

EDITORIAL

THREE DECADES OF CHANGE IN ADOLESCENT HEALTH AND LIFESTYLE IN CZECHIA: INSIGHTS FROM THE HBSC STUDY 1994–2022

Introduction

Czech adolescents have grown up in a period marked by rapid and far-reaching societal, economic and technological change. Since the early 1990s, the Czech Republic has undergone a profound transformation from a centrally planned to a market-oriented economy, accompanied by rising living standards but also growing social and regional inequalities. Over the same period, the country has implemented multiple educational reforms, including changes to curricula, assessment systems and the organisation of lower- and upper-secondary education, which have altered academic expectations and the everyday rhythm of school life for children and young people. These structural changes have been paralleled by waves of digitalisation: the spread of home computers and the internet in the late 1990s and 2000s, the rapid adoption of smartphones and social media in the 2010s, and the increasing integration of digital technologies into learning and leisure. Together, these developments have reshaped how adolescents move through their neighbourhoods, how they spend their free time, how they relate to peers, teachers and parents, and which risks and resources they encounter in their daily lives.

Against this backdrop of transition and digital acceleration, the Health Behaviour in School-aged Children (HBSC) study provides a unique lens on how key dimensions of adolescent life in Czechia have evolved. The HBSC surveys allow researchers to capture changes in health-related behaviours such as physical activity, active school transport, substance use and sexual behaviour, shifts in body weight and body image, new forms of digital engagement and screen-based activities, and transformations in perceived school climate, mental wellbeing and social support. Because these domains are assessed repeatedly in nationally representative samples using comparable instruments, the HBSC makes it possible to examine not only whether adolescent health is improving or worsening overall, but also how patterns of risk and protection are redistributing across gender, age groups, socio-economic strata and in relation to other health-related indicators.

Czechia has participated in the HBSC study since 1994, conducting nationally representative surveys every four years among 11-, 13- and 15-year-old students using a standardised protocol prescribing among others the sampling procedures, questionnaire content or data cleaning and processing methods. Repeated cross-sectional data collected over more than three decades thus provide a robust basis for monitoring long-term trends and inequalities in wellbeing and health behaviours accounting for their social determinants. The last wave of data collection took place as eighth in the row in 2022. This longevity is undoubtedly a huge asset of the study. At the same time it represents a certain challenge as it is crucial to balance the needs for monitoring of trends, which requires consistency in wording of the instruments, and keeping the flexibility to include new areas of interest as they emerge in the ever-evolving world. Therefore, some of the research areas

were dropped over time, such as watching VHS or DVD, whereas others were (and definitely will be in the future) included when identified as critical for adolescent health and development (e.g., electronic media communication or planetary health).

On the occasion of the 30th anniversary of the HBSC study in Czechia, this thematic issue brings together a set of trend analyses examining long-term developments in selected aspects of health and lifestyle among Czech adolescents. In the present article, we draw on this unique evidence base to describe how the lives of Czech adolescents have changed across multiple domains in ten separate articles. Some of the topics allowed us to dig deeper into the past and some provide more recent snapshot because they were simply not existing in the 1990s or the 2000s. This set of diverse areas covered gives a chance to highlight broader trajectories, turning points, and emerging patterns that collectively shape adolescent lifestyles and discuss the implications for public health and education policy.

Our goal is to highlight common patterns and tensions across domains and to identify cross-cutting implications for prevention and policy.

Summary of the Present Thematic Issue

By juxtaposing findings across diverse domains and time spans, the issue seeks to illustrate both the breadth of the HBSC study and its capacity to capture dynamic changes in adolescent health within a rapidly transforming social context. Taken together, the findings presented here depict a complex yet, in many respects, fragmented picture of changes in adolescent health and lifestyle in Czechia pointing to domain-specific divergence in trends. On the one hand, several traditionally monitored risk behaviours show substantial long-term improvements. Both alcohol consumption and cigarette smoking declined markedly during the mid-2010s, particularly between 2014 and 2018, followed by a period of relative stabilisation (*Kázmér et al. Trends in adolescent cigarette smoking in Czechia: findings from the HBSC study 2014–2022*; *Csémy et al. Trends in alcohol use among Czech adolescents: findings from the HBSC study 2014–2022*). Similarly, sexual initiation has gradually shifted towards older ages, especially among girls, accompanied by an overall decline in the proportion of 15-year-olds reporting sexual experience (*Ševčíková et al. Trends in sexual initiation and contraception use among Czech adolescents between 2002–2022*). These trends suggest a weakening of some classical risk behaviours that have historically dominated adolescent health research. On the other hand, the same period is characterised by persistent or worsening trends in several domains closely linked to everyday routines and psychosocial functioning. The prevalence of overweight and obesity has increased steadily over the past two decades, with more pronounced growth among boys and adolescents from

lower socioeconomic backgrounds (Voráčová *et al.* *Overweight, obesity, and body weight perception among Czech adolescents: a two-decade analysis, HBSC study 2002–2022*). Active school transport has declined since the mid-2000s and has stabilised only at substantially lower levels (Vorlíček *et al.* *Active school transport among Czech adolescents declined between 2006 and 2022: HBSC study findings*), reflecting broader changes in mobility patterns and built environments. In parallel, adolescents' sleep duration has shortened, social jet lag has become increasingly common (Sigmund *et al.* *Trends in sleep patterns among Czech adolescents and their current correlates of late bedtimes and social jet lag: HBSC study 2014–2022*), and the intensity as well as problematic forms of social media use have risen sharply in recent years (Boniel-Nissim *et al.* *Changes in social media use patterns among Czech adolescents: HBSC study 2018–2022*).

Across multiple domains, the analyses point to identifiable periods of accelerated change. While the mid-2010s appear as a phase of rapid improvement in substance-related behaviours, the years following 2018 – coinciding with the COVID-19 pandemic – are marked by stagnation of earlier positive trends and an intensification of challenges related to mental wellbeing, digital engagement, and daily rhythms. Importantly, these developments do not affect all adolescents equally. Gender differences have shifted from disparities in the prevalence of risk behaviours (Kázmér *et al.*, Csémy *et al.*) towards differences in psychosocial vulnerability, with girls more often affected by problematic social media use (Boniel-Nissim *et al.*), greater and increasing perceived school pressure (Sandora *et al.* *Trends in the perception of school climate in the Czech Republic: HBSC study 1994–2022*), poorer mental wellbeing, and changes in sexual behaviour (Ševčíková *et al.*); while boys show less favourable trajectories in body weight or incidence of medically-treated injuries (Bakalár *et al.* *Trends in medically attended injuries among Czech adolescents between 2002 and 2022*).

Socioeconomic inequalities emerge as a consistent, albeit domain-specific, determinant. While gradients are less pronounced in substance use and sexual behaviour, they are clearly evident in overweight and obesity (Voráčová *et al.*), active transport (Vorlíček *et al.*), and environmental literacy (Selinger *et al.* *Planetary-health literacy and mental wellbeing in Czech adolescents: insights from the HBSC survey 2022*). These patterns suggest that contemporary inequalities in adolescent lifestyles are increasingly shaped by structural and environmental conditions rather than by individual choices alone.

Despite its broad thematic scope, this thematic issue does not aim to comprehensively cover all dimensions of adolescent health and lifestyle. Notably, several important domains are not examined in dedicated trend analyses, including eating patterns beyond their manifestation in body weight outcomes, total physical activity outside the context of active school transport, and long-term trajectories of mental health indicators such as life satisfaction, psychological complaints, or emotional wellbeing. This selective focus reflects both pragmatic editorial choices and the historical sequencing of data collection within the HBSC study.

At the same time, many of these domains have been addressed through complementary analytical and dissemination activities of

the Czech HBSC team. In particular, selected findings related to eating habits, physical activity, mental health, or newly emerging risk behaviours (e.g., energy drink consumption or vaping) have been synthesised and communicated within the national knowledge-translation initiative “Zdravá generace”^{*}, which aims to make HBSC evidence accessible to practitioners, policymakers, and the general public. In addition, several of the omitted areas are regularly covered in international HBSC reports published in collaboration with the World Health Organization, where Czech data contribute to cross-national comparisons of adolescent health behaviours, wellbeing, and social determinants^{**}. Together, these national and international outputs underscore that the present thematic issue represents a focused analytical contribution rather than a comprehensive overview, and should be interpreted as part of a broader and continuously evolving body of HBSC-based evidence.

Implications for Policy, Practice and Research

The combined HBSC evidence from Czechia suggests several priorities.

The findings of this thematic issue underline the need to move beyond single-behaviour approaches towards more integrated strategies for adolescent health promotion and prevention. Health-related behaviours in adolescence are closely interconnected and shaped by shared social and environmental contexts. Policies should therefore address these linkages – for example by combining physical-activity promotion, including active school transport, with injury prevention, mental health support, and the development of safe digital habits.

At the same time, public health efforts must address both long-standing and emerging health risks. While substantial progress has been made in reducing cigarette smoking and heavy drinking among adolescents, continued vigilance is needed to sustain these gains. In parallel, increasing overweight and obesity, declining condom use, problematic social media use, and the persistence of multiple injuries represent growing challenges that require coordinated responses across sectors.

Schools remain a key setting for integrated health promotion, yet the findings point to rising school-related pressure and weaker perceived support among students. Strengthening school climates by explicitly valuing students' wellbeing alongside academic performance should therefore be a priority. Integrating planetary health literacy into school curricula, together with opportunities for student-led environmental action, may support both psychosocial wellbeing and the adoption of sustainable health-related behaviours.

The observed trends further highlight the importance of targeted interventions for vulnerable groups. Boys and adolescents from lower socioeconomic backgrounds remain priority populations for obesity and injury prevention, while very early sexual initiators may benefit from tailored sexual health education. Girls appear particularly affected by challenges related to mental health, school pressure, and problematic social media use, underscoring the need for gender-sensitive approaches.

Finally, while repeated cross-sectional trend analyses such as those provided by the HBSC are indispensable, future research

^{*}www.zdravagenerace.cz

^{**}<https://www.hbsc.org/publications/reports/>

should be complemented by longitudinal and mixed-methods approaches. Combining trend data with qualitative studies and intervention trials would help clarify causal pathways and support the development and evaluation of integrated programmes, particularly in school settings.

Conclusion

Across the three decades of HBSC participation, Czech adolescents' health profiles have not simply improved or worsened; they have reconfigured. Substance use risks have receded; in their place we see rising body-weight problems, a heavier injury burden, more intense digital engagement, complex sexual health patterns, and growing educational and climate-related pressures.

The new analyses on overweight and body weight perception, sexual initiation and contraception, planetary-health literacy and injuries broaden the picture beyond traditional risk behaviours and underscore the need for policies that treat adolescent health as multi-dimensional – physical, mental, social, and environmental.

The findings also underscore the continued relevance of the HBSC study as a tool for monitoring social change and its health consequences among young people. The ability of HBSC to adapt its content over time, while maintaining methodological continuity, enables the identification of both long-term trends and emerging issues. As adolescent lives continue to be reshaped by technological, environmental and societal transformations, sustained surveillance combined with timely analytical reflection remains essential for informing evidence-based policy and practice. Future strategies should be integrated, gender- and equity-sensitive, and designed with adolescents' voices at the centre, recognising them not only as recipients of interventions but also as agents capable of shaping healthier and more sustainable futures.

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