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The Health Behaviour in School-aged Children: WHO Collaborative Cross-National (HBSC) Study: origins, concept, history and development 1982–2008

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Abstract

This paper traces the history of the HBSC study from its origins in the early 1980's to the present day describing how it was first conceptualised scientifically and how this influenced issues of study design. The challenges of managing a cross-national study are explained as are changes and adaptations over time with growth of the study from 3 to over forty country members. The key partnership with the World Health Organisation and its benefits are presented. With developments in scientific management and theoretical perspectives, HBSC has made a substantial contribution to the area of youth health. The last decade has seen increased dissemination to policy makers and evidence that scientific information arising from the study has influenced strategic policy development and practical health improvement programmes. This paper considers some of the key success factors and challenges for the study as it attempts to maximise its scientific output and channels the research findings into health improvement for young people. Future challenges for the study are also considered.

Purpose of the paper

The purpose of this paper is to trace the history of the HBSC study from its origins in the early 1980's to the present day. It describes how the study was first conceptualised scientifically and how this influenced issues of study design. The paper discusses the challenges of managing a cross-national study and how these had to be changed and adapted as the number of member countries has increased. The key role of the World Health Organisation and its partnership with HBSC, which has been highly beneficial to the study in a range of ways, is also outlined. Alongside developments in scientific management and theoretical perspectives, HBSC has made a substantial contribution to the area of youth health. The last decade has seen the improved translation of accumulated knowledge and understanding into dissemination activities and products aimed at policy makers. Scientific information arising from the study has influenced strategic policy development and practical health improvement programmes. This paper also considers some of the key success factors and challenges for the study as it attempts to maximise its scientific output and channels the research findings into health improvement for young people.

Origins of the HBSC study

Early years

In 1982, researchers from Norway, Finland and England met to discuss the problems of lack of comparability of cross-na-

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tional data on smoking among young people. They agreed that they would collaborate on the development of a new cross-national survey using a common research protocol and research instrument so that data could be compared with confidence. This led to the conceptualisation of a study that would look not only at smoking but would extend to include a range of important health-related behaviours in the context of young people's lifestyles. Soon afterwards a research plan was formulated and researchers from both Denmark and Austria joined the initial group. The first cross-national survey involving these five countries took place in 1983/84 although Denmark's took place after schedule.

Researchers from French-speaking Belgium, Hungary, Israel, Netherlands, Scotland, Sweden, Switzerland and Wales soon joined the network; this expanded group was responsible for formulating the protocol for the 1985/86 survey that involved 13 countries.

Conceptual framework

The perspective taken from the study's inception was one in which adolescent health related behaviours were seen as part of young people's broader lifestyle and health was viewed in its social context¹. HBSC was not to be a standard epidemiological study nor one in which smoking was seen simply as a health damaging risk behaviour. Instead, health related behaviours, such as smoking, were conceptualised as forming a set of interconnected patterns within adolescent lifestyles. Critically the approach involved a broad understanding of how young people lived; both the wider society and the social domains that adolescents inhabited were considered important influences on behaviour. Health was conceptualised not merely as absence of illness or disease, but as both psychological and physical well-being. There was an implicit interest in understanding how behaviour related to health. Health related habits and psychosocial aspects of health were considered to be key criterion (outcome) variables, with personal and environmental factors in lifestyle as predictors. The importance of demographics and the macrosocial context as influences were also explicitly acknowledged.

The conceptual approach dictated the survey content. Items relating to the social domains of family, peers, and school were included as were an array of relevant health promoting and health risk behaviours of contemporary public health concern. The first two surveys had a special focus: smoking (1983/84) and physical activity (1985/86). The survey design and content was and still is considered as innovative because it acknowledged, ahead of its time, that how young people feel is a valid aspect of their health (and that they can accurately report about it). In this respect it paid attention to young people's everyday symptoms and health complaints, as well

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as their reflections on their health and well-being. Reflecting on the last 26 years it is clear that this strong and innovative scientific foundation has underpinned the success and longevity of the HBSC study. The level and flexibility of the conceptual model has meant that researchers across disciplinary divides have been able to cross such barriers to collaborate with and learn from each other. This has been one of the key defining features of the HBSC research network.

A developmental perspective informed the choice of age groups to study. It recognised the importance of maturational processes that affect cognitive function, self-perceptions and psychological processes. Social influences and expectations also vary according to age. The selected age groups – 11, 13 and 15 – represent the onset of adolescence, the time when young people face the challenges of physical and emotional changes; and the middle years, when young people start to consider important life and career decisions. They also mark increased of autonomy and choice around patterns of consumption; and were within the bounds of compulsory schooling in most European countries.

The initial conceptual framework for HBSC¹ still applies, although it has been further developed. In contrast to a traditional epidemiological model in which behaviours are seen in isolation as predictors of disease and ill-health, HBSC focuses on variables that increase understanding of human beings within a social context; and attempts to describe and analyse them within that wider context. It aims to understand relationships as part of complex systems and to describe and understand the processes while acknowledging that they are changing over time, depending on culture, country, socioeconomic and other national or local circumstances.

New thinking has extended the conceptual framework through specialist areas of work around contexts, behaviours and health outcomes. As the now large body of published work from the study demonstrates (see www.hbsc.org for a complete bibliography), extensive exploration of relevant theoretical questions has been achieved. There has been a growing focus on inequity and the social determinants of health as well as much descriptive work around cross-national comparisons and trends. The approach rests on the original lifestyles and social context framework, the recognition of new threats and challenges to adolescent health and a growing exploration of macro-level influences on social, health and behavioural outcomes.

Network organisation and development

From the very start, face-to-face meetings of the international group have been a crucially important part of research col-

laboration for HBSC. They have fostered cooperation and enabled effective development work to take place. Meetings have been instrumental in developing a sense of membership and commitment and have acted as international team building experiences, providing training opportunities for post-graduate students and early career researchers. In the early years, correspondence outside of meetings was limited to telephone and fax. It was not until the mid- to late- 1990s that email became a practical option for the network members and even then the technology was rudimentary and did not, for example, allow for sharing of files. Data files were stored and transported first on large magnetic tape reels, then on floppy discs before electronic attachments became a possibility. It is clear that the study's organisational development has been shaped by developments in the world of communications and information technology; keeping abreast of such technological developments has been a central success factor.

Despite such advances face-to-face meetings are still considered vitally important. So twice a year, taking this duty in turn, member countries host a meeting open to all network members. One of these meetings is a scientific meeting where research is presented in conference style, and open to researchers outside the HBSC network. The other is devoted to working groups, hence restricted to members. Between these main study meetings, ad hoc meetings of special interest groups are organised as well as regular meetings of organising and management committees. Regular face-to-face contact has proved to be vital to establish and maintain collaborative working relationships and learning opportunities; themselves key success features of the research network.

Study growth

When study membership was small the whole group could easily sit around one large table and make presentations, conduct discussions and scientific arguments, and resolve these by whatever means were agreed among the group. Within ten years the membership had grown from 3 countries to 25 and as many as 50 people would regularly attend meetings, making it increasingly necessary to develop more formal mechanisms to decide the scientific direction of the study; and to avoid differing viewpoints escalating into conflicts. After 15 years, in 1998, when the study had grown to 29 member countries it was clear that a major reorganisation of working practices was required.

This period of major restructuring forced the network to re-examine its core principles and values, they were debated over a prolonged period, rendering them explicit to all. The underlying themes of consultation, democracy, inclusion and transparency, built informally in the early years, were explicitly acknowledged and it was agreed they should run

through all aspects of network activity and working practices. A management consultant was employed to work with the network members and the end result was that a new organisational structure as well as a set of guidelines and rules were approved and implemented in 1998. While these structures and mechanisms remain functional, they have been revisited several times over the last ten years resulting in some modifications and new developments. There is now more or less continuous appraisal of working practices and it is acknowledged that as the study membership continues to increase and collaborations outside Europe and North America develop, new systems will need to be put in place. This willingness to re-examine and prioritise the functionality of working relationships, and to do so in an inclusive, democratic way, is now a hallmark of the 'HBSC approach'.

A further feature of HBSC has been the centralisation of key research processes. This was driven by a desire to maintain high quality standards, provide a point of reference for external stakeholders and ensure continuity during periods of unstable or short-term funding at country levels. Thus a key development has been the establishment of international centres to conduct the main activities of coordination and databank management. The study's International Coordinating Centre is based at the Child and Adolescent Health Research Unit, University of Edinburgh; and the International Databank at the Centre for Health Promotion, University of Bergen. Funding from national agencies and from an international subscription system has provided financial support over long time-periods for these centres. As HBSC grows and recognises the value in such expertise, it is working towards a 'shared model' for the management of a range of international activities, making it likely to see the creation of an increased number of specialist centres based in different countries.

Study organisation

The HBSC network membership comprises national teams from countries in Europe and North America. The study has grown to include 43 countries and regions in 2009. Each member country has one national team. A Principal Investigator (PI), who has been formally accepted by the study Assembly, leads each national team. The Assembly comprises the PI of every member country and is the decision making body of the study. The national team is selected by the PI. Each member of a national team is automatically a member of the HBSC Research Network. The roles, responsibilities and rights of PIs and national team members have been collaboratively developed and agreed by the Assembly and form the study's Terms of Reference.

As the key decision-making body, the Assembly is chaired by the International Coordinator, who comes from the ranks of

and is voted into office by the Assembly. The following have held the position of International Coordinator since the study inception:

- Lasse Kannas (University of Jyväskylä, Finland), from 1982, including the 1983/84 survey of 3 countries;
- Leif Aaro (University of Bergen, Norway), from 1985 including the 1985/86 survey of 11 countries;
- Chris Smith (Health Promotion Wales) and Bente Wold (University of Bergen, Norway) (shared IC role), from 1989 including the 1989/90 survey of 17 countries and the 1993/94 survey of 25 countries;
- Candace Currie (University of Edinburgh, Scotland), from 1995 including the 1997/98 survey of 28 countries, the 2001/02 survey of 35 countries; the 2005/06 survey of 41 countries and the forthcoming 2009/10 survey.

Also supporting the Assembly, there is an elected Coordinating Committee (CC) which reviews the study's progress, develops internal policy, organises meetings, discusses membership issues, liaises with study partners, especially the World Health Organisation (WHO), and ultimately advises and makes recommendations to the Assembly for it to debate and decide upon. The CC comprises representatives from different organisational sub-groups; the Scientific Development Group (SDG), Policy Development Group (PDG) and Methodology Development Group (MDG) and from 6 different geographical divisions of the study membership. As well as the Assembly, the elected International Coordinator (IC) chairs the Coordinating Committee and the Scientific Development Group. Individual network members work together in Focus Groups (FG) that concentrate on specific issues or areas of scientific interest. FG coordinators sit on the SDG. An elected International Databank Manager manages the process of producing the international data file. This position, was held by Bente Wold since 1999 and now by Oddrun Samdal, both based at the University of Bergen, Norway.

Partnership with WHO

The WHO Regional Office for Europe adopted HBSC soon after it was established and the study became a 'WHO Collaborative Study', and this has been an important driver of the success of the network. As HBSC's main partner, WHO plays an important role in many aspects of the governance of the study including providing support to a number of member countries and to the Assembly of Principal Investigators. Critically, WHO has been instrumental in helping to increase research capacity in some parts of the European Region through funding training workshops and enabling countries to make

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successful applications to join and participate in the study. Representatives from WHO have been vital members of the HBSC Policy Development Group and WHO has established a policy series of reports from the study: 'Health Policy for Children and Adolescents' (HEPCA). Since 1998 the main international report from the HBSC study has been published by WHO as part of this series²⁻⁴.

There have been two recent major initiatives from WHO which have given a platform to HBSC research and promoted the utilisation of its findings. One of these is the European 'Strategy for Child and Adolescent Health'. This strategy for child and adolescent health and development was adopted at the 55th session of the WHO Regional Committee in Bucharest in September 2005. It was developed in response to a Regional Committee resolution in 2003 and presents a life-course approach with emphasis on equity and participation, rather than disease and mortality. WHO found HBSC to be a useful source for the development of the strategy and it has given WHO a mandate to support countries developing child and adolescent health strategies. A number of tools have been produced to assist with this, including the 'information tool' that employs HBSC survey data. The information gathered has potential to help countries with funding proposals and also raises the profile of HBSC within their Ministry of Health (see <http://www.euro.who.int/childhealthdev>).

The second initiative is the HBSC/WHO Forum series established in 2006 for information exchange, discussion and learning about how scientific evidence can impact on practice, programmes and policy to improve young people's health at national and international levels in the European Region. On 10–11 March 2006, the WHO Regional Office for Europe and the HBSC Network held the first international forum on the socioeconomic determinants of healthy eating habits and physical activity among adolescents. The Forum, held in Florence, was co-sponsored and hosted by the Government of Italy (Tuscany Region) and the Meyer Foundation.

Resources developed for the Forum included evidence reviews drawing on HBSC and other data which examined cross-cutting social determinants of body weight, with particular attention to the socio-economic patterning of determinants, case studies of innovative effective practice and policy briefing papers. The Forum and the process leading to it served as a mechanism for strengthening and consolidating evidence-based and multisectoral policies and action in this increasingly important area. It also contributed to the WHO European Ministerial Conference on child obesity, held in November 2006 by highlighting policies and interventions that enable healthy eating habits among adolescents through action on the social determinants. The full forum report can be downloaded from the WHO web-site www.euro.who.int. The sec-

ond Forum on Social Cohesion for Mental Health, following the same format, took place in October 2007, in Viareggio and is presented in detail later in this volume⁵.

WHO has also had crucial role in supporting the infrastructure of the HBSC study through its WHO Collaborating Centres scheme. Several HBSC national teams are based in or receive support from Collaborating Centres in their countries. Examples include the University of Bergen, the University of Bielefeld, and NHS Health Scotland that support HBSC related activities in Norway, Germany and Scotland respectively. These centres have agreements with WHO to deliver products and participate in specified activities with the goal of contributing to health improvement for children and adolescents using the vehicle of the HBSC study.

Research products

International research protocols are produced for each HBSC survey^{1,6–9}. These comprise detailed information on rationale, concepts, methods, questionnaire and survey administration (see Roberts et al.¹⁰, this volume). The inclusive nature of the network translates into a collaborative production process involving most members of the study's scientific Focus Groups (FGs) and the overarching Scientific Development Group (SDG). Strict quality controls are exerted at all stages of production. Each protocol includes an overall rationale as well as a rationale for each specialist area based on the purpose and conceptual framework of the study and theoretical interests and public health relevance of its elements. Each new survey protocol draws on the previous one especially since there are mandatory parts to the questionnaire that have remained unaltered from one survey to the next, to facilitate monitoring activities. Nevertheless, each protocol also includes new areas of development; these usually become part of the optional sections that countries can choose to include. The protocol also acts as a rulebook for the research; with sanctions for non-adherence such as data not being accepted as valid for comparison. For each survey, the final draft of the protocol has to be approved by the Assembly before it is adopted for use. Protocols are available on request and to use for specific purposes as long as these do not interfere with country surveys or violate relevant intellectual property rights.

Following each survey since 1993/94 an international report has been produced documenting the main findings and in some cases taking a thematic approach. In all international reports the prevalence of behaviours, health outcomes and social factors are presented by age and sex cross-nationally. Early reports were mainly descriptive^{2,11}, while more recent reports have been thematic. The report from the 2001/02 sur-

vey examined young people's health in the context of various social and developmental factors³; and the latest report, from the 2005/06 survey, investigated inequalities in young people's health⁴. Other reports in the HEPCA series have focussed on specific topics, including gender and health¹² and alcohol use among young people¹³.

As with the protocol, the process of producing reports is collaborative; involving a team of editors as well as authors. The production of the 2004 report from the 2001/02 survey involved more than 50 authors and although there are benefits to the network, as well as the product, of such an inclusive approach; it resulted in a lengthy process. To address this efficiency issue, the strategy for the report from the 2005/06 survey relied on a smaller number of authors, writing according to a highly specified plan with a greater degree of editorial input. Willingness to change approaches to such collaborative endeavours and acknowledge the learning gained, signifies the democratic processes at work within HBSC.

The dissemination of research findings is a defining component of network activity; and there are many imperatives at national and international levels. Although not mutually exclusive, HBSC targets its dissemination to policy makers and other stakeholders and the wider scientific community. Producing appropriate reports and papers for different audiences requires time, skill and motivation; and at times the network and its members have focused on some activities to the relative exclusion of others.

WHO has played a key role in study development not only in terms of publishing the reports but also in helping with publicising and disseminating them to a wide range of potential users. The reports can be downloaded from the WHO website (www.euro.who.int) and are distributed to every health ministry in the European region as well as to other relevant stakeholders at national level. WHO has also provided crucial support for media events at national and international levels. Although there have been tensions about prioritising policy targeted reports over publications in peer-reviewed journals, or vice-versa, recent evidence suggests that it is synergistic to explicitly target both categories of audience.

HBSC contribution to scientific development

The publication of scientific articles in peer reviewed international journals is a priority for the study and its network members. HBSC has fostered a collaborative and inclusive approach to this endeavour, designed explicitly to achieve greater output as well as to develop cooperation and capacity among the membership. A key aim of HBSC, throughout its history, has been to make a significant contribution to

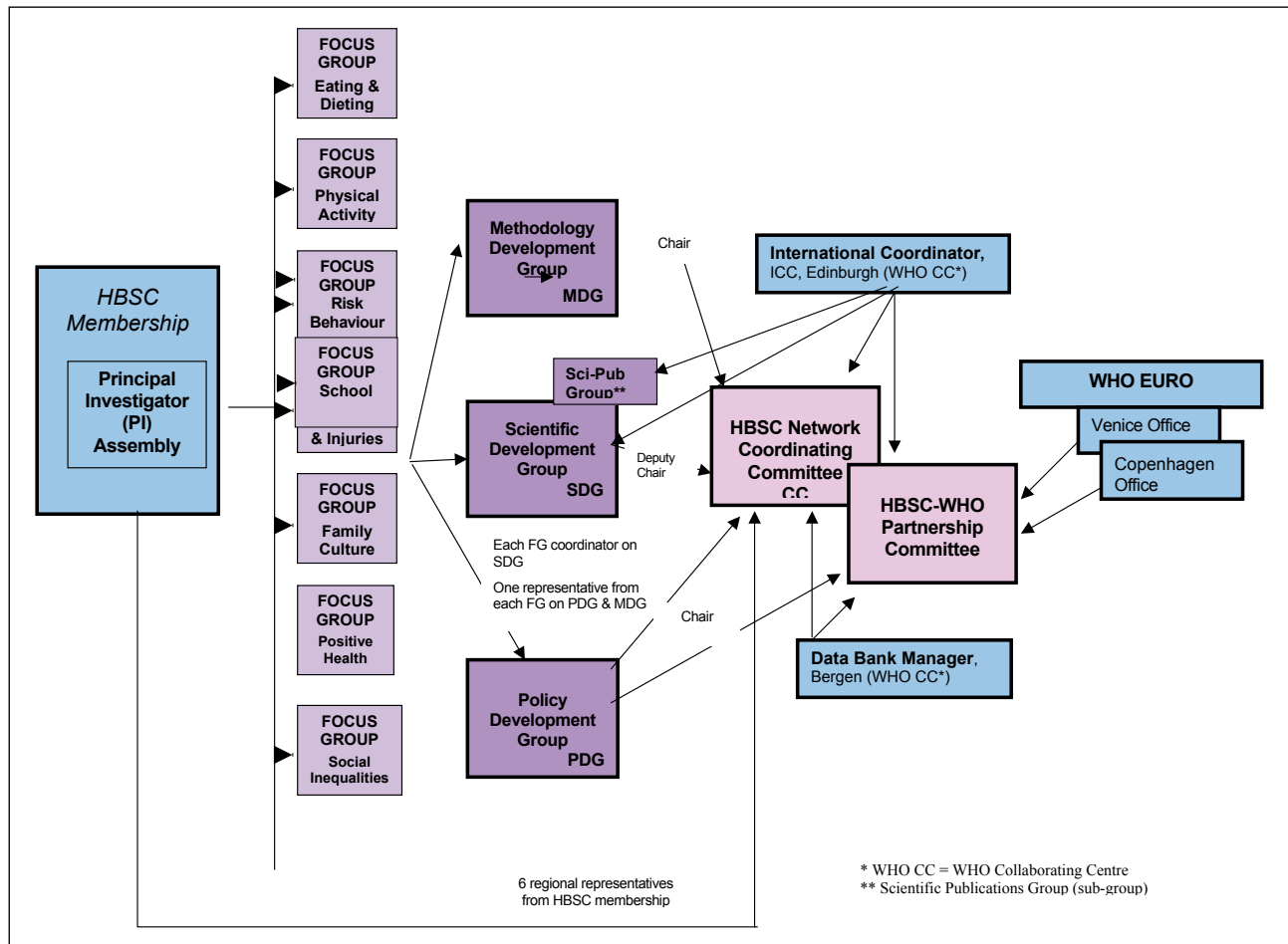


Figure 1. HBSC organisational structure.

scientific knowledge and understanding of adolescent health through development of theory, production of empirical data, and innovation in survey methodology.

The early years saw a modest publication rate with 66 articles published between 1986 and 2002. While this output was small, the content was wide ranging, with four broad categories of papers. Many were descriptive, single or multi-country papers that reported the prevalence of key behaviours or health outcomes, sometimes making between country comparisons. Examples include Kuusela et al.'s (1997)¹⁴ paper comparing the oral hygiene habits of 11 year olds in 22 countries; and Batista-Foguet et al.'s (2000)¹⁵ paper on the lifestyles of Spanish school-aged children. A second type of paper was explanatory and looked at social predictors of health and behaviour. These included Nutbeam et al.'s (1993)¹⁶ paper on the impact of school alienation on health behaviour and Granado Alcon et al.'s (2001)¹⁷ paper focussing on family as a child development context and smoking behaviour among schoolchildren in Greenland. A third type of paper explored association be-

tween patterns of behaviours and health measures. Pickett et al. (2002)¹⁸ published an international analysis on the association between different risk behaviours and injury, while Nic Gabhainn et al. (2002)¹⁹ examined dieting patterns and related lifestyles of school aged children in the Republic of Ireland. Fourth, a number of papers focussed on the development of health and social indicators. In 1997, Currie et al.²⁰ published theoretical perspectives and empirical data on indicators of socioeconomic status for adolescents, presenting the Family Affluence Scale for the first time. This indicator was later to become a key predictor of adolescent health outcomes in the study as reviewed in Currie et al., (2008b)²¹.

Between 2003 and 2009 there has been a substantial increase in the output and in the sophistication of papers published. More complex analytic approaches have been developed, including for example, multi-level modelling, which allows attention to be paid to school and country level influences. Others have analysed trends in health or have focussed on the social context and social determinants of health: there are

29 published papers on the school context, 25 on the socio-economic context, 11 on family relationships and 17 on peer relationships. Examples include Boyce et al.'s²² paper on adolescent risk taking, neighbourhood social capital and health; and Andersen et al.'s paper (2007)²³ on school-related risk factors for drunkenness and how these differ between socio-economic groups.

Exemplifying the development of more complex analytic approaches including multi-level methods are Torsheim et al.'s (2006)²⁴ on country material distribution and adolescents' perceived health in 27 countries; and Vereecken et al.'s (2005)²⁵ on the relative influence of individual and contextual socio-economic status on consumption of fruit and soft drinks among adolescents in Europe. Attention to macro-level influences is presented in Zamboni et al.'s (2006)²⁶ multi-country paper on how welfare regimes mediate the effect of socio-economic position on health in adolescence; and Wold et al.'s paper (2004)²⁷ on national and school policies on restrictions on teachers smoking in seven European countries. Trends in health and patterning of health are examined in Samdal et al.'s paper (2007)²⁸ on vigorous physical activity and TV watching among adolescents in 7 countries from 1986 to 2002; and Richter & Leppin's paper (2007)²⁹ on trends in socioeconomic differences in tobacco smoking among German schoolchildren between 1994 and 2002.

The last 10 years have seen a range of efforts to increase scientific productivity and boost the study's contribution to the evidence base on young people's health. One innovation that has made an important contribution to this was the introduction of scientific Focus Groups (FGs) as a key component of study structure (see Fig. 1). Members have been able to join the FG in which they have greatest expertise or interest and to collaborate with other members on their specialist topic area (e.g., social inequalities, positive health, risk behaviours). The groups have developed new paradigms and used various conceptual frameworks and theoretical models in order to advance their thinking and gather the most relevant data. New indicators have been developed and validation studies have been undertaken for new items and scales. The SDG has encouraged collaborative working on papers so that novice researchers have the opportunity to work with more experienced scientists. In addition, a publications database has been developed to register all publications. This has had the benefit of setting priorities, avoiding overlaps and increasing collaboration.

Current developments

A range of issues influence the current position of HBSC and the challenges it faces. The study has grown rapidly, has re-

structured and re-oriented itself conceptually and organisationally. Such flexibility has been substantially made possible by the shared values and principles that guide decision-making and the investment in working relationships and training opportunities that members share. While the focus will continue to be on methodological and conceptual development, the network has increasingly been oriented outwards, developing contacts and liaisons with others.

In recent years HBSC has made contact with other cross-national studies of young people. These include the European School Survey Project on Alcohol and Other Drugs (ESPAD) and the Global School-based Student Health Survey (GSHS) which has been conducted mainly outside the European Region. It is important for these studies to cross-fertilise in relation to their methods and empirical findings in order to share good practice in research, avoid duplication, and analyse similarities and differences in their data.

While the main partnership is with WHO EURO, more recently HBSC has been identified by WHO Headquarters as a model study in the area of child and adolescent health. Data have been accessed for reports and the reports have been widely used and cited. Similarly UNICEF, OECD and EMCDDA have shown increasing interest in gaining information on HBSC and using the data in their own reports. This level of external interest in the data highlights the issues of data access for the network. All HBSC products, including protocols and datasets are collaboratively developed, with funding granted from an increasing range of government and NGOs; thus they are neither rightly public property nor in the gift of single or small group of individuals to share. Current mechanisms for sharing data and study resources and the principles underlying the approach of the network to these issues are under review to ensure that HBSC can best contribute to future scientific and policy development in the area of young people's health.

While HBSC membership is restricted to Europe and North America, an interest in using the survey methodology on other continents has emerged. A Middle East initiative has developed in collaboration with the Israeli HBSC team and versions of the HBSC survey have been conducted in Indonesia³⁰, the Pacific Islands³¹ and also more recently in Cabo Verde³². Terms of reference for collaborating with countries that are at present ineligible for full membership are currently in development. HBSC has garnered considerable expertise over its' history in the exchange of concepts between cultures and investigating how to render data comparable across cultural groups. However, much work remains and as new concepts and issues in adolescent health emerge, the process begins anew. This should help the network adapt to collaborate with countries from outside Europe, but new, different and challenging obstacles are to be expected.

Conclusion

HBSC has come a long way in the 27 years of its existence and there are many future opportunities to embrace and challenges to face. It has been recognised that wider dissemination of HBSC findings would benefit from greater collaboration with external partners with complementary expertise in fields of policy and particular scientific areas such as looking at macro- social and economic determinants of health. Building better links with policy makers, to maximise the usefulness of the study and its impact on health improvement for the youth of the world, remains the ongoing challenge of HBSC. Providing reports for and with young people is a further type of dissemination that HBSC plans to take forward. The net-

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work also needs to find mechanisms to harness the full potential of HBSC to produce papers of significance in advancing the understanding of adolescent health. HBSC should become a resource for countries that need to build capacity in survey research to gather data on their young people in order that the skills, capacity and learning of the network can maximise its impact for all young people.

Acknowledgement

HBSC is an international study carried out in collaboration with WHO/EURO. A complete list of the participating researchers can be found on the HBSC website (www.HBSC.org).

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