		0.101		0.502	

	Smoking		Alcohol consumption		Marijuana use	
	Without risk	With risk	Without risk	With risk	Without risk	With risk
Population size						
2203–9999 inhabitants	75.1%	24.9%	58.4%	41.6%	80.1%	19.9%
10,000–49,999 inhabitants	78.8%	21.2%	52.2%	47.8%	73.5%	26.5%
50,000 inhabitants and more	78.9%	21.1%	56.0%	44.0%	71.8%	28.2%
Pearson Chi-Square – Asymp. Sig	0.403		0.232		0.032	
Unemployment rate						
Lowest through 4.9	80.6%	19.4%	53.0%	47.0%	69.9%	30.1%
5 through 9.9	76.5%	23.5%	58.3%	41.7%	78.1%	21.9%
Above 10	76.3%	23.7%	52.4%	47.6%	75.5%	24.5%
Pearson Chi-Square – Asymp. Sig	0.350		0.202		0.038	
Polarity between the capital city of Prague and the rest of the country						
Other cities	77.3%	22.7%	56.8%	43.2%	77.8%	22.2%
Capital city of Prague	78.0%	22.0%	53.3%	46.8%	71.3%	28.8%
Pearson Chi-Square – Asymp. Sig	0.788		0.259		0.018	

The strongest association revealed was the one between the co-occurrence of health risk behaviour and going out with friends. The teenagers spending time with their friends, going out, partying, etc. are 1.8 more times more likely to engage in multiple health risk behaviours.

4. Discussion

School environment, school norms, peer affiliation and social bonding are associated with adolescent drug use also in similar studies from abroad (Hawkinns et al. 1992, Ensmiger et al. 2002). These results only support some previous findings (Spilková 2013), especially the relation between going out in the evenings and alcohol drinking has been recognized by many studies focusing on teenagers (Demant, Ostergaard 2007; Hubbard 2005; Valentine, Holloway 2008). Since going out and partying with friends is also a way to extend the network of friends and reaffirm friendship (Demant, Ostergaard 2007), it will be very difficult to diminish the negative effects of on the health-risk behaviour of teenagers. On the contrary, hobbies (such as playing a musical instrument, singing, painting, etc.) and active involvement in sport significantly lower the risk of health risk behaviour co-occurrence in teenagers.

It seems thus that it is the role of parents, their monitoring of the leisure time activities of their children and good example setting, which is among the crucial determinants of the teenage risk behaviour. Piko (2000) claims that low level of perceived father support increases the chance of all types of substance use. Similarly, Repetti et al. (2002) state that family environments represent crucial links for understanding mental and physical health across the life span. As Bobakova et al. (2012) found, parental monitoring as significantly associated with the reduction of substance use in youth subcultures. Similarly, Fergus and Zimmerman (2005) claim that young people, whose parents do not provide adequate family care, are more prone to health risk behaviours.

Second, the family composition is without any doubt crucial for the healthy and unproblematic growing up (Fulkerson et al. 2006; DiClemente et al. 2001; Carlson, Corcoran 2001 and others). Our results show that the teenagers living in families with none of their biological parents are 1.6 times more likely to multiple substance use, as well as those living in a family with only one biological parent (1.3 times). Also Flewelling and Bauman (1990) found that children of disrupted families are at a higher risk of initiating the use of controlled substances and engaging in sexual intercourse. Dawson (1991) enhances the effects of family composition also on other health-related problems. She found that children living with single mothers or with mothers and stepfathers were more likely to have repeated a grade of school, to have been expelled, to have been treated for emotional or behavioural problems, and to have elevated scores for behavioural problems and health vulnerability than those living with both biological parents. Compared to children living with both biological parents, children of divorced parents experienced an increased risk of accidental injury, and those living with a single mother were at increased risk of asthma. Umberson (1987) in one of her older studies shows that the effects work also reversely, thus marriage and presence of children in the home have a deterrent effect on negative health behaviours.

The parent, in this case the mother's education also plays the role. As the results show, the children of mothers with university degree and high school graduation report multiple substance use less often. Education of mother's importance has been also recognized in other studies – Spilková (in print) found that the children of

mothers with university degree are significantly more often having some special hobbies. The role of mothers, however, shows mixed results in various studies. Luk et al. (2010) e.g. found that among sons, father communication was protective against marijuana use and mother communication was protective against smoking. Neither father nor mother communication was protective against substance use by daughters. Therefore, it is clear that more research is needed to understand gender-specific differences in correlates of adolescent substance use and the implications for prevention and intervention. The role of parenting is extremely important, as Baumrind (1991) sums up, authoritative parents who are highly demanding and highly responsive are more successful in protecting their adolescents from problem drug use, and in generating competence. However, she also found that authoritative upbringing, although sufficient, is not a necessary condition to produce competent children. In accordance with our results we suggest that reasonable leisure time activities promoted by parents' example and role setting serve as a mediator of the child's risk behaviour.

At the very individual level, the self-reported health proved to have significant effects on the health risk behaviour and its co-occurrence. Our results clearly show that the teenagers who evaluate their health status as bad or very bad are 1.3 times more likely to indulge in multiple health risk behaviours. However, the causal relation here can be two-ways. It is not clear from our analysis if the self-reported health influences the substance abuse or the badly rated health is the outcome of multiple health risk behaviours. Other studies also confirm the complex character of the self-rated health measures. Vingilis et al. (1998) for example found that 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. Family structure was mediated by income, and school achievement and child-parent relationship were mediated by tobacco use and self-esteem. The relation between self-rated health and risk behaviour of teenagers thus needs further research attention.

5. Conclusion

The research on teenage risk behaviour is without doubt a highly complex domain which has to take into consideration many aspects ranging from the geographic environment, social environment and community cohesion through the school setting and peer influence to family effects and mental health moderation of the one's health behaviour choices. There are many studies which focus on the effects of geographic context or neighbourhood environment in relation to teenage risk behaviour (Jang, Johnson 2001; Hadley-Ives et al. 2000). Similarly, many studies also implicate that school environments also have to be taken into account (Leatherdale, Manske 2005; Samdal 1998).

Although the roles of one's physical and social environment are important, parental example and family setting are even more crucial for the healthy development of a child and a teenager. The presented study (as well as some previous works on similar issues Spilková, Dzúrová, Pitoňák 2014) did not found a significant link between the geographic environment and risk behaviours. The family and peer levels are evidently the principal domains where the prevention and health policies have to focus (Spilková, Dzúrová 2012b). Parents have to be targeted for increasing the interest in their children's leisure time activities, they should mainly support their children's specific hobbies and meaningful physical activity. Parent example, especially from the part of mothers, is truly irreplaceable. A complex strategy of prevention including not only the risk behaviour prevention, but a gradual change in fostering of leisure activities and quality of life of teenagers is needed.

Tab. 4 Multi level modelling of crude and adjusted effects of the particular risk factors.

		Crude				Adjusted			
		OR	**95% CI**		**p**	**OR**	**95% CI**		**p**
Gender	Girl	1.03	0.82	1.29	0.79	0.84	0.63	1.11	0.23
Age	15 years	1.39	1.09	1.77	0.01	1.37	1.06	1.75	0.01
SRH	Bad	1.98	1.22	3.23	0.01	1.7	1.03	2.8	0.04
Mother's education	High school	0.51	0.31	0.84	0.01	0.55	0.33	0.92	0.02
	University	0.5	0.3	0.85	0.01	0.62	0.36	1.08	0.09
Family composition	Only one biological parent	1.75	1.38	2.22	<0.001	1.64	1.28	2.09	<0.001
	No biological parent	2.83	1.28	6.27	0.01	2.3	1.04	5.13	0.04
Group of friends	Yes	2.27	1.96	3.37	<0.001	2.76	2.09	3.64	<0.001
Sport	Yes	0.73	0.57	0.94	0.01	0.76	0.59	0.98	0.04
PC	Yes	0.8	0.64	1.01	0.06	0.73	0.55	0.96	0.02
Hobbies	Yes	0.61	0.49	0.78	<0.001	0.63	0.49	0.81	<0.001

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RESUMÉ

Víceúrovňová analýza zdravotně rizikového chování českých teenagerů

Zdravotně rizikové chování teenagerů, především pak užívání návykových látek, je jedním z nejožehavějších problémů v rámci zdravotní problematiky. Cílem tohoto článku je popsat rozsah vícenásobného zdravotně rizikového chování v rámci náctileté populace a také analyzovat roli individuálních a rodinných faktorů, stejně tak jako školního prostředí a geografických faktorů na kombinace rizikového chování mladých lidí v Česku. Hodnocena je frekvence kouření, zkušenosti s opilostí a také užívání marihuany. Data pro tento výzkum byla získána v rámci šetření provedeného on-line mezi žáky devátých ročníků 19 základních škol v Praze a 18 základních škol ve zbytku republiky. Výsledky ukazují, že složení rodiny a zejména pak kvalita vztahu s matkou byly potvrzeny jako významné proměnné spojené s rizikovým chováním v tomto věku. Adolescenti pocházející z úplných rodin (s oběma rodiči), měli signifikantně menší prevalenci všech tří rizikových chování oproti studentům, kteří žili v rodině pouze s jedním ze svých biologických rodičů, či zcela bez rodičů. Také respondenti, kteří deklarovali vysokou spokojenost se svým vztahem k matce, měli nejnižší prevalenci rizikových chování. Pokud jde o volnočasové aktivity, je to především „chození ven s kamarády a partou", které očividně nejsilněji zvyšuje pravděpodobnost, že dojde k rizikovému chování. Naopak, specifické koníčky (v tomto případě různé kroužky a zájmová sdružení) redukovala toto riziko. Signifikantní asociace s agregátními veličinami (charakteristikami obcí) byly potvrzeny pouze v případě užívání marihuany, u ostatních druhů rizikového chování tedy geografické faktory neměly prokazatelný vliv. Je tedy jasné, že prevence a zdravotní politika v této oblasti rizikového chování adolescentů musí být zaměřena na první místě na rodinu a oblast vrstevnických vztahů.

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