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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

BACKGROUND, METHODOLOGY AND MANDATORY ITEMS FOR THE 2017/18 SURVEY

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Dedicated to the memory of our valued friends and colleagues,
Dr John Freeman (HBSC Canada) and Dr Izabella Tabak (HBSC Poland)

CONTENTS

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PREFACE

The Health Behaviour in School-aged Children WHO Collaborative Cross-National study (HBSC) network aims to share knowledge and increase transparency in our work. By making our study protocol available to researchers, policy-makers and a wide range of stakeholders, we are hoping to raise awareness of and promote the HBSC study internationally.

This document is an abridged version (hereafter termed "External Protocol") of the full HBSC International Study Research Protocol for the 2017/18 survey (hereafter termed "Internal Protocol"). The External Protocol is available to the public on request through the HBSC website (www.hbsc.org).

HBSC cross-national surveys are conducted every four years in member countries. For each survey, an Internal Protocol is produced by members of the HBSC international network. It includes full information on HBSC's scientific rationale and methodology, as well as mandatory and optional survey questions of the HBSC survey. The Internal Protocol is a resource developed specifically for HBSC members to provide practical information on elements such as survey administration and questionnaire translation. It also details conceptual work and new areas of research development.

The first External Protocol was produced for the 2009/10 HBSC survey and, since then, international interest in the study has continued to grow. This latest version, the 2017/18 External Protocol, is now available for public use. It includes an overview of the historical development of HBSC, study aims and the organisational structure of the network. The conceptual framework is described, outlining the key theoretical and conceptual approaches that underpin the study. An overview of our scientific background and methods, including the mandatory survey items, is also provided. HBSC optional packages are listed by title, but full item descriptions are not given, as they include developing HBSC work. As the field of adolescent health advances and expands, new topics are introduced to HBSC. For the 2017/18 survey, we have included a new special focus area on electronic media communication to enable a better understanding of the role this plays in relation to young people's health and well-being.

The External Protocol is not intended to be a comprehensive guide on how to conduct the HBSC survey outside of HBSC member countries. Rather, it is hoped that it will provide a window into the HBSC study – our history, methodology and findings.

We are always happy to hear from colleagues around the world who are interested in finding out more about HBSC. Further information is available by emailing info@hbsc.org.

For those who are interested in using HBSC survey instruments outside of Europe and North America, there is the opportunity to become a Linked Project. For more information, please email linkedprojects@hbsc.org.

Jo Inchley, BSc MSc PhD
HBSC International Coordinator

ACRONYMS AND ABBREVIATIONS

BMI	body mass index
CC	(HBSC network) Coordinating Committee
DBM	(HBSC) Data Bank Manager
DIC	(HBSC) Deputy International Coordinator
DMC	(HBSC) Data Management Centre
DSM-5	Diagnostic and Statistical Manual of Mental Disorders
DSMM	Differential Susceptibility to Media Effects Model
ECG	(HBSC) Early Careers Group
EMC	electronic media communication
ESPAD	European School Survey Project on Alcohol and Other Drugs
EU	European Union
FAS	Family Affluence Scale
FFQ	Food Frequency Questionnaire
FGs	focus groups
GDI	gender development index
HBSC	Health Behaviour in School-aged Children (study)
IC	(HBSC) International Coordinator
ICC	intraclass correlation coefficient
IGD	Internet gaming disorder
IOTF	International Obesity Task Force
MDG	(HBSC) Methodology Development Group
MQ	Mandatory Questionnaire
MSPSS	Multidimensional Scale of Perceived Social Support
MVPA	moderate-to-vigorous physical activity
OECD	Organisation for Economic Co-operation and Development
PA	physical activity
PDG	(HBSC) Policy Development Group
PI	principal investigator
POSI	preference for online social interaction
PPS	probability proportionate to size
SDG	(HBSC) Scientific Development Group
SDQ	Strengths and Difficulties Questionnaire
SES	socioeconomic status
SMD	social media disorder
SRH	self-rated health
STI	sexually transmitted infection
UNICEF	United Nations Children's Fund
VPA	vigorous physical activity
WHO	World Health Organization
YRBS	Youth Risk Behavior Surveillance (study)

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1

Background, rationale and HBSC organisational structure

Inchley J, Currie D, Currie C & Alemán-Díaz A

HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL: SECTION 1

BACKGROUND, RATIONALE AND HBSC ORGANISATIONAL STRUCTURE

Inchley J, Currie D, Currie C & Alemán-Díaz A

1. Introduction

The Health Behaviour in School-aged Children (HBSC) study is a unique cross-national research study into the health and well-being of adolescents across over 45 countries in Europe and North America,[1] conducted in collaboration with the World Health Organization (WHO) Regional Office for Europe. The study has been conducting surveys of young people every four years since 1983/84 with an increasing number of countries participating, and provides a vital resource to compare health and well-being of adolescents between countries and over time.

Adolescents now make up a quarter of the world's population, the largest generation of young people in history.[2] Recent improvements in maternal and child health have led to a marked increase in under-5 survival and a subsequent shift in disease burden from childhood to adolescence, leading to calls for greater investment in public health during the adolescent years.

For the development of effective health promotion policies targeted at improving health and reducing health inequalities among young people, it is essential to recognise the unique biological, emotional and social transitions – and associated challenges – that occur during this stage of the life-course. The health and well-being of adolescents is strongly affected by social factors immediate to young people's environment, including family, school and community, as well as those more distal to their lives – national-level factors such as economic climate or educational opportunities, for example. Issues of equity also impact on young people's health and well-being, including those relating to gender, ethnicity, migrant status, sexual identity, religious belief and disability, among other social determinants. Age and gender differences in health also need to be understood within a developmental perspective in which adolescents may be particularly sensitive to socio-environmental influences.[3,4]

The HBSC study embraces the WHO broad perspective that health encompasses physical, social and emotional well-being.[5] HBSC recognises the importance of investigating positive aspects of health and well-being as well as risk factors for future ill health and disease, and so incorporates a wide range of behavioural indicators. A social, rather than biomedical, research perspective has been one of the hallmarks of the study since its inception and continues today; family and school environments, peer relationships, social group membership, online interaction and communication, and the socioeconomic environment in which young people are growing up are all explored to understand the patterns of health and well-being found in the adolescent population.

2. Aims and objectives

The HBSC study aims to gain new insight into, and increase understanding of, adolescent health and well-being in their social context. The study is both an international research study and an international monitoring study of health and well-being in adolescents. Researchers participating in the HBSC study come from different disciplinary backgrounds and use a variety of conceptual and theoretical models to describe, analyse and explain the health behaviour and health of young people. As well as being a research and monitoring study, HBSC also aims to inform and impact on health promotion and health education policy, programmes and practice aimed at young people at national and international levels.

The main objectives of the study are to:

- initiate and sustain national and international research on health and well-being, health behaviour and the social context of health in adolescents;
- contribute to theoretical, conceptual and methodological development in the area of adolescent health;

- collect relevant data and monitor adolescent health and well-being in member countries;
- contribute to the global knowledge base on adolescent health, with a particular focus on health and well-being, health behaviour and the social context of health;
- disseminate findings to relevant audiences, including researchers, policy-makers, health promotion practitioners, teachers, parents and young people;
- link to WHO objectives, especially in relation to *Investing in children: the European child and adolescent health strategy 2015–2020*;[6]
- inform and support the development of health promotion programmes and interventions with school-aged children;
- promote and support the establishment of national expertise on health and well-being, health behaviour and on the social context of health in school-aged children; and
- establish and strengthen an international network of experts in the field of adolescent health.

3. HBSC methodology

The HBSC survey instrument is an international standard questionnaire used by all participating countries, with the addition of optional content at national level. This external version of the 2017/18 protocol covers only the international standard section of the HBSC questionnaire, which is mandatory for use in each country. HBSC is a school-based survey and the self-report questionnaire is administered to a nationally representative sample of 11-, 13- and 15-year-olds within the classroom setting. In the previous survey round in 2013/14, almost 200 000 young people (approximately 4000–5000 per country) from across Europe and North America participated. The data collected in each country are compiled into an international data file according to the protocol for each survey. Section 3 and Annex 1 describe the survey procedures in more detail and provides the international Mandatory Questionnaire for the 2017/18 survey.

The international standard questionnaire enables the collection of common data across all participating countries and thus enables cross-national comparisons of health and well-being to be made. Trend data are gathered with successive surveys and may be examined at national and cross-national levels. The network supports data-sharing and, as well as providing access to aggregate data through the WHO European Health Information Gateway (https://gateway.euro.who.int/en/), also makes the micro data for the mandatory component of each survey publicly accessible after three years (starting with the 2001/02 survey) via the HBSC online data portal (http://www.uib.no/en/hbscdata).

In HBSC, continuing research has resulted in the building of a coherent set of indicators that together provide a valid representation of the health, well-being and risk behaviours of adolescents and their developmental and social determinants. The conceptual framework of the study and the variables included in the 2017/18 survey are described in Sections 2 and 3, including health, behavioural and social contextual indicators. Further detail on these topic areas is provided in Section 5 on scientific rationales.

4. WHO collaboration

The WHO Regional Office for Europe adopted HBSC soon after it was established and the study became a WHO collaborative study. WHO plays an important role in many aspects of the governance of the study. It provides support to a number of member countries and to the HBSC Assembly of Principal Investigators (PIs). WHO has also been instrumental in enabling countries across the European Region to make successful applications to join and participate in the study. It is represented on the study's Policy Development Group (PDG) and provides advice and support in the area of stakeholder engagement and increasing the impact of the study.

The HBSC international reports published after each survey round are produced in collaboration with WHO. They present descriptive information on cross-national comparisons and also focus on particular themes, such as the social context of health and inequalities in health.[7–11] HBSC findings have also been used extensively by WHO in other reports and strategies (including the child and adolescent health strategy) and key data are included in the WHO European Health Information Gateway (https://gateway.euro.who.int/en/), increasing the utility of the study by providing easy access to customisable HBSC data alongside indicators from other studies.

5. HBSC membership

The study began as an informal collaboration between a small number of countries, with five countries carrying out the first survey in 1983/84. HBSC membership has grown steadily over the years and currently 48 countries/regions are members of the international network.

As one of the primary aims of the study is to produce data of the highest possible quality, membership of HBSC is strictly dependent upon adherence to the International Research Protocol for each survey. New countries join the study as associate members and attain full membership status once they have successfully completed one survey and their data have been accepted for inclusion in the international data file. Each country team needs to comply with the study's Terms of Reference, which has rules about data use and publication, and roles and responsibilities of members. The ultimate sanction for non-compliance with the International Protocol and the Terms of Reference is loss of membership. Countries outside of Europe and North America who wish to conduct the HBSC survey can register as HBSC Linked Projects (http://www.hbsc.org/membership/linkedprojects/index.html).

6. HBSC organisational structure

The study is organised and developed by a network of HBSC national teams that include researchers based in university departments, research centres or organisations, government or other institutions (the PIs and their national teams).

Overall coordination of the network and its activities, as well as liaison with WHO, are the responsibility of the elected International Coordinator (IC). The IC manages the HBSC International Coordinating Centre, currently located at the University of St Andrews, Scotland.

In addition to the IC, there are two other elected roles in the network organisation, the Deputy International Coordinator (DIC) and the Data Bank Manager (DBM). The DBM is responsible for the organisation of the international data file, the standards for data inclusion, the codebook and all such related matters. The DBM, currently located at the University of Bergen, Norway, also manages the Data Management Centre (DMC). The DIC works closely with the IC at strategic level and provides support in the coordination of network activities and management of the International Coordinating Centre.

There are presently over 370 individuals included in the HBSC membership list, comprising PIs and their national team members. The network holds member meetings twice a year, with a full scientific meeting in the spring and a working meeting in the autumn.

The main decision-making body is the PI Assembly. The Assembly consists of all national PIs and votes on all major issues relating to the study's scientific, policy and organisational development. The network Coordinating Committee (CC) is the elected body that advises and supports the IC and PI Assembly in reviewing the management, organisation, activities and progress of the study.

A recent development in the HBSC network is the conception of its Early Careers Group (ECG), representing those who have recently joined the network and who are early in their academic careers. The idea is to build a foundation for future leadership within the

network and promote knowledge exchange among the HBSC membership. Group members take on roles within the scientific and management structures of the study to contribute fresh ideas and learn more about its strategic development.

A system of working groups was established to enable all members to contribute to the scientific development of the study within their area of expertise and interest. These groups, known as focus groups (FGs), have worked on the following specific topic areas covering social context as well as health and well-being: Family culture; Peer culture; Social inequality; School setting; Eating and dieting; Physical activity; Positive health; Risk behaviour; Sexual health; and Violence and injuries. The FGs are responsible for the development of research in their chosen topic, including conceptual development, and development of new items and testing their validity. In addition, a number of writing groups have evolved over the years to allow new areas of interest to develop and to facilitate cross-FG collaboration and publication. These include, for example, writing groups on bullying, chronic conditions, electronic media communication (EMC), gender, health literacy, medicine use, migration, puberty, obesity and spiritual health.

Overseeing the work of the FGs and writing groups are three main development groups:

- the Scientific Development Group (SDG)
- the Policy Development Group (PDG)
- the Methodology Development Group (MDG).

The SDG is chaired by the IC and is responsible for reviewing and coordinating the FG work, refining the overall conceptual framework and contributing to the production of the International Protocol. Each FG chair represents the FG on the SDG.

Each FG also has a representative on the PDG, which is responsible for devising a policy framework, including a production and dissemination strategy for the International Report and other major outputs from the study.

The MDG is responsible for developing improvements to the survey methods and procedures to enhance the quality of the study, as well as providing advice and support to the DBM.

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2

Conceptual framework

Inchley J, Currie C & Alemán-Díaz A

CONCEPTUAL FRAMEWORK

Inchley J, Currie C & Alemán-Díaz A

1. Study perspectives

The perspective taken from the study's inception is one in which adolescent health-related behaviours are seen as part of young people's broader lifestyle, and health is viewed in its social context.[1] Both the wider society and the social worlds that adolescents inhabit are considered important influences on their behaviour, such that health and well-being are seen as the outcomes of individual and environmental factors. The importance of demographics and the macro-social context as influences were explicitly acknowledged in the early descriptions of the HBSC conceptual framework.[1,2]

The survey design and content has always acknowledged that how young people feel is an important aspect of their health, and the data therefore provide a valid representation of their health and well-being, perspectives and experiences. From the outset, a developmental perspective informed the choice of age groups to study. It recognised that maturational processes affect cognitive function, self-perceptions and psychological processes, and that social influences and expectations vary according to chronological and maturational age. The selected age groups – 11-, 13- and 15-year-olds – represent the onset of adolescence (the time when young people face the challenges of physical and emotional changes) and the middle years, when they start to consider important life and career decisions. They also mark a period of increased autonomy and choice around patterns of consumption.

The initial conceptual framework for HBSC has been further developed over the last 35 years,[2] with an increasing focus on inequality and the social determinants of health. As well as describing cross-national differences and trends, explanatory models are used to better understand patterning of health behaviours and health outcomes across different social and cultural contexts. New threats and challenges to adolescent health have been recognised and macro-level influences such as political, economic, cultural, educational and environmental factors are considered important components of the model.

The multidisciplinarity of the study's approach has been emphasised and reinforced with its growth and the expansion of the international research network. Growth has allowed multiple strands of research to proceed simultaneously and has encouraged a cross-fertilisation, or "fusion", of different disciplinary and conceptual approaches.

2. General conceptual approaches

At least four general conceptual approaches are integrated within the HBSC study.

1. **A social psychological approach**, which includes the original lifestyle approach and the more general social settings/contexts approach. This paradigm can also embrace developmental perspectives and approaches that consider psychological factors (such as personal coping skills, self-esteem, perceived social support and perceived social strain) in explanations of health behaviours and health at individual level.
2. **A public health/epidemiological approach**, including surveillance, the study of populations at risk, trends and identification of risk factors. Countries need to have participated in at least three successive surveys to study trends. Trends in social contextual factors can be analysed in addition to those in health and behaviour.
3. **A socio-ecological/multilevel approach**, which can include: investigating the interplay between individual- and environmental-level factors; identifying risk and resilience factors within social settings and circumstances; conducting theory-driven or theory-building research; and identifying social structural/system variables to gain a new level of understanding of health outcomes.

4. **A developmental or biological approach**, in which the importance of maturation, including timing of puberty, in influencing health and well-being and health and risk behaviours is considered.

The study has seen some significant advances over the years, including: the introduction of new theories and concepts that contribute to a more sophisticated and multifaceted understanding of health in young people; the development of new instruments to address new research questions; and the use of advanced statistical tools to enhance data interrogation and analytic enquiry. A major review of the protocol was initiated in 2015/16 in preparation for the 2017/18 HBSC survey, with the aim of reducing the size of the Mandatory Questionnaire to allow countries more scope for inclusion of optional packages and national items. During this process, a short-life working group was established to review and revise the HBSC conceptual framework. As a result, five new conceptual groups were established to extend the study's work in the areas of mental health, leisure, neighbourhood, social relations and school-level influences. This work is currently ongoing.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Survey methodology

Samdal O, Torsheim T & Currie D

SURVEY METHODOLOGY

Samdal O, Torsheim T & Currie D

1. The HBSC survey instrument

HBSC is a school-based survey, with data collected through self-completion questionnaires administered in the classroom before being compiled within an international data file. Surveys have been conducted at four-year intervals since 1985/86 in a growing number of member countries (see Table 1). New countries that have joined the network for the 2017/18 survey are Azerbaijan, Georgia, Kazakhstan and Serbia.

An international protocol is developed by study members for each survey.

The HBSC international questionnaire for each survey consists of three types of questions that are used to create the national survey instrument:

- mandatory questions that each country is required to include to create the international dataset;
- optional packages of questions on specific topic areas from which countries can choose; and
- country-specific questions related to issues of national importance.

The 2017/18 survey also includes a "special focus area" that forms part of the Mandatory Questionnaire and allows more in-depth analysis of topics considered to be of particular relevance to adolescent health. The special focus area for 2017/18 is electronic media communication (EMC).

A summary of mandatory and optional questions included in the 2017/18 questionnaire is presented in Table 2. The full Mandatory Questionnaire is available in Annex 1.

A school-level questionnaire is also available to countries for the 2017/18 survey. This is completed by a member of the management team in schools participating in the main HBSC survey and aims to monitor school health promotion policies, processes and practices.

Through the HBSC international Mandatory Questionnaire, common data across all participating countries are collected, enabling the quantification of patterns of key health behaviours, health indicators and contextual variables.[1,2] These data allow cross-national comparisons to be made. Trend data that may be examined at national and cross-national levels are gathered with successive surveys. In addition to its research and monitoring properties, HBSC also aims to inform and influence health promotion and health improvement policies, programmes and practices aimed at young people at national and international levels.[3–7]

As Table 2 shows, survey questions cover a range of health indicators and health-related behaviours in addition to young people's life circumstances. Questions are subject to validation and piloting at national and international levels, with the outcomes being shared within the HBSC network and published internationally.[8–14] The mandatory questions provide information on: demographic factors (e.g., age, gender, socioeconomic status); social context (e.g., family, peer culture, school environment); health outcomes (e.g., self-rated health, injuries, overweight and obesity); health behaviours (e.g., eating, physical activity and toothbrushing); and risk behaviours (e.g., smoking, alcohol use, cannabis use, sexual behaviour and bullying),[6] well-being and EMC. Analysis of trends is possible as a number of these mandatory variables have remained unchanged over three or more survey cycles.

Table 1. HBSC PARTICIPATING COUNTRIES BY SURVEY YEAR

1983/84	1985/86	1989/90	1993/94	1997/98	2001/02	2005/06	2009/10	2013/14
1 England	1 Finland	1 Finland	1 Finland	1 Finland	1 Finland	1 Finland	1 Finland	1 Finland
2 Finland	2 Norway	2 Norway	2 Norway	2 Norway	2 Norway	2 Norway	2 Norway	2 Norway
3 Norway	3 Austria	3 Austria	3 Austria	3 Austria	3 Austria	3 Austria	3 Austria	3 Austria
4 Austria	4 Belgium (French)	4 Belgium[b]	4 Belgium (French)	4 Belgium (French)	4 Belgium (French)	4 Belgium (French)	4 Belgium (French)	4 Belgium (French)
5 Denmark[a]	5 Hungary	5 Hungary	5 Hungary	5 Hungary	5 Hungary	5 Hungary	5 Hungary	5 Hungary
	6 Israel	6 Scotland	6 Israel	6 Israel	6 Israel	6 Israel	6 Israel	6 Israel
	7 Scotland	7 Spain	7 Scotland	7 Scotland	7 Scotland	7 Scotland	7 Scotland	7 Scotland
	8 Spain	8 Sweden	8 Spain	8 Spain	8 Spain	8 Spain	8 Spain	8 Spain
	9 Sweden	9 Switzerland	9 Sweden	9 Sweden	9 Sweden	9 Sweden	9 Sweden	9 Sweden
	10 Switzerland	10 Wales	10 Switzerland	10 Switzerland	10 Switzerland	10 Switzerland	10 Switzerland	10 Switzerland
	11 Wales	11 Denmark[a]	11 Wales	11 Wales	11 Wales	11 Wales	11 Wales	11 Wales
	12 Denmark	12 Netherlands[a]	12 Denmark	12 Denmark	12 Denmark	12 Denmark	12 Denmark	12 Denmark
	13 Canada	13 Canada	13 Netherlands	13 Canada	13 Canada	13 Canada	13 Canada	13 Canada
	14 Latvia	14 Latvia	14 Canada	14 Latvia	14 Latvia	14 Latvia	14 Latvia	14 Latvia
	15 Northern Ireland[a]	15 Northern Ireland	15 Latvia	15 Northern Ireland	15 Poland	15 Poland	15 Poland	15 Poland
	16 Poland	16 Poland	16 Northern Ireland	16 Poland	16 Belgium (Flemish)	16 Belgium (Flemish)	16 Belgium (Flemish)	16 Belgium (Flemish)
		17 Poland	17 Poland	17 Belgium (Flemish)	17 Czech Republic[c]	17 Czech Republic[c]	17 Czech Republic[c]	17 Czech Republic[c]
			18 Belgium (Flemish)	18 Czech Republic[c]	18 Estonia	18 Estonia	18 Estonia	18 Estonia
			19 Czech Republic[c]	19 Estonia	19 France	19 France	19 France	19 France
			20 Estonia	20 France	20 Germany	20 Germany	20 Germany	20 Germany
			21 France	21 Germany	21 Greenland	21 Greenland	21 Greenland	21 Greenland
			22 Germany	22 Greenland	22 Lithuania	22 Lithuania	22 Lithuania	22 Lithuania
			23 Greenland	23 Lithuania	23 Russian Federation	23 Russian Federation	23 Russian Federation	23 Russian Federation
			24 Lithuania	24 Russian Federation	24 Slovakia	24 Slovakia	24 Slovakia	24 Slovakia
			25 Russian Federation	25 Slovakia	25 England	25 England	25 England	25 England
			26 Slovakia	26 England	26 Greece	26 Greece	26 Greece	26 Greece
				27 Greece	27 Portugal	27 Portugal	27 Portugal	27 Portugal
				28 Portugal	28 Ireland	28 Ireland	28 Ireland	28 Ireland
				29 Ireland	29 United States	29 United States	29 United States	29 MKD[d]
				30 United States	30 MKD[d]	30 MKD[d]	30 MKD[d]	30 Netherlands
					31 Netherlands	31 Netherlands	31 Netherlands	31 Italy
					32 Italy	32 Italy	32 Italy	32 Croatia
					33 Croatia	33 Croatia	33 Croatia	33 Malta
					34 Malta	34 Malta	34 Malta	34 Slovenia
					35 Slovenia	35 Slovenia	35 Slovenia	35 Ukraine
					36 Ukraine	36 Ukraine	36 Ukraine	36 Iceland
						37 Bulgaria	37 Iceland	37 Luxembourg
						38 Iceland	38 Luxembourg	38 Romania
						39 Luxembourg	39 Romania	39 Armenia
						40 Romania	40 Turkey	
						41 Turkey	41 Armenia	40 Bulgaria
								41 Albania
								42 Republic of Moldova

[a] Carried out survey after scheduled fieldwork dates. [b] National data file. [c] The Czech Republic adopted a new short name, Czechia, in 2016. [d] The former Yugoslav Republic of Macedonia (MKD is an abbreviation of the International Organization for Standardization (ISO)). Note: although Albania and Bulgaria participated in the 2009/10 survey, they are not listed because the national data were not submitted to the international data centre by the deadline.

Table 2. MANDATORY QUESTIONS AND OPTIONAL PACKAGES FOR THE 2017/18 HBSC SURVEY

Mandatory questions		Optional packages	
Variable name	**Title**	**Variable name**	**Title**
Demographic factors			
sex grade monthbirth yearbirth	Gender Grade Age: month of birth Age: year of birth		
Health and well-being			
health	Self-rated health	PH1	Short depression scale
lifesat	Life satisfaction (Cantril ladder)	PH2	Sleep
headache stomachache backache feellow irritable nervous sleepdificulty dizzy	Health complaints	PH3	Sleep quality
		PH4	Medicine use
		PH5	Strengths and Difficulties Questionnaire (SDQ)
		PH6	Cohen perceived stress scale
		PH7	WHO (Five) well-being index
		PH8	Positive youth development
		PH9	Positive mental health through active engagement
		PH10	Positive mental health through sense of unity
thinkbody	Body image	PH11	Positive mental health through social self-efficacy
Health-related behaviours and BMI			
physact60	Moderate-to-vigorous physical activity (MVPA)	PA1	Screen time related sitting
		PA2	Wearables
		PA3	Active travel to school
		PA4	Environmental factors
timeexe	Vigorous physical activity (VPA): frequency	PA5	Motivations
breakfastwd breakfastwe	Eating breakfast • weekdays • weekend	ED1	Food frequency
fruits_2 vegetables_2 sweets_2 softdrinks_2	Food consumption frequency	ED2	Weight reduction behaviours
fmeal	Family meals (N)	ED3	Food-related lifestyle aspects
toothbr	Toothbrushing frequency	ED4	Body image
bodyweight bodyheight	Body mass		

Table 2. MANDATORY QUESTIONS AND OPTIONAL PACKAGES FOR THE 2017/18 HBSC SURVEY (contd)

Mandatory questions		Optional packages	
Variable name	**Title**	**Variable name**	**Title**
Health-related behaviours and BMI (contd)			
smokltm smok30d_2	Smoking in lifetime Smoking in last 30 days	RB1	Smoking at present
		RB2	Number of cigarettes smoked in last 30 days
		RB5	Use of electronic cigarette
		RB6	Use of water pipe
alcltm alc30d_2	Alcohol in lifetime Alcohol in last 30 days	RB3	Beverage-specific frequency of alcohol use
drunkltm drunk30d	Drunkenness in lifetime Drunkenness in last 30 days	RB4	Drinking motives
cannabisltm_2 cannabis30d_2	Cannabis use in lifetime (*) (**) Cannabis use in last 30 days (*) (**)	RB7	Frequency of substance use in last 12 months
		RB8	Illicit drug use in lifetime
		RB9	Peer substance use
		RB10	Adolescent gambling
School setting			
likeschool	School engagement	SC1	School related competence/autonomy
schoolpressure	School: effort/demands	SC2	School related reward
studtogether studhelpful studaccept	Student support	SC3	Participation/theory of organised participation
teacheraccept teachercare teachertrust	Teacher support		
Violence and injuries			
bulliedothers beenbullied cbulliedothers cbeenbullied	Bullying perpetration Bullying victimisation Cyberbullying perpetration (N) Cyberbullying victimisation (N)	VIP1	Serious injuries (past 12 months)
		VIP2	Specific forms of bullying perpetration and victimisation
		VIP3	Suicidal ideation and behaviour
fight12m	Frequency of physical fighting	VIP4	Violence (physical fighting and weapon carrying)
injured12m	Frequency of medically treated injuries	VIP5	Child abuse and maltreatment
Peer culture			
friendhelp friendcounton friendshare friendtalk	Peer support	PC1	Social competencies: trust and empathy

Table 2. MANDATORY QUESTIONS AND OPTIONAL PACKAGES FOR THE 2017/18 HBSC SURVEY (contd)

Mandatory questions		Optional packages	
Variable name	**Title**	**Variable name**	**Title**
Electronic Media Communication (Special Focus Area)			
emconlfreq1 emconlfreq2 emconlfreq3 emconlfreq4	Frequency of online contact with friends and others (N)	EMC1	Fear of missing out
emconlpref1 emconlpref2 emconlpref3	Preference for online social interaction (N)	EMC2	Internet gaming disorder
emcsocmed1 emcsocmed2 emcsocmed3 emcsocmed4 emcsocmed5 emcsocmed6 emcsocmed7 emcsocmed8 emcsocmed9	Problematic social media use (N)		
Sexual health			
hadsex	Prevalence of sexual intercourse (*) (**)	SH1	Romantic relationships
agesex	Age of first sexual intercourse (*) (**)	SH2	First sexual intercourse
contraceptcondom contraceptpill	Contraception use at last intercourse (*) (**): • condom • birth control pill		
Family			
motherhome1 fatherhome1 stepmohome1 stepfahome1 fosterhome1 elsehome1	Family structure: main home	FC1	Current family situation
talkmother talkfather talkstepfa talkstepmo	Ease of family communication	FC2	Quality of family communication
famhelp famsup famtalk famdec	Family support	FC3	School related parental support
		FC4	Young carers
		FC5	Parental monitoring
		FC6	Family activities

Table 2. MANDATORY QUESTIONS AND OPTIONAL PACKAGES FOR THE 2017/18 HBSC SURVEY (contd)

Mandatory questions		Optional packages	
Variable name	**Title**	**Variable name**	**Title**
Social inequality			
employfa employmo employnotfa employnotmo	Parental employment	SI1	Parental education
fasfamcar fasbedroom fascomputers fasdishwash fasbathroom fasholidays	Family Affluence Scale (FAS): • car ownership • own bedroom • computer ownership • dishwasher • bathrooms • holidays	SI2	Perceived family wealth
countryborn countrybornmo countrybornfa	Country of birth (**) • Self • Mother • Father	MG1	Attitudes to migrants
		MG2	Feelings toward immigrants
		MG3	Perception of unequal treatment
Additional optional packages			
Leisure		LS1	Leisure activities
Neighbourhood		NB1	Neighbourhood social features
		NB2	Neighbourhood structural features
Disability and Chronic Conditions		CC1	Disability and chronic conditions
Gender		GD1	Gender norms
Health Literacy		HL1	Health literacy for school-aged children
Puberty		PB1	Pubertal status and timing (menarche)
Spiritual Health		SPR1	Spiritual health measure

(N) New item **15-year-olds only* ***Opt-out eligible*

The layout of national questionnaires depends on the individual country's use of optional packages and additional questions of national interest, but guidance on the overall design and balance of topic areas and some general principles are provided. For example:

- it is recommended that generic questions (such as "liking school") be placed before specific ones so that immediate responses are not influenced by reactions to questions on more specific perceptions within the same setting or context (bullying, for example);
- optional package items can be placed within the topic area following mandatory items; and
- sensitive questions in the Mandatory Questionnaire should be carefully placed to reduce their sensitivity and avoid association with other items that could influence responses.

Standard text is used for the cover of the final student questionnaires, explaining the aim of the study, the confidential nature of answers and processes to ensure confidentiality, and the option of not answering any or all of the questionnaire, and providing simple instructions on answering the questions.

Original-language and English-language versions of the final student and school-level questionnaire form part of the metadata available for each country's data file.

2. Translation

The source language for all items is English, with translations into national language(s). Accurate translation is crucial for robust cross-national comparison of survey results. The standard approach in HBSC has been to ask the same question in each country through direct translation, with adaptations permitted only when absolutely necessary for linguistic clarity. The standard method employed in the study for checking translations is a process in which the translated questions are back-translated into the source language (English) and compared against the original. This method (without additional reviewing techniques) has limitations,[15] but it identifies major errors and highlights potential discrepancies. The back-translation process has been strengthened in recent surveys by incorporating a more thorough system through which back-translations are also independently checked by a translation team specifically established for the task, followed by discussion and further review involving the researcher and translator where necessary.

New member countries carrying out the survey for the first time are required to test their translations through pilot surveys and qualitative work (such as focus groups with children). Translations are adjusted at this stage and may be further refined during the required pilot phase prior to each survey. New items are also thoroughly tested across countries in this way. Language groups have been in place from the early phase of the study, reflecting geographic zones used in the management structure: countries that include Russian-speaking populations, for example, have collaborated to work more efficiently and ensure consistency with translations.

3. Validation

HBSC is involved in a continuous process of developing and validating the research instruments. This is an important part of quality assurance, permitting robust research conclusions to be reached. Identifying and publishing the psychometric properties of HBSC instruments/items allows other studies and researchers to use the items. Validation work is ongoing within member countries, as new instruments and items are developed for each survey round. HBSC members have published validation studies on a wide range of topics over the years, including the Family Affluence Scale (FAS),[8,14,16–19] the subjective health questionnaire,[10,20,21] food frequency questionnaire,[13] self-rated health[22] and sexual health.[23]

4. Sampling

The specific population targeted for sampling (the sample frame) is young people attending school aged 11, 13 and 15 years. The desired mean age for the three age groups is 11.5, 13.5 and 15.5. A minimum of 95% of the eligible target population should be within the sample frame (+/- 6 months). Countries may choose to stratify their samples to ensure representation by, for example, geographic location, ethnic group or school type.

Cluster sampling is used, with the primary sampling unit being school class. When, due to the sampling frame, it is not possible to use classes as the primary sampling unit, schools are the primary sampling unit. Where the number of classes eligible for sampling is unknown, probability proportionate to size (PPS) sampling is used, making use of actual or estimated school size.[24] All pupils within selected classes are included in the sample. The recommended sample size for each of the three age groups is set at approximately 1500 students, the calculation assuming a 95% confidence interval of +/- 3% around a proportion of 50% and a design factor of 1.2, based on analyses of existing HBSC data.[2]

Differing school systems mean that imposing a uniform sampling approach to timing of the survey and grades/classes to be sampled from across all countries is impractical. In some countries, each age group corresponds to a single school grade, while in others a proportion may be found across grades due to students being advanced or held back. Further complications arise when the target population is split across different levels of schooling, such as primary and secondary.

To deal with this complexity, age is determined as the priority for sampling, with classes containing students of the relevant age being selected across school years. The survey is administered at different times of the academic year as appropriate to the national school system to produce samples with mean ages of 11.5, 13.5 and 15.5. Fieldwork usually lasts from one to two months in each country.

A nationally representative sample is drawn in the vast majority of countries; where a national sample is not possible, a regional sample is drawn (the minimum size of the total population for regional samples should be 1 million). A census among the relevant age groups is taken in countries where the population is sufficiently small, with all classes of young people in the relevant age groups being surveyed.

Countries are provided with sampling guidance notes and are required to submit a standardised sampling report providing comprehensive information on the strategy employed. This information is part of the metadata attached to each country's data file and the international data file. It is then collated and made available to the HBSC network by the DMC at the University of Bergen, Norway.

5. Ethical practice

HBSC research is conducted in an ethical manner that respects the dignity, safety and rights of research participants and that recognises the responsibilities of the researchers. Children's rights are specifically protected through the United Nations Convention on the Rights of the Child.[25] Article 12 addresses children's rights to express their views on all matters that affect them: it is expected that efforts be made to obtain informed consent from children involved in research projects, as well as their parents or guardians. HBSC recognises and adheres to these recommendations at each stage of the survey process.

Each HBSC country is required to:

1. ensure procedures are in place to review ethical conduct, often through an ethics committee within a university or region; where ethics committees are not in place, countries should adhere to national ethical guidelines concerning research with children and submit their protocol to any relevant board at country level;
2. make certain that any applicable legal requirements in relation to researchers working with children (such as police checks and police clearance certificates) are satisfied;
3. guarantee that study participants and their schools, parents/guardians are fully informed about the research and procedures are in place to enable them to withdraw from the study easily;
4. employ written and/or oral procedures for "informed" consent; and
5. fully document their national procedures.

Documentation is provided to inform parents/children of the ways in which confidentiality and anonymity are assured, giving details of who has access to the data and how they are stored and used. Explanations are provided in a way that children can understand. Parental (or guardian) and pupil consent is sought, as the young people involved are normally under the age of legal consent.[26] Informed consent relies on the quality of the information given and procedures in place to ensure the process is monitored. The approach typically adopted in HBSC is of "opt-out" or "passive" consent, with the option to withdraw from participation.

Instructions for those administering the survey highlight the importance of ensuring children are aware that they can choose whether or not to participate. Children are informed at the beginning of the survey that they do not have to answer questions if they do not want to.

Schools may wish to see the full questionnaire and it is useful if this is accompanied by a rationale for the study as a whole, a timescale, a description of what the study will entail in terms of time and teacher/pupil involvement, and contact details of the research team. If schools are unhappy and want to exclude certain questions, HBSC teams respect this decision and record it for data-coding purposes.

6. Survey administration

Countries use a range of procedures to administer the survey. Survey completion may be managed by researchers who visit the schools and ensure a standard protocol is followed, or instructions can be issued to class teachers, school nurses or other staff who then administer the survey. Instructions need to be clear and concise when it is not possible to oversee this process. HBSC countries may also collect the data through an online survey.

Depending on national procedures and guidelines, countries are advised to bear in mind the following recommendations:

- local authorities or education boards should be contacted before approaching schools so they are able to manage the research burden on schools (this may be a requirement in certain countries);
- a standardised instruction sheet/document for teachers (or others administering the survey) is important to ensure uniform procedures are followed; and
- it is good practice to convey survey findings to all involved in the study (schools, teachers and pupils).

7. Piloting

All mandatory and optional items in the questionnaires have been piloted within HBSC countries. Each participating country is required to carry out a pilot of their full national questionnaire prior to the survey to check for completion within given time, respondents' understanding of the items (particularly for the younger age group), appropriateness of questionnaire layout and sequencing of questions, translation issues, and provision of adequate instructions. Items are thoroughly tested in a number of countries within the study before being suggested as mandatory or optional.

8. Data management

The HBSC survey covers sensitive topics and assures anonymity to participants. All HBSC members have a responsibility to ensure information provided by young people is kept in a secure and confidential manner, and that information that could possibly lead to the identification of individuals is not available in the data file.

HBSC recommends that members be guided by the European Data Protection Directive (95/46/EC) on the protection of individuals with regard to the processing of personal data and the free movement of such data, and Organisation for Economic Co-operation and Development (OECD) guidelines on the protection of privacy and transborder flows of personal data.[27] Network members are also asked to consult the European Commission's RESPECT guidelines, which form the basis of a voluntary code of practice covering the conduct of socioeconomic research in Europe.[28]

Data files from each country are prepared in accordance with detailed guidelines on data entry, coding and data quality-checking, which are documented in the HBSC Internal Protocol. The data file is then sent to the DMC. All countries are also required to provide metadata through a web-based questionnaire from the DMC that includes items on sampling method, non-response/response rates, weighting method, ethical clearance procedures and any questionnaire deviations from the international standard version.

All data processing, including consistency checks, age-cleaning, derivation of variables and imputation, is handled centrally at the DMC. Data on young people outside the target age groups are removed and deviations from the research protocol documented, typically to make data users aware of changes to the wording of questions and/or response categories in a country. Depending on the magnitude of the deviation, the user can then choose to include or exclude items from subsequent analyses. Sample weights, primary sampling units and stratification variables are clearly identified, enabling the precision of estimates to be correctly adjusted for survey design in subsequent analyses[29] and recognising the increasing use of hierarchical modelling methods.[30]

When all national data have been accepted and processed centrally, the files are merged and the combined dataset is subjected to a further round of data quality-checking. The agreed international data file is made available to the PIs in each participating country and, subsequently, to produce the HBSC international report, international journal articles, policy reports and briefings.

The international data file is restricted to use by member country teams for a period of three years from the time it is finalised, after which the mandatory part of the data is available for external use by agreement with PIs across the study. Further details regarding data access can be found on the HBSC public website (http://www.hbsc.org). Three rounds of previous HBSC data (the 2001/02, 2005/06 and 2009/10 surveys) are published online with open access for external users via the HBSC data portal (http://www.uib.no/en/hbscdata).

9. Continuous improvements and quality-assurance procedures

Review of current practice and suggestions for improvement to ensure the highest possible data quality are part of the HBSC network's ongoing work. The development of the study's management and FG structure has aided this process. Periodic review of the Internal Protocol ensures all aspects of the study are revisited and recent advances in research methods and conceptualisation can be incorporated: previous reviews have led to substantial refinements of procedures relating to sampling, translation and data documentation and an increased emphasis on peer-reviewed publication.

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4

Engagement, policy and dissemination

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4.1

POLICY CONTEXT FOR THE HBSC STUDY: AN OVERVIEW

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4.1 POLICY CONTEXT FOR THE HBSC STUDY: AN OVERVIEW

Alemán-Díaz A, Cosma A & Molcho M

1. Policy context for the HBSC study: an overview

The HBSC study provides a solid evidence base to support the development and implementation of policies that aim to improve the health and well-being of children and adolescents. The study is set against a policy backdrop that extends from the national to the global scene, with close collaboration with WHO and the European Commission. As such, the study actively contributes to the current international agenda around the health and well-being of children and adolescents.

Collaboration between the HBSC study and the WHO Regional Office for Europe spans over three decades. The study had a direct input into the strategy document *Investing in children: the European child and adolescent health strategy 2015–2020*[1] as well as making available the data presented in the latest 2013/14 HBSC international report through the European Health Information Gateway (https://gateway.euro.who.int/en/data-sources/hbsc/) and its accompanying app, contributing to the strategy's goal to make children's lives visible.

The study has also worked with the European Commission on the production of reports[2] and most recently contributed to country fact sheets on national school food policies built by the European Commission Joint Research Centre that integrated HBSC obesity maps for 15-year-old boys and girls.[3] These profiles support the implementation of the European Union (EU) action plan on childhood obesity for 2014–2020[4] by facilitating knowledge exchange and fostering stakeholder dialogue. The inclusion of these data highlights the value of the HBSC data and expertise and their usability at EU level.

The HBSC study can directly contribute to the monitoring and evaluation of the implementation of global treaties like the United Nations Convention on the Rights of the Child[5] and strategies like the Sustainable Development Goals[6] and the WHO global strategy for women's, children's and adolescents' health for 2016–2030.[7] In addition, the focus that the HBSC study now places on child participation[8] can directly help in meeting the European regional objective of making children and adolescents visible to policy-makers and decision-makers.[1]

2. HBSC as a policy tool

There are a number of ways in which the HBSC survey can influence policy.[9,10]

First, now active in 48 member countries, the HBSC network has international data on children and young people that allow for cross-national comparisons over time. Such data can empower policy-makers through provision of evidence from which to build strategy and programmes.[11] The study also serves as a model collaborative project for generating research capacity nationally and internationally. Second, the survey has been generating research for over 30 years, thereby contributing to the scientific knowledge-base (theoretically and practically) around adolescent health. Third, by connecting HBSC data to monitoring and surveillance efforts, the HBSC study becomes the benchmark from which policy-makers and relevant stakeholders measure change to affect the health and well-being of the region's young people. Finally, the study offers advocates evidence to support causes that influence child and adolescent well-being, as well as technical advice in the interpretation of the data used.

In preparation for the launch of the 2013/14 international report,[8] HBSC worked with the WHO Regional Office for Europe to compile national case studies detailing HBSC's role at national level to affect policy. Examples from Armenia, Germany, Latvia, the Russian

Federation, Sweden and Scotland have been published, highlighting the policy-making relevance of HBSC data.[12,13] Additionally, since 2006, HBSC has been working with the United Nations Children's Fund (UNICEF) on their report cards, which are powerful advocacy tools connected to global agendas to promote child and adolescent well-being. The HBSC network provides data for these reports and collaborates with the research team in UNICEF to ensure the best use of the data, as was the case with report cards 7,[14] 9,[15] 11,[16] 13,[17] and the latest report card, 14,[18] which was launched in June 2017.

A strong collaboration exists between the HBSC study and the OECD, which has been promoting online consultations[19] on a number of topics[20–22] through its Wikiprogress site (http://wikiprogress.org/) and publishes important reports that shape the policy discourse on important global issues, most recently child well-being. Over the years, the HBSC study has provided data for OECD reports, including *Doing better for children*,[23] *Doing better for families*[24] and *Health at a glance*.[26] Representatives of the HBSC network were invited to OECD events,[26] including the Centre for Education and Research International Conference on Education, Social Capital and Health in Oslo, Norway, 2010, in recognition of the HBSC network's status as a key stakeholder and expert on child health. The study has also contributed to the OECD/European Commission review of school surveys in Europe[27] and a more recent analysis of government welfare payments and child well-being. In seeking partnerships like these, HBSC embodies a knowledge translation role with the capacity to influence policy, programmes and practices, raising public awareness that can in turn shape the discourse around adolescent health.

The HBSC is well positioned in the world of adolescent health and has an incredible opportunity to influence policy and policy dialogue in many ways, as highlighted in this section. The study capitalises on its extensive network, wide-ranging expertise, and long-standing reputation to make its data relevant to policy dialogues on adolescence and maximise use of its findings among a wide range of policy stakeholders.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

Engagement, policy and dissemination

4.2

ACTIVE PARTICIPATION OF YOUNG PEOPLE IN THE HBSC SURVEY

Kelly C, Dzielska A, Branquinho C, Alemán-Díaz A & the HBSC Youth Engagement Advisory Group

4.2 ACTIVE PARTICIPATION OF YOUNG PEOPLE IN THE HBSC SURVEY

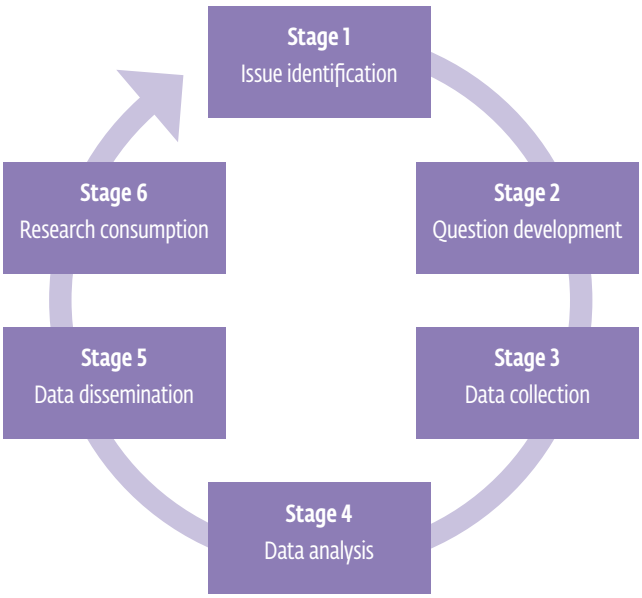
Kelly C, Dzielska A, Branquinho C, Alemán-Díaz A & the HBSC Youth Engagement Advisory Group [1]

1. Introduction

Participative research aims to engage research participants in all aspects of the research process through the development, application and investigation of appropriate mechanisms and research approaches. Youth participation refers to their active participation and real influence in the decisions that affect their lives, not to their token or passive contribution. Given that children are experts in their own lives, their active engagement in research that is relevant to them is essential.

Article 12 of the Convention on the Rights of the Child[1] states that children and young people should have their opinions taken into account in all major decisions affecting their lives. Their participation is supported by international stakeholders such as the United Nations Committee on the Rights of the Child,[2] the European Commission[3,4] and European policy,[5] and the need for active participation of young people is underscored by Positive Youth Development theory.[6] Youth engagement also results in important and positive impacts on the community, organisations, institutions, adults and, especially, young people.[7,8] The HBSC network, in support of these aims, seeks to make youth participation a standard in adolescent research (Fig. 1) and to provide example and leadership in this area.

FIG. 1. RESEARCH CYCLE



Source: Colette Kelly, youth engagement presentation, University of St Andrews, Scotland, 10 April 2013.

1 The Youth Engagement Advisory Group consists of investigators from the following countries: **Canada:** John Freeman, William Pickett, Wendy Craig; **Czechia:** Ferdinand Salonna, Jana Vocacova; **England:** Fiona Brooks, Ellen Klemera, Anthony Morgan, Josefine Magnusson, Kayleigh Chester; **France:** Emmanuel Godeau; **Ireland:** Saoirse Nic Gabhainn, Michal Molcho, Colette Kelly; **Italy:** Franco Cavallo; **Luxembourg:** Yolande Wagener; **Poland:** Joanna Mazur, Anna Dzielska, Dorota Kleszczewska, Hanna Nałęcz, Agnieszka Małkowska-Szkutnik; **Portugal:** Margarida Gaspar de Matos, Teresa Santos, Cátia Branquinho, Diana Frasquilho; **Scotland:** Jo Inchley, Candace Currie, Aixa Alemán-Díaz, Alina Cosma, Karen Hunter, Ross Whitehead, Joseph Hancock; **Slovakia:** Andrea Madarasová Gecková, Zuzana Dankulincová Veselska, Zuzana Nováková; and **Wales:** Chris Roberts.

2. Examples of youth engagement and related activities in the network

Young people's perspective on HBSC findings was included in the 2013/14 international HBSC report;[9] nationally, this has also taken place in Canada,[10] Ireland, Poland and Portugal. In Scotland, a youth report was developed based on 2013/14 data[11] and a systematic review of the benefits of involving young people in the development of programmes to secure health was conducted.[12] Teams in Czechia (*Get schools moving*), Poland (*Experts ask the young*[13]) and Slovakia (*We want to hear their voice*[14]) conducted participative workshops with young people on HBSC data. In Ireland, questions were devised by young people for inclusion in the Irish 2013/14 HBSC survey.[15] In Portugal, *Dream Teens* became a national network that gives children a voice and increases their social and civic participation.[16,17] These initiatives and activities were possible through partnerships with various government and civic organisations in different countries.

The bi-annual international HBSC network meetings have invited young people from host countries to participate since 2013. The HBSC's 30th anniversary meeting in Scotland (Spring 2013) included a dedicated youth participation day with 24 young people from five countries (Canada, Ireland, England, Scotland and Wales) attending as delegates and sharing their ideas, views and experiences.

3. Contribution to the 2017/18 HBSC survey

An online youth survey, translated into nine languages, was conducted in the summer of 2016. The survey, which asked young people to prioritise health areas and identify optimal communication channels, was promoted nationally and by a number of international youth organisations, such as the European Youth Card Association, Eurochild and participants of the Children as Actors Transforming Society conference. The survey was completed by 552 adolescents and its findings have informed the 2017/18 HBSC questionnaire.[18]

Going forward, it is intended that member countries will foster the creation of a network of active and socially participatory young people in their countries, enabling their participation in the various phases of the research process.

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5

Scientific rationales

HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

hbsc

Scientific rationales 5.1

BODY IMAGE

Ojala K & Kenny U

5.1 BODY IMAGE

Ojala K & Kenny U

1. Background

Body image has been defined as a person's mental representation of his or her body shape, form and size, and it evolves and changes under biological, psychological, social and cultural influences.[1,2] Adolescence – when rapid bodily changes occur and appearance is of importance – is a crucial period in relation to body image.

Discrepancy between self-perceived body size and desired ideal body image is considered to be at the core of body dissatisfaction.[3] Discontent with their body weight is highly prevalent among young people.[4,5] This is likely to have particular influence in adolescence, when a major developmental task is the establishment of identity. Body dissatisfaction has been found to be related to low self-esteem and other mental health problems, including eating disorders in adolescents.[6–9]

In general, overweight and obese adolescents have lower body satisfaction than their non-overweight peers.[10] Jansen et al.[10] suggest, however, that "feeling fat" is more important than "being fat" by showing that mental health indicators are more closely associated with body-weight perception than weight status. Previous studies have revealed a clear gender difference in body-weight perceptions among adolescents: girls are more likely than boys to report that their body is too fat, while boys are more likely to report that their body is too thin.[11–13] This gender difference stems from different socio-cultural expectations. The ideal female body shape is perceived as being very slim and prepubescent-like, while the ideal physique for males is also lean, but muscular and wide-shouldered.[14]

In addition to body mass, the prospective analyses of change in body dissatisfaction during adolescence among girls have reflected the contributions of appearance conversations with friends, and appearance social comparisons.[20] Similarly, social comparisons with peers, models, celebrities and athletes have been positively linked to adolescent body dissatisfaction and engagement in maladaptive health behaviours.[16] High appearance schemas, high internalisation of thin ideals, and lower autonomy have also been identified as factors that predicted worsening body image in girls.[21]

2. HBSC approach and previous work

Body image is a complex psychological construct that involves body-related thoughts, beliefs, emotions and behaviours.[17] The construct of body image comprises two core facets: body image evaluation and investment. The former facet refers to a person's evaluative thoughts, beliefs and emotions about his or her physical appearance. The latter, body image investment, reflects the cognitive and behavioural importance an individual places on appearance. HBSC provides a unique opportunity to examine both body image evaluation and investment in the context of young people's everyday life in different countries. HBSC focuses on body-weight perception, as it is an important facet of body image in adolescents.

According to the international HBSC results, girls have significantly higher prevalence (~30–40%) in perceiving their body to be "too fat" compared to boys (~20%), and perceived overweight increases with age among girls.[18] Increased body mass index (BMI), a body compositional change associated with puberty, has been found to negatively influence body satisfaction among adolescent girls.[19] Whitehead et al.[5] reported that perceived overweight among girls aged 15 years remained relatively stable between 2002 and 2014, while perceived overweight in boys increased in about one third of the 33 countries studied. Psychological factors, such as body-ideal internalisation and social comparison processes, are implicated in adolescents' body image experiences.[16,20] Among adolescents, body-ideal internalisation generally involves efforts made to achieve a thin-ideal (generally among girls) and/

or a muscular and lean ideal (generally among boys), which in turn has been found to predict body dissatisfaction among both adolescent boys and girls.[21]

A variety of factors play a role in body image perception. Previous HBSC studies have shown associations between body image and puberty, BMI, subjective well-being, self-rated health, life satisfaction and happiness, emotional and physical symptoms, weight-reduction behaviour, eating habits, physical activity, risk behaviour and bullying.[4–6,11–13,22–28]

Findings from 24 HBSC countries concluded that enhanced parental communication might contribute to lower levels of body dissatisfaction in girls and that better paternal communication can help avoiding body-weight dissatisfaction in boys.[29] Daily family breakfasts, family evening meals and ease of communication with parents were inversely associated with Irish adolescent boys' weight concerns.[13] With respect to social influences, Caccavale et al.[30] reported that social engagement with peers moderates the relationship between weight status and body image for adolescent girls; overweight/obese girls with more social engagement were more likely to have higher levels of body satisfaction compared to overweight/obese girls with less social engagement. In an additional study concerning peers, Kenny et al.[28] found that stronger friendship dynamics were associated with decreased levels of body dissatisfaction.

3. Objectives

The objectives are to:

- compare weight perception trends cross-nationally;
- examine weight perception in the context of a wide range of health behaviours and health outcomes;
- investigate associations, if any, between weight perception and positive health-related outcomes;
- explore the social determinants that may influence self-perceived over- and underweight perception; and
- explore the links, if any, between over- and underweight perception and positive health outcomes; that is, what social determinants are important/resilience factors?

4. Instruments

The body image item (Item box 1) measures body dissatisfaction related to self-perceived body weight.

Item box 1. Body image

Do you think your body is ... ?

◯	Much too thin
◯	A bit too thin
◯	About the right size
◯	A bit too fat
◯	Much too fat

Source: HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised: response category "I do not think about it" was removed), 2005/06, 2009/10, 2013/14.

The body image item has been included in HBSC since the 1993/94 survey, and developed internally for HBSC use. Similar kinds of questions have been used in several other health-related questionnaires. This dimension of body image has particular importance as subjective well-being and weight-reduction behaviour are highly associated with it. Body-weight satisfaction may change markedly during adolescence (especially in puberty) due to quick and significant somatic changes, so it may have an impact on mental well-being and behaviour.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

Scientific rationales 5.2

BODY MASS

Lazzeri G, Kelly C, Ahluwalia N &
the Eating and Dieting Focus Group

5.2 BODY MASS

Lazzeri G, Kelly C, Ahluwalia N & the Eating and Dieting Focus Group

1. Background

Data on weight and height are important in assessing the health of young people. BMI, calculated as weight in kg divided by height in m^2 (kg/m^2), is associated with direct measures of fatness and is a commonly employed index of adiposity (underweight, healthy weight or overweight). The use of BMI to evaluate obesity in young people is recommended by several expert groups, including the International Obesity Task Force (IOTF),[1] an expert committee on obesity treatment and evaluation[2] and WHO.[3]

In population-level health surveys, including the HBSC survey, self-reported rather than objectively measured weight and height are employed. To classify overweight in children and adolescents, a distributional approach can be used (percentiles), age and sex-specific cut-off points by Cole et al., [1,4] or the WHO BMI for age Z-scores.[3,5] In the HBSC 2013/14 international report, overweight and obesity data are presented using the WHO standards (main text) and the IOTF cut-offs (Annex).

Overweight and obesity in youth is associated with increased risk for cardiovascular disease in later years.[6] Obese children are more likely to remain obese in adulthood[7] and childhood/adolescent obesity are associated with psychosocial conditions such as depression,[8] as well as impaired health-related quality of life during adolescence and into the future.[9]

There are many behaviours and societal factors that interact to contribute to the causes of obesity.[10,11] Theoretical frameworks in behaviour change are used to plan interventions in obesity as well as socio-environmental approaches for population-based obesity prevention initiatives. Schools are an important setting in which multilevel interventions can be implemented. There is a need to better understand the relationship of overweight with demographic (such as gender and socioeconomic status (SES)), socio-environmental (including schools, bullying, social media and puberty) and lifestyle factors (diet, risk behaviours, physical activity and sedentary behaviours, for example) and HBSC has contributed to this area.[12,13]

2. HBSC approach and previous work

The HBSC survey has made a major contribution to knowledge on overweight and obesity in adolescence. Data from 25 countries from three consecutive surveys (2002, 2006 and 2010) were analysed in a recent paper.[14] In over half of the countries examined, overweight prevalence did not change during 2002–2010, but increasing overweight prevalence was noted in many eastern European countries over this time period. Overweight prevalence remained high in several countries in Europe and North America.[14] Data from the HBSC 2013/14 international report[15] showed that generally, overweight and obesity decreased with increasing age and boys tended to have significantly higher prevalence in almost all countries and regions at all ages. Increased overweight prevalence was associated with low family affluence (measure of SES) for boys in around half of countries and regions and about two thirds for girls.[15]

Many HBSC reports have focused on the association of overweight with psycho-social, behavioural and lifestyle factors. Physical inactivity and sedentary behaviours (television-watching, computer use) have been positively related to overweight in several national HBSC datasets and in the international dataset.[12,16,17]

Reported consumption of fruit, vegetables, soft drinks and breakfast have been related to overweight prevalence nationally and internationally.[12,18] A consistent negative correlation between regular breakfast consumption and overweight has been noted across

countries. In addition, dieting, bullying behaviours and perceived health have also been related to overweight in other national-level data from the HBSC survey.[19–21]

Recent analysis based on data from 34 countries from the HBSC survey showed that age at menarche was inversely associated with individual BMI and country-level overweight at age 11. Individual and country-level measures of BMI accounted for 40% of the country-level variance in age at menarche.[22]

A recent report on trends in obesity and obesity-related behaviours between 2002 and 2014 illustrates that while levels of obesity have stabilised in some countries and regions, the most marked increases are observed in eastern European countries, where levels were low in 2002.[23] Across 27 countries, the mean prevalence of obesity and overweight was 19%, with the highest levels mainly in southern European regions.[23]

3. Objectives

The HBSC study enables the investigation of the prevalence and correlates of overweight and obesity in a wide range of industrialised countries. The main objectives of these items are to:

- identify the prevalence of overweight (including obesity) among 11-, 13- and 15-year-old male and female adolescents;
- classify high-risk (obese) groups;
- describe the secular trends in overweight and examine their relationship to social and environmental factors; and
- establish associations between overweight and other health-related behaviours, psychological well-being and social factors.

4. Instruments

The purpose of this item is to calculate BMI and assess weight status of young people. Children are invited to write down their height and weight in country appropriate units (cm vs. inches, pounds vs. kg) (Item box 1). However, all the values should be finally (re)coded in cm and kg, respectively. In the HBSC survey, questions on height and weight were asked for the first time in the 1997/98 survey.

Self-reported weight and height measures, like other self-reported variables, are not as precise as objective measurements taken by trained people, are subject to random error and, more importantly, can be subject to systematic reporting bias. Validation studies have compared self-reported vs. measured heights and weights (see, for example, Elgar et al.[24]). In general, mean self-reported heights in adolescents are greater than actual heights, and mean self-reported weights in children are lower than measured weights. This leads to an underestimation of mean BMI and BMI-based classification of weight status (overweight/obese), the bias being generally greater in girls than boys and with increasing BMI values.[24] Based on Estonian data, the mean underestimation of overweight prevalence based on self-reports was small at 3.6%.[25]

Item box 1. Body mass

How much do you weigh without clothes? _____

How tall are you without shoes? _____

Source: HBSC.
HBSC surveys: 1997/98 (optional package), 2001/02, 2005/06, 2009/10, 2013/14.

There is sufficient evidence to support the use of prevalence rates for overweight and obesity derived from self-reported measures as fairly accurate proxies, particularly when such data cannot be obtained by actual measurements, and to suggest that self-reported heights and weights are suitable for identifying valid relationships in epidemiological studies.[25–27]

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

hbsc

Scientific rationales 5.3

EATING HABITS

Kelly C, Lebacq T, Kukk M &
the Eating and Dieting Focus Group

5.3 EATING HABITS

Kelly C, Lebacq T, Kukk M & the Eating and Dieting Focus Group

1. Background

Healthy eating habits during childhood and adolescence promote optimal childhood health and help prevent diseases in adulthood such as cardiovascular disease and certain cancers.[1,2] Many factors influence eating behaviours during adolescence.[3,4] The family environment and peer influences play a role in food choice as well as individual factors such as taste, food preferences and habits. Broader environmental influences such as food marketing and food environments (including school food) also influence the food adolescents consume.

Diet-related diseases such as obesity[5] are common among adolescents across the European Region. Inadequate intake of vegetables and fruits,[6,7] as well as inequalities in dietary behaviours[8,9] and obesity,[10,11] are well documented.

The HBSC study includes questions on frequency of intake of specific foods (fruit, vegetables, sweets and soft drinks), breakfast consumption and family meals. This enables comparisons across countries and regions and to study trends in eating behaviours. In 2013/14, large variations across countries and regions were found in some eating habits.[12] For example, daily fruit consumption ranged from 9% among 15-year-old boys in Greenland to 65% among 15-year-old girls in Armenia. Daily soft-drink consumption was low (below 5%) in Nordic countries and Greece, but was high in Belgium (French) Malta and Bulgaria (30%). Weekday breakfast was highest in the Netherlands and Portugal (80% or more) and lowest (under 50%) in Slovenia.[12]

The HBSC study provides key data for policy-makers; almost all Member States in the WHO European Region have government-approved policies on nutrition.[13]

2. HBSC approach and previous work

The difficulties in assessing dietary habits among children and adolescents are numerous.[14] Since the beginning of the HBSC survey, only a limited number of food frequency items, focusing on a few indicators of adolescents' diets, have been employed. Food frequency questions have been used since 1985/86, with breakfast consumption and family meals questions included since 2001/02. Across survey years, minor changes to items have been made to improve the questions if necessary.

National reports of adolescents' eating habits illustrate important areas of national interest. For example, in Greece, adolescents' eating habits are in the process of changing from more traditional to more westernised diets.[15] In Ireland, rates of food poverty were high and not associated with social class.[16] Associations between irregular meal consumption and low frequency of fruit and vegetable consumption was found in Denmark.[17] In Greenland, factors such as availability, cost and seasonal variation were found to be important to the intake of both imported and traditional Greenlandic foods.[18] Frequency of soft-drink and energy-drink consumption in Slovakia was high, especially among boys and in older schoolchildren.[19]

Cross-country comparisons of the dietary habits of adolescents are the hallmark of the HBSC study. The 2013/14 data,[12] supported by previous survey cycles, illustrate that: daily fruit consumption decreases with age for boys and girls; girls tend to consume more fruit than boys; and girls and boys from high-affluence families are more likely to eat fruit daily. Daily soft-drink consumption increases with age, particularly in boys, and adolescents from low-affluence families are more likely to report daily soft-drink consumption, although the reverse is true in a few countries and regions. With respect to breakfast consumption, findings from the 2013/14 study[20]

as well as previous HBSC surveys show that: daily consumption decreases with age; boys are more likely than girls to consume breakfast daily; and young people from high-affluence families are more likely to eat breakfast daily. The 2013/14 international report[12] also revealed that the prevalence of adolescents eating evening meals with both or one parent every day decreased with age, with little difference found between boys and girls. Daily evening meals with parents also tend to be more common among adolescents from high-affluence families.

Several papers report trends in adolescents' dietary habits based on national HBSC surveys (including Greenland,[21,22] Denmark,[23] Poland,[24] Nordic countries[9] and Lithuania[25]). Internationally, the HBSC data reveal an improvement in adolescents' fruit and vegetable intake between 2002 and 2010, but further increases are still needed, as a substantial proportion of young people still do not meet recommended intakes.[26] The overall trends in daily breakfast are less clear: although the prevalence increased in a few countries from 2002 to 2010, others reported a decrease or little change.[20]

A recent report on trends in obesity and obesity-related behaviours[27] across 32 countries and regions illustrates decreases in daily consumption of sugary soft drinks and sweets between 2002 and 2014 (29% in 2002 to 18% in 2014, and 30% in 2002 to 24% in 2014, respectively). Among 36 countries, a very small yet statistically significant increase in daily fruit (from 34% to 37%) and daily vegetable (from 30% to 35%) intakes was seen between 2002 and 2014. Overall decreases in inequalities in these food items were observed but were mainly a result of improvements in consumption among high-affluence families.

3. Objectives

The objectives are to:

- investigate a selection of dietary indicators of adolescents' food habits;
- examine cultural variation in consumption frequency of different food items;
- consider food habits in the context of other health behaviours and outcomes; and
- study trends and inequalities in food-related behaviours

4. Instruments

In the 2017/18 HBSC survey, eating habits are measured by three different questions: breakfast consumption (Item box 1), food frequency (Item box 2) and family meals (Item box 3).

4.1 Breakfast consumption

The purpose of this item is to assess the frequency of consumption of breakfast during weekdays and weekend days. The item was introduced for the first time in the 2001/02 HBSC survey.

According to a validation study conducted in 2004/05 and based on test-retest and seven-day diaries among adolescents in Belgium (Flemish), Finland and Italy, test-retest kappa statistics of daily consumers versus less than daily consumers were strong (Belgium (Flemish): week 0.71; weekend 0.60; Italy: week 0.71; Finland: week 0.78; weekend 0.58). Kappa statistics comparing the daily consumption of breakfast according to the diaries in the Flemish population were fair for the weekend (0.34) and moderate for the weekdays (0.47).[28,29] In addition, a study conducted among Danish students in 2012 showed good-to-moderate agreement for the breakfast measure: percent agreement 0.70–0.87, kappa 0.43–0.65.[30]

Item box 1. Breakfast consumption

How often do you usually have **breakfast** (more than a glass of milk or fruit juice)?
*Please tick one circle for **weekdays** and one circle for **weekend**.*

Weekdays	Weekends
○ I never have breakfast during the week	○ I never have breakfast during the weekend
○ One day	
○ Two days	○ I usually have breakfast on only one day of the weekend (Saturday OR Sunday)
○ Three days	
○ Four days	○ I usually have breakfast on both weekend days (Saturday AND Sunday)
○ Five days	

Source: HBSC.
HBSC surveys: 2001/02, 2005/06, 2009/10, 2013/14.

4.2 Food frequency

This item (Item box 2) is designed to measure the frequency of consumption of specific food items. It does not assess portion size of foods or specific nutrients. Questions on food frequency were introduced in the 1985/86 HBSC survey. There have been changes over time to the food items listed and to the response options. In summary, the data from 2001/02 and onwards are not comparable to previous years.

A validation study conducted in 2004/05 and based on test-retest and seven-day diaries among Belgian and Italian schoolchildren found Spearman's correlations between the Food Frequency Questionnaire (FFQ) items and the diary ranging from −0.13 to 0.67. This study indicated that overestimation must be considered when the FFQ tool is used for estimating consumption frequencies.[28] In addition, the ability to rank individuals varies considerably between food items.

Item box 2. Food frequency

How many times a week do you usually eat or drink ... ?
Please tick one circle for each line.

	Never	Less than once a week	Once a week	2-4 days a week	5-6 days a week	Once a day, every day	Every day, more than once
Fruits	○	○	○	○	○	○	○
Vegetables	○	○	○	○	○	○	○
Sweets (candy or chocolate)	○	○	○	○	○	○	○
Coke or other soft drinks that contain sugar	○	○	○	○	○	○	○

Source: HBSC.
HBSC surveys: 1985/86, 1989/90, 1993/94, 1997/98, 2001/02 (revised: response categories expanded; "raw" and "cooked" vegetables combined into one item, "vegetables"), 2005/06, 2009/10, 2013/14.

4.3 Family meals

An item to assess family meals (breakfast and evening meals separately) with six response options was mandatory as of 2009/10. For the 2017/18 survey, however, it was decided to include only one question about the frequency of having meals together with the family. The goal of this item is to assess the frequency of shared meals with the family (Item box 3).

Validation studies still need to be conducted for this revised family meal item. Regular family mealtimes (most days) may be of interest in many research studies, although those who "never" eat together may also be considered at risk and of interest.

Item box 3. Family meals

How often do you and your family usually have meals together?

- ◯ Every day
- ◯ Most days
- ◯ About once a week
- ◯ Less often
- ◯ Never

Source: Twenty-07 Study (1986).
HBSC surveys: 2001/02 (optional package: item FC37), 2013/14 (optional package).

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

Scientific rationales 5.4

ORAL HEALTH

Honkala S

5.4 ORAL HEALTH

Honkala S

1. Background

Oral diseases are very prevalent worldwide, causing pain, discomfort, increasing absenteeism from school and/or work and reducing quality of life. According to the Global Burden of Disease 2010 study, untreated caries in permanent teeth was the most prevalent of the 291 most common diseases and injuries.[1] Severe periodontitis and untreated caries in deciduous teeth were also among the 10 most common diseases.[1] Treatment of oral diseases carries significant financial costs annually.

The most common oral diseases, caries and periodontal diseases, could be prevented by the adoption of healthy behaviours. Removal of dental plaque by toothbrushing twice a day has been accepted as the international recommendation for maintaining good oral hygiene and periodontal health.[2] Dental caries and erosion of the teeth can be prevented by using fluoride toothpaste when brushing twice a day[3,4] and restricting the frequency of between-meal sugar consumption.[3]

Toothbrushing habits are established quite early in life, and thus family, especially parents, play a dominant role in encouraging the adoption of brushing habits in their children.[5] Adolescents who brush more frequently seem to have more favourable oral hygiene conditions.[6]

Poor oral hygiene has been shown to be associated with higher levels of cardiovascular diseases, inflammation,[7] diabetes and hypertension,[8] and metabolic syndrome.[9] Smoking is one of the most common risk factors for chronic diseases and a leading cause of preventable deaths.[10] Smoking harms nearly every organ of the body[10] and is considered a major risk factor for poor periodontal health.[11] Irregular toothbrushing has been shown to be related to smoking.[12]

2. HBSC approach and previous work

Previous results from the HBSC study show that the prevalence of recommended toothbrushing is more frequent among girls, adolescents who perform well at school, who live in affluent families, and whose parents have high occupational status.[13–18] Toothbrushing frequency varies considerably between countries. For example, among 15-year-old boys, 28% in the Republic of Moldova and 79% in Switzerland reported brushing more than once a day.[17] The corresponding figures for girls were 41% and 91%, respectively. Prevalence was higher among 15-year-old girls than 11-year-olds in about half of the studied 42 countries and regions.[17] Among boys, toothbrushing tended to decrease with age.[17]

In recent years, a positive increasing trend was found in toothbrushing frequency in most of the countries and regions, and differences between the countries had diminished.[16] The increasing trend was stronger among boys and younger adolescents,[16] but adolescents in most of the countries and regions lagged far behind the recommended twice-a-day toothbrushing frequency.[16,17]

In Scotland, family structure has been shown to be significantly associated with girls' toothbrushing habits.[5] Family-related factors, parental monitoring and parental attachment (bonding) were strongly associated with toothbrushing frequency in Finland.[19] A recent study from Denmark showed that migration status (non-Danish origin) increased the rate of infrequent toothbrushing.[18]

3. Objectives

The objectives are to explore the associations between toothbrushing and:

- smoking;
- health complaints and self-rated health;
- life satisfaction; and
- family culture.

4. Instruments

The mandatory question about oral health focuses on frequency of toothbrushing. It has remained unchanged since the first study of the HBSC survey (Item box 1).[20] In Finland, this same question has been used since 1977 in the nationwide research programme, the Adolescent Health and Lifestyle Survey, which has been conducted every second year. The reliability and validity of the question with all five answering options have been tested several times and have been shown to be good.[21,22]

In analyses and reported findings, the most common cut-off point has been more than once a day. This mirrors the international recommendation of twice-a-day toothbrushing frequency. Very few people brush more often, and doing so does not increase the health effect.

Item box 1. Toothbrushing

How often do you brush your teeth?

◯	More than once a day
◯	Once a day
◯	At least once a week but not daily
◯	Less than once a week
◯	Never

Source: HBSC.
HBSC surveys: 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales 5.5

FAMILY CULTURE

Tabak I, Klemera E, Orkenyi A, Moreno C, Zaborskis A, de Roos S & the Family Culture Focus Group

5.5 FAMILY CULTURE

Tabak I, Klemera E, Orkenyi A, Moreno C, Zaborskis A, de Roos S & the Family Culture Focus Group

1. Background

The family provides the primary developmental and social framework in which children learn and establish values and norms. Family life is increasingly being understood as a key mechanism through which the health and well-being of young people is mediated. Research has identified that family structure and family dynamics have a clear influence on adolescents' development, life chances and health behaviour.[1]

HBSC has adopted an ecological systemic perspective to describe the family life of adolescents, including the composition of the family and family functioning affecting quality of communication with parents, parenting support, family activities and overall satisfaction with family atmosphere. These topics represent how much families influence adolescents' health and well-being, their healthy and risk behaviours.

The HBSC Family Culture Focus Group has produced an extensive body of research that highlights the significance of family functioning and communication patterns for adolescents' health outcomes. HBSC work has contributed to demonstrating that family dynamics can operate as health assets in terms of maintaining health and protecting against risk behaviours.[1]

2. HBSC approach and previous work

Results from the 2013/14 HBSC survey show that the majority of children in all HBSC countries and regions live with both their parents, followed by children living in single-parent homes, step-parent homes and other situations.[2] Relationships between family structure and young people's participation in risk behaviours have been examined both at national and international level. Research has identified an association between reconstituted families or stepfamilies and increased prevalence of risk behaviours.[3,4] Conversely, living with both biological parents was found to be protective against risk behaviours such as early sexual initiation[5] and suicidal behaviours.[6]

Previous HBSC work indicates that young people find it easier to communicate with their mothers than fathers, and that ease of parental communication decreases with age.[2] HBSC findings show that positive family communication is a protective factor against engaging in risk behaviours such as smoking,[4] drinking, using cannabis, early sexual[5] or suicidal behaviours.[6] Similarly, previous research confirmed the value of communication in the family for health, well-being and life satisfaction.[7] Easy communication with parents buffers the negative association between electronic media use and life satisfaction.[8] HBSC trend analyses since 1994 reveals that in most countries and regions, the proportion of adolescents reporting difficulties in communication with parents increased from 1993/94 to 1997/98, then decreased afterwards.[9] From 2002 to 2010, a positive trend was observed for ease of communication with father for both boys and girls, and for ease of communication with mother for boys only.[9]

Results of the 2013/14 HBSC survey show age and gender differences in perceived family support, with boys reporting higher support than girls in the 13- and 15-year-old age groups. Family support also decreases with age.[10] An analysis of Polish adolescents indicates that family support is related to other indicators of family relationships and to young people's life satisfaction,[11] and has a protective role against multiple recurrent health complaints related to school stress.[12]

3. Objectives

The objectives are to:

- describe the configuration of the family (intact, single-parent, stepfamily, other) and analyse how differences in family structure may introduce variations in children's living conditions in different cultural contexts;
- identify and provide a description within each family structure of the resilience factors making possible an effective family dynamic, by age and gender;
- identify cultural, gender and age differences in communication with parents and step-parents and its association with adolescents' health, life satisfaction and health behaviours;
- identify trends over time in young people's experiences of parental communication and support; and
- provide information on family dynamics in relation to social support, its relationship with structural features of the family, young people's health and health behaviours, by age and gender.

4. Instruments

4.1 Family structure

Family structure (Item box 1) has been included in the HBSC questionnaire since the early years of the study, but the format of the question has changed over time. The current family structure items were introduced in the 2005/06 survey and are designed to be sensitive to the fact that family structures are varied. The word "partner" was added for the 2017/18 survey to be more inclusive around possible home environment situations.

Item box 1. Family structure

All families are different (for example, not everyone lives with both their parents, sometimes people live with just one parent, or they have two homes or live with two families) and we would like to know about yours.

Please answer this first question for the home **where you live all or most of the time** and tick the people who live there.

◯	Mother
◯	Father
◯	Stepmother (or father's girlfriend/partner)
◯	Stepfather (or mother's boyfriend/partner)
◯	I live in a foster home or children's home
◯	Someone or somewhere else (e.g., siblings, grandparents). *Please write it down* _____

Source: HBSC.
HBSC survey(s): 2001/02, 2005/06 (revised), 2009/10, 2013/14. Revised for 2017/18 HBSC survey (response categories "grandmother" and "grandfather" were removed). Note that "partner" was added for 2017/18 survey.

4.2 Ease of communication

These four items (Item box 2) are designed to measure perceived ease of communication with mother, father, stepmother and stepfather. The items were developed internally for the HBSC study in 1985/86. The word "partner" was added for the 2017/18 survey to be more inclusive around possible home environment situations.

The full scale and a shortened version were validated in Poland with 6162 students (age 11–17 years, mean age 14.7). The results showed that both the full clear communication scale (11 items) and the four-item short version have very good reliability.[13] In England in 2012, young people appeared strongly supportive of this question: focus groups undertaken with young people aged 11, 13 and 16/17 expressed a preference for this question in terms of an ability to address and access the reality of family life.[14]

Item box 2. Ease of communication

How easy is it for you to talk to the following persons about things that really bother you?
Please tick one circle for each line.

	Very easy	Easy	Difficult	Very difficult	Don't have or see this person
Father	○	○	○	○	○
Stepfather (or mother's boyfriend/ partner)	○	○	○	○	○
Mother	○	○	○	○	○
Stepmother (or father's girlfriend/ partner)	○	○	○	○	○

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14. Note that "partner" was added for the 2017/18 survey.

4.3 Family support

In collaboration with the Peer Culture Focus Group, the 2013/14 survey included two subscales of the Multidimensional Scale of Perceived Social Support (MSPSS)[15]: family (FA) and friends (FR). Items on family support (Item box 3) measure the perceived availability of emotional support and help within the family.

The MSPSS has shown good validity and reliability. Its length and incorporation of a friends and family scale have been shown to have applicability to adolescents in various populations (such as age groups and ethnic backgrounds). Furthermore, it has shown to correlate to external concepts such as depression, anxiety, family care, and resilience. The MSPSS has been validated and used in a wide variety of studies.[15,16]

Item box 3. Family support

We are interested in how you feel about the following statements.
Please show how much you agree or disagree with each one.
Please tick one circle for each line.

	Very strongly disagree	2	3	4	5	6	Very strongly agree
My family really tries to help me	○	○	○	○	○	○	○
I get the emotional help and support I need from my family	○	○	○	○	○	○	○
I can talk about my problems with my family	○	○	○	○	○	○	○
My family is willing to help me make decisions	○	○	○	○	○	○	○

Source: adapted from: Zimet G, Grodaon K. The Multidimensional Scale of Perceived Social Support. J Pers Assess. 1988;52(1):30–41.
HBSC survey(s): 2013/14.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales 5.6

PEER CULTURE

Lenzi M, Boniel-Nissim M, Gommans R, Matos MG & the Peer Culture Focus Group, in collaboration with Brooks F & the Family Culture Focus Group

5.6 PEER CULTURE

Lenzi M, Boniel-Nissim M, Gommans R, Matos MG & the Peer Culture Focus Group, in collaboration with Brooks F & the Family Culture Focus Group

1. Background

Adolescence is a stage of development when family relationships change and peer relations become more intense and extensive. During this time, peers become increasingly important in helping each other to define their identities, and develop personal and social competencies.[1] Adolescents' social lives and perceptions of belonging have been found to relate to health as well as to perceptions of well-being and quality of life.[2] Having good peer relationships is therefore indicative of adolescent health and well-being.[3] Peer groups are an important source of support and guide social learning. During this period, adolescents are not only dealing with changes in their school environment, but also with transformations in their bodies, emotions and social relationships. In this developmental stage, peer support has a critical role in impacting adolescent psychosocial well-being.[4]

From a social learning theory point of view, peer relations provide an advantageous context in which skills relating to empathic capacity, the adoption of others' perspectives, communication, cooperation, and the management and resolution of conflicts can be learned. Children without friends have fewer opportunities to learn social skills and their difficulties in relating to others can perpetuate their isolation; friendship provides a supportive context for self-exploration and emotional growth.[3] More specifically, in relation to social support, Ecological Systems Theory[5] states that peer support fosters the transmission of social norms promoting mutual help and pro-social behaviour within the group. Moreover, according to the Stress-Buffering Theory,[6] social support protects people from the negative effects of stressful events or situations; at the same time, in line with the Relational Regulation Theory, social support contributes to promoting mental health regardless of stress levels.

An in-depth understanding of the mechanisms and processes through which peers promote change in adolescents' health attitudes and behaviours (positively and negatively) is fundamental in order to develop policies promoting adolescent well-being and preventing risk behaviours.

2. HBSC approach and previous work

Previous HBSC studies have examined the links between peer relationships and adolescent well-being. In a recent study on Portuguese adolescents,[7] findings showed that adolescents' health was influenced by their relationship with their peers. When communication with peers was easy, young people reported to be more satisfied with life and have fewer health complaints. Cristini et al.[8] compared the influences of different sources of social support (parents and friends) with respect to early adolescents' psychosocial well-being. Results showed that older boys and girls perceived less social support from parents and more from friends (measured by ease of communication), with the latter being a stronger protective factor against life dissatisfaction and psychological symptoms.

The relationship between family and peer support was investigated by Vieno et al.[9] They investigated influences of different sources of social support (parents and friends), a sense of school community and self-efficacy on psychosocial well-being (measured by self-reported life satisfaction and psychological symptoms) in an integrative model. Self-efficacy and a sense of school community were found to mediate the association between social support from parents and peers and psychosocial adjustment. Friends' support (measured by ease of communication, number of friends and time spent with friends) positively related to psychosocial well-being both directly and indirectly through its links to self-efficacy and sense of school community.

In relation to risk behaviours, Gaspar and Matos[10] studied tobacco and alcohol use, number of friends and perceptions of happiness, and concluded that having fewer friends relates to more smoking and alcohol use, and unhappiness. However, in a recent study on socioeconomic inequalities in adolescent smoking,[11] poorer relationships with peers and having fewer close friends were associated with lower levels of weekly smoking, maybe due to reduced opportunities to smoke and lower perceived peer pressure. In line with these findings, Kuntsche & Delgrande Jordan[12] found that for both cannabis use and drunkenness, individual substance use was strongly associated with having substance-using peers.

3. Objectives

The HBSC study aims to improve the attention paid to peer culture and develop valid, age-appropriate instruments with which to better understand the social lives of adolescents and their links to health behaviours, health outcomes and well-being. The main objectives are to:

- evaluate the role of peer support in protecting adolescents from health-risk behaviours and psychosomatic symptoms, and in promoting psychological well-being (such as life satisfaction);
- evaluate the direct and indirect effect of peer support on adolescent well-being (by buffering the negative influence of school stress on psychosomatic symptoms, for example);
- investigate gender, age and socioeconomic status differences in peer support;
- analyse the combined effect of peer and parental support on adolescent well-being (by evaluating the continuity/cognitive model and the compensatory/competition model); and
- analyse the association between country-level variables (such as income inequality and generalised trust) and peer support.

4. Instruments

Within the HBSC survey, peer support is measured through a subscale of the MSPSS.[13] These items were introduced for the first time as part of the 2013/14 HBSC survey, in collaboration with the Family Culture Focus Group, which has included the family scale of the MSPSS in its protocol. The peer support and family support questions are to be combined into a single question, with family support questions coming first and peer support second.

The MSPSS was originally developed and tested on university students[14] and later validated in a wide range of samples (including adolescents, pregnant women and older adults).[15,16] The MSPSS is intended to measure three sources of support: family (FA), friends (FR), and significant other (SO). Because of its length (12 items in total), the scale is ideal for cross-national studies that require assessment of multiple variables. Its items are easy to understand (requiring fourth-grade reading level) and therefore suitable for young people or populations with limited literacy.

Several studies have confirmed the reliability and validity of the scale, especially with respect to the "friends" and "family" subscales. Data from Scottish validation work (which included a test-retest) have been analysed. Principle component analysis confirmed the three-factor solution found in previous studies, for both Time 1 (T1, N=553) and Time 2 (T2, N=217), explaining 77.8% and 74.8% of variance respectively. Cronbach's alphas showed strong internal validity for all scales: Family: T1 .90, T2 .85; Friends: T1 .91, T2 .90; significant other: T1 .89, T2 .89. Correlation coefficients indicated adequate-to-strong test-retest reliability for the scales.

Item box 1. Peer support

We are interested in how you feel about the following statements.
Please show how much you agree or disagree with each one.
Please tick one circle for each line.

	Very strongly disagree	2	3	4	5	6	Very strongly agree
My friends really try to help me	○	○	○	○	○	○	○
I can count on my friends when things go wrong	○	○	○	○	○	○	○
I have friends with whom I can share my joys and sorrows	○	○	○	○	○	○	○
I can talk about my problems with my friends	○	○	○	○	○	○	○

Source: adapted from: Zimet G, Grodaon K. The Multidimensional Scale of Perceived Social Support. J Pers Assess. 1988;52(1):30–41.
HBSC survey(s): 2013/14.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales

5.7

5.7 PHYSICAL ACTIVITY

Bucksch J, Sigmund E, Badura, P, Tesler R, Ng K, Inchley J, Tynjala J, Salonna F, Nalecz H, Hamrik Z & the Physical Activity Focus Group

5.7 PHYSICAL ACTIVITY

Bucksch J, Sigmund E, Badura, P, Tesler R, Ng K, Inchley J, Tynjala J, Salonna F, Nalecz H, Hamrik Z & the Physical Activity Focus Group

1. Background

Physical activity (PA) in childhood is important for maintaining energy balance and helping develop bone strength, as well as reducing the risk of chronic diseases such as high blood pressure, high blood cholesterol, metabolic syndrome, low bone density and depression in adulthood.[1] Regular PA prevents obesity, reduces body weight[1,2] and contributes to good mood, life satisfaction and better overall mental health.[3,4]

During the last decade, the prevalence of habitual PA has remained relatively stable, but the majority of adolescents do not meet current PA recommendations.[5,6] Concurrently, obesity in school-aged children and adolescents has been rising[7] and has reached an historically high plateau.[8] These findings indicate that action needs to be taken on an international level to reduce adolescent obesity through implementing effective interventions to foster physical activity in conjunction with promoting appropriate eating habits and reducing screen-time behaviours.[9]

Despite positive developments with regards to national PA policies or action plans,[10] more efforts are required to improve PA surveillance, research and the amount of high quality PA interventions, especially in low- and middle-income countries.[11] As correlates and determinants of adolescent PA include demographic and biological factors (younger age, male gender), psychological factors (e.g., high self-efficacy, positive motivation), behavioural attributes and skills (e.g., motives, traits, knowledge) social and cultural factors (exercise and PA role models, social support from family, friends and peers) and physical environment factors (e.g., access to open space – parks, trails, green spaces – and access to shops, services and jobs within walking distance), a socio-ecological approach is recommended to develop effective interventions.[11]

2. Objectives

The purpose of assessing and monitoring PA in the HBSC population is to:

- determine the proportion of adolescents who meet the current recommendation for daily PA, by age and gender;
- determine the frequency of leisure-time vigorous physical activity (VPA);
- follow and describe trends in adolescent PA;
- identify correlates and determinants of moderate-to-vigorous physical activity (MVPA) and VPA;
- investigate health outcomes associated with PA and physical inactivity; and
- explore the clustering of energy balance-related behaviours (PA, screen-time behaviours, sleep and dietary patterns).

3. HBSC approach and previous work

The HBSC study has extended the current state of the PA literature and examined a broad spectrum of topics, including trends, prevalence, correlates/determinants and associations with health outcomes.[6,7,12–15] Age, gender and socioeconomic differences in PA, as well as potential mediating relationships between these influences on PA, have been studied.[14,15] Recently, items measuring MVPA and VPA have been used to assess sleep quality[16,17] and the influence of socioeconomic status on health behaviours.[18]

The MVPA items, introduced into the study in 2001/02, have been used to examine patterns of overweight and obesity[19] as well as health complaints.[21] Social correlates of PA and relationships between PA and other health behaviours and health risks were also

examined.[20-22] Other HBSC research examined influences on participation in sport and exercise and social reproduction of PA,[23] as well as associations with well-being[24] and motives for PA.[25]

It should also be emphasized that, for children and adolescents, the school is a particularly important setting for the promotion of PA. Recent HBSC research has found, for example, that the total amount of PA is positively related to the allocation of physical education classes and the number of extracurricular school sports clubs. Moreover, perception of residential neighbourhood safety and the percentage of streets with pavements were also related to adolescents' active travel to school.[26,27]

4. Instruments

Two items measuring PA are included as mandatory in the 2017/18 survey: one investigates MVPA and the other VPA. It is important to recognise that MVPA and VPA represent two distinct constructs expressing different behavioural patterns associated with different outcomes.[28]

4.1 MVPA

The MVPA item has been included in the HBSC as a mandatory question since the 2001/02 survey. It is used to identify compliance with current PA recommendations.[29]

The MVPA item was adapted for use in the HBSC study from the item developed by Prochaska et al.[30] for the purposes of clinical practice with adolescents. The authors validated it against seven-day continuous measurement using an accelerometer (r=0.40, p<.001) and observed its substantial test-retest stability (intraclass correlation coefficient (ICC)=0.77).[30] Similarly, test-retest stability was found to be acceptable in the samples of Finnish[31] (ICC=0.6-0.8), Chinese[32] (ICC=0.82), and Czech, Slovak and Polish[33] (ICC=0.6) 11–15-year-olds. Moreover, the authors of an Australian study concluded that the self-reported MVPA index had an acceptable validity for measuring non-compliance with physical activity recommendations in 15–17-year-old adolescents. Comparing five days of valid accelerometer wearing time, the specificity for meeting current MVPA guidelines assessed by the MVPA index ranged from 60.8% (for boys) to 79.7% (girls).[34]

Item box 1. MVPA

Physical activity is any activity that increases your heart rate and makes you get out of breath some of the time. Physical activity can be done in sports, school activities, playing with friends, or walking to school. Some examples of physical activity are running, brisk walking, rollerblading, biking, dancing, skateboarding, swimming, soccer, basketball, football and surfing [country-specific examples can be given].

Over the **past 7 days**, on how many days were you physically active for a total of at least **60 minutes** per day?
*Please **add up** all the time you spent in physical activity each day.*

0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
○	○	○	○	○	○	○	○

Source: Prochaska JJ, Sallis JF, Long B. A physical activity screening measure for use with adolescents in primary care. Arch Pediatr Adolesc Med. 2001;155(5):55–49. The original measure included two items: past 7 days and typical week. Adapted for use in the HBSC survey.
HBSC survey(s): 2001/02 (included past 7 days and typical week), 2005/06 (included only past 7 days item), 2009/10, 2013/14.

4.2 VPA

Booth et al.[35] evaluated the reliability and validity of the HBSC VPA item in a large sample of 13- and 15-year-old Australian students and showed that adolescents classified as active had higher fitness levels than those classified as inactive. Reliability of the measure was good (67% to 85%). Rangul et al.[36] found the HBSC VPA item to be reliable (ICC=0.71) and its validity was classified as fair when correlated with maximal oxygen consumption – VO^2max (r=0.33). The test-retest reliability was assessed by Liu et al.[32] in China and by Bobakova et al.[33] in the three Visegrad countries (Czechia, Slovakia and Poland), resulting in the ICCs 0.68 and 0.62, respectively. In their review, Biddle et al.[37] indicated that the VPA item has strong reliability and validity. However, they noted that validity against objective monitoring of PA is lacking, because only fitness-related criterion measures have been used thus far.

The VPA frequency item was mandatory from the beginning of the HBSC study until 1997/98, and was then reinstated for the 2005/06, 2009/10 and 2013/14 surveys. The VPA item explicitly encompasses a dimension of PA as a recreational pursuit, sports or hobby to discriminate PA of vigorous intensity.

Item box 2. VPA

Outside school hours: how **often** do you usually exercise in your free time so much that you get out of breath or sweat?

◯	Every day
◯	4 to 6 times a week
◯	2 to 3 times a week
◯	Once a week
◯	Once a month
◯	Less than once a month
◯	Never

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02 (optional package), 2005/06, 2009/10, 2013/14.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

hbsc

Scientific rationales

5.8

HEALTH AND WELL-BEING

Ottova V, Vollebergh W, van Dorsselaer S, Jericek Klanscek H, Välimaa R, Gobina I, Gaspar T, Mazur J, Ravens-Sieberer U, Torsheim T & the Positive Health Focus Group

5.8 HEALTH AND WELL-BEING

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1. Background

In modern societies, the most challenging health problems can be described as problems of functional limitations rather than defined medical disease. General health, well-being and mental health are becoming more important targets for health policy.[1] Information on subjective well-being and subjective health of children and adolescents is therefore very important.

The HBSC study implements a multidimensional assessment of subjective health and well-being, including absence of distress, the presence of well-being and indicators of overall health and life satisfaction. In the Mandatory Questionnaire, "self-rated health" measures the present subjective evaluation of general health and "life satisfaction" refers to an overall assessment of life. The distress-no distress axis is covered by the Health Complaints Index.

Self-rated health (SRH) is based on an individual's perception and evaluation of his or her health, and is usually founded on age-peer comparison, either consciously or unconsciously.[2] SRH, as it is typically operationalised, covers a continuum, ranging from what has been termed "negative health" to "positive" states, depending on the overall state of the system.[3] In adolescence, health is a particularly important resource and poor health may result in long-term negative effects that may continue throughout adulthood.[4]

Life satisfaction places the emphasis on the evaluative aspects of subjective well-being and focuses on describing the overall content, not just the "health-oriented" satisfaction with life – that is, the child/adolescent's current situation. Life satisfaction, the overall evaluation of life, is an important cognitive aspect of well-being. It is a global assessment of one's life and is thought to be relatively stable over time, compared with spontaneous feelings related to one's immediate experiences.[5]

The term "subjective health complaints" (Health Complaints Index) is used to describe a variety of health symptoms experienced by the individual, which may range from occasional health complaints to clinical manifestations, and may impair everyday functioning. The term "subjective health complaints" highlights the role of personal experience and individual interpretation, which is the most important in terms of measuring the impact of health complaints to individual well-being.

Subjective health complaints tend to cluster together, and there is a high prevalence of multiple health complaints among adolescents.[6–9] Recurrent health complaints among adolescents might persist alongside, and also be associated with, other health problems later into adulthood.[10–12] During adolescence, the experience of multiple or recurrent health complaints has been associated with decreased well-being and quality of life,[7] increased demand for primary care services,[13,14] medicine use,[15] and also school absenteeism.[16]

2. HBSC approach and previous work

The 2017/18 HBSC survey includes three measures on health and well-being (SRH, life satisfaction, and health complaints).

SRH is a central outcome in HBSC publications and has been shown to be both age- and gender-specific. Cavallo et al. reported a gender-by-age interaction for SRH, with girls reporting poorer health across ages 11 to 15.[17] Kelleher et al.[18] found that adolescents with poor SRH reported more health complaints, lower life satisfaction, lower levels of physical activity, and had more difficulties making friends. Psychosocial (such as relationship with parents, close friends, classmate support, satisfaction with school) and behavioural

factors (like substance use, physical activity, consumption of fruits and vegetables and sedentary behaviour) are associated with SRH.[19–21] Multilevel analysis of students from 28 countries showed that 20–40% of health inequalities were explained separately by the psychosocial and behavioural pathways. Jointly, these two pathways accounted for 50–60% of the inequalities in SRH.[19]

Other studies report that age-related increases in poor health can be observed during adolescence.[22] Non-HBSC studies with large adolescent samples showed a strong association between negative SRH and lower cardiorespiratory fitness, higher BMI,[23] and a higher risk for school dropout and reduced work integration.[24] A study of time trends from 2002 to 2010 using HBSC data found an overall positive trend in SRH. The trend was stronger from 2002 to 2006 than from 2006 to 2010, a fact that could be attributed to the setback of the economic crisis in Europe in 2007/08.

Danielsen et al.[25] confirmed the importance of self-efficacy to students' life satisfaction. Diseth et al.[26] concluded that support from teachers was associated with self-efficacy and achievement goals, which in turn predicted academic achievement level and life satisfaction. Ravens-Sieberer et al. found a relationship between low socioeconomic status and low life satisfaction.[7] Multilevel approaches confirm the effects of national-level factors on life satisfaction, with evidence for a relationship between national income, income inequality and adolescent life satisfaction.[27]

Recent studies have also focused on the role of EMC in relation to life satisfaction. Boniel-Nissim and colleagues[28] reported weak main effects of EMC on life satisfaction. Increasing computer use was associated with lower life satisfaction; this negative impact of computer use was stronger for adolescents reporting more difficult communication with their parents. A study using German HBSC data reported significant inequalities in life satisfaction related to educational track; the association was mediated in part through health behaviours.[29]

A comparative trend study of HBSC countries and regions found variation in time trends.[30] Life satisfaction decreased from 2002 to 2010 in six western European countries and regions, but increased in the same period for a number in eastern Europe. In general, life satisfaction decreased with age and was higher among boys.

The results from the HBSC 2013/14 survey showed significant cross-national variation in the prevalence of multiple health complaints among adolescents.[9] Older adolescents and girls have increased odds of multiple recurrent health complaints[7] and a rising gap between girls and boys can be observed with age.[8] The magnitude of gender differences varies across countries, from weak in countries with a high score on the gender development index (GDI) to strong in countries with a low score on the GDI. In Sweden, girls with migrant backgrounds have increased risk of subjective health complaints compared to those with Swedish backgrounds.[31] Increased odds of multiple health complaints is associated with low SES[7,32] as well as higher income inequality (Gini Index).[33]

A multilevel study of the effect of the economic crisis in 2007 on adolescents' psychological health complaints in 2010 indicated that the negative shift of the recent recession on the employment market in several countries and regions did not affect adolescents' psychological health complaints.[34] However, the level of current youth unemployment in 2010 was related to the level of health complaints in 2010.

School-related stress and social support are consistently associated with different health complaints with a primary somatic presentation (headache, abdominal pain, backache and dizziness).[35] Shared school class contextual factors may have main and stress-moderating effects on adolescent health complaints,[36] and girls might be more affected by a higher level of school demands.[37]

An association between family and school climate and subjective health complaints has also been found.[38] Good communication with peers as well as with parents is important for the absence of psychological complaints.[39] Negative psychosocial relationships, such as reflected by the occurrence of bullying, are associated with higher odds of recurrent health complaints, regardless of whether as victim, bully or bully/victim.[40,41] Health complaints are also associated with food poverty[42] and screen-based activity.[43] In cross-country comparisons, the association is not consistent for screen-based media use and subjective health complaints.[44]

International analysis of trends from 2002 to 2010 revealed no common trend in health complaints across countries,[6] but differences between countries. A study of time trends in inequalities in health complaints found an increase in a few countries but constant inequalities for the large majority.[32]

3. Objectives

The overall objectives for positive health and well-being as they relate to SRH, life satisfaction and health complaints are described here jointly under the term "health and well-being". The aim is to:

- identify trends in health and well-being and conduct cross-national comparisons;
- explore the associations between the physical and psychological domains of health and well-being, such as differences in life satisfaction between groups of healthy and unhealthy children (according to self-reported general health);
- explore the role of social and cultural background on health and well-being, and identify similarities/differences;
- examine the role of socioeconomic and contextual factors, such as different gender role traditions at a cultural level, on adolescents' health and well-being; and
- explore the impact of national indicators, such as gross domestic product, the Gini coefficient and youth unemployment rates, on adolescents' health and well-being.

4. Instruments

4.1 SRH

Since 2001/02, the HBSC survey has included a well established measure on SRH that has proven to work well in large epidemiological surveys,[45] and now include the four response categories of excellent, good, fair and poor (Item box 1). The item has remained unchanged since the 2001/02 survey.

Item box 1. SRH

Would you say your health is ... ?

◯	Excellent
◯	Good
◯	Fair
◯	Poor

Source: Kaplan GA, Camacho T. Perceived health and mortality: a nine-year follow-up of the human population laboratory cohort. Am J Epidemiol. 1983;117(3):292–304.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.

The SRH item has not been subject to structured validation studies in the HBSC group, but several studies are relevant to supporting its validity. Publications using HBSC data show that the SRH of students is strongly associated with their socioeconomic background, and that welfare regimes are important in explaining variations in adolescent SRH across countries.[47]

Since the introduction of the item, variation in translation of "fair" has been suspected, which in some countries and regions has had a positive slant (leaning towards "excellent" and "good") while in others a negative slant, leaning towards "poor". A recent study focused on potential cross-national variation in the semantics of "fair health".[48] The analysis of HBSC data suggested huge cross-national variation in the proportion reporting "fair" health. The authors proposed two solutions to meet the methodological challenges in comparative analysis:

1) the category "fair" is combined with both "good" and "excellent" vs "poor" health; or
2) the category "fair" is combined with "poor" and "good", if the particular interest is the population reporting "excellent" health.

Independent of the semantics of "fair" health, there is convincing evidence from non-HBSC studies with large adolescent populations that SRH is a relatively stable construct over repeated observations during adolescence, and deteriorates consistently with a lack of general well-being, disability, health-care attendance and health-compromising behaviour.[49]

4.2 Life satisfaction (Cantril ladder)

In adult research, a one-item scale has proved to be a valid measurement of life satisfaction.[50] Minor wording change was conducted on the original item to facilitate its use with 11-year-olds and this revised version was piloted in five countries in spring 2001. Some design changes have been made to the presentation. The item is a measure of general life satisfaction and functions as an indicator of well-being (Item box 2). The Cantril ladder has remained unchanged since the 2001/02 survey.

Item box 2. Life satisfaction

Here is a picture of a ladder. The top of the ladder "10" is the best possible life for you and the bottom "0" is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?
Tick the circle next to the number that best describes where you stand.

○	10	Best possible life
○	9	
○	8	
○	7	
○	6	
○	5	
○	4	
○	3	
○	2	
○	1	
○	0	Worst possible life

Source: Cantril H. The pattern of human concern. New Brunswick (NJ): Rutgers University Press. 1965.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.

A recent reliability study in Scottish samples[51] found that the Cantril Ladder of Life Satisfaction showed good reliability among 11–15-year-old pupils. Among 11-year-olds, the reliability was better than that of the Students' Life Satisfaction Scale. The study also reported good convergent validity with other emotional well-being measures, perceived health and subjective health.

Observed relationships with quality of life and SRH in other studies are in the expected range, and support claims about validity. There are also results suggesting that adolescent reports correlate strongly with adult reports.[52] Analyses carried out on former HBSC surveys showed the item to be associated with the general health item and the HBSC symptom checklist.[17]

4.3 Health complaints

Subjective health complaints have been measured in all previous HBSC surveys since 1986. However, the HBSC Symptom Checklist (note: this measure is also referred to as "psychosomatic complaints") as an eight-item scale was fully developed and has remained unchanged since the 1993/94 survey.

The scale used in the HBSC study is a non-clinical measure of subjective health complaints and includes eight complaints: headache, abdominal pain, backache, feeling low, irritability or bad mood, feeling nervous, sleeping difficulties and dizziness (Item box 3).

Item box 3. HBSC Symptom Checklist

In the last 6 months, how often have you had the following ... ? *Please tick one circle for each line.*

	About every day	More than once a week	About every week	About every month	Rarely or never
Headache	○	○	○	○	○
Stomach ache	○	○	○	○	○
Backache	○	○	○	○	○
Feeling low	○	○	○	○	○
Irritability or bad temper	○	○	○	○	○
Feeling nervous	○	○	○	○	○
Difficulties in getting to sleep	○	○	○	○	○
Feeling dizzy	○	○	○	○	○

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

Haugland & Wold conducted qualitative semi-structured interviews (n=38) and a quantitative study (n=344) with early adolescents from Norway (age: 9th graders; resp. 14–16-year-olds).[53] The interviews (content validity) with pupils revealed that the presence of health complaints negatively influences subjective well-being and functioning in daily life. In these interviews, adolescents were also consistent in how they defined different symptoms, suggesting that adolescents have a common frame of reference when they rate their frequency of symptoms. In some cases, adolescents explained their symptoms consistent with a stress model of

health complaints. In other cases, adolescents attributed their health complaints to developmental processes, such as growing pains, or ergonomic factors, such as low quality of air in classrooms. The quantitative analysis of this study showed acceptable test-retest reliability for the HBSC symptom scale as a whole (Pearson-r = .79) and somewhat lower reliability for the single symptoms (Pearson-r = 0.61 to 0.76).

Although previous studies suggest that the scale reflects two facets (psychological and somatic) that might differ qualitatively,[54–56] the scale can be considered as measuring a unidimensional latent trait of psychosomatic complaints.[57] The scale is flexible in that statistical analyses are meaningful both on single-item and sum-score levels.[57]

5. References

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales

5.9

ALCOHOL USE

Van Dorsselaer S, Vieno A, Pavlova D
& the Risk Behaviour Focus Group

5.9 ALCOHOL USE

Van Dorsselaer S, Vieno A, Pavlova D & the Risk Behaviour Focus Group

1. Background

In most industrialised countries, alcohol use starts in adolescence.[1–4] From early to late adolescence, drinking and drunkenness prevalence and frequency increase dramatically.[2,5] In fact, excessive drinking and drunkenness is more common in late adolescence and early adulthood than in any other life period.[6]

Frequent and excessive drinking is associated with a range of adverse consequences,[7] including future drinking and drug use,[8] academic problems,[9] unplanned and risky sex,[10,11] motor vehicle crashes,[12] and various physical and emotional problems.[13] Many countries and regions therefore have an interest in monitoring adolescent alcohol use, identifying its associated factors, and establishing policies and programmes to limit its use.[14]

Alcohol is the most commonly used substance among post-primary-school students internationally.[15,16] The range in prevalence across countries and regions is varied, with monthly use among 15-year-olds lower than 30% in some and greater than 60% in others.[5,16] There is evidence that differences in drinking rates between adolescent boys and girls may have diminished in recent years in some countries and regions.[15,17,18]

Over the last decade, drunkenness among young people has become a major public health concern in many countries worldwide. The frequency of drunkenness has increased in some (mainly participating eastern European countries) while decreasing in others.[5]

2. HBSC approach and previous work

The HBSC study does not aim to test theories on substance use, but merely describe risk behaviour in different contexts, the main context being cross-national. Expectancy theory, which derives from social cognitive theory, has perhaps the strongest empirical base with respect to a theoretical relationship to adolescent alcohol use.[19] The basic idea is that behaviour is the product of expectations.

According to the motivational model of alcohol use,[20,21] the decision to drink or not is the result of several consecutive factors: historical circumstances (e.g., genetic disposition), personality characteristics (e.g., extraversion, sensation-seeking), sociocultural factors (e.g., drinking patterns), environmental factors (e.g., alcohol availability), situational and current factors (e.g., reinforcement from past drinking), alcohol expectancies and drinking motives. Drinking motives can be classified according to two underlying dimensions that reflect the valence (positive or negative) on the one hand, and the source (internal or external) of the outcomes individuals expect to achieve by drinking on the other.[22,23]

HBSC has published studies comparing substance use cross-nationally and describing trends over the last decades. De Looze et al.[24] examined trends in adolescent weekly alcohol use between 2002 and 2010 in 28 European and North American countries. They found that prevalence rates differed considerably across countries, showing an overall decline in alcohol consumption in most in all gender and age subgroups. Describing trends in drunkenness, Kuntsche et al.[18] observed a significant increase of about 40% in the mean frequency of drunkenness in all seven participating eastern European countries, while there was a decrease in the western European countries. Although the general pattern is that alcohol is more prevalent in boys than in girls, gender differences have become smaller over time.[5]

National studies have looked at alcohol use in different contexts: peer and school factors,[25,26] parental styles,[27,28] mental health and emotional well-being,[29,30] and motives for drinking.

3. Objectives

The objectives of the HBSC assessment of alcohol are to identify patterns of use in adolescents and associated factors by age, sex, country and time, and assess:

- frequency of alcohol use in lifetime and during the last 30 days; and
- frequency of drunkenness in lifetime and during the last 30 days.

4. Instruments

4.1 Alcohol use

Alcohol consumption is assessed using two items that measure lifetime prevalence (Item 1) and last 30 days' prevalence (Item 2) of alcohol use (Item box 1).

Item box 1. Alcohol use – lifetime and last 30 days

On how many days (if any) have you drunk alcohol? *Please tick one circle for each line.*

	Never	1-2 days	3-5 days	6-9 days	10-19 days	20-29 days	30 days (or more)
In your lifetime	○	○	○	○	○	○	○
In the last 30 days	○	○	○	○	○	○	○

Source: adapted from: HBSC survey 2009/10, European School Survey Project on Alcohol and Other Drugs (ESPAD) 2007.
HBSC survey(s): 2009/10 (response categories "times"), 2013/14 (for the 2013/14 survey, response categories were changed from "times" to "days").

The items to assess the frequency of alcohol consumption are in line with other international surveys of youth substance use (e.g., Monitoring the Future). The current items were first introduced in the 2013/14 HBSC survey when the response categories were changed from "times" to "days". A validation pilot in the Netherlands with a split half design showed only a slightly higher prevalence when using "days" rather than "times" for life-time use of alcohol (p=0.04) but no differences for 30-day alcohol use.[31]

In general, self-reported substance use is considered to be highly reliable and accurate when the questions are self-administered, anonymous and carefully administered in the school setting.[32] The lifetime drinking frequency question is important to distinguish abstainers from students who have ever consumed some alcohol. The lifetime item can also be used to further validate other alcohol use questions.

4.2 Drunkenness

Besides the average volume of consumed alcohol measured by frequency questions above, drunkenness is the second main dimension to model the relationship between alcohol consumption and outcomes such as disease.[33] Drunkenness is particularly

common among adolescents and young adults[2] and is associated with specific harmful consequences,[1] as well as the frequency of drinking and the intake of different types of beverages, mainly spirits.[3,4]

Two mandatory items are designed to measure lifetime and last 30 days' "drunkenness" (Item box 2). The lifetime drunkenness item has been included in all HBSC surveys since the beginning of the study in 1982 and has been shown to be associated with other risk behaviour as well as poor adjustment to school.[1] The item on drunkenness in the last 30 days was first introduced in the 2013/14 HBSC survey.

Item box 2. Drunkenness – lifetime and last 30 days

Have you ever had so much alcohol that you were really drunk? *Please tick one circle for each line.*

	No, never	Yes, once	Yes, 2-3 times	Yes, 4-10 times	Yes, more than 10 times
In your lifetime	○	○	○	○	○
In the past 30 days	○	○	○	○	○

Source: HBSC.
HBSC survey(s): from 1985/86, 1989/90, 1993/94, 1997/98, 2001/02 to 2005/06 (single question on "ever really drunk"), 2009/10 (two separate questions on "ever really drunk" and "last 30 days"), 2013/14 (two items "lifetime" and "last 30 days" were introduced).

In order to present the same horizontal format for all substance use items, it was decided to change the format for the lifetime item on drunkenness and combine it in a box with the last 30 days item. However, to maintain the trends in drunkenness, the answer categories were not changed. Thus, the response options are different from the other substance use behaviours.

Based on Swiss ESPAD data, Gossrau-Breen et al.[35] included both subjective drunkenness and 5+ drinking and found stronger links to siblings' excessive drinking, parent–child relationships and parental monitoring for the former than for the latter. This indicates that the question on subjective drunkenness better measures risky single-occasion drinking among adolescents than by asking about the frequency with which the respondent has had five or more drinks at one time or period.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales 5.10

TOBACCO USE

Pavlova D, Alessio V, Van Dorsselaer S
& the Risk Behaviour Focus Group

5.10 TOBACCO USE

Pavlova D, Alessio V, Van Dorsselaer S & the Risk Behaviour Focus Group

1. Background

Tobacco use claimed an estimated 100 million lives worldwide during the 20th century, and remains a serious and growing global health threat.[1] Smoking behaviour is typically established in adolescence; most adult smokers lit their first cigarette or were already addicted to nicotine before the age of 18.[2] Active smokers are more likely to develop heart disease, stroke and lung cancer.[3]

Tobacco use by adolescents and young adults has declined substantially in the last 40 years. However, according to the latest HBSC study findings, one in three adolescents aged 15 years and one in six aged 13 years had a smoking tobacco experience.[4] Every adult who dies early because of smoking is replaced by two new young smokers. If smoking continues at current rates, 5.6 million – or one out of every 13 – of today's children in the United States alone will ultimately die prematurely from a smoking-related illness.[3]

2. HBSC approach and previous work

The risk and protective factors related to youth smoking extend over a broad range of aspects and over different levels of adolescents' lives. Risk and protective factors can be placed in an ecological model, which suggests interconnections among factors from different levels.[5] Five levels of influence are proposed to explain individual behaviour such as smoking: the intrapersonal level (individual characteristics such as knowledge, attitudes, beliefs and personality traits, but also genetic factors), the interpersonal level (interactions between family, peers and friends), the institutional level (rules and regulations within institutions, such as school and sports and leisure activity clubs), the community level (influences from social networks and norms within the community) and public policy (regulations and laws at national or regional level).

Several of these variables at intrapersonal and interpersonal level (alcohol and cannabis use, peer relations, parental support and school environment) are included in the HBSC questionnaire; instead of only looking at smoking prevalence rates, smoking can therefore be studied in a broader context and as part of an adolescent's lifestyle.

The HBSC study provides a unique opportunity to monitor trends in health behaviours. Several recent papers have shown decreases in smoking prevalence in recent years among many HBSC countries. For example, Swiss HBSC data show that cigarette smoking decreased markedly between 2010 and 2014.[6] Similar positive trends have been shown in England[7] and Ireland.[8] However, results from the 2014 survey in Poland suggested unfavourable trends in tobacco smoking, mostly in adolescent girls. Special attention was drawn to the environmental aspects of smoking in adolescence, in particular the role of family and neighbourhood.[9]

Family-related aspects of adolescent life have emerged as important factors in analyses on adolescent smoking. Griesbach et al.[10] examined the relationship of family structure and smoking in seven HBSC countries and regions. Zaborskis[11] examined the relationship of family structure and smoking and found that higher prevalence of smoking among adolescents in Lithuania is associated with a non-intact family structure as well as weaker parental support and bonding. A recent empirical study comparing the association between family affluence and adolescent smoking in 33 European countries, Israel and Canada identified two patterns: the prevalence of adolescent smoking was higher in less-affluent countries, but the difference in smoking prevalence between socioeconomic groups was greater in more-affluent countries.[12]

School-related influences on adolescent smoking have also been well studied within HBSC. For example, Rasmussen et al. found an inverse association between school connectedness (perceived level of school satisfaction and sense of belonging) and adolescent smoking among Danish adolescents.[13] In Croatian 15-year-olds, a favourable school environment (based on classmate support, academic achievement, liking school and school pressure) was linked with less smoking.[14] In contrast, in the same study, an extensive peer environment (number of peers and contacts with peers) was related to more smoking. In northern countries and the United Kingdom, above average academic achievement was associated with lower odds ratios of smoking.[15]

A number of possible predictors of smoking behaviour among Swedish adolescents have been identified, including: female sex, lower parental education, poorer family mood, poorer self-rated health, poorer self-esteem, less negative attitude towards smoking, and binge drinking.[16]

3. Objectives

The objectives are to:

- monitor tobacco use cross-nationally and over time, as a basis for preventive interventions, policy evaluations and for drafting new action plans and policy initiatives; and
- define the scope of tobacco use by measuring the lifetime prevalence and last 30 days' prevalence of tobacco use among adolescents.

4. Instruments

Tobacco smoking is measured by two items (Item box 1): lifetime prevalence (Item 1) and last 30 days' prevalence (Item 2). The mandatory item on lifetime smoking prevalence was first introduced in the 2013/14 survey and the 30-day prevalence item has been in the HBSC questionnaire since the 2001/02 survey, with some revisions made in 2005/06 and 2013/14.

Item box 1. Tobacco smoking – lifetime and last 30 days

On how many days (if any) have you smoked cigarettes? *Please tick one circle for each line.*

	Never	1-2 days	3-5 days	6-9 days	10-19 days	20-29 days	30 days (or more)
In your lifetime	○	○	○	○	○	○	○
In the last 30 days	○	○	○	○	○	○	○

Source: adapted from: Monitoring the future: a continuing study of the lifestyles and values of youth (1975–on) and the European School Survey Project on Alcohol and Other Drugs (ESPAD) (1995).
HBSC survey(s): 2009/10 (last 30 days' use – "times" as response categories). "In your lifetime" introduced in 2013/14 survey. For 2013/14 survey, response categories were changed from "times" to "days".

The current items were first introduced in the 2013/14 survey. They were adapted from the previous measures used in the 2009/10 survey, which measured tobacco smoking using "times" as response category instead of "days". In addition, a question about the frequency of smoking in lifetime was added in 2013/14. This is important because in the previous HBSC surveys, it was difficult to distinguish abstaining (never-smoking) students from those who had already smoked. Current items have shown satisfactory validity and reliability in previous studies.[17]

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales 5.11

CANNABIS USE

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5.11 CANNABIS USE

Vieno A, Marino C, Pavlova D & the Risk Behaviour Focus Group

1. Background

The occasional use of cannabis, the most widely used illicit drug among adolescents, has become normative among a substantial minority of high-school students.[1-4] Heavy cannabis use is associated with reduced educational attainment and school dropout, depression, health problems, risk-taking and deviancy, and greater risk for the use of other drugs.[5] In the 2013/14 HBSC study, the percentage of 15-year-old students reporting lifetime cannabis use was 15%, with 7% of students reporting having used cannabis during the last 30 days.

HBSC monitors cannabis use cross-nationally and assesses differences in social contexts, cross-national and cultural determinants of use, as well as associations with health-related outcomes (such as health risks and psychosocial problems). Monitoring its use and increasing understanding of the factors promoting or buffering cannabis use can inform policy-makers to make more effective choices in order to help minimise the risks associated with cannabis use.

A wide range of theories has been applied to adolescent substance use,[6] including social cognitive and developmental theories such as Social Identity Theory,[7] Problem Behaviour Theory,[8] Social Cognitive Theory[9] and the Theory of Reasoned Action.[10] These theories have emphasised the cultural context of drug use, social influence of peers and parents, normative perceptions, adolescent development and personality as key influences on illicit drug use. It should be noted that peer influence is the single most well documented predictor of adolescent substance use, with parental factors, school and neighbourhood environments, personality and other influences also ranked as important.[11]

2. HBSC approach and previous work

Due to the major public health concern around the issue of drug use, and cannabis use in particular, mandatory questions on the lifetime and 12-month prevalence of cannabis use have been included in the survey for 15-year-olds since the 2001/02 survey onwards.

In the 2005/06 Mandatory Questionnaire, the lifetime and 12-month prevalence questions on cannabis use were extended to include an item on 30-day prevalence. In the 2013/14 questionnaire, both the lifetime and 30-day prevalence were assessed, in addition to age of onset of cannabis use, which was new to the international mandatory part of the survey.

The cannabis items have been used in several publications. On a basic level, data from HBSC have been used to describe the prevalence of substance use in different countries.[12,13] For example, Godeau et al.[12] confirmed that cannabis was the third-leading psychoactive substance, after alcohol and tobacco. Results showed that the majority of adolescents belonged to experimental use (once or twice during the previous year: 7.9% of children) or moderate use (3–39 times: 7.3%) groups and that these groups were less frequently represented in eastern, northern and southern Europe, in favour of "discontinuation" (that is, having tried cannabis, but no cannabis use during the previous year).

The long-term nature of HBSC has enabled trends in substance use to be monitored over time[13] and the investigation of explanations for the observed developmental patterns by linking them to differences in national policy[14] or youth culture.[15] Ter Bogt et al.[16] highlighted the need to use cross-nationally comparable policy measures in order to examine the most effective harm-reduction strategies. Substance use has also been studied in the context of adolescent development, the family social environment,[17] peer and

school factors,[18,19] ideologies endorsed by adolescent users, and the use of other substances such as alcohol and tobacco.[19] As an example, De Looze et al.[19] found a significant association between peer and parental variables (that is, parental knowledge and time spent with peers) and substance use.

The mental health effects of cannabis use have been studied by Monshouwer et al.,[20] who found a positive association between cannabis use and externalising problems such as delinquent and aggressive behaviour.

3. Objectives

The overall objectives for this topic area are to:

- monitor and describe cannabis use among adolescents and demonstrate trends in illicit drug use via sequential surveys; and
- discern between first-time, recreational and heavy users via lifetime- and 30-day use, and relate use profiles to other social and health outcomes.

4. Instruments

Cannabis use is measured by two items: lifetime prevalence (Item 1) and last 30 days' prevalence (Item 2).

The cannabis use prevalence items (Item box 1) have been derived from the ESPAD 2015 study. They were adapted by HBSC in 2001/02. This question is mandatory for 15-year-olds only. For 2013/14, HBSC response categories were changed from "times" to "days" and the mandatory question on cannabis use was split into two items: lifetime prevalence and 30 days' prevalence (to align with other substance use items).

The lifetime prevalence item is designed to determine the scope of cannabis use by measuring the prevalence of its use among participating students, whereas the item on last 30 days' use is meant to identify current and frequent users who may be at higher risk for the negative consequences of cannabis use. Appropriate country-specific street names for cannabis should be added in brackets to ensure that the question is understood by all students, and to capture all the different forms in which cannabis is used.

Item box 1. Cannabis use – lifetime and last 30 days

Have you ever taken cannabis [insert appropriate street names here]? *Please tick one circle for each line.*

	Never	1-2 days	3-5 days	6-9 days	10-19 days	20-29 days	30 days (or more)
In your lifetime	○	○	○	○	○	○	○
In the last 30 days	○	○	○	○	○	○	○

Source: adapted from: ESPAD (1995).
HBSC survey(s): from 2001/02, 2005/06 to 2009/10 (response categories "times"), 2013/14 (for the 2013/14 survey the response categories changed from "times" to "days"). In 2017/18, "life" was replaced with "lifetime".

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales 5.12

SCHOOL SETTING

Freeman J, Samdal O, Klinger D, Currie D, Teutsch F, Garcia-Moya I, Ramelow D, Liiv K, Katreniakova Z, Rasmussen M & the School Focus Group

5.12 SCHOOL SETTING

Freeman J, Samdal O, Klinger D, Currie D, Teutsch F, Garcia-Moya I, Ramelow D, Liiv K, Katreniakova Z, Rasmussen M & the School Focus Group

1. Background

A supportive school environment is an asset for health-enhancing behaviours, health and life satisfaction, while a non-supportive school environment may constitute a risk. This perspective encompasses multiple aspects of adolescents' school life: satisfaction with school, school-related stress, and school support from teachers and classmates.

School satisfaction has been consistently negatively associated with compromising health behaviours, such as cigarette smoking, alcohol consumption, marijuana use, and gambling behaviour.[1,2] Students who experience higher levels of school pressure are generally characterised by more compromising health behaviours, more frequent health complaints and psychological complaints,[3,4] and poorer mental health.[5] Teacher support is related to better mental health[6,7] as well as lower early alcohol use,[8] lower risk of daily smoking, and lower risk of weekly cannabis use.[9] Classmate support is related to improved mental health[10] and lower rates of drunkenness and, for males, lower rates of smoking.[11]

Over the years, extensive work has been conducted based on the HBSC school items, with our theoretical approach being primarily based on two theoretical underpinnings: Self-determination Theory[12,13] and Effort-Reward-Imbalance Theory.[14,15] These theories can bridge the profound differences between the school and the minds and bodies of students.

Studies on determinants and outcomes of students' school perceptions have been conducted in a number of single countries and regions scattered across the HBSC network, including Iceland,[16] Israel,[17] Belgium (Flemish),[18] Poland,[19] Spain[20,21] and England.[22] Studies on determinants have focused on the influence of family-related factors and characteristics of the school neighbourhood on students' general feelings towards school, while studies on outcomes have largely examined associations between students' perceptions of school and health-risk behaviours.

2. HBSC approach and previous work

In addition to studies based on single country data, over the years a number of cross-national studies have been conducted. For example, an early study by Samdal et al.[23] based on data from Norway, Finland, Latvia and Slovakia indicated that predictors of students' school satisfaction differed from those of academic achievement. Data from Belgium, Canada, Italy, Romania and England showed that family affluence, democratic school climate and perceived neighbourhood social capital were positively related to participation of 15-year-olds in community organizations.[24] Data from 13- and 15-year-olds in Canada, Norway and Romania revealed similar cross-national patterns in strong relationships between school climate and psychosomatic complaints, perceived academic achievement and school satisfaction.[25] Finally, a consistent positive association emerged between teacher connectedness and emotional well-being for Spanish and English adolescents, regardless of demographic factors, country and perceptions of school performance.[6]

Research spanning the entire HBSC network is less extensive. A recent cross-national study investigated socioeconomic inequalities in smoking among 15-year-old adolescents in 35 countries by examining the mediating role of psychosocial factors in the peer group, family and school environment. The most important mediating factors included academic achievement and school satisfaction.[26]

In regard to cross-national trends in perceived school pressure by gender and age, Klinger et al.[27] found that reported perceptions of school pressure did not change between 1994 and 2010, despite a temporary increase in 2002 and 2006. With the exception of children at age 11, girls reported higher levels of school pressure than boys, with school pressure higher in older age groups. These findings were consistent across countries. Finally, the latest HBSC international report presenting the 2013/14 data concluded that older students generally seemed to be more challenged by their school life, while younger age groups liked school to a greater extent, felt less pressured by schoolwork and generally reported better school performance.[28]

3. Objectives

The objectives of the school package in the HBSC study are to:

- describe the prevalence and nature of four critical school factors and their interrelationships: school satisfaction, teacher support, classmate support and perceived school pressure;
- investigate cross-national and cross-cultural differences in the prevalence and nature of these school factors, considering contextual factors characterising the family, peers and the community;
- investigate the relationships between the aforementioned school factors and students' health behaviours, health and well-being; and
- inform policy-makers in the health and education sectors.

4. Instruments

4.1 School satisfaction

School satisfaction is measured by a single mandatory item (Item box 1) measuring students' emotional and psychological connectedness to school in terms of liking school. It has been included in the HBSC survey since 1985/86 and has, over the years, been found to be a powerful correlate of health behaviours and health perceptions.[1,2,29–31] It has been retained for the 2017/18 survey.

Item box 1. School satisfaction

How do you feel about school at present?

◯	I like it a lot
◯	I like it a bit
◯	I don't like it very much
◯	I don't like it at all

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

4.2 School effort/demands

Demands on students are measured by a single mandatory item (Item box 2) that aims to measure the global feeling of being pressured by the demands of schoolwork, which includes work at school and homework. It is often considered a measure of school-related stress, and associations have been documented with risk behaviours, frequent health complaints, psychological complaints[3,4] and poor mental health.[5] It has been included in the HBSC survey since 1993/94.

Item box 2. School pressure

How pressured do you feel by the schoolwork you have to do?

- ◯ Not at all
- ◯ A little
- ◯ Some
- ◯ A lot

Source: HBSC.
HBSC survey(s): 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

4.3 Student support

Within HBSC, student support is measured by three mandatory items (Item box 3). The three items have been included in each survey since 1993/94.

Item box 3. Classmate support

Here are some statements about the students in your class(es).
Please show how much you agree or disagree with each one. *Please tick one circle for each line.*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The students in my class(es) enjoy being together	◯	◯	◯	◯	◯
Most of the students in my class(es) are kind and helpful	◯	◯	◯	◯	◯
Other students accept me as I am	◯	◯	◯	◯	◯

Source: HBSC.
HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised: introductory text revised to specify "students"; response categories changed to "agree/disagree" from "always" ... "never"), 2005/06, 2009/10, 2013/14.

The classmate support scales were included in validation analyses along with a three-item teacher support scale. Confirmatory factor analyses of the classmate and teacher support showed that a correlated two-factor model fitted the data well, indicating that the division into a classmate and a teacher support subscale was a valid measurement model, as found in a Norwegian study (n=681)[32] and in a cross-national study (n=23 202) of students from Austria, Canada, England, Lithuania, Norway, Poland and Slovenia.[33] In 2009/10, 14 countries used these items (approx. 82 000 pupils). Factor analysis indicated a single factor with loadings between 0.790 to 0.846, explaining 66% of the variance. Cronbach's alpha was 0.74.

4.4 Teacher support

Teacher support is measured by three items (Item box 4).

Item box 4. Teacher support

Here are some statements about your teachers. Please show how much you agree or disagree with each one.
Please tick one circle for each line.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I feel that my teachers accept me as I am	○	○	○	○	○
I feel that my teachers care about me as a person	○	○	○	○	○
I feel a lot of trust in my teachers	○	○	○	○	○

Source: HBSC.
HBSC survey(s): 2013/14.

Teacher support was included in the 2009/10 survey as an optional package based on validation work in Austria, Norway, Denmark and Scotland in spring 2009. Using the Self-determination Theory framework to develop and refine survey items for the scale, six items were piloted. Where possible, previous HBSC items were used or adapted. A sample of 552 students (aged 11, 13 and 15 years) responded to the complete sample of items. Factor analysis identified a single factor measuring relatedness (quality of student/teacher relations). We selected the items that had the strongest factor loadings. The final scale consisted of four items with factor loadings varying from 0.700 to −0.819 and having an internal consistency (Cronbach's alpha) of .86. Following further analyses, three items were retained for use in the 2013/14 Mandatory Questionnaire and are included again in the 2017/18 survey.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales

5.13

SEXUAL HEALTH

Költő A, Godeau E, Nic Gabhainn S, Young H, Magnusson J, Moreau N & Burke L

5.13 SEXUAL HEALTH

Költő A, Godeau E, Nic Gabhainn S, Young H, Magnusson J, Moreau N & Burke L

1. Background

Reproductive and sexual health is an integral part of holistic health and comprises the promotion of safe and healthy sexual behaviour, including reproductive choice. Attaining mature sexuality is among the many major tasks, both psychological and physical, inherent in the period of transition between childhood and adulthood.

Sexual health is part of adolescents' general, social and personal well-being. It is rooted in life-long sexual development spanning from early childhood throughout adulthood. Across industrialised nations, a relatively high proportion of those leaving compulsory education have already experienced sexual intercourse and some have engaged in risky sexual behaviour.

Addressing the sexual health of young people by raising their commitment to safer sex has become a priority among developed countries.[1-4] In the HBSC 2013/14 study,[5] the proportion of 15-year-olds who have already had sexual intercourse varies from 71% to 2%, with an average of 26%. Prevalence of 15-year-olds who did not use a condom at last intercourse varies from 9% to 42%.

These findings clearly show the importance of questions on sexual intercourse and methods of protection in future HBSC studies. It is known that early sex has implications for self-perception, well-being, social status and future health behaviour, including sexual behaviour.[6,7] Early sexual initiation can be seen as part of broader risk-behaviour clusters including substance use and unprotected sex,[8,9] although along with a direct causal relationship, general genetic and environmental factors may be important mediators.[10] Unprotected intercourse bring the risk of unintended pregnancy with its number of possible outcomes for this age group, including abortion, early parenthood and adoption.[11]

2. HBSC approach and previous work

The first questions relating to sexual health were included in the HBSC survey in 1989/90, but it was not until 2001/02 that four standardised sexual health questions were included. Derived from the United States Youth Risk Behavior Surveillance (YRBS) study (and the 1986 Minnesota Adolescent Health survey), the questions measured experience of sexual intercourse, age of sexual initiation, methods used to prevent pregnancy at last intercourse and condom use at last intercourse.

The 2005/06 HBSC study included the same sexual health questions. Of the 41 participating countries and regions, data were collected from 30 on experience of sexual intercourse, 31 on contraceptive pill use and 30 on condom use. In the 2009/10 survey, the same four questions were included as mandatory under the same conditions. Of the 41 participating countries and regions, data were collected from 36 on experience of ever having sexual intercourse, 34 on contraceptive pill use and 32 on condom use.

A trend analysis was performed on the HBSC mandatory sexual health data from 2002, 2006 and 2010. No linear trend (that is, no continuous increase or decrease) over time was found for most of the countries and regions for young people who have had sexual intercourse by that age. For girls from eastern European and those from northern European countries, however, the prevalence of early or very early sexual initiation increased. A general increase was observed in condom use among both genders.[12]

A mixed-methods pilot study, including respondents from five countries, was conducted in 2012/13 of proposed changes to the international mandatory questions:[13] addition of a skip pattern; combining the two previous items on condom use into one; and

alteration to the layout of the question on contraception use. The results showed that these changes have enhanced the validity of the mandatory items on sexual health. They were implemented in 2014, and will be maintained for the 2017/18 survey round.

The 2013/14 HBSC international report first presented international comparisons for the overall prevalence of ever having had sex and, separately, the use of condoms and contraceptive pills during last intercourse.[14] Across countries and regions, there were no associations between the sexual health measures and family affluence. Contraceptive pill use remained low, whereas condom use seemed to remain high. Overall, gender differences seemed to be reducing, particularly in northern and western Europe. Though these findings appeared positive, a small but significant number of adolescents continued to engage in sexual risk behaviours (such as not using a condom or oral contraceptive pills), thus risking sexually transmitted infections (STIs), unwanted pregnancies, abortion and associated negative psychosocial outcomes.[15]

3. Objectives

The objectives were to measure:

- the proportion of students initiated into sexual intercourse, and to know at what age they first engaged in this behaviour;
- the prevalence of students using age-appropriate means of protection against unwanted pregnancy at their last intercourse; and
- the prevalence of students protected against STIs by use of condoms at their last intercourse.

4. Instruments

Three sexual health items, with a skip pattern after the first question, are mandatory for the 2017/18 HBSC survey. To maintain comparability, these items are the same as those from the 2013/14 survey and are largely the same as the mandatory questions from previous survey rounds. The questions measure experience of sexual intercourse, age of first sexual intercourse and use of contraception at last sexual intercourse (condom, birth control pills and other methods). Sexual behaviour questions are only asked to students from the 15-year-old age group.

4.1 Prevalence of sexual intercourse

The first mandatory sexual health item (Item box 1) is designed to measure the prevalence of sexual intercourse among participating students.

Item box 1. Ever had sexual intercourse

Have you ever had sexual intercourse (sometimes this is called "making love," "having sex," or "going all the way" or [other appropriate colloquial terms])?

◯	Yes
◯	No (*please go to question **)

Source: adapted from: YRBS, Centers for Disease Control, United States.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.

A quantitative pilot study[13] carried out in France, Hungary, Ireland and Romania in 2012/13 yielded a response rate of 96.7% (563 of 582 participants) to the question of ever having had sexual intercourse. Of the pilot sample, 24.3% of boys and 14.5% of girls reported that they previously had sexual intercourse.

4.2 Age at first sexual intercourse

The second question (Item box 2) is designed to measure age at first sexual intercourse.

Item box 2. Age at first sexual intercourse

How old were you when you had sexual intercourse for the first time?

- ◯ 11 years old or younger
- ◯ 12 years old
- ◯ 13 years old
- ◯ 14 years old
- ◯ 15 years old
- ◯ 16 years old or older

Source: adapted from: YRBS, Centers for Disease Control, United States.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.

It is acknowledged that the HBSC study is not the ideal means to assess age at initiation of sexual activity, because even the oldest participants are in only their 16th year, when the majority of young people are not yet sexually active. This should be considered as a limitation when discussing findings based on these data.

Quantitative findings from the pilot study carried out in France, Hungary, Ireland and Romania in 2012/13 revealed that of the participants who had previously reported having sex, 96.4% provided an age of first sexual intercourse.[13]

4.3 Contraceptive use at last intercourse

The third question is designed to measure contraception use at last intercourse (Item box 3 and 4).

Item box 3. Condom use at last intercourse

The last time you had sexual intercourse, did you or your partner use a condom?

- ◯ Yes
- ◯ No
- ◯ Don't know

Source: adapted from: YRBS, Centres for Disease Control, United States.
HBSC survey(s): 2013/14.

Item box 4. Contraceptive pill use at last intercourse

The last time you had sexual intercourse, did you or your partner use birth control pills?

◯	Yes
◯	No
◯	Don't know

Source: adapted from: YRBS, Centres for Disease Control, United States.
HBSC survey(s): 2013/14.

Quantitative analysis of the pilot study[13] carried out in France, Hungary, Ireland and Romania in 2012/13 found that the most frequently used method of contraception at last intercourse among sexually active participants was condom use. Of the sexually active students, very few respondents reported they did not know if a condom was used (n=2/112, 1.9%), and the number of missing values for condom use was n=18/112 (16%).

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

hbsc

Scientific rationales 5.14

SOCIAL INEQUALITY

Elgar FJ, De Clercq B, Frasquilho D, Stevens GWJM,
Due P, Currie C & the Social Inequalities Focus Group

5.14 SOCIAL INEQUALITY

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1. Background

The HBSC study contributes to research on social inequalities in adolescent health and health behaviours both within and between member countries and regions. Because social inequalities in health during adolescence track strongly into adulthood,[1,2] informing policies that aim to reduce social inequalities in health and health behaviours is a priority of public health research.

HBSC works towards a socio-environmental conceptualisation of socioeconomic position as a resource that can be accessed at multiple levels (individual, family, local area). This approach has been influenced by Dahrendorf's Theory of Life Chances,[3] which describes opportunities offered to individuals based on their position in society. Furthermore, material and psychosocial paths can be examined in relation to socioeconomic inequalities in adolescent health. The materialist path explains how social class differences in health are created by unequal distributions of resources and services that support health. The psychosocial path emphasises the stress, lack of control and marginalising consequences of a lower socioeconomic position.[4] Material and psychosocial paths are not mutually exclusive, but their distinction is useful to guide decisions about whether to operationalise socioeconomic conditions in terms of absolute or relative family affluence.

2. HBSC approach and previous work

Diderichsen provides a four-part conceptual model that guides HBSC research on social inequalities in adolescent health.[1,5]

1. Differential exposure: how much are adolescents from different socioeconomic groups exposed to "hazards" (e.g., poor schools, smoking, alcohol drinking) and "protective factors" (e.g., supportive social relations, health promoting policies, health education)?
2. Differential vulnerability: why exposure to health hazards does not always result in poor health or poor health behaviours. Some individuals are resilient or have resources and options to avoid being harmed while others are vulnerable.
3. Differential effect: poor health behaviours sometimes have harmful effects and sometimes less serious effects. Examples include excessive drinking or cannabis use which, in some cases, relate to academic problems, injuries, unprotected sex and poor social relationships.
4. Macro-level influences: macroeconomic circumstances and policies influence the above three processes. The HBSC study is well suited for multilevel analyses of macro-level factors and individual, class and school characteristics.

HBSC data have been used to study socioeconomic differences in parent–child relations,[6] exposure to peer bullying,[7] and school connectedness and satisfaction.[8] Disadvantaged young people have a higher prevalence of poor self-rated health, low life satisfaction, multiple health complaints, obesity, infrequent intake of fruit and vegetables, higher levels of skipping breakfast, infrequent toothbrushing and low levels of physical activity.[1,2,7,9–15] However, there are inconsistent findings in some areas, like physical injuries, and smoking and drinking.[12]

Cross-nationally, similar socioeconomic differences are found in self-rated health, life satisfaction and health symptoms.[11,14,16] The direction of the association between socioeconomic position and some risk behaviours, such as toothbrushing and smoking, nevertheless varies across countries.[17–19] Daily consumption of sugar-sweetened soft drinks is more common in higher socioeconomic groups in some central European countries but more common in lower socioeconomic groups in western European countries and

regions.[20] Overweight status is inversely associated with socioeconomic position in almost all high-income countries and regions, but varying associations between overweight and socioeconomic position are found in middle-income countries in Europe.[10]

Research on trends in health inequalities suggests that socioeconomic differences in adolescent health have increased.[21] HBSC data are also used to isolate the effects of relative deprivation on psychosomatic symptoms[25] and obesity risk factors.[26] These studies found that adolescents who are relatively worse off than their schoolmates report more internalising mental health problems, lower life satisfaction, fewer breakfasts, less physical activity and fewer healthful food choices (after differences in absolute affluence were controlled).

3. Objectives

The objectives of HBSC in relation to social inequalities in health are to:

- examine socioeconomic differences in health and health behaviours, how these differences vary within and across countries and regions, and over time; and
- study the material and psychosocial processes that underlie socioeconomic patterning of health and health behaviours.

4. Instruments

4.1 Parental employment

Parental unemployment relates to a wide range of adverse health and developmental outcomes. Research on parental unemployment and child well-being is still limited, but the evidence shows that children living in jobless families tend to have poorer health than children of employed parents. The difference has been found in psychosomatic symptoms, mental well-being and self-reported health.[24,25] Children in jobless families also have higher risk of risk behaviour (such as binge drinking), depression, and accidents and hospitalisation, and report less vegetable consumption, increased television-viewing, lower schooling ambitions, lower family support and higher rates of family violence.[26–33]

4.1.1 Previous use of parental employment status within the HBSC occupational social class measure

Most of the studies cited above used a measure of parental unemployment that is consistent with the first item of the HBSC parental occupation scale.[27,34] Traditionally, researchers measured socioeconomic position through parental income, education or employment/occupation.[35] Adolescents cannot provide information about income and parental education, since it is not part of the mandatory HBSC questionnaire. However, parental occupation has been part of the questionnaire since its inception.[35] Due to some of the difficulties related to high rates of missing values when coding the occupational status into scales,[24,36] the measure was simplified into the current parental employment status instrument for the 2017/18 Mandatory Questionnaire (Item box 1).

Item box 1. Parental employment status

Father	Mother
Does your father have a job?	Does your mother have a job?
◯ Yes	◯ Yes
◯ No	◯ No
◯ Don't know	◯ Don't know
◯ Don't know or don't see father	◯ Don't know or don't see mother
If **No,** why does your father not have a job? *Please tick the circle that best describes the situation.*	If **No,** why does your mother not have a job? *Please tick the circle that best describes the situation.*
◯ He is sick, or retired, or a student	◯ She is sick, or retired, or a student
◯ He is looking for a job	◯ She is looking for a job
◯ He takes care of others, or is full-time at home	◯ She takes care of others, or is full-time at home
◯ I don't know	◯ I don't know

Source: HBSC (revised version of Parental Occupation Scale).
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14. For the 2017/18 survey, the closed-ended question asking about parental occupation (specific job father/mother) was excluded.

4.1.2 Validation work

Parental employment and occupation has demonstrated its validity in several studies, showing a high agreement between children's and parents' responses.[37] In 2005, a pilot study was conducted by the Social Inequalities Focus Group of the HBSC network in six countries. It also found high agreement between children and parents.

4.1.3 Coding and reporting guidelines

Responses to the first part of the question (whether the father and mother are employed or not) can be used to identify four groups – both parents employed, both parents non-employed, father non-employed, and mother non-employed.[38] Some research has used this information to create three groups: both parents employed, one parent employed, both parents unemployed.[27,29] Other studies have grouped adolescents with one or both parents unemployed, and those with at least one parent unemployed.[39]

It should be noted that adolescents living in homes with no parents employed are the most vulnerable group, but the fathers' and mothers' unemployment may differentially impact adolescent health.[27,33] Depending on the research question, studying the effect of unemployment can be more accurate when excluding unemployed people who are not actively seeking a job. Thus, responses about the mother and father can be coded into those whose have at least one parent unemployed but looking for a job, or more strictly, identifying those who have mothers and fathers unemployed and looking for a job.[26]

4.2 Family affluence

The HBSC study developed an alternative tool to parental occupational social class to increase the thoroughness and detail of research into social inequalities in health[35] and because many children, especially younger ones, have difficulty describing parental occupation.

The study needed a measure that was easy to answer for young children, applicable across countries and regions, and based on simple indicators of affluence in the respondent's home.[40] During the development of the FAS, one of the challenges facing the HBSC study was the need to develop items that are appropriate for differentiating poor and affluent families in national and cross-national samples. This issue is particularly relevant when the FAS is used in trend studies and cross-national comparisons.

Because the FAS is a list of common material assets and activities, its scores do not equally correspond to a family's socioeconomic position in different socioeconomic conditions. It is therefore problematic to equate the average or distribution of FAS data or the associations between FAS and health over time or between countries. Items in the FAS invoke different meaning and cultural significance in different countries and regions (e.g., having one's own bedroom) or are less related to socioeconomic position over time (e.g., number of computers). Whether FAS is an appropriate measure of SES depends on the population being studied, the underlying theory and the research question posed.

The first version of FAS was used in the surveys in 1993/94 (car ownership and own bedroom) and 1997/98 (car ownership, own bedroom and family holidays) incorporating items which have their origin in classical measures of material and social deprivation. To increase the scale's discrimination in affluent countries and regions where these items are commonplace, an item on computer ownership was added in 2001/02.[40] Thus, FAS is a dynamic scale, with items added or removed in response to changing economic circumstances and changes in common material assets in the home. In 2012/13, the FAS Development Project revised and updated the scale for the 2013/14 HBSC survey to better reflect changing patterns of consumption and lifestyles.[41] The current version, FAS III (Item box 2), includes two new items on dishwasher and number of bathrooms in the home.[42]

Item box 2. Family Affluence Scale (FAS III)

Does your family own a car, van or truck?

- ◯ No
- ◯ Yes, one
- ◯ Yes, two or more

Source: Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children survey. Health Educ Res. 1997;12(3):385–97. Items on family cars and own bedroom were introduced in the HBSC 1993/94 survey..
HBSC survey(s): 1993/94 , 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

Do you have your own bedroom for yourself?

- ◯ No
- ◯ Yes

Source: Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children survey. Health Educ Res. 1997;12(3):385–97. Items on family cars and own bedroom were introduced in the HBSC 1993/94 survey..
HBSC survey(s): 1993/94 , 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

5.14 SOCIAL INEQUALITY

How many computers does your family own (including laptops and tablets, **not** including game consoles and smartphones)?

- ◯ None
- ◯ One
- ◯ Two
- ◯ More than two

Source: Currie C, Molcho M, Boyce W, Holstein B, Torsheim T, Richter M. Researching health inequalities in adolescents: the development of the Health Behaviour in School-Aged Children (HBSC) Family Affluence Scale. Soc Sci Med. 2008;66(6):1429–36. The item on family computers was introduced in the 2001/02 survey.
HBSC survey(s):2001/02, 2005/06, 2009/10, 2013/14.

How many bathrooms (room with a bath/shower or both) are in your home?

- ◯ None
- ◯ One
- ◯ Two
- ◯ More than two

Source: Torsheim T, Cavallo F, Levin KA, Schnohr C, Mazur J, Niclasen B et al. Psychometric validation of the revised Family Affluence Scale: a latent variable approach. Child Indic Res. 2016;9(3):771–84. The item on bathrooms was introduced in the 2013/14 HBSC survey.
HBSC survey(s): 2013/14.

Does your family have a dishwasher at home?

- ◯ No
- ◯ Yes

Source: Torsheim T, Cavallo F, Levin KA, Schnohr C, Mazur J, Niclasen B et al. Psychometric validation of the revised Family Affluence Scale: a latent variable approach. Child Indic Res. 2016;9(3):771–84. The item on bathrooms was introduced in the 2013/14 HBSC survey.
HBSC survey(s): 2013/14.
Full explanation of rationale for the items on bathrooms and dishwasher are reported in the 2013 FAS Development Study Report.[41]

How many times did you and your family travel out of [insert country here] for a holiday/vacation last year?

- ◯ Not at all
- ◯ Once
- ◯ Twice
- ◯ More than twice

Source: Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children survey. Health Educ Res. 1997;12(3):385–97. The item on family holidays was introduced in the 1997/98 survey.
HBSC survey(s): 1997/98*, 2001/02*, 2005/06*, 2009/10*, 2013/14.
* Wording was "During the last 12 months, how many times did you travel away on holiday with your family.

4.2.1 Validity

The validity of FAS has been addressed by several studies (see review in Currie et al.[40]). The average FAS in a country corresponds with objective measures of country wealth (such as per capita income[41]). Andersen et al.[43] found close agreement between parents' and 11-year-olds' responses to the FAS items in six countries. A study in Ireland found that FAS had moderate internal reliability and its scores significantly related to parental occupation.[25]

Although FAS seems to be an appropriate and easily applied indicator of socioeconomic position, the comparability of FAS between countries and regions remains problematic.[44] A study by Schnohr et al.[45] showed the advantage of country-specific weighting of each FAS item to facilitate cross-national comparisons. Recent efforts have recommended other scoring procedures.

4.2.2 Suggestions for scoring the HBSC Family Affluence Scale

Currie et al.[40] originally proposed a summation of FAS items as a scale from 0 to 9 or categorisation of this total score in three groups (low 0–3, medium 4–6, and high 7–9). The FAS has been used in several different ways according to the research question addressed and there are no standard algorithms for scoring. These inconsistencies have contributed some noise to the literature, but researchers can find alternative scoring methods to address differential item functioning in between countries and regions, age groups or survey cycles to estimate a latent construct with differential weights applied to each item of study, or to study relative socioeconomic position and relative deprivation (see Makransky et al.[46] and Elgar et al.[47]).

In its 2013/14 international report, the HBSC study estimated "relative SEP" by comparing the individual's summary score from the FAS III to all other scores in their country or region (stratified by age group and gender). These scores were then used to identify groups of young people in the lowest 20% (low affluence), middle 60% (medium affluence) and highest 20% (high affluence) and to report inequalities in health between these groups. However, it should be noted that by equalising distributions of low, medium and high affluence across countries and regions, the 2013/14 international report disregarded cross-national differences in absolute poverty and material standards of living.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales 5.15

MIGRATION

Stevens GWJM, Walsh SD, Tel HJJ and the HBSC Migration Writing Group

5.15 MIGRATION

Stevens GWJM, Walsh SD, Tel HJJ and the HBSC Migration Writing Group

1. Background

Due to global technological, political and economic developments, current international migration is of an unprecedented volume. The current refugee crisis highlights these developments, with a large influx of immigrants in 2015, and migration as a key topic in political and societal discourse across Europe. On 1 January 2015, the number of people living in the EU-28 who were citizens of non-member countries was 19.8 million, while the number of people living in the EU-28 who had been born outside of the EU was 34.3 million (EUROSTATS statistics).

It is important for the HBSC study to assess immigration status (by means of the country of birth of both adolescents and their parents) not only because of the large and growing number of immigrant children in the study, but also because it is widely acknowledged that having an immigrant background is likely to affect the social economic situations, social relations and (subsequent) health and health behaviours of both children and adolescents. Previous studies on the impact of immigration on health problems and risky health behaviours have shown inconsistent results, however, with studies showing higher, equally high or lower levels of these problems and behaviours among immigrant young people.[1] As the HBSC study collects data in a large number of countries and in a great variety of immigrant populations through measures which have been found to be valid in this age group,[2] HBSC can greatly contribute by increasing scientific knowledge on the impact of immigration status to health and health behaviours during childhood and adolescence.

2. HBSC approach and previous work

To date, some studies on this subject have already been carried out using HBSC data, although their number is modest. Most of these studies used data from single countries and produced contrasting results. For instance, in Israel, immigrant adolescents from Ethiopia and the former Soviet Union were found to exhibit higher levels of cigarette and nargila (water pipe) smoking, binge drinking and being drunk, as well as lower mental health.[3,4] Danish studies focusing on loneliness indicated that first-generation immigrants (but not second-generation immigrants) have an increased risk for loneliness when compared to their non-immigrant peers.[5,6] In contrast, results from the Netherlands indicated that immigrant adolescents showed about equally high levels of internalising and externalising problems as their non-immigrant peers when taking other sociodemographic variables into account.[7,8]

To date, there have been few multi-country studies published. In a study of 10 countries using the 2010 data, (first- and second-generation) immigrant youth were found to fare worse than non-immigrants on fighting, bullying, life satisfaction and psychosomatic complaints; these effects were comparable across countries.[9] The importance of the immigrant composition of school (i.e., the percentage of immigrants in a school) was highlighted by a recent HBSC study conducted in 11 countries.[10] It found that when schools had a higher proportion of immigrants, both immigrants and non-immigrants were more often involved in fighting and bullying, but immigrants were victimised less often. However, these detrimental effects were diminished when classmate support was taken into account.[10]

3. Objectives

The objectives of HBSC in relation to immigration are to:

- describe the relationship between immigration status and young people's SES, family structure and social relations, how it varies within and across countries and regions, and how it changes over time;
- analyse the relationship between immigration status and health and health behaviours between and within countries, and how inequalities develop over time; and
- study the processes, mechanisms and dynamics behind the relationship between immigration status and health and health behaviours.

4. Instruments

To measure immigration status, the country of birth of both the child and the parent is assessed (Item box 1–3), which is in line with many former studies.[1] Receiving countries often differ as to who they consider to be immigrants. In immigration studies in the United States, individuals are often considered as immigrants only when they were not born in the country of residence (first-generation immigrants). In contrast, in western European studies, children whose parents or even grandparents were born abroad are conceived of as (second- and third-generation) immigrants.[11–14]

Asking about the country of birth of both the adolescent and parents allows us to differentiate between first- and second-generation immigrants. In a study using reports of parents and children (aged 11) on the country of birth of parents and children,[2] it has been shown that the percentage of children who were willing to fill out these questions was almost 100% and the degree of agreement between the answers of the children and their parents was very high (>98%). These results clearly indicate that children as young as 11 years are able to provide valid responses to these questions.

Item box 1. Country of birth – child

In which country were you born?

◯	[Insert COUNTRY OF RESIDENCE]
◯	*
◯	*
◯	*
◯	*
◯	*
◯	Another country (fill out): _____

Source: HBSC.
HBSC survey(s): 2009/10 (optional package: closed-ended question), 2013/14.
*Each country should make a list of the five largest immigrant groups in their country.

Item box 2. Country of birth – mother

In which country was your mother born?

◯	[Insert COUNTRY OF RESIDENCE]
◯	*
◯	*
◯	*
◯	*
◯	*
◯	Another country (fill out): _____

Source: HBSC.
HBSC survey(s): 2009/10 (optional package: closed-ended question), 2013/14.
*Each country should make a list of the five largest immigrant groups in their country.

Item box 3. Country of birth – father

In which country was your father born?

◯	[Insert COUNTRY OF RESIDENCE]
◯	*
◯	*
◯	*
◯	*
◯	*
◯	Another country (fill out): _____

Source: HBSC.
HBSC survey(s): 2009/10 (optional package: closed-ended question), 2013/14.
*Each country should make a list of the five largest immigrant groups in their country.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales

5.16

FIGHTING

Cosma A & Walsh SD

5.16 FIGHTING

Cosma A & Walsh SD

1. Background

Violence is a major concern in most countries, with physical fighting being the most common manifestation of violence among young people.[1,2] To understand this phenomenon and to examine the factors that influence and contribute to it, core measures of violence as problem behaviour are essential. Physical fighting (as well as weapon-carrying) were identified by expert consensus as the highest priority behaviours associated with youth violence and intentional injuries.[3]

2. HBSC approach and previous work

To address the problem of youth violence, we follow the public health approach. The principles of public health provide a useful framework for continuing to investigate and understand the causes and consequences of violent behaviour and to offer potential routes for prevention.[4] The public health approach to violence prevention seeks to improve the health and safety of all individuals by addressing underlying risk factors. A problem behaviour approach examines the involvement of the young person in multiple and cumulative risk behaviours and the relationships between them.

Recent cross-national studies (from 2012 onwards) covered mainly the following topics:

- epidemiologic trends over time in the occurrence of frequent physical fighting, demographic variations in reported trends, and national wealth and income inequality as correlates;[5]
- cross-national estimates of the prevalence of physical fighting and weapon-carrying among adolescents aged 11–15 years, and examining the possible effects of physical fighting and weapon-carrying on the occurrence of physical (medically treated injuries) and emotional (multiple health complaints) health outcomes among adolescents within the theoretical framework of Problem Behaviour Theory;[6]
- the prevalence of bullying victimisation and physical fighting in young people in 79 high- and low-income countries and the relations between structural determinants of adolescent health (country wealth, income inequality and government spending on education) and international differences in youth violence;[7] and
- the relationship between immigrant status and involvement in physical fighting[8] and the relationship between immigrant school composition and the levels of physical fighting among immigrant and non-immigrant adolescents.[9]

Additional peer-review manuscripts were mainly national in scope and addressed a variety of topics surrounding the causes and consequences of adolescent violence. These include studies of the association between:

- screen time and physical violence;[10] and
- physical fighting, fighting-related injuries and family affluence among young people in Canada.[11]

3. Objectives

The objectives of the violence and bullying items within HBSC are to:

- document the prevalence of fighting in young people across gender, age and family affluence;
- analyse cross-country differences, similarities and time trends in fighting; and
- document determinants, correlates and consequences of fighting.

4. Instruments

The concern about fighting and its place in society raises a number of questions about the frequency, nature, origins and health effects of physical fights. These are all questions in need of answers, if fighting behaviour is to be considered a marker for "at-risk youth" and a contributor to the violence-related morbidity and mortality of adolescents. Therefore, frequency of physical fighting is assessed as a measure of aggression and violence and a component of multiple problem and risk behaviours (Item box 1). Frequency of fighting has been well validated and reliability ascertained with extensive use in the United States YRBS.[3,12]

Item box 1. Physical fighting

During the past 12 months, how many times were you in a physical fight?

- ◯ I have not been in a physical fight in the past 12 months
- ◯ 1 time
- ◯ 2 times
- ◯ 3 times
- ◯ 4 times or more

Source: Brener ND, Collins JL, Kann L, Warren CW, Williams BI. Reliability of the Youth Risk Behavior Survey questionnaire. Am J Epidemiol. 1995;141:575–80.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.

The topic of violence was introduced to HBSC in 1998. The current item on physical fighting was taken from the YRBS and has been a mandatory question consistently since the 2001/02 survey.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales

5.17

BULLYING

Cosma A & Walsh SD

5.17 BULLYING

Cosma A & Walsh SD

1. Background

School bullying is one of the most prevalent forms of youth violence. Bullying has been defined as negative physical or verbal actions that have hostile intent, cause distress to victims, are repeated over time, and involve a power differential between bullies and their victims[1,2] In the past decade, cyberbullying has emerged as an additional form of inflicting harm on another person. Cyberbullying can be defined as intentional behaviour aimed at harming another person or persons through computers, cell phones and other electronic devices, and perceived as aversive by the victim.[3]

Victims of bullying experience a range of problem behaviours, such as psychological maladjustment,[4] psychosomatic health problems,[5] medicine use,[6] depression and anxiety.[7] Bullying can have particularly negative outcomes when it is experienced as being on the basis of elements of the young person's identity, such as their ethnic background or sexual tendency.[8,9] Most of these consequences can be seen even decades after, including worse SES, poorer job performance and social-relationship difficulties.[10] Students who engage in bullying others may be less interested in school and more likely to engage in health-risk behaviours such as smoking, drug use and excessive drinking.[11,12]

2. HBSC approach and previous work

There are many theories that try to explain the bullying phenomenon (including the Socio-ecological Model, Social Cognitive Theory, Systems Theory and the Bystander Approach). HBSC focuses on the socio-ecological model, which differentiates between five different systems to help understand the complex interactions that facilitate bullying.[13]

Recent HBSC cross-national studies (from 2012 onwards) have included the following topics:

- time trends in bullying victimisation in 33 countries (2002–2010);[14]
- the relationship between immigrant school composition and immigrant status and peer violence in 11 countries;[15]
- structural determinants of bullying in 79 countries;[16] and
- the relationship of bullying to homicide and income inequality.[17]

The vast majority of published HBSC manuscripts on bullying topics have been national in scope and origin. Selected topics include:

- prevalence and time trends bullying behaviours[18–20] and cyberbullying;[21]
- racial bullying and victimization;[22]
- substance use and bullying;[23]
- body image and bullying;[24] and
- cyberbullying and psychosomatic health.[25]

3. Objectives

The objectives of the bullying and cyberbullying items within HBSC are to:

- document the bullying and cyberbullying (perpetration and victimisation) prevalence in young people across age, gender and family affluence;
- document the psychosocial determinants of bullying and cyberbullying (perpetration and victimisation);

- analyse international differences and similarities in bullying and cyberbullying (perpetration and victimisation) prevalence;
- examine the psychological, social, academic and behavioural outcomes of bullying and cyberbullying (perpetration and victimisation);
- understand resilience factors for moderating the relationship between bullying (perpetration and victimisation) and negative psychological, social and behavioural outcomes;
- examine differences between determinants, correlates and outcomes of bullying and cyberbullying; and
- have the capacity to connect data with specific regional- and country-level public health policies.

4. Instruments

Mandatory questions on bullying (perpetration) and being bullied (victimisation) were introduced to the HBSC in 1997/98 (Item box 1 and 2). The mandatory items on the frequency of bullying and being bullied start with a preamble that was originally developed by Olweus[26] and have been widely validated across multiple cultural contexts.[27] For the current survey cycle (2017/18), this was amended to make it more child friendly. For this survey cycle, following consultation with specialists and young people, the word "only" from the second response category has been removed.

The current version of mandatory items has been modified slightly and include questions on cyberbullying (perpetration and victimisation) (Item box 3 and 4). The latter were introduced in the Canadian national survey in 2006 and have been employed successfully in provincial studies of bullying conducted in Ontario, Canada. In the 2013/14 survey, two questions were asked about cybervictimisation. In the current survey, these have been combined into one question following validation analysis which showed the two items to have similar determinants and outcomes. In addition, a new question has been included on cyberbullying perpetration which was also used in the previous rounds of the survey in Canada.

Item box 1. Bullying perpetration

Here are some questions about bullying. We say a person is ***being bullied*** *when another person or a group of people repeatedly say or do unwanted nasty and unpleasant things to him or her. It also is bullying when a person is teased in a way he or she does not like or when he or she is left out of things on purpose. The person that bullies has more power than the person being bullied and wants to cause harm to him or her.* ***It is not bullying*** *when two people of about the same strength or power argue or fight.*

How often have you taken part in bullying another person(s) at school in the past couple of months?

◯	I have not bullied another person(s) at school in the past couple of months
◯	It has happened once or twice
◯	2 or 3 times a month
◯	About once a week
◯	Several times a week

Source: Olweus D. The Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1986.
HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised in 2001/02 to conform with: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996) 2005/06, 2009/10, 2013/14. For the 2017/18 survey, "only" was removed from the second response category and "student" was replaced with "person".

Item box 2. Bullying victimisation

How often have you been bullied at school in the past couple of months?

- ◯ I have not been bullied at school in the past couple of months
- ◯ It has happened once or twice
- ◯ 2 or 3 times a month
- ◯ About once a week
- ◯ Several times a week

Source: Olweus D. The Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1986.
HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised in 2001/02 to conform with: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996) 2005/06, 2009/10, 2013/14. For the 2017/18 survey, "only" was removed from the second response category and "student" was replaced with "person".

Item box 3. Cyberbullying perpetration

In the past couple of months how often have you taken part in cyberbullying (e.g., sent mean instant messages, email or text messages; wall postings; created a website making fun of someone; posted unflattering or inappropriate pictures online without permission or shared them with others)?

- ◯ I have not cyberbullied another person in the past couple of months
- ◯ It has happened once or twice
- ◯ 2 or 3 times a month
- ◯ About once a week
- ◯ Several times a week

Source: adapted from: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996. Piloted in Canada in HBSC 2009/10 and 2013/14 as two questions. Combined to one question for 2017/18 HBSC survey.
HBSC survey(s): new mandatory question.

Item box 4. Cyberbullying victimisation

In the past couple of months how often have you been cyberbullied (e.g., someone sent mean instant messages, email or text messages about you; wall postings; created a website making fun of you; posted unflattering or inappropriate pictures of you online without permission or shared them with others)?

- ◯ I have not been cyberbullied in the past couple of months
- ◯ It has happened once or twice
- ◯ 2 or 3 times a month
- ◯ About once a week
- ◯ Several times a week

Source: adapted from: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996. HBSC survey 2013/14 (mandatory, split into two questions). 2017/18 single question (combining the previous two questions).
HBSC survey(s): new mandatory question.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales

5.18

INJURIES

Cosma A & Walsh SD

5.18 INJURIES

Cosma A & Walsh SD

1. Background

Childhood injury is a leading public health concern. Unintentional injuries are the largest cause of death and disability in children and young people beyond 1 year of age.[1] It is estimated that injuries account for 36% of deaths in children under 15 years[1] and 23% of deaths among those under 19 years. Understanding the mechanisms and risk factors for injury morbidity is necessary to contribute to the development of interventions to control and prevent serious injuries and death in young people.[3,4] Thus, epidemiological and surveillance data are the cornerstone of successful injury prevention efforts.

2. HBSC approach and previous work

The approach taken to the study of adolescent injury within HBSC and the application of data on injuries to preventive measures is based on the "population health approach". This approach focuses on the interaction between individual and contextual factors that influence the health of populations over the life-course. It tries to identify systematic variations in health outcomes and their patterns of occurrence, and applies the resulting knowledge to develop and implement policies and actions to improve health and well-being of those populations.[5]

The topic of injury was first introduced in the 1993/94 HBSC survey. HBSC investigators and their research teams have made extensive use of the mandatory and optional injury items for peer-review publications by examining the prevalence of injury across countries, social determinants of injury, and associations between multiple risk behaviour and injury.[6–14]

3. Objectives

The objectives of the injury item are to:

- document the prevalence of medically attended injuries in adolescents;
- document the psychosocial determinants of medically attended injuries;
- analyse international differences and similarities in the medically attended injuries prevalence; and
- have the capacity to connect data with specific regional- and country-level public health policies.

4. Instruments

The most commonly used criteria for identifying more significant injuries (the requirement for medical attention and impairment of activity) are employed, enabling a focus on more significant injury events and creating consistency with other studies in the field. The mandatory question in HBSC therefore examines injury requiring medical attention.

The HBSC item measuring the frequency of medically treated injury (Item box 1) originates from the 1988 Child Health Supplement to the United States National Health Interview Survey, with the same item being regularly used in the YRBS.[15] It has been used in the HBSC survey since 1993/94 and is considered the standard item for studying injuries, having been substantially validated as part of the YRBS study[15] and in Canada.[16]

Item box 1. Medically attended injury

Many young people get hurt or injured from activities such as playing sports or fighting with others at different places such as the street or home. Injuries can include being poisoned or burned. Injuries do not include illnesses such as Measles or the Flu. The following questions are about injuries you may have had during the past 12 months.

During the past 12 months, how many times were you injured and had to be treated by a doctor or nurse?

- ◯ I was not injured in the past 12 months
- ◯ 1 time
- ◯ 2 times
- ◯ 3 times
- ◯ 4 times or more

Source: Child Health Supplement to the US National Health Interview Survey ("CHS-NHIS").
HBSC survey(s): 1993/94 (mandatory), 1997/98 (optional package), 2001/02, 2005/06, 2009/10, 2013/14.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Scientific rationales

5.19

ELECTRONIC MEDIA COMMUNICATION

Special topic area for the 2017/18 survey

van den Eijnden R & Boniel-Nissim M

5.19 ELECTRONIC MEDIA COMMUNICATION

van den Eijnden R & Boniel-Nissim M

1. Background

For teenagers, electronic media is far more than just a tool for communicating. Currently, most young people have a constant Internet connection at home or school (through computer, tablet or smartphone) that can be used as a tool for communicating with family, friends and strangers, playing, learning and studying, doing homework, and consulting and getting support.

EMC is increasing alongside rapid technological progression. It has become central to young people's lives and an integral part of how they communicate with one another. However, the impact of EMC on young people's health and well-being is not yet fully understood. With HBSC striving to be progressive and a front-runner in young people's health and social contextual research, it is important to keep up with developments and include new emerging areas that have such a profound impact on young people's health, well-being and social environment.

There is accumulating empirical evidence that EMC can have both beneficial and harmful effects on the psychosocial development of young people. For instance, EMC can enhance perceived peer support,[1] but can also increase the risk of compulsive social media use[2] and online victimisation.[3] EMC has also been related to higher depressive feelings,[4] low sleep quality,[5] insomnia,[6] low life satisfaction,[7] attention-deficit hyperactivity disorder,[8] anxiety[8] and aggressive behaviour.[8,9] Currently, little is known about the processes underlying positive and negative outcomes of EMC on young people's health and well-being.

2. HBSC approach and previous work

A helpful conceptual model for understanding the associations between EMC use and positive and negative outcomes is the Differential Susceptibility to Media Effects Model (DSMM).[10] This model illustrates that some individuals are more susceptible to media effects than others and shows in which way media may influence individuals. The DSMM model will be tested in the 2017/18 HBSC survey.

Kuntsche et al.[11] show that from 2002 to 2006, EMC increased in almost all participating countries and regions. Particularly high increases were found in eastern Europe. Across countries and regions, the higher the frequency of EMC, the higher the number of afternoons and evenings spent with friends.

The study of Boniel-Nissim et al.[12] supports these findings. It examined trends in adolescent EMC and its relationship with ease of communication with friends of the opposite sex, from 2002 to 2010 in 30 European and North American regions. The authors conceptualised/measured EMC through one question assessing the frequency of contact with friends via phone or Internet. Results showed that EMC use increased over this time period in most of the regions, and increased with age. The more teenagers used EMC, the easier they found it to talk with friends of the opposite sex. The 2013/14 HBSC survey used five new items to measure EMC. Findings showed that as age increases, daily social media contact with friends increases (11-year-olds: 20%; 13-year-olds: 30%; 15-year-olds: 33%).[13]

Another study investigated the associations between frequency of EMC use and life satisfaction, along with the intensity of use.[7] Findings suggested that spending more hours per day using electronic media was associated with lower life satisfaction, but EMC with

friends was associated with higher life satisfaction. Supportive communication with parents seemed to buffer the negative effect of electronic media overuse.

Gommans et al.[14] showed a relationship between frequency of EMC and substance use. This study investigated the unique associations between EMC with friends and adolescent substance use (tobacco, alcohol and cannabis) over and beyond the associations of face-to-face interactions with friends and the average level of classroom substance use. Results showed that EMC was uniquely associated with substance use, predominantly alcohol.

3. Objectives

The objectives are to:

- investigate the relationship between frequency of EMC use and positive outcomes (e.g., peer support) and negative outcomes (e.g., problematic social media use symptoms, cybervictimisation) at international and country levels;
- gain more insight into the mediating role of EMC with strong-tie relationships (i.e., close friends) and weak-tie relationships (i.e., friends known through the Internet) in the association between preference for online social interaction (POSI) and peer support and cybervictimisation, at international and country levels;
- gain more insight into the moderating role of individual factors studied within HBSC, particularly POSI, on the relationship between EMC and peer support, problematic social media use symptoms and cybervictimisation, at international and country levels; and
- gain more insight into the role of country-level factors (e.g., national population-level EMC) in the relationship between EMC and peer support, problematic social media use symptoms and cybervictimisation.

4. Instruments

4.1 Intensity of EMC

Intensity of EMC is measured with four items (Item box 1). The first three ask for EMC with a particular group of friends (close friends, friends from a larger friend group, and friends one got to know through the Internet but didn't know before). Two of these items (i.e., EMC with close friends and EMC with friends met on the Internet) were previously used in, and validated by, the EU Kids Online and Net Children Go Mobile Project.[15] For the present study, one category of friends, "friends from a larger friend group", was added to fill the gap between strong- and weak-tie relationships. One answer category ("Almost all the time throughout the day") was also added (supported by a pilot study conducted in a group of Dutch university students). To be able to create a general measure of *intensity of EMC* (without acknowledging the exact people one has contact with), a fourth item was added – "people other than friends (e.g., parents, brothers/sisters, classmates, teachers)".

Item box 1. Intensity of electronic media communication

The next questions are about "online contact" and "online communication". When we use these terms we mean sending and receiving text messages, emoticons, and photo, video or audio messages through instant messaging ([insert local examples e.g. Viber, WhatsApp]), social network sites (e.g. Facebook, [add local examples]) or e-mail (on a computer, laptop, tablet, or smartphone).

How often do you have ONLINE contact with the following people?
Please tick one circle for each line.

	Don't know/ doesn't apply*	Never or almost never	At least every week	Daily or almost daily	Several times each day	Almost all the time throughout the day
Close friend(s)	○	○	○	○	○	○
Friends from a larger friend group	○	○	○	○	○	○
Friends that you got to know through the Internet but didn't know before	○	○	○	○	○	○
People other than friends (e.g., parents, brothers/sisters, classmates, teachers)	○	○	○	○	○	○

* If you have answered "Don't know/doesn't apply" to all of the above four items, you can skip the following questions about online behaviour [provide question number] and continue with question XX.

Source: adapted from: EU Kids Online and Net Children Go Mobile Project.
HBSC survey(s): special topic area 2017/18 HBSC survey.

4.2 Problematic social media use

Problematic social media use symptoms will be measured with the original nine-item social media disorder scale (SMD-scale)[2] using a dichotomous (No/Yes) answer scale (Item box 2). The study by van den Eijnden et al.[2] generated evidence that the nine-item SMD-scale is a psychometrically sound and valid instrument. Confirmatory factor analysis showed good model fits, indicating solid structural validity. The nine-item scale also showed appropriate internal consistency (Cronbach's alpha >.76), sufficient test-retest reliability (Pearson correlation = .50, $p < .001$) and good convergent validity, as indicated by strong correlations with the Compulsive Internet Use Scale and self-declared problematic social media use. The SMD-scale also showed good criterion validity and adequate sensitivity and specificity.

The items of the SMD-scale reflect the nine criteria suggested in the latest version of the appendix of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) to define Internet gaming disorder (IGD) as a tentative disorder.[16,17] In the absence of specific diagnostic criteria for SMD, the development of the SMD-scale was based on the assumption that SMD and IGD are two forms of the same overarching construct, problematic internet use, and should thus be defined by the same set of diagnostic criteria – preoccupation, tolerance, withdrawal, persistence, escape, problems, deception, displacement and conflict.

Item box 2. Problematic social media use symptoms

We are interested in your experiences with **social media**. The term social media refers to **social network sites** (e.g. Facebook, [add other local examples]) and **instant messengers** (e.g. [insert local examples], WhatsApp, Snapchat, Facebook messenger).

During the past year, have you ... *Please tick one circle for each line.*

	No	Yes
... regularly found that you can't think of anything else but the moment that you will be able to use social media again?	○	○
... regularly felt dissatisfied because you wanted to spend more time on social media?	○	○
... often felt bad when you could not use social media?	○	○
... tried to spend less time on social media, but failed?	○	○
... regularly neglected other activities (e.g. hobbies, sport) because you wanted to use social media?	○	○
... regularly had arguments with others because of your social media use?	○	○
... regularly lied to your parents or friends about the amount of time you spend on social media?	○	○
... often used social media to escape from negative feelings?	○	○
... had serious conflict with your parents, brother(s) or sister(s) because of your social media use?	○	○

Source: van den Eijnden RJ, Lemmens JS, Valkenburg PM. The Social Media Disorder Scale. Comput Human Behav. 2016;61:478–87.
HBSC survey(s): special topic area 2017/18 HBSC survey.

4.3 POSI

POSI is measured with three items from the five-item subscale "perceived depth of online communication"[18] (Item box 3). Perceived depth of online communication refers to the extent to which adolescents experience online communication to be more effective in self-disclosing intimate information than offline face-to-face communication. We prefer to use the term "preference for online social interaction" instead of "perceived depth of online communication", because in our view this term has a better theoretical foundation (Theory of Problematic Internet Use[19]).

The original depth scale of five items formed a one-dimensional scale with a Cronbach's alpha of .83.[18] In the Digital Youth Project of the University of Utrecht, which is conducted among adolescents aged 12 to 15 years, a shortened version of this scale was used, consisting of three items. This shortened version of three items showed good internal consistency with a Cronbach's alpha of .86. An index of POSI can be obtained by averaging the scores of the three items.

Item box 3. Preference for online social interaction (POSI)

Below are some statements on the Internet. Could you indicate whether you agree or disagree with each of the following statements? *Please tick one circle for each line.*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
On the Internet, I talk more easily about secrets than in a face-to-face encounter	○	○	○	○	○
On the Internet, I talk more easily about my inner feelings than in a face-to-face encounter	○	○	○	○	○
On the Internet, I talk more easily about my concerns than in a face-to-face encounter	○	○	○	○	○

Source: adapted from: Peter J, Valkenburg P. Individual differences in perceptions of Internet communication. Eur J Commun. 2006;21:213–26.
HBSC survey(s): special topic area 2017/18 HBSC survey.

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HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

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Annex 1

International standard version of the HBSC 2017/18 Mandatory Questionnaire

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ANNEX 1. INTERNATIONAL STANDARD VERSION OF THE HBSC 2017/18 MANDATORY QUESTIONNAIRE

CONTENTS

ANNEX 1. INTERNATIONAL STANDARD VERSION OF THE HBSC 2017/18 MANDATORY QUESTIONNAIRE

1. Overview

A comprehensive protocol review took place following the 2013/14 survey, with the aim of reducing the size of the Mandatory Questionnaire (MQ). The primary driver for this was the increasing requirement for principal investigators (PIs) to include items of specific interest to national health priorities.

In reducing the length of the MQ, the decision was taken to maintain the breadth of topics covered, but reduce the number of items to a minimum core indicator set, ensuring that the MQ still covered the important aspects of young people's health and the social context of their lives. This leaves more space for countries and regions to include items specific to their national context, as well as HBSC optional packages.

The 2017/18 MQ includes 44 mandatory questions with a total of 100 items. A "special topic area" has also been reintroduced and will focus on electronic media communication (EMC), with questions on frequency of online contact with friends, preference for online communication, and problematic social media use symptoms. As part of the MQ, these items will be used by all HBSC national teams, permitting an in-depth look at this important emerging aspect of young people's lives that has the potential for both positive and negative effects on their health and well-being. In addition to EMC, new items on family meals and cyberbullying are also included in the 2017/18 survey.

2. Mandatory Questionnaire item specifications

This annex lists each of the accepted Mandatory Items for the 2017/18 survey cycle presented by focus area, along with the following information:

- name
- description
- item
- previous HBSC surveys in which the item(s) have been included
- status 2017/18 (new/amended/unchanged).

SECTION 1. Demographic factors and family affluence (questions 1–5)

1. Sex

Description: measure to determine gender.

Are you a girl or a boy?

◯	Boy
◯	Girl

HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

2. Grade

Description: a standard measure outlining school grade.

What class are you in?

◯	Country-specific grade (11-year-old)
◯	Country-specific grade (13-year-old)
◯	Country-specific grade (15-year-old)

HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.
Status 2013/14: unchanged.

3–4. Age: month/year of birth

Description: a standard measure to determine age of participants.

What month were you born?

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

What year were you born?

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

5. Family Affluence Scale (FAS)

Description: a six-item measure of material family wealth as an alternative indicator of socioeconomic status, given the difficulties in obtaining reliable information on parental occupation.

Does your family own a car, van or truck?

- ◯ No
- ◯ Yes, one
- ◯ Yes, two or more

Source: Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children survey. Health Educ Res. 1997;12(3):385–97. Items on family cars and own bedroom were introduced in the HBSC 1993/94 survey.
HBSC survey(s): 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

Do you have your own bedroom for yourself?

- ◯ No
- ◯ Yes

Source: Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children survey. Health Educ Res. 1997;12(3):385–97. Items on family cars and own bedroom were introduced in the HBSC 1993/94 survey.
HBSC survey(s): 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14..

How many computers do your family own (including laptops and tablets, **not** including game consoles and smartphones)?

- ◯ None
- ◯ One
- ◯ Two
- ◯ More than two

Source: Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children survey. Health Educ Res. 1997;12(3):385–97. Items on family cars, own bedroom and family holidays were introduced in the HBSC 1997/98 survey.
HBSC survey(s): 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.

How many bathrooms (room with a bath/shower or both) are in your home?

- ◯ None
- ◯ One
- ◯ Two
- ◯ More than two

Source: Torsheim T, Cavallo F, Levin KA, Schnohr C, Mazur J, Niclasen B, Currie C, FAS Development Study Group. Psychometric validation of the revised Family Affluence Scale: a latent variable approach. Child Indic Res. 2016;9(3):771–84. The item on bathrooms was introduced in the 2013/14 HBSC survey.
HBSC survey(s): 2013/14.

Does your family have a dishwasher at home?

- ◯ No
- ◯ Yes

Source: Torsheim T, Cavallo F, Levin KA, Schnohr C, Mazur J, Niclasen B, Currie C, FAS Development Study Group. Psychometric validation of the revised Family Affluence Scale: a latent variable approach. Child Indic Res. 2016;9(3):771–84. The item on dishwasher was introduced in the 2013/14 HBSC survey.
HBSC survey(s): 2013/14.

How many times did you and your family travel out of [insert country here] for a holiday/vacation last year?

- ◯ Not at all
- ◯ Once
- ◯ Twice
- ◯ More than twice

Source: Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children survey. Health Educ Res. 1997;12(3):385–97. The item on family holidays was introduced in the 1997/98 survey.
HBSC survey(s): 1997/98*, 2001/02*, 2005/06*, 2009/10*, 2013/14.
Status 2017/18: unchanged.
* Wording was "During the last 12 months, how many times did you travel away on holiday with your family".

SECTION 2. Health and well-being (questions 6–9)

6. Self-rated health

Description: a measure of perceived health status.

Would you say your health is ... ?

○	Excellent
○	Good
○	Fair
○	Poor

Source: Kaplan GA, Camacho T. Perceived health and mortality: a nine-year follow-up of the human population laboratory cohort. Am J Epidemiol. 1983;117(3):292–304.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged

7. Life satisfaction

Description: a measure of general life satisfaction and functions as an indicator of well-being.

Here is a picture of a ladder. The top of the ladder "10" is the best possible life for you and the bottom "0" is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment?
Tick the circle next to the number that best describes where you stand.

○	10	Best possible life
○	9	
○	8	
○	7	
○	6	
○	5	
○	4	
○	3	
○	2	
○	1	
○	0	Worst possible life

Source: Cantril H. The pattern of human concern. New Brunswick (NJ): Rutgers University Press; 1965.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

8. Health complaints

Description: a non-clinical measure of subjective health. The list includes physical and psychological symptoms. This measure is also referred to as "the HBSC Symptom Checklist" and "psychosomatic complaints".

In the last 6 months, how often have you had the following ... ? *Please tick one circle for each line.*

	About every day	More than once a week	About every week	About every month	Rarely or never
Headache	○	○	○	○	○
Stomach ache	○	○	○	○	○
Backache	○	○	○	○	○
Feeling low	○	○	○	○	○
Irritability or bad temper	○	○	○	○	○
Feeling nervous	○	○	○	○	○
Difficulties in getting to sleep	○	○	○	○	○
Feeling dizzy	○	○	○	○	○

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

9. Body image

Description: this item assesses perceived body size to identify those who are dissatisfied with their body weight.

Do you think your body is ... ?

○	Much too thin
○	A bit too thin
○	About the right size
○	A bit too fat
○	Much too fat

Source: HBSC.
HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised: response category "I do not think about it" was removed), 2005/6, 2009/10, 2013/14.
Status 2017/18: unchanged.

SECTION 3. Health-related behaviours and BMI (questions 10–21)

10. Moderate-to-vigorous physical activity (MVPA)

Description: a measure of weekly MVPA, used to identify those who meet the current international guidelines for physical activity of one hour or more of at least moderate intensity daily. As indicated in the question definition text, the focus is on the total amount of activity undertaken and therefore includes all types of activity both in and out of school hours.

Physical activity is any activity that increases your heart rate and makes you get out of breath some of the time. Physical activity can be done in sports, school activities, playing with friends, or walking to school. Some examples of physical activity are running, brisk walking, rollerblading, biking, dancing, skateboarding, swimming, soccer, basketball, football and surfing [country-specific examples can be given].

Over the **past 7 days**, on how many days were you physically active for a total of at least **60 minutes** per day?
*Please **add up** all the time you spent in physical activity each day.*

0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
○	○	○	○	○	○	○	○

Source: Prochaska JJ, Sallis JF, Long B. A physical activity screening measure for use with adolescents in primary care. Arch Pediatr Adolesc Med. 2001;155(5):554–9. The original measure included two items: past seven days and typical week. Adapted for use in the HBSC survey.
HBSC survey(s): 2001/02 (included both past seven days and typical week), 2005/06 (included only past seven days), 2009/10, 2013/14.
Status 2017/18: unchanged.

11. Breakfast consumption

Description: a measure of frequency of breakfast consumption, which is generally considered an important factor in a healthy lifestyle. The question is split between weekdays and weekends to identify those who do not eat breakfast on a school day.

How often do you usually have **breakfast** (more than a glass of milk or fruit juice)?
*Please tick one circle for **weekdays** and one circle for **weekend**.*

Weekdays	Weekends
○ I never have breakfast during the week	○ I never have breakfast during the weekend
○ One day	
○ Two days	○ I usually have breakfast on only one day of the weekend (Saturday OR Sunday)
○ Three days	
○ Four days	○ I usually have breakfast on both weekend days (Saturday AND Sunday)
○ Five days	

Source: HBSC.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

12. Food consumption frequency

Description: a measure designed to assess a few important indicators of adolescents' food habits. These four items represent broad indicators of healthy (fruit and vegetables) and unhealthy (sweets and sugary soft drinks) food consumption.

How many times a week do you usually eat or drink ... ?
Please tick one circle for each line.

	Never	Less than once a week	Once a week	2-4 days a week	5-6 days a week	Once a day, every day	Every day, more than once
Fruits	○	○	○	○	○	○	○
Vegetables	○	○	○	○	○	○	○
Sweets (candy or chocolate)	○	○	○	○	○	○	○
Coke or other soft drinks that contain sugar	○	○	○	○	○	○	○

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02 (revised: response categories expanded; "raw" and "cooked" vegetables combined into one item "vegetables"), 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

13. Family meals

Description: a measure designed to assess the frequency of shared mealtimes with family members.

How often do you and your family usually have meals together?

- ○ Every day
- ○ Most days
- ○ About once a week
- ○ Less often
- ○ Never

Source: Twenty-07 Study (1986).
HBSC survey(s): 2001/02 (optional package: item FC37), 2013/14 (optional package).
Status 2017/18: new item.

14. Toothbrushing

Description: a basic measure on frequency of toothbrushing. The commonly accepted recommendation for toothbrushing is twice a day.

How often do you brush your teeth?

- ◯ More than once a day
- ◯ Once a day
- ◯ At least once a week but not daily
- ◯ Less than once a week
- ◯ Never

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

15. Vigorous physical activity

Description: a measure of the frequency of vigorous physical activity undertaken as a recreational/leisure pursuit outside of school hours.

Outside school hours: how **often** do you usually exercise in your free time so much that you get out of breath or sweat?

- ◯ Every day
- ◯ 4 to 6 times a week
- ◯ 2 to 3 times a week
- ◯ Once a week
- ◯ Once a month
- ◯ Less than once a month
- ◯ Never

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02 (optional package), 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

16. Smoking in lifetime and last 30 days

Description: a measure of the prevalence of tobacco use. The question measures lifetime prevalence (Item 1) and last 30 days' prevalence (Item 2) of smoking cigarettes.

On how many days (if any) have you smoked cigarettes? *Please tick one circle for each line.*

	Never	1-2 days	3-5 days	6-9 days	10-19 days	20-29 days	30 days (or more)
In your lifetime	○	○	○	○	○	○	○
In the last 30 days	○	○	○	○	○	○	○

Source: adapted from: Monitoring the future: a continuing study of the lifestyles and values of youth (1975-on) and the European School Survey Project on Alcohol and Other Drugs (ESPAD) (1995).
HBSC survey(s): 2009/10 (last 30 days' use – "times" as response categories), 2013/14 ("In your lifetime" introduced; response categories changed from "times" to "days").
Status 2017/18: unchanged.

17. Alcohol use in lifetime and last 30 days

Description: a measure to assess the frequency of lifetime (Item 1) and last 30 days' (Item 2) alcohol consumption.

On how many days (if any) have you drunk alcohol? *Please tick one circle for each line.*

	Never	1-2 days	3-5 days	6-9 days	10-19 days	20-29 days	30 days (or more)
In your lifetime	○	○	○	○	○	○	○
In the last 30 days	○	○	○	○	○	○	○

Source: adapted from: HBSC survey 2009/10, ESPAD 2007.
HBSC survey(s): 2009/10 (response categories "times"), 2013/14 (response categories were changed from "times" to "days").
Status 2017/18: unchanged.

18. Drunkenness in lifetime and last 30 days

Description: a measure to assess the frequency of lifetime (Item 1) and last 30 days' (Item 2) drunkenness.

Have you ever had so much alcohol that you were really drunk? *Please tick one circle for each line.*

	No, never	Yes, once	Yes, 2-3 times	Yes, 4-10 times	Yes, more than 10 times
In your lifetime	○	○	○	○	○
In the past 30 days	○	○	○	○	○

Source: HBSC.
HBSC survey(s): from 1985/86, 1989/90, 1993/94, 1997/98, 2001/02 to 2005/06 (single question on "ever really drunk"), 2009/10 (two separate questions on "ever really drunk" and "last 30 days"), 2013/14 (two items "lifetime and "last 30 days" were introduced).
Status 2017/18: unchanged.

*19. Cannabis use in lifetime and last 30 days

Description: a measure to assess the frequency of lifetime and last 30 days' cannabis use.

Have you ever taken cannabis [insert appropriate street names here]? *Please tick one circle for each line.*

	Never	1-2 days	3-5 days	6-9 days	10-19 days	20-29 days	30 days (or more)
In your lifetime	○	○	○	○	○	○	○
In the last 30 days	○	○	○	○	○	○	○

Source: adapted from: ESPAD 1995.
HBSC survey(s): from 2001/02, 2005/06 to 2009/10 (response categories "times"), 2013/14 (response categories changed from "times" to "days"). In 2017/18, "life" was replaced with "lifetime".
Status 2017/18: unchanged.

*Age group: 15-year-olds only.

20–21. Body mass

Description: height and weight are used to calculate body mass index (BMI), which is used to determine those who are overweight or obese.

How much do you weigh without clothes? _____

How tall are you without shoes? _____

Source: HBSC.
HBSC survey(s): 1997/98 (optional package), 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

SECTION 4. School (questions 22–25)

22. School engagement

Description: this item is intended to measure students' global feeling about school as a whole.

How do you feel about school at present?

- ◯ I like it a lot
- ◯ I like it a bit
- ◯ I don't like it very much
- ◯ I don't like it at all

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

23. School pressure

Description: this item is intended to measure the global feeling of being pressured by schoolwork, which includes work at school and homework.

How pressured do you feel by the schoolwork you have to do?

- ◯ Not at all
- ◯ A little
- ◯ Some
- ◯ A lot

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

24. Student support

Description: these three items are intended to form a composite scale to measure social support from classmates.

Here are some statements about the students in your class(es).
Please show how much you agree or disagree with each one. *Please tick one circle for each line.*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
The students in my class(es) enjoy being together	○	○	○	○	○
Most of the students in my class(es) are kind and helpful	○	○	○	○	○
Other students accept me as I am	○	○	○	○	○

Source: HBSC.
HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised: introductory text revised to specify "students"; response categories changed to agree/disagree from "always" ... "never"), 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

25. Teacher support

Description: these three items are intended to form a composite scale to measure social support from teachers.

Here are some statements about your teachers.
Please show how much you agree or disagree with each one. *Please tick one circle for each line.*

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I feel that my teachers accept me as I am	○	○	○	○	○
I feel that my teachers care about me as a person	○	○	○	○	○
I feel a lot of trust in my teachers	○	○	○	○	○

Source: HBSC.
HBSC survey(s): 2013/14.
Status 2017/18: unchanged.

SECTION 5. Violence and injuries (questions 26–31)

26. Bullying others

Description: measures the frequency of bullying others and being bullied at school, as well as the frequency of cyberbullying (perpetration and victimisation). "Bullying" is the assertion of interpersonal power through aggression. It has been defined as negative physical or verbal actions that have hostile intent, cause distress to victims, are repeated over time, and involve a power differential between bullies and their victims.

*Here are some questions about bullying. We say a person **is being bullied** when another person or a group of people, repeatedly say or do unwanted nasty and unpleasant things to him or her. It also is bullying when a person is teased in a way he or she does not like or when he or she is left out of things on purpose. The person that bullies has more power than the person being bullied and wants to cause harm to him or her. **It is not bullying** when two people of about the same strength or power argue or fight.*

How often have you taken part in bullying another person(s) at school in the past couple of months?

- ◯ I have not bullied another person(s) at school in the past couple of months
- ◯ It has happened once or twice
- ◯ 2 or 3 times a month
- ◯ About once a week
- ◯ Several times a week

Source: Olweus D. The Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1986.
HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised in 2001/02 to conform with: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996) 2005/06, 2009/10, 2013/14. For the 2017/18 survey "only" was removed from the second response category and "student" was replaced with "person".
Status 2017/18: amended:

- the definition was shortened and the nature of bullying as a repeated action was made clearer;
- in the amended preamble the word "student" was changed to "person"; to have consistency across items, the same change was implemented in both traditional and cyberbullying perpetration items; and
- the word "only" was removed from the second response category.

27. Bullying victimisation (being bullied)

How often have you been bullied at school in the past couple of months?

- ◯ I have not been bullied at school in the past couple of months
- ◯ It has happened once or twice
- ◯ 2 or 3 times a month
- ◯ About once a week
- ◯ Several times a week

Source: Olweus D. The Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1986.
HBSC survey(s): 1993/94, 1997/98, 2001/02 (revised in 2001/02 to conform with: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996) 2005/06, 2009/10, 2013/14. For the 2017/18 survey "only" was removed from the second response category and "student" was replaced with "person".
Status 2017/18: amended:

- the definition was shortened and the nature of bullying as a repeated action was made clearer;
- in the amended preamble the word "student" was changed to "person"; to have consistency across items, the same change was implemented in both traditional and cyberbullying perpetration items; and
- the word "only" was removed from the second response category.

28. Cyberbullying perpetration

In the past couple of months how often have you taken part in cyberbullying (e.g., sent mean instant messages, email or text messages; wall postings; created a website making fun of someone; posted unflattering or inappropriate pictures online without permission or shared them with others)?

- ◯ I have not cyberbullied another person in the past couple of months
- ◯ It has happened once or twice
- ◯ 2 or 3 times a month
- ◯ About once a week
- ◯ Several times a week

Source: adapted from: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996. Piloted in Canada in HBSC 2009/10 and 2013/14 as two questions. Combined to one question for 2017/18 HBSC survey.
HBSC survey(s): new mandatory question.
Status 2017/18: new.

29. Cyberbullying victimisation

In the past couple of months how often have you been cyberbullied (e.g., someone sent mean instant messages, email or text messages; wall postings; created a website making fun of you; posted unflattering or inappropriate pictures of you online without permission or shared them with others)?

- ◯ I have not been cyberbullied in the past couple of months
- ◯ It has happened once or twice
- ◯ 2 or 3 times a month
- ◯ About once a week
- ◯ Several times a week

Source: adapted from: Olweus D. The revised Olweus Bully/Victim Questionnaire. Mimeo. Bergen: University of Bergen; 1996. HBSC survey 2013/14 (mandatory, split into two questions). 2017/18 single question (combining the previous two questions).
HBSC survey(s): new mandatory question.
Status 2017/18: new.

30. Frequency of physical fighting

Description: a measure of aggression and violence assessed through the frequency of physical fighting in the previous 12 months.

During the past 12 months, how many times were you in a physical fight?

- ◯ I have not been in a physical fight in the past 12 months
- ◯ 1 time
- ◯ 2 times
- ◯ 3 times
- ◯ 4 times or more

Source: Brener ND, Collins JL, Kann L, Warren CW, Williams BI. Reliability of the Youth Risk Behavior Survey questionnaire. Am J Epidemiol. 1995;141:575–80.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

31. Frequency of medically treated injuries

Description: a measure of the frequency of significant injuries during the previous 12 months. To distinguish from minor injuries, which are a common occurrence among young people, a significant injury is here defined as one that requires medical attention.

Many young people get hurt or injured from activities such as playing sports or fighting with others at different places such as the street or home. Injuries can include being poisoned or burned. Injuries do not include illnesses such as Measles or the Flu. The following question is about injuries you may have had during the past 12 months.

During the past 12 months, how many times were you injured and had to be treated by a doctor or nurse?

- ◯ I was not injured in the past 12 months
- ◯ 1 time
- ◯ 2 times
- ◯ 3 times
- ◯ 4 times or more

Source: Child Health Supplement to the US National Health Interview Survey ("CHS-NHIS").
HBSC survey(s): 1993/94 (mandatory), 1997/98 (optional package), 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

SECTION 6. Peer culture (question 32)

32. Peer support

Description: measures perceived social support from friends and is part of the Multidimensional Scale of Perceived Social Support (MSPSS). This item is presented in conjunction with Family Support (Item 44).

We are interested in how you feel about the following statements.
Please show how much you agree or disagree with each one.
Please tick one circle for each line.

	Very strongly disagree	2	3	4	5	6	Very strongly agree
My friends really try to help me	○	○	○	○	○	○	○
I can count on my friends when things go wrong	○	○	○	○	○	○	○
I have friends with whom I can share my joys and sorrows	○	○	○	○	○	○	○
I can talk about my problems with my friends	○	○	○	○	○	○	○

Source: adapted from: Zimet G, Grodaon K. The Multidimensional Scale of Perceived Social Support. J Person Assess. 1988;52(1):30–41.
HBSC survey(s): 2013/14.
Status 2017/18: unchanged.

SECTION 7. EMC items for special topic area (questions 33–35)

The next questions are about "online contact" and "online communication". When we use these terms we mean sending and receiving text messages, emoticons, and photo, video or audio messages through instant messaging ([insert local examples e.g. Viber, WhatsApp]), social network sites (e.g. Facebook, [add local examples]) or e-mail (on a computer, laptop, tablet, or smartphone).

33. EMC – frequency of online contact with friends and others

Description: a measure of the frequency of online contact with different groups of people.

How often do you have ONLINE contact with the following people?
Please tick one circle for each line.

	Don't know/ doesn't apply*	Never or almost never	At least every week	Daily or almost daily	Several times each day	Almost all the time throughout the day
Close friend(s)	○	○	○	○	○	○
Friends from a larger friend group	○	○	○	○	○	○
Friends that you got to know through the Internet but didn't know before	○	○	○	○	○	○
People other than friends (e.g., parents, brothers/sisters, classmates, teachers)	○	○	○	○	○	○

* If you have answered "Don't know/doesn't apply" to all of the above four items, you can skip the following questions about online behaviour [provide question number] and continue with question XX.

Source: adapted from: EU Kids Online and Net Children Go Mobile Project.
HBSC survey(s): special topic area 2017/18 HBSC survey.
Status 2017/18: new.

34. EMC – preference for online social interaction

Description: a measure of the preference for online compared with face-to-face communication.

Below are some statements on the Internet. Could you indicate whether you agree or disagree with each of the following statements. *Please tick one circle for each line.*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
On the Internet, I talk more easily about secrets than in a face-to-face encounter	○	○	○	○	○
On the Internet, I talk more easily about my inner feelings than in a face-to-face encounter	○	○	○	○	○
On the Internet, I talk more easily about my concerns than in a face-to-face encounter	○	○	○	○	○

Source: adapted from: Peter J, Valkenburg P. Individual differences in perceptions of Internet communication. Eur J Commun. 2006;21:213–26.
HBSC survey(s): special topic area 2017/18 HBSC survey.
Status 2017/18: new.

35. EMC – problematic social media use

Description: a measure for identifying those who have problematic social media use.

We are interested in your experiences with **social media**. The term social media refers to **social network sites** (e.g. Facebook, [add other local examples]) and **instant messengers** (e.g. [insert local examples], WhatsApp, Snapchat, Facebook messenger).

During the past year, have you ... *Please tick one circle for each line.*

	No	Yes
... regularly found that you can't think of anything else but the moment that you will be able to use social media again?	○	○
... regularly felt dissatisfied because you wanted to spend more time on social media?	○	○
... often felt bad when you could not use social media?	○	○
... tried to spend less time on social media, but failed?	○	○
... regularly neglected other activities (e.g. hobbies, sport) because you wanted to use social media?	○	○
... regularly had arguments with others because of your social media use?	○	○
... regularly lied to your parents or friends about the amount of time you spend on social media?	○	○
... often used social media to escape from negative feelings?	○	○
... had serious conflict with your parents, brother(s) or sister(s) because of your social media use?	○	○

Source: van den Eijnden RJ, Lemmens JS, Valkenburg PM. The Social Media Disorder Scale. Comput Human Behav. 2016;61:478–87.
HBSC survey(s): special topic area 2017/18 HBSC survey.
Status 2017/18: new.

SECTION 8. Sexual health (questions 36–39)

*36. Prevalence of sexual intercourse

Description: a measure of the prevalence of sexual intercourse among 15-year-olds. This question contains a skip pattern. Those who answer "No" should be directed forward in the questionnaire to the next question that does not concern sexual health behaviour, so that respondents who have never had sexual intercourse will not have to answer questions that are not relevant to them.

Have you ever had sexual intercourse (sometimes this is called "making love," "having sex," or "going all the way" or [other appropriate colloquial terms])?

- ◯ Yes
- ◯ No (*please go to question **)

Source: adapted from the Youth Risk Behavior Survey (YRBS), Centers for Disease Control, United States.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

*Age group: 15-year-olds only.

*37. Age of first sexual intercourse

Description: a measure of the age at which sexual intercourse first took place.

How old were you when you had sexual intercourse for the first time?

- ◯ 11 years old or younger
- ◯ 12 years old
- ◯ 13 years old
- ◯ 14 years old
- ◯ 15 years old
- ◯ 16 years old or older

Source: adapted from the YRBS, Centers for Disease Control, United States.
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14.
Status 2017/18: unchanged.

*Age group: 15-year-olds only.

*38–39. Contraception use

Description: these questions are designed to measure contraception use at last intercourse.

The last time you had sexual intercourse, did you or your partner use a condom?

- ◯ Yes
- ◯ No
- ◯ Don't know

The last time you had sexual intercourse, did you or your partner use birth control pills?

- ◯ Yes
- ◯ No
- ◯ Don't know

Source: adapted for use in HBSC 2013/14 from the YRBS, Centers for Disease Control, United States.
HBSC survey(s): 2013/14.
Status 2017/18: unchanged.

*Age group: 15-year-olds only.

SECTION 9. Family (questions 40–44)

40. Country of birth (self/mother/father)

Description: three measures of the country(ies) in which the young person and his/her mother and father were born. Together, the questions allow determination of the (first- or second-generation) immigrant status of the child and his/her country of origin. For each item, the resident country plus the five largest immigrant groups in that country are listed.

In which country were you born?

- ◯ [Insert COUNTRY OF RESIDENCE]
- ◯ *
- ◯ *
- ◯ *
- ◯ *
- ◯ *
- ◯ Another country (fill out): _____

Source: HBSC.
HBSC survey(s): 2009/10 (optional package: closed-ended question), 2013/14.
*Each country should make a list of the five largest immigrant groups in their country.

In which country was your mother born?

- ◯ [Insert COUNTRY OF RESIDENCE]
- ◯ *
- ◯ *
- ◯ *
- ◯ *
- ◯ *
- ◯ Another country (fill out): _____

Source: HBSC.
HBSC survey(s): 2009/10 (optional package: closed-ended question), 2013/14.
*Each country should make a list of the five largest immigrant groups in their country.

In which country was your father born?

- ◯ [Insert COUNTRY OF RESIDENCE]
- ◯ *
- ◯ *
- ◯ *
- ◯ *
- ◯ *
- ◯ Another country (fill out): _____

Source: HBSC.
HBSC survey(s): 2009/10 (optional package: closed-ended question), 2013/14.
*Each country should make a list of the five largest immigrant groups in their country.

41. Family structure

Description: a measure of family structure and household composition.

All families are different (for example, not everyone lives with both their parents, sometimes people live with just one parent, or they have two homes or live with two families) and we would like to know about yours.

Please answer this first question for the home **where you live all or most of the time** and tick the people who live there.

- ◯ Mother
- ◯ Father
- ◯ Stepmother (or father's girlfriend/partner)
- ◯ Stepfather (or mother's boyfriend/partner)
- ◯ I live in a foster home or children's home
- ◯ Someone or somewhere else (e.g., siblings, grandparents). *Please write it down*
  _____

Source: HBSC.
HBSC survey(s): 2001/02, 2005/06 (revised), 2009/10, 2013/14. Revised for 2017/18 HBSC survey (response categories "grandmother" and "grandfather" were removed; "partner" added next to father's girlfriend and mother's boyfriend).
Status 2017/18: amended.

42. Parental employment

Description: a measure of parental employment status and reasons for unemployment.

Father	Mother
Does your father have a job?	Does your mother have a job?
◯ Yes	◯ Yes
◯ No	◯ No
◯ Don't know	◯ Don't know
◯ Don't know or don't see father	◯ Don't know or don't see mother
If **No,** why does your father not have a job? *Please tick the circle that best describes the situation.*	If **No,** why does your mother not have a job? *Please tick the circle that best describes the situation.*
◯ He is sick, or retired, or a student	◯ She is sick, or retired, or a student
◯ He is looking for a job	◯ She is looking for a job
◯ He takes care of others, or is full-time at home	◯ She takes care of others, or is full-time at home
◯ I don't know	◯ I don't know

Source: HBSC (revised version of Parental Occupation Scale).
HBSC survey(s): 2001/02, 2005/06, 2009/10, 2013/14. For the 2017/18 survey, the closed-ended question asking about parental occupation (specific job father/mother) was excluded.
Status 2017/18: amended.

43. Ease of family communication

Description: a measure of communication with family members as an indicator of the quality of relationships.

How easy is it for you to talk to the following persons about things that really bother you?
Please tick one circle for each line.

	Very easy	Easy	Difficult	Very difficult	Don't have or see this person
Father	◯	◯	◯	◯	◯
Stepfather (or mother's boyfriend/ partner)	◯	◯	◯	◯	◯
Mother	◯	◯	◯	◯	◯
Stepmother (or father's girlfriend/ partner)	◯	◯	◯	◯	◯

Source: HBSC.
HBSC survey(s): 1985/86, 1989/90, 1993/94, 1997/98, 2001/02, 2005/06, 2009/10, 2013/14. Note that "partner" was added for 2017/18 survey.
Status 2017/18: amended.

44. Family support

Description: measures perceived social support from family and is part of the Multidimensional Scale of Perceived Social Support (MSPSS). This item is presented in conjunction with the peer support measure.

We are interested in how you feel about the following statements.
Please show how much you agree or disagree with each one.
Please tick one circle for each line.

	Very strongly disagree	2	3	4	5	6	Very strongly agree
My family really tries to help me	○	○	○	○	○	○	○
I get the emotional help and support I need from my family	○	○	○	○	○	○	○
I can talk about my problems with my family	○	○	○	○	○	○	○
My family is willing to help me make decisions	○	○	○	○	○	○	○

Source: adapted from: Zimet G, Grodaon K. The Multidimensional Scale of Perceived Social Support. J Person Assess. 1988;52(1):30–41.
Status 2017/18: unchanged.

HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY PROTOCOL

BACKGROUND, METHODOLOGY AND MANDATORY ITEMS FOR THE 2017/18 SURVEY

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