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Decline in alcohol use among adolescents in Slovakia: a reason for optimism?



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ABSTRACT

Objectives: To analyze selected indicators of alcohol use (lifetime use, initiation of drinking at ≤ 13 years of age, weekly use, beverage preferences, initiation of drunkenness at ≤ 13 years of age and lifetime drunkenness) in adolescents in Slovakia from 2006 to 2014.

Study design: The Health Behaviour in School Aged Children (HBSC) study is a cross-sectional questionnaire study.

Methods: A standardized uniform questionnaire was used in representative samples of 11-, 13- and 15-year-old adolescents. In Slovakia, the HBSC study was undertaken in 2006 ($n = 3972$), 2010 ($n = 5089$) and 2014 ($n = 4369$).

Results: Over the study period, decreases were observed in weekly drinking (from 34.3% to 21.0% in 15-year-old boys and from 22.1% to 11.9% in 15-year-old girls), lifetime drinking and initiation of drinking at ≤ 13 years of age. In terms of beverage preferences, the reduction in beer consumption was most notable. Approximately one-third of respondents got drunk for the first time at ≤ 13 years of age, and this remained consistent throughout the study period. **Conclusions:** The declining trend in alcohol use among adolescents in Slovakia may reflect a progressive change in the social environment and is attributable, at least in part, to policy improvements such as pricing and stricter legislation and enforcement.

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Introduction

Excessive use of alcohol ranks globally among the most significant risk factors for premature loss of health and mortality. According to official data, 3.3 million deaths worldwide

were attributed to alcohol in 2012, representing 5.9% of all deaths. The problem is most pronounced in Europe, where consumption reaches the highest levels in the world (10.9 l of pure alcohol per capita vs 6.2 l globally) and deaths attributable to alcohol account for 13.3% of all deaths.¹

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The largest decline in alcohol use was seen in Southern Europe from 1990 to 2010, followed by Central-Western and Western Europe. In Nordic countries, consumption remained fairly stable. However, consumption increased by almost 8% in Central and Eastern Europe (CEE) within the same period.²

Adolescence is an important period for initiation and development of substance use, including alcohol. Social motives, such as identification with adult-like behaviour, getting one's own way, resisting social norms, etc., prevail among the reasons for drinking alcohol.^{3,4} Adolescents may also perceive alcohol as a mediator to intensify contacts with peers and initiate new relationships.⁵ On the other hand, young people usually underestimate the health effects of alcohol (particularly those associated with long-term use). For this reason, monitoring the use of psychoactive substances among adolescents is of great importance for evaluating population health in this age group.

Besides personal characteristics, the overall social environment substantially determines alcohol use by adolescents,⁶ regardless of their family background (i.e., the drinking behaviour of their parents). A strict implemented policy may significantly limit drinking among youngsters.⁷ Aside from restrictive measures limiting access to alcoholic beverages, pricing⁸ and marketing regulations⁹ play an important role in prevention at population level.

Since the late 1990s, alcohol consumption among adolescents in most European countries has shown a declining trend, primarily among boys but also among girls.¹⁰ However, this trend was not apparent in CEE, and consumption increased in some countries of this region, particularly among girls, between 1998 and 2006.^{10–12} However, from 2002 to 2010, a decline has also been apparent in other parts of the continent,¹³ indicating that the unfavourable trend in CEE has been broken, and development is approaching the situation first seen in Western Europe.

The aim of this study was to analyze changes in selected indicators of alcohol use (lifetime use, initiation of drinking at ≤ 13 years, weekly use, beverage preferences, initiation of drunkenness at ≤ 13 years and lifetime drunkenness) among adolescents in Slovakia from 2005 to 2014 using Health Behaviour in School Aged Children (HBSC) data. This analysis will contribute to understanding the development of alcohol consumption in the light of social changes taking place in Slovakia.

Methods

The HBSC study is an international, school-based cross-sectional study. Its standardized design makes it possible to create harmonized datasets appropriate for cross-country comparisons and for identifying changes over time. Data are collected through uniform anonymous questionnaires completed at schools. The questionnaires include mandatory modules of questions used in every participating country, and optional modules containing sets of questions based on the specific needs of individual countries.

The sample is created in accordance with the structure of the educational system in the given country and is stratified

by region and type of school in order to obtain representative data on 11-, 13- and 15-year-old adolescents.

HBSC surveys were undertaken in Slovakia in school years 2005/2006, 2009/2010 and 2013/2014 (i.e., May–June 2006, 2010 and 2014). Two-step sampling was used in keeping with the standardized research protocol.¹⁴ In the first step, participating schools were selected at random with probability proportional to size using an official list of all schools obtained from the Slovak Institute of Information and Prognosis for Education. The sample of schools was stratified by region (eight administrative self-governing regions) and type of school (elementary schools comprising 1st–9th grades and grammar schools comprising 6th–13th grades). In the second step, classes within the participating schools were selected at random for data collection. Parents were informed in advance about the study via the school administration and could opt out if they did not wish their child to participate. Participation in the study was fully voluntary and anonymous, with no explicit incentives provided for participation. This approach provided samples that were proportionally representative of all areas and population subgroups at nationwide level, thus eliminating possible bias caused by heterogeneity of the target population. Pupils from the 5th–9th grades were considered eligible for this study (i.e., adolescents aged 11–15 years), and only 11-, 13- and 15-year-old respondents were included in the analysis. Table 1 shows the basic characteristics of the samples obtained in three waves of the survey. Drop outs were mainly due to absence of children due to illness or other personal reasons, and the refusal of parents or adolescents to be involved in the study. No notable differences in response rate were observed between the selected schools.

This study analyzed HBSC data related to adolescents' reports on lifetime experience of drinking alcohol, early initiation of drinking, weekly alcohol drinking, weekly drinking of certain types of beverages (beer, wine and spirits), early initiation of drunkenness and lifetime experience of drunkenness.

Lifetime experience of drinking alcohol was measured by the question, 'On how many days (if any) have you drunk alcohol in your lifetime?' Possible responses were 'never', '1–2 days', '3–5 days', '6–9 days', '10–19 days', '20–29 days' and '30 days or more'. All answers except 'never' were considered as positive. This variable was only analyzed in 15-year-old respondents.

Early initiation of alcohol drinking was measured by the question, 'At what age did you first drink alcohol?' Possible responses were 'never', '11 years or less', '12 years', '13 years', '14 years', '15 years' and '16 years or older'. The answers '11 years or less', '12 years' or '13 years' were considered as positive. This variable was only analyzed in 15-year-old respondents.

Weekly alcohol drinking and weekly drinking of beer, wine and spirits were measured by the question, 'At present, how often do you drink anything alcoholic, such as beer, wine or spirits?' The following beverage types were stated: beer, wine, spirits, alcopops and other drinks. For each beverage type, possible responses were 'every day', 'every week', 'every month', 'sometimes' and 'never'. An answer of at least 'every day' or 'every week' for at least one of the beverage types was considered as weekly drinking. An answer of 'every day' or

Table 1 – Basic characteristics of samples obtained in three waves of the Health Behaviour in School Aged Children survey in Slovakia.

Year	Overall response rate	Respondents (n)		
		11 years old	13 years old	15 years old
2006	85.6%	1298 (608 boys)	1327 (595 boys)	1252 (591 boys)
2010	79.5%	1140 (528 boys)	1600 (774 boys)	1568 (771 boys)
2014	78.8%	1534 (776 boys)	2162 (1035 boys)	1549 (813 boys)

'every week' for the respective type of beverage was considered as weekly drinking of beer, wine or spirits. Weekly drinking of particular beverages was only analyzed in 15-year-old respondents.

Early initiation of drunkenness was measured by the question, 'At what age did you first get drunk?' Possible responses were 'never', '11 years or less', '12 years', '13 years', '14 years', '15 years' and '16 years or older'. The answers '11 years or less', '12 years' or '13 years' were considered as positive. This variable was only analyzed in 15-year-old respondents.

Lifetime experience of drunkenness was measured by the question, 'On how many days (if any) have you got drunk in your lifetime?' Possible responses were 'never', '1–2 days', '3–5 days', '6–9 days', '10–19 days', '20–29 days' and '30 days or more'. All answers except 'never' were considered as positive.

The results are presented as percentages with the relevant 95% confidence intervals (CI). Differences between rates were considered to be significant if the 95% CI did not overlap.

Results

Lifetime alcohol drinking among 15-year-old respondents (Fig. 1) decreased significantly during the study period in both boys (from 86.9% to 69.3%) and girls (from 88.4% to 69.9%). The decrease was gradual in boys, but a significant decline was

seen between 2005/2006 and 2009/2010 in girls and the prevalence remained almost unchanged in 2013/2014. No notable sex differences were observed.

Initiation of drinking at ≤ 13 years of age as reported by 15-year-olds (Fig. 1) decreased substantially during the study period in both boys (from 61.0% to 39.5%) and girls (from 58.0% to 32.2%). A significant sex difference was only seen in 2009/2010 when boys prevailed over girls.

Weekly alcohol drinking (Fig. 2) declined notably during the study period, with the change holding for all age groups as well as for both boys and girls. Boys predominated over girls in each age group over the whole study period.

Regarding reports on drinking the most common types of alcoholic beverages in 15-year-old respondents (Fig. 3), the decline in beer consumption was significant among both boys (from 24.1% to 15.9%) and girls (from 9.4% to 5.6%) over the study period. Wine consumption only decreased in boys (from 8.5% to 4.1%). While the prevalence of positive answers regarding weekly drinking of spirits only differed slightly between 2005/2009 and 2013/2014, the percentage was notably higher in both boys and girls in 2009/2010.

Approximately one-third of the 15-year-old respondents reported positive answers regarding initiation of drunkenness at ≤ 13 years (Fig. 1), and the rates did not change significantly over the study period. Moreover, no remarkable sex differences were observed.

The prevalence of reports on lifetime drunkenness (Fig. 4) declined significantly after 2009/2010 in 13- and 15-year-old

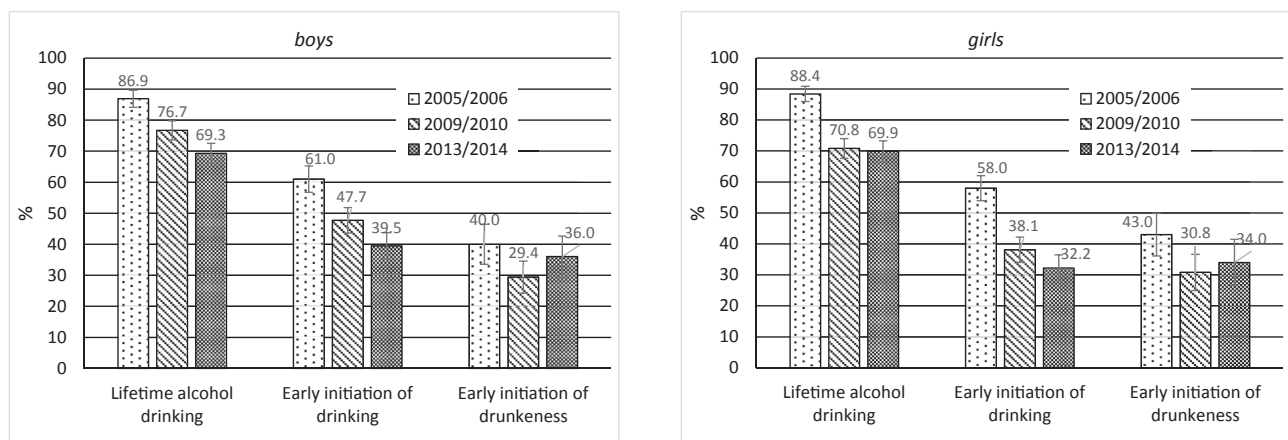


Fig. 1 – Lifetime experience with alcohol drinking, early initiation of drinking and drunkenness. 15-years old respondents reporting to drink alcohol at least twice a lifetime. 15-years old respondents reporting the first alcohol drinking and drunkenness at age 13 or younger. HBSC Slovakia 2005/2006, 2009/2010, 2013/2014 (Error bars represent confidence interval 95%).

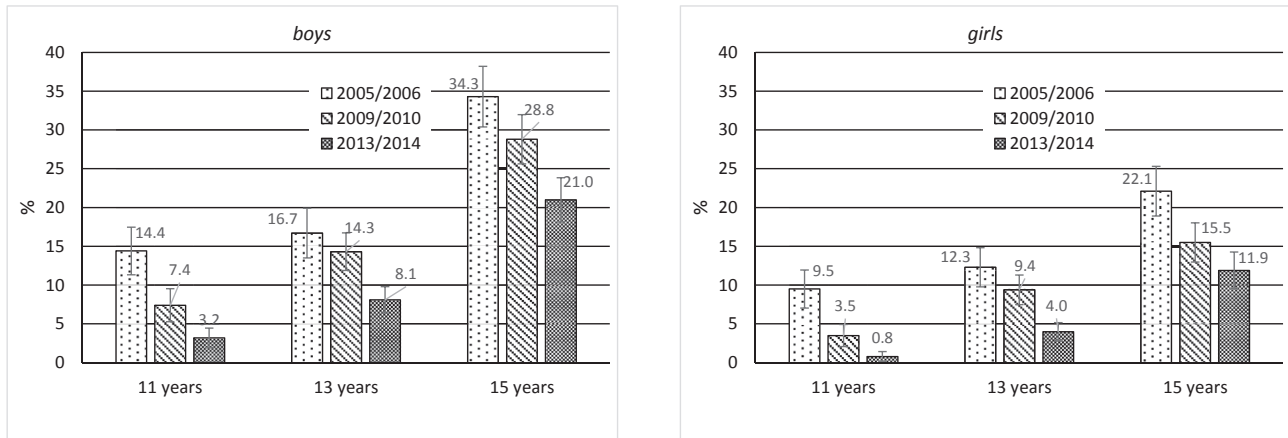


Fig. 2 – Weekly alcohol drinking. Respondents reporting to drink alcohol at least once a week. HBSC Slovakia 2005/2006, 2009/2010, 2013/2014 (Error bars represent confidence interval 95%).

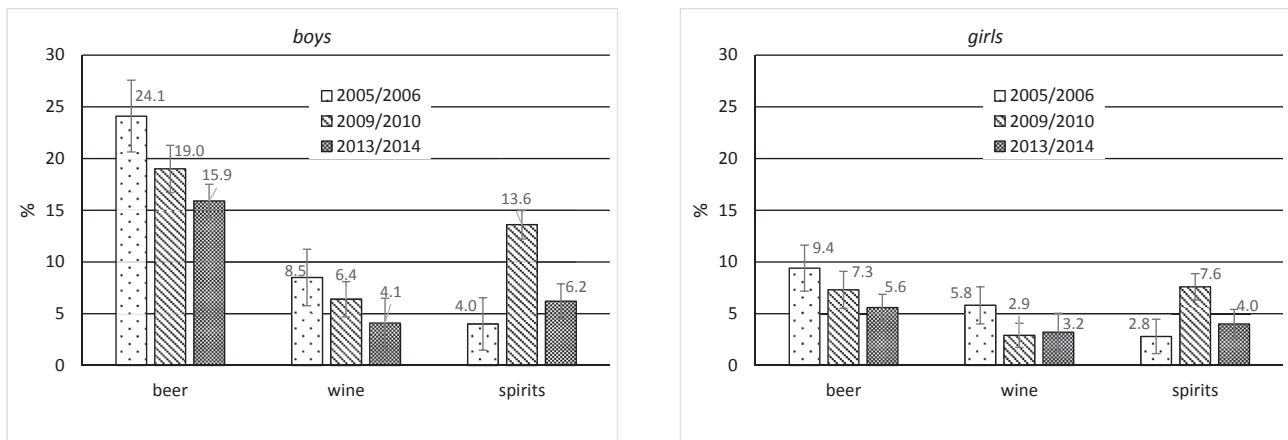


Fig. 3 – Weekly drinking of beer, wine and spirits. 15-years old respondents reporting to drink selected kind of alcohol at least once a week. HBSC Slovakia 2005/2006, 2009/2010, 2013/2014 (Error bars represent confidence interval 95%).

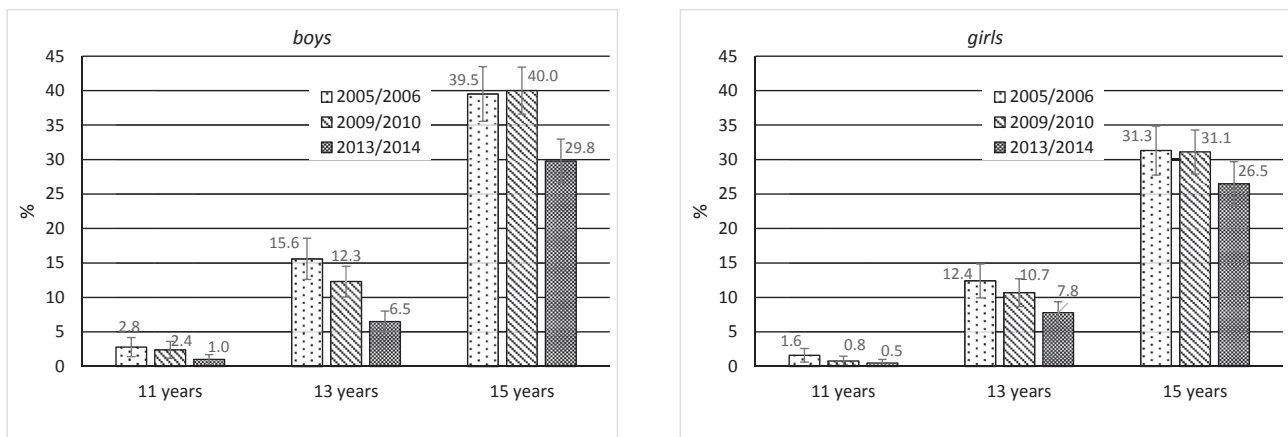


Fig. 4 – Lifetime drunkenness. Respondents reporting being drunk at least twice a lifetime. HBSC Slovakia 2005/2006, 2009/2010, 2013/2014 (Error bars represent confidence interval 95%).

boys. In girls, the changes were insignificant, with the exception of 13-year-olds in whom prevalence declined over the study period.

Discussion

The HBSC results provide a valid and representative insight into development of the epidemiological situation in Slovakia regarding the drinking behaviour of adolescents. The findings clearly indicate a decline in alcohol consumption among adolescents: in indicators of experimenting with alcohol consumption (lifetime drinking and initiation of drinking at ≤ 13 years) as well as in the indicator of regular use (weekly drinking). Considering the indicators of binge drinking leading to drunkenness, a decline is not so explicit. Particularly in girls, the decrease is only slight and insignificant. Moreover, early initiation of drunkenness at ≤ 13 years remained virtually unchanged in both boys and girls. The findings also highlight changes in beverage preferences among adolescents. The above-mentioned overall decline in weekly drinking was mainly due to decreased frequency of beer consumption. However, the unchanged frequency of spirits consumption indicates a relative increase in their popularity among adolescents.

These findings are consistent at some level with the official estimate of the World Health Organization¹ showing a downward trend in Slovakia in the age-standardized death rate attributable to selected alcohol causes (decreased by 34% between 1992 and 2010, from 124.1 to 82.4 deaths per 100,000 population). It seems that the trend shown in the present results is a follow-up to development in CEE, as indicated in previous analyses of international HBSC data.¹³ Moreover, when browsing through the rankings of alcohol use indicators stated in the international HBSC reports from the 1990s to the present time,¹⁵ Slovakia's position can be seen to move gradually from among the leading positions closer to the European average. Although this trend is also seen in neighbouring countries, according to the latest HBSC results, the decline is particularly apparent in Slovakia and the Czech Republic.¹⁶ This development offers some optimism regarding a possible reduction in the traditional notable difference in alcohol-attributable loss of health between CEE and Western Europe.^{17,18}

The declining trend in alcohol use by adolescents in Slovakia may reflect progressive change in the social environment, particularly a decrease in social tolerance of excessive drinking and drunkenness, as well as an overall decline in the popularity of alcohol use. However, further research is needed to justify this hypothesis. Such changes are attributable, at least in part, to legislative changes and improvement in their enforcement. For example, in 2009, Act No. 219/1996 Coll. on Protection against Alcohol Abuse was amended (Act. 214/2009 Coll.) making it more effective. Moreover, from 1 March 2010, the excise tax on spirits was increased by 15% (Act No. 474/2009 Coll.). According to official data from the Statistical Office of the Slovak Republic, the customer price index for alcohol increased by up to 139.3% from 2000 to 2014.¹⁹ The effect of pricing was pronounced given the decrease in the average real wage by 3.8% between 2010 and 2011 and its

stagnation over the following two years.^{19,20} Act No. 313/2011 Coll., which changed and amended Act No. 8/2009 Coll. on Road Traffic, reclassifies driving under the influence of alcohol (blood alcohol concentration >1 g/kg) from an offence to a criminal act and generally specifies stricter sentences for offences committed by offenders in traffic under the influence of addictive substances. Moreover, on 3 July 2013, the Government of the Slovak Republic approved a strategy for state health policies based on official documents of the World Health Organization,²¹ in which alcohol control is considered as one of the main priorities of public health. Such positive changes in the social environment can have a positive influence on the behaviour of adolescents, regardless of family background.⁶

However, despite the above-mentioned positive changes, some aspects of alcohol use by adolescents still raise concerns. For example, the findings indicate a disappearing trend in traditional sex differences, particularly in indicators of drunkenness. This corresponds with the relative increase of popularity of spirits among both boys and girls (i.e., no significant decrease, unlike wine and beer). Such a preference is particularly associated with binge drinking and drunkenness.^{22,23} Binge drinking leading to drunkenness among adolescent girls is currently a topical problem across many European countries. The situation found in Slovakia therefore reflects the overall development in Europe and deserves appropriate attention.

These findings demonstrate the development of alcohol use by adolescents in Slovakia, which is undergoing a social and economic transformation process typical of CEE countries. Therefore, they contribute to overall understanding of alcohol control in adolescents at population level.

This study has a few limitations. The results are based on self-reports of respondents, and the prevalence data may vary, to some extent, from the actual situation.²⁴ However, as standardized uniform methods were used in each survey, the sensitivity and specificity of the results have remained the same, and differences found over time should be considered as valid findings reflecting actual development in the country. Moreover, the sampling method used (stratification by region and type of school, as well as selection with probability proportional to size) provided representative data reflecting the actual epidemiological situation on a nationwide level.

Finally, the study findings suggest the following implications for practice.

- The development of current alcohol policy in Slovakia seems to be on a good path. However, there are several reserves in the pricing of alcohol beverages, namely regarding spirits, for more effective enforcement of the legislative norms regulating availability and restrictions towards minors.⁸ As reported by Esser and Jernigan,⁹ alcohol marketing regulation in Slovakia is at an average level compared with other European countries, so there is still space to make policies more effective.
- Binge drinking, the decline in which is not as notable as seen in other aspects of alcohol use, needs attention. Drinking patterns, especially drinking leading to intoxication, play an important role in alcohol-related harms in young people.²⁵ Therefore, binge drinking among

adolescents should be considered as a special issue in preventive programmes and campaigns.

- The development of the situation among girls indicates a need for attention. As seen in numerous countries in Western Europe, ¹⁶ the gradual disappearance of the traditional predominance of males in alcohol drinking, including binge drinking, should be expected in Slovakia. This should be taken into consideration in preventive programmes in schools and communities, as well as in media campaigns.

Author statements

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Ethical approval

The study was approved by the Ethics Committee of the Faculty of Medicine, P.J. Safarik University in Kosice.

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Competing interests

None declared.

REFERENCES

1. World Health Organization. *Global status report on alcohol and health*. Geneva: WHO; 2014.
2. World Health Organization. *Status report on alcohol and health in 35 European countries*. Copenhagen: WHO Regional Office for Europe; 2013.
3. Kuntsche E, Knibbe R, Gmel G, Engels R. Who drinks and why? A review of socio-demographic, personality, and contextual issues behind the drinking motives in young people. *Addict Behav* 2006;31:1844–57.
4. Kuntsche E, Gbahainn SN, Roberts C, Windlin B, Vieno A, Bendtsen P, et al. Drinking motives and links to alcohol use in 13 European countries. *J Stud Alcohol Drugs* 2014;75:428–37.
5. Engels RCME, ter Bogt TF. Influences of risk behaviours on the quality of peer relations in adolescence. *J Youth Adolesc* 2001;30:675–95.
6. Bendtsen P, Damsgaard MT, Tolstrup JS, Ersbøll AK, Holstein BE. Adolescent alcohol use reflects community-level alcohol consumption irrespective of parental drinking. *J Adolesc Health* 2013;53:368–73.
7. Simons-Morton B, Pickett W, Boyce W, ter Bogt TF, Vollebergh W. Cross-national comparison of adolescent drinking and cannabis use in the United States, Canada, and The Netherlands. *Int J Drug Policy* 2010;21:64–9.
8. Purshouse RC, Meier PS, Brennan A, Taylor KB, Rafia R. Estimated effect of alcohol pricing policies on health and health economic outcomes in England: an epidemiological model. *Lancet* 2010;375:1355–64.
9. Esser MB, Jernigan DH. Assessing restrictiveness of national alcohol marketing policies. *Alcohol Alcohol* 2014;49:557–62.
10. Simons-Morton BG, Farhat T, ter Bogt TF, Hublet A, Kuntsche E, Nic Gabhainn S, et al. Gender specific trends in alcohol use: cross-cultural comparisons from 1998 to 2006 in 24 countries and regions. *Int J Public Health* 2009;54(Suppl. 2):199–208.
11. Kuntsche E, Kuntsche S, Knibbe R, Simons-Morton B, Farhat T, Hublet A, et al. Cultural and gender convergence in adolescent drunkenness: evidence from 23 European and North American countries. *Arch Pediatr Adolesc Med* 2011;165:152–8.
12. Zaborskis A, Sumskaš L, Maser M, Pudule I. Trends in drinking habits among adolescents in the Baltic countries over the period of transition: HBSC survey results, 1993–2002. *BMC Public Health* 2006;6:67.
13. Looze MD, Raaijmakers Q, Bogt TT, Bendtsen P, Farhat T, Ferreira M, et al. Decreases in adolescent weekly alcohol use in Europe and North America: evidence from 28 countries from 2002 to 2010. *Eur J Public Health* 2015;25(Suppl. 2):69–72.
14. HBSC survey methods. Available at: <http://www.hbsc.org/methods/index.html>; 2016 (last accessed 9 January 2016).
15. HBSC Publications. *International reports*. HBSC Publications. Available at: <http://www.hbsc.org/publications/international/>; 2016 (last accessed 9 January 2016).
16. Inchley J, Currie D, Young T, Samdal O, Torsheim T, Augustson L, et al., editors. *Growing up unequal: gender and socioeconomic differences in young people's health and well-being. Health Behaviour in School-Aged Children (HBSC) Study: international Report from the 2013/2014 survey*. Copenhagen: World Health Organization; 2016.
17. Zatonski W, Manczuk M, Sulkowska UHEM Project Team. *Closing the health gap in European Union*. Warsaw: Cancer Epidemiology and Prevention Division, the Maria Skłodowska-Curie Memorial Cancer Center and Institute of Oncology; 2008.
18. Rehm J, Shield KD, Rehm MX, Gmel G, Frick U. *Alcohol consumption, alcohol dependence and attributable burden of disease in Europe: potential gains from effective interventions for alcohol dependence*. Toronto: Centre for Addiction and Mental Health; 2012.
19. Statistical Office of the Slovak Republic. Available at: www.statistics.sk; 2016 (last accessed 23 May 2016).
20. European Trade Union Institute. *Wage development infographic*. Brussels: European Trade Union Institute. Available at: <https://www.etui.org/Topics/Crisis-austerity-alternatives/Wage-development-infographic>; 2016 (last accessed 23 May 2016).
21. World Health Organization. *Global strategy to reduce the harmful use of alcohol*. Geneva: WHO; 2010.
22. Kuntsche E, Knibbe R, Gmel G, Engels R. 'I drink spirits to get drunk and block out my problems...' beverage preference, drinking motives and alcohol use in adolescence. *Alcohol Alcohol* 2006;41:566–73.
23. Naimi TS, Siegel M, DeJong W, O'Doherty C, Jernigan D. Beverage- and brand-specific binge alcohol consumption among underage youth in the U.S. *J Subst Use* 2015;20:333–9.
24. Lintonen T, Ahlström S, Metso L. The reliability of self-reported drinking in adolescence. *Alcohol Alcohol* 2004;39:362–8.
25. Bye EK, Rossow I. The impact of drinking pattern on alcohol-related violence among adolescents: an international comparative analysis. *Drug Alcohol Rev* 2010;29:131–7.