

Monitoring adolescent health behaviours and social determinants cross-nationally over more than a decade: introducing the Health Behaviour in School-aged Children (HBSC) study supplement on trends

Emmanuel Kuntsche^{1,2}, Ulrike Ravens-Sieberer³

1 Addiction Switzerland, Research Institute, Lausanne, Switzerland

2 Behavioural Science Institute, Radboud University Nijmegen, Nijmegen, The Netherlands

3 Department of Child and Adolescent Psychiatry, Psychotherapy, and Psychosomatics, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

Correspondence: Emmanuel Kuntsche, Addiction Switzerland, Research Institute, PO Box 870, CH 1001 Lausanne, Switzerland, Tel: +41 21 321 29 52, Fax: +41 21 321 29 40, e-mail: ekuntsche@addictionsuisse.ch

Young people are among the major driving forces of society's development. They are the capital on which tomorrow's world is built. It is not the young people *per se* that enhance tomorrow's quality of life but their ideas, creativity, motivation and energy to move things forward; these are all aspects that are closely intertwined with health and wellbeing. Young people's health and wellbeing is multi-faceted and several aspects contribute to it such as their physical condition, being overweight, injuries, physical activity, having a good relationship with their parents, not being bullied or stressed by school-related issues, safe sexual intercourse and—most of all—being free of physical or mental complaints and satisfied with life in general. It is one of this supplement's strengths to bring many of these aspects together in one volume.

But where are we standing in terms of adolescent health and wellbeing and related factors? What can possibly or realistically be achieved in the near future? These questions are crucial for policy makers in charge of improving young people's health and wellbeing. However, in a world in which most if not all conditions were found to be relative, it is impossible to answer these questions without a 'fixed point' or 'stand point' for comparison. In this respect, this supplement offers two valuable anchors. First, all contributions include multiple countries. This allows to see where a given country is standing in comparison to the neighbouring countries or to countries in different regions of Europe or even overseas. Second, all contributions include multiple survey years. This allows the comparison of a given age group, e.g. 15-year-olds, surveyed in 2010 with the same-aged peers living in the same country 4, 8, 12 or 16 years ago.

Moreover, both aspects contribute to the assessment of differences in changes of prevalence (differences in trends) of health behaviours and social determinants across different countries. While it is difficult to link a policy measure implemented in a given country at a certain time point or differences in a country-specific policy to observed differences in adolescent health behaviours or related factors, the results presented here nevertheless offer valuable insight on which evidence-based policy can and should be based.

What this supplement has to offer

General aim

As mentioned above, in addition to multiple countries and multiple survey years, the aim of this supplement was to provide evidence on various aspects of young people's health, wellbeing and related factors. To be able to do so, most contributions are in short

report format. In this way, the reader can easily get an overview of prevalence changes across countries for selected outcomes, e.g. fruit and vegetable consumption, overweight, injury-related mortality and morbidity, physical activity, parental communication, bullying, early sexual intercourse and condom use, weekly alcohol consumption and the co-occurrence of tobacco and cannabis use, and life satisfaction, just to name a few of the outcomes included. Full-length papers offer examples of how time trends can be interpreted and explained when dealing with perceived school pressure and health complaints.

Results in a nutshell

Altogether, this supplement consists of 20 contributions. After a general introduction into the Health Behaviour in School-aged Children (HBSC) project by Currie and Alemán-Díaz¹ and its impact over time, Schnohr et al.² describe some historical aspects of the HBSC. Their paper also briefly reviews previously published trend papers that emerged from this collaboration. It also describes methodological considerations and analytical strategies on how to produce reliable trends based on an international study. In the paper by Cavallo et al.,³ adolescents were asked to assess their current health condition. The results show that over the last decade an increasing proportion of adolescents rated their health as excellent. Analyses conducted by Vereecken et al.⁴ reveal an increase in daily fruit and vegetable consumption between 2002 and 2010 in a majority of countries, with a decrease noted in only five countries. Honkala et al.⁵ demonstrate that the prevalence of recommended tooth brushing (i.e. more than once a day) increased in all countries except in Scandinavia, where it was already high in 1994. This also means that differences between the countries diminished from 2004 to 2010.

Analyses conducted by Ottová-Jordan et al.⁶ show that trend patterns in recurrent health complaints vary considerably across countries; i.e. nine countries showed no linear or quadratic trend, seven a linear decrease, five a linear increase, four a U-shape curve, six an inverted U-shape curve and four an unstable trend. Ahluwalia et al.⁷ document an increase in overweight prevalence (including obesity) predominantly in Eastern Europe. In other countries, overweight rates remained stable albeit at high levels. Also noteworthy is that no decreases from 2002 to 2010 were found in any of the countries. The paper by Molcho et al.⁸ reveals that in the same timespan injury-related mortality, but not morbidity, declined over time across all the included 30 countries. Interestingly, risky behaviours such as substance use, physical activity or fighting were

consistently and significantly associated with injury morbidity, but did not explain the observed temporal trends. Kalman et al.⁹ demonstrate that despite a slight overall increase in physical activity from 2002 to 2010 across the 32 included countries nine showed a significant decrease.

Boniell-Nissim et al.¹⁰ document an increase in electronic media communication from 2002 to 2010 in most of the 30 included countries. Electronic media communication was also linked with communicating easily with friends in general and with the opposite sex in particular. In the same vein, analyses conducted by Brooks et al.¹¹ show, in the majority of the 32 countries, an increase in the proportion of adolescents who find it easy to talk to their mother or father about the issues that are of importance to them, and this was mostly pronounced for the communication with the father. A decreasing trend was found only in France, Slovenia and Poland. The paper by Klinger et al.¹² reveals that the overall proportion of students who felt under pressure due to the amount of schoolwork they had did not change, with the levels reported in 1998 being similar to those reported in 2010 across all gender and age groups. Students in North America report the highest perceptions of school pressure, followed by Great Britain, Eastern Europe, Nordic countries and Germanic countries in a descending order. Analyses conducted by Moor et al.¹³ show that, in the majority of countries, schoolchildren who perceived their family wealth as low reported significantly higher rates of multiple health complaints (1994: 12 out of 19 countries; 1998: 17 out of 25 countries, 2002: 26 out of 32 countries, 2006: 30 out of 37 countries, 2010: 32 out of 36 countries). In the majority of countries, there was no change in social inequalities in health complaints across the survey years.

The paper by Chester et al.¹⁴ reveals a decrease in occasional and chronic bullying victimization between 2002 and 2010 in the majority of the 33 included countries. Although there was no linear trend across countries from 2002 to 2010, Ramiro et al.¹⁵ demonstrate differences in sexual intercourse among adolescents in different European regions. There was a tendency of increased initiation among girls in eastern Europe and decreased very early initiation (i.e. younger than 13) among girls in northern Europe, along with a general increase in condom use in boys and most notably in girls. Analyses conducted by De Looze et al.¹⁶ reveal that between 2002 and 2010 weekly alcohol use declined in 20 of the 28 European and North American countries included and in all geographical regions. The authors conclude that, although the declining trend was remarkably similar across countries, prevalence rates still differ considerably, from highest to lowest in eastern Europe (10.1%), southern Europe (9.9%), western Europe (7.8%), Anglo-Saxon countries (6.1%) and northern Europe (4.1%). Consistent with alcohol consumption, the paper by Hublet et al.¹⁷ shows a decrease from 2002 to 2010 in concurrent use of tobacco and cannabis in all European and North American regions, a decrease in tobacco-only use in all European regions and a decrease in cannabis-only use in all regions except in eastern European countries. Holstein et al.¹⁸ document that the prevalence of medicine use for headaches increased in twelve out of twenty countries, most notably in the Czech Republic, Poland, Russia, Sweden and Wales.

Concerning general life satisfaction, Cavallo et al.¹⁹ found no consistent trends across all countries. Between 2002 and 2010, six relatively affluent western countries (Austria, Canada, Switzerland, Denmark, Finland and Greenland) and two eastern European countries (Hungary and Macedonia) decreased. In contrast, increasing life satisfaction was observed in six eastern European countries (Estonia, Croatia, Lithuania, Latvia, Russia and Ukraine), and in four western European countries (Spain, Norway, Portugal and Belgium). Finally, analyses by Ottová-Jordan et al.²⁰ reveal that individual factors, especially being a female, being bullied, experiencing school pressure and smoking, were more strongly associated with health complaints in the different survey years

than country characteristics, such as national wealth or income inequality.

Conclusion: is there nothing to worry about anymore?

What emerges as a general picture of the 19 contributions included in this supplement is that, across countries, contemporary adolescents are better off than their counterparts were about a decade ago. In 2010, a higher proportion of adolescents ate healthily in terms of fruit and vegetable consumption, had a good dental hygiene, did not suffer from injury, were physically active on a daily basis, communicated with friends electronically, found it easy to talk to their mother or father about important personal issues, were not victimized in terms of occasional or chronic bullying, used a condom when having sex, did not drink alcohol on a weekly basis and lived tobacco and cannabis free. Consistently and as a kind of general summary, Cavallo et al.³ report a higher proportion of adolescents who rated their health as excellent.

The overall optimistic picture seems surprising considering that many countries in Europe and North America faced a severe economic crisis in the last decade. At the same time, however, policies and actions to improve public health were implemented in many countries such as the ban of selling cigarettes to minors and smoking in public buildings including bars and restaurants or the policies aiming to increase physical activity and healthy eating in school children to counteract excess weight and obesity development. However, one has to bear in mind that such trends over time are never the result of a single measure but reflect changes in fashions, behavioural norms, societal values, etc., as well as the diversity of the policy actions that were taken. This is what makes it particularly difficult to come up with sound explanations for the observed trends.

While the overall picture indicates improvements in adolescent health and social determinants this was not the case for all the countries. For example, in Greenland, Norway, Poland and Denmark an increase in multiple recurrent health complaints was observed from 1994 to 2010.⁶ In the Czech Republic, Denmark, Italy, Lithuania, Russia, Scotland, Slovenia, Switzerland and USA in 2010, there was a lower proportion of adolescents who were physically active on a daily basis compared to 8 years ago.⁹ In the same time span, less adolescents found it easy to talk to their mother or father about important personal issues in France, Slovenia and Poland.¹¹ Also, in French-speaking Belgium and Finland, there were increasing trends of bullying victimization.¹⁴ Thus, it is not only important to consider the evidence of single countries or groups of countries, but the multiple evidence presented in the various articles included in this supplement can help to better understand the development in a given country in the light of the others.

The fact that not all the examined variables developed positively across the years is something to be concerned about. Despite the results showing that a higher proportion of adolescents ate healthily in terms of fruit and vegetable consumption and were physically active on a daily basis, overweight prevalence including obesity increased from 2002 to 2010, predominantly in Eastern Europe, or remained stable in the best case.⁷ Furthermore, although a higher proportion of adolescents did not suffer from any injuries, did not experience bullying victimization, did not drink alcohol on a weekly basis, lived tobacco and cannabis free, and rated their health as excellent, the prevalence of medicine use for headaches increased from 1986 to 2010 in 12 out of 20 countries.¹⁸ More research is clearly needed to gain a better insight into these seemingly contradictory trends.

Another major concern is that many if not the majority of adolescents living in Europe and North America still do not meet the recommendations for healthy living despite the improvements described above. For example, large proportions of adolescents do

not meet the recommendations for physical activity (at least 60 min per day),⁹ for time spent in front of electronic screens (no more than 2 h per day)¹⁰ or for fruit and vegetable consumption (daily basis).⁴ This demonstrates the need for continued advocacy, policy implementation, and a strengthening of efforts to motivate adolescents and their parents to behave in healthy ways. It is imperative to work with policymakers from various countries to implement health strategies for children and adolescents that take into account social determinants for health cross-nationally.

Acknowledgements

The Health Behaviour in School-aged Children (HBSC) study is an international study carried out in collaboration with the WHO/Europe. The international coordinator of the study was Candace Currie, University of St. Andrews, Scotland. The data bank manager of the study was Oddrun Samdal, University of Bergen, Norway. A complete list of participating countries and researchers is available on the HBSC website (<http://www.hbsc.org>). The authors thank Dr. Kate Levin and Dr. Bjørn Holstein for their collaboration and contribution to the supplement and Lucie Chambeyron and Anna Katz for their editing work for all papers.

Funding

The data collection for each HBSC survey is funded at the national level. This supplement was funded by the Swiss National Science Foundation (grant no. B-0010_160593), the Swiss HBSC study (mainly funded by the Swiss Federal Office of Public Health, grant no. 09.000925) and the HBSC International Coordinating Center, St. Andrews, UK.

Conflicts of interest: None declared.

References

- Currie C, Alemán-Días AY. Building knowledge on adolescent health: reflections on the contribution of the Health Behaviour in School-aged Children (HBSC) study. *Eur J Public Health* 2015;25(suppl 2):4–6.
- Schnohr WC, Molcho M, Rasmussen M, et al. Trend analyses in the Health Behaviour in School-aged Children study: methodological considerations and recommendations. *Eur J Public Health* 2015;25(suppl 2):7–12.
- Cavallo F, Dalmaso P, Ottová-Jordan V, et al. Trends in self-rated health in European and North-American adolescents from 2002 to 2010 in 32 countries. *Eur J Public Health* 2015;25(suppl 2):13–15.
- Vereecken C, Pedersen TP, Ojala K, et al. Fruit and vegetable consumption trends among adolescents from 2002 to 2010 in 33 countries. *Eur J Public Health* 2015;25(suppl 2):16–19.
- Honkala S, Vereecken C, Niclasen B, Honkala E. Trends in toothbrushing in 20 countries/regions between 1994 and 2010. *Eur J Public Health* 2015;25(suppl 2):20–23.
- Ottová-Jordan V, Smith ORF, Gobina I, et al. Trends in multiple recurrent health complaints in 15-year-olds in 35 countries in Europe, North America and Israel from 1994 to 2010. *Eur J Public Health* 2015;25(suppl 2):24–27.
- Ahluwalia N, Dalmaso P, Rasmussen M, et al. Trends in overweight prevalence among 11-, 13- and 15-year-olds in 25 countries in Europe, Canada and USA from 2002 to 2010. *Eur J Public Health* 2015;25(suppl 2):28–32.
- Molcho M, Walsh D, Donnelly P, et al. Trend in injury-related mortality and morbidity among adolescents across 30 countries from 2002 to 2010. *Eur J Public Health* 2015;25(suppl 2):33–36.
- Kalman M, Inchley J, Sigmundova D, et al. Secular trends in moderate-to-vigorous physical activity in 32 countries from 2002 to 2010: a cross-national perspective. *Eur J Public Health* 2015;25(suppl 2):37–40.
- Boniell-Nissim M, Lenzi M, Zsiros E, et al. International trends in electronic media communication among 11- to 15-year-olds in 30 countries from 2002 to 2010: association with ease of communication with friends of the opposite sex. *Eur J Public Health* 2015;25(suppl 2):41–45.
- Brooks F, Zaborskis A, Tabak I, et al. Trends in adolescents' perceived parental communication across 32 countries in Europe and North America from 2002 to 2010. *Eur J Public Health* 2015;25(suppl 2):46–50.
- Klinger DA, Freeman J, Bilz L, Liiv K, et al. Cross-national trends in perceived school pressure by gender and age from 1994 to 2010. *Eur J Public Health* 2015;25(suppl 2):51–56.
- Moor I, Richter M, Ravens-Sieberer U, et al. Trends in social inequalities in adolescent health complaints from 1994 to 2010 in Europe, North America and Israel: The HBSC study. *Eur J Public Health* 2015;25(suppl 2):57–60.
- Chester KL, Callaghan M, Cosma A, et al. Cross-national time trends in bullying victimisation in 33 countries among children aged 11, 13 and 15 from 2002 to 2010. *Eur J Public Health* 2015;25(suppl 2):61–64.
- Ramiro L, Windlin B, Reis M. Gendered trends in early and very early sex and condom use in 20 European countries from 2002 to 2010. *Eur J Public Health* 2015;25(suppl 2):65–68.
- De Looze M, Raaijmakers Q, Ter Bogt T, 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.
- Hublet A, Bendtsen P, De Looze ME, et al. Trends in the co-occurrence of tobacco and cannabis use in 15-year-olds from 2002 to 2010 in 28 countries of Europe and North-America. *Eur J Public Health* 2015;25(suppl 2):73–75.
- Holstein BE, Andersen A, Fotiou A, et al. Adolescents' medicine use for headache: secular trends in 20 countries from 1986 to 2010. *Eur J Public Health* 2015;25(suppl 2):76–79.
- Cavallo F, Dalmaso P, Ottová-Jordan V, et al. Trends in life satisfaction in European and North-American adolescents from 2002 to 2010 in over 30 countries. *Eur J Public Health* 2015;25(suppl 2):80–82.
- Ottová-Jordan V, Smith ORF, Augustine L, et al. Trends in health complaints from 2002 to 2010 in 34 countries and their association with health behaviours and social context factors at individual and macro-level. *Eur J Public Health* 2015;25(suppl 2):83–89.