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# **RESEARCH TO IMPROVE IMPLEMENTATION AND EFFECTIVENESS OF SCHOOL HEALTH PROGRAMMES**

Prepared for:

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Division of Health Promotion, Education, and Communication  
World Health Organization, Geneva  
The School Health Working Group  
The WHO Expert Committee on Comprehensive  
School Health Education and Promotion



**World Health Organization**

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## **Dedication**

Mr. Stu Cohen, the primary author of this report, died shortly after submitting the final draft of this paper to the World Health Organization. This document is a fine example of Mr. Cohen's wonderful skill for taking complicated scientific research and crafting language that facilitates understanding and application. We are grateful for Mr. Cohen's contributions to WHO's Global School Health Initiative.

The World Health Organization (WHO) is a specialized agency of the United Nations with primary responsibility for international health matters and public health. WHO came into being on 7 April 1948, when the 26th United Nations member ratified its Constitution.

The objective of WHO is the attainment by all peoples of the highest possible level of health. Health, as defined in the WHO Constitution, is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. Through WHO, the health professions of some 190 countries exchange their knowledge and experience with the aim of making possible the attainment by all citizens of the world a level of health that will permit them to lead a socially and economically productive life.

The World Health Assembly is the policymaking body of WHO and meets in annual session. The Executive Board, which meets twice a year, acts as the executive organ of the Assembly. WHO activities are carried out in six regions, each comprising a regional committee and a regional office. Regional committees meet in annual sessions. The Secretariat consists of a Director-General, six Regional Directors, and such technical and administrative staff as is required.

The first World Health Assembly, held in June 1948 and attended by 53 delegates from WHO's 55 Member States, approved a programme of work that listed its top priorities as malaria, maternal and child health, tuberculosis, venereal diseases, nutrition, and environmental sanitation. In 1979, the World Health Assembly unanimously endorsed the Declaration of Alma-Ata, which stated that primary health care was to be the key to attaining the goal of health for all by the year 2000.

Over the years, the WHO's programmes have responded to, and often anticipated, the major health concerns of Member countries. WHO's ninth general programme of work (1996–2001) fixes goals and targets for the organization's global health action. It focuses on lessening of inequities in health, control of rising costs, the eradication or elimination of selected infectious diseases, the fight against chronic diseases, and the promotion of healthy behaviour and a healthy environment.

Reflecting the concerns and priorities of the Organization and its Member States, WHO publications provide authoritative information and guidance aimed at promoting and protecting health, and preventing and controlling disease.

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Promoting the health of children through schools has been an important goal of WHO, UNESCO, UNICEF, and other international agencies since the 1950s. Since the 1980s, WHO's work in school health has steadily increased. In May 1994, WHO's commitment to and support for school health was further enhanced by the creation of the Division of Health Promotion, Education, and Communication (HPR).

The Director-General of WHO charged the new Division with strengthening WHO's capacities to promote health through schools. He recognized that many WHO programmes have the capacities to provide technical support for a wide range of school-based health promotion, health education, and disease and injury prevention efforts. He also recognized that the support of many WHO programmes is needed to foster the development of integrated and comprehensive approaches to school health, and to provide leadership and direction for a Global School Health Initiative. The new Division established a School Health Team as an integral part of the Division's Health Education and Health Promotion Unit. An interdivisional Working Group on School Health was created through which WHO programmes support the Global School Health Initiative.

The Initiative is designed to improve the health of students, school personnel, families, and other members of the community through schools. Its objective is to increase the number of schools that are "health promoting schools." WHO works in partnership with other organizations to:

- revitalize and enhance worldwide support for promoting health through schools
- build on research and experience worldwide, and particularly on international, national, and local efforts to help schools become health promoting schools
- enable organizations to maximize the use of their resources
- unite the diverse school health initiatives of the United Nations family
- provide full partnership to all organizations involved

The WHO Expert Committee Meeting on Comprehensive School Health Education and Promotion in 1995 serves as the foundation for WHO's Global School Health Initiative. The overall objective of the Expert Committee was to make recommendations for policy measures and actions that WHO, its Regional Offices, other United Nations agencies, national governments, and nongovernmental organizations could take to enable schools to use their full potential to improve health. This document has been prepared to help achieve that objective.

The Global School Health Initiative is founded on partnerships, both within and outside WHO, and fosters new partnerships among organizations with capacities, constituencies, and experience that can help the world's schools become institutions for health as well as education.

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Organizations wishing to contribute to the work of WHO by supporting the Global School Health Initiative and anyone desiring further information about the Initiative should contact: Dr. Desmond O'Byrne, Chief, Health Education and Health Promotion Unit (HEP), Division of Health Promotion, Education and Communication (HPR), WHO, Geneva, Telephone: (41 22) 791 25 78; FAX: (41 22) 791 07 46.

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Geneva, 18–22 September 1995

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## **Other Expert Committee Documents Available from WHO (HPR/HEP)**

*Promoting Health Through Schools. Report of the WHO Expert Committee on Comprehensive Education and Promotion, Geneva, 18–22 September 1995*

*The Status of School Health (WHO/HPR/HEP/96.1)*

*Improving School Health Programmes: Barriers and Strategies (WHO/HPR/HEP/96.2)*

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## 1.0 Introduction

... Given what is known about the probable effect of health and nutrition interventions for learning and attendance, and given the relatively modest cost of a carefully designed, carefully targeted program, the implication for education planners is clear: More investment in child health and nutrition will pay off well for education ... Under a broad range of assumptions, these cost-benefit analyzes suggest that appropriate health and nutrition interventions in the schools are likely to prove to be a very high-yield investment.

— D.T. Jamison & J. Leslie, 1990

The Ottawa Charter for Health Promotion, adopted in 1986 at the First International Conference on Health Promotion, states: "Health is created and lived by people within the settings of their everyday life; where they learn, work, play, and love. Health is created by caring for oneself and others, by being able to take decisions and have control over one's life circumstances, and by ensuring that the society one lives in creates conditions that allow the attainment of health by all its members." The Charter calls upon the World Health Organization and other international organizations to advocate the promotion of health in all appropriate forums and to support countries in setting up strategies and programmes for health promotion."

The Charter is one important step in the march toward realizing the goal of "Achieving Health for All by the Year 2000" that was first enunciated at the WHO/UNICEF meeting in Alma Ata in 1978 (1). Progress has been further enhanced by fully integrating Health for All in the broad development goals of the United Nations. Specifically, with regard to promoting the health of children, the World Summit for Children adopted on 30 September 1990 a Plan of Action noting that:

As today's children are the citizens of tomorrow's world, their survival, protection and development is the prerequisite for the future development of humanity. Empowerment of the younger generation with knowledge and resources to meet their basic human needs and to grow to their full potential should be a primary goal of national development. As their individual development and social contribution will shape the future of the world, *investment in children's health, nutrition and education is the foundation for national development* (emphasis added).



Determining which investments in children's health, education, and development yield the greatest benefits requires care. Decisions to invest resources in one area and not in another are routinely made by national governments, nongovernmental bodies, United Nations agencies and their regional offices, public and private donor organizations, and schools. These decisions directly affect the health of children, their families and, ultimately, their communities.

Substantial bodies of knowledge about theory and practice exist in many—although by no means all—of the areas affecting the improvement of school health's implementation and effectiveness. Progress in the field is uneven, but there is a strong foundation on which to build.

This document, the third background paper for the WHO Expert Committee on Comprehensive School Health Education and Promotion, reviews the research necessary to plan and implement effective and cost-effective programmes to improve the health of children through schools. It explores what research can tell us about: (1) the health status of children, (2) what young people are doing that will affect their health in the future, (3) what schools should do, and are doing, to influence health, and (4) what guidance research can provide about how to intervene effectively and cost-effectively through schools to improve children's health and education. The paper seeks to identify the most significant gaps in this knowledge base as priorities for future research.

Research has different meanings in different contexts. The emphasis here is upon research as a practical, action-oriented step in a process leading to effective school health programmes. The intention is not to identify every important question that could, or should, be the object of research. Rather, it is to focus on the questions that, if answered, can provide the most immediately useful guidance to those who plan, implement, monitor, or evaluate school health programmes at the national or subnational level and those institutions and agencies in the international community that assist them.

Research in school health programmes can guide choices in making investments in children's health, nutrition, education, and development. It can assist decisionmakers to:

- Use existing knowledge to help design school health programmes.
- Verify that programmes are relevant for the people, the school systems, and the communities in which they operate.
- Monitor programme implementation to determine whether they are being implemented as planned, corrected when required, and improved as needed.

- Measure how programmes affect the health and education of children and the health of school staff and whether they do so cost-effectively.

## 1.1 Research to Practice: Some Examples

If there are many gaps in our knowledge and questions for the future, there are also many examples of the successful ways in which research is leading to more effective practices for school health programmes:

- Research carried out over more than 30 years demonstrates that teachers will adopt an innovation to the extent that it first addresses their concerns about changes asked of them in classroom management and practice, and then addresses the impact on students. Without meeting the first requirement, new practices, no matter how innovative, are unlikely to be adopted and sustained (2,3).

In the state of Madhya Pradesh, India, that research is being put into practice through the Teacher Empowerment Project. As many as 500 teachers per day (at first from 23 school districts and now moving into the state's 45 districts and 77,000 schools) attend seminars in which they develop new learning materials and strategies and provide peer demonstrations. The focus is on giving teachers decisionmaking power, thereby enabling them to control the change process in their classrooms and build their self-confidence and status in the community. The project is coupled with seminars for local education officials and school heads, and low-cost improvements in school environments. Preliminary results point to large increases in attendance and learning-retention among students, as well as increased empowerment, participation, and satisfaction among teachers. (4).

- Between 1986 and 1989, the US Centers for Disease Control and Prevention sponsored the first large-scale (5,000 students and 150 teachers in seven states) evaluation of the Teenage Health Teaching Modules (5), a comprehensive school health curriculum for grades 7-12 (corresponding to the middle- and high-school grades in the USA). The evaluation demonstrated improvements in health-related knowledge, attitude, and self-reports of some behaviours (e.g., reductions in alcohol and drug use). One of the most significant findings was that teacher training was a critical factor in the use of the curriculum and in student outcomes. Untrained teachers did not share the same gains (6).

As a result of this finding and other confirmatory research, the Centers for Disease Control and Prevention requested and the United States Congress appropriated substantial funding to: (1) enable national, state, and local health and education organizations to work together to strengthen school health, (2) build the capacity of state and local education agencies to organize and develop comprehensive school health programmes, (3) monitor the extent to which young people practice important health-related behaviours, and (4) establish training and demonstration programmes, including a network of 58 centers that provide teacher training in every state and territorial education agency and in the largest urban school systems. Since its inception, the network has trained hundreds of thousands of elementary and high school teachers (7).

- Although some basic investigation remains to be done, research has generally linked helminthic infection to poor cognitive function, educational attainment, and learning ability (8,9). At the same time, effective and low-cost treatments exist and, if applied, can ameliorate the effects of infection on children (10).

One project that demonstrated the importance of the school as a site for addressing the problem in cooperation with the existing health services system was carried out on the island of Montserrat, West Indies, beginning in 1987. Significant reductions in helminthic infection were achieved along with lower costs than would have resulted through other delivery methods (11).

## 1.2 **Major Questions for Research to Improve the Implementation and Effectiveness of School Health Programmes**

The implementation of effective school health programmes relies upon research findings drawn from a variety of domains. In the simplest terms, if research in school health is to be useful in guiding practice and in the development of effective school health programmes, it must address seven interrelated questions (explicated in Sections 3–9), each of which considers both the progress in the field with regard to research on that question and priorities for future research:

- What indicators can be used in planning and monitoring school health programmes? (Section 3)
- What is the health status of school-age children and the nature of the health risks they face? (Section 4)

- With the knowledge of the under-representation of girls in school, what are the factors that reduce their enrollment? (Section 5)
- How can countries assess the infrastructure available to develop and sustain school health programmes? (Section 6)
- What research can guide practice on school health environment, health education, health services, and their integration? (Section 7)
- What is known about the cost-effectiveness of school health programmes and about health problem-specific interventions that can be delivered through schools? (Section 8)
- What is known about the diffusion of innovations in school health programmes? (Section 9)

Only the second question—that of the health status of children and the health risks they face—has been investigated in some depth. Beginning at Alma Ata in 1978, and continuing with the declaration of 1979 as the International Year of the Child, the emphasis on infant and child survival required a greater understanding of and ability to measure the health status of children. Support from academic institutions, United Nations and other international agencies, private foundations, and nongovernmental organizations funded more than a decade of research in this field (12).

With regard to the other questions, the state of research is less extensive and less sophisticated. However, this should not be taken to mean that even the understanding of the health status of school-age children and the most powerful ways to improve their health is in any sense complete. The emphasis of the child survival movement and the research that advanced the goal was on children from birth to five years of age—before the age at which most children enter school. Knowledge about the health status of school-age children is subject to other limitations as well, especially at the country level. And, while there are some promising interventions designed to ameliorate one or another of the most significant health problems these children face, few have yet been rigorously evaluated.

The uneven development of research characterizes the state of the art with regard to the primary components of an integrated approach to developing truly health promoting schools as well. Two of the components of such an approach—school health services and school health education—have been investigated extensively (although much of that research has focused on content and less on issues surrounding implementation). Indeed, so much emphasis has been placed on health education and health services that none of the other components (school envi-

ronment; health promotion for school personnel; school and community projects; nutrition and food services; physical education and recreation; or mental health and counselling) has received the attention it deserves or the resources that would support systematic research. And there is virtually no research about how the various components of school health programmes can best be integrated to improve the health of school-age children. Nonetheless, if the answers to each of the questions posed above is incomplete, there is much that is known to guide policy and practice.

### 1.3 Selected Research Findings

Before considering the progress to date in the field and future priorities for research in each of the seven areas identified above, it is important to note some of the significant research findings that either have guided or can guide policy and practice. Including the three examples in Section 1.1., many of these are described throughout this paper. Some of the more important findings that will be discussed, and the sections in which they appear, include the following:

- There are clear interrelationships among “health-compromising” behaviours that put an individual at risk. Similarly, there are clear interrelationships among “health-enhancing” behaviours that serve as protective factors. (3.3)
- There are five major health and nutrition problems that seem especially suitable for efficient and cost-effective intervention strategies through schools: (1) Protein-Energy Malnutrition (PEM), (2) micronutrient deficits, (3) helminthic infection, (4) hearing and sight impairments, and (5) temporary hunger (4.1).
- There is unequivocal evidence linking the educational level attained by girls to their health, the health and well-being of their children, and their ability to contribute to the community (5.1).
- There is a fundamental relationship between the quality of a school’s physical and psychosocial environment and the health of students and staff (7.2).
- The most effective health education curricula exemplify a number of characteristics, including being skills based, sequentially developed, and reflecting the interdependence of the individual, peers, the family, and the community (7.3).
- When family planning and reproductive health care are provided through multiservice, school-based health clinics, these health

services programmes have been successful at reducing pregnancy among high-risk adolescents (7.4).

- School health programmes are among the most cost-effective approaches for enhancing the health and development of school-age children (8.1).
- Research in diffusion of innovations, critical in guiding the development and implementation of school health programmes, indicates that successful diffusion depends upon a wide variety of factors, including the communication channel through which the innovation is spread, the nature of the social system in which it is being introduced, and especially the extent to which change agents from within that social system champion the innovation (9.0).

As this brief selection indicates, the significant findings in school health apply to a wide variety of areas, from basic research linking health and education to the substance of school health programmes. They exemplify and require continued investigation about many diverse issues, from programme implementation to an understanding of schools as dynamic social systems.

#### 1.4 **Types of Research and Progress in the Field**

Three types of research are important to the continued development and improvement of school health programmes: descriptive research, evaluative research, and implementation research (13).

Descriptive research helps to understand a population, to define a problem, and to indicate the scope for interventions. Much of the work that has been done to develop and refine indicators of child health status falls into this category, as does the research needed to define better the variety of indicators discussed below. Descriptive research provides both the baselines for interventions and the criteria against which progress can be measured.

Evaluative research is carried out to assess the efficacy of specific interventions against defined criteria. Most often, evaluative research is performed on new interventions under experimental conditions (or as close to experimental conditions as is possible in implementing interventions in complex social systems such as the school).

Implementation research is directed toward understanding how to create the conditions for the successful diffusion and implementation of those interventions that have demonstrated to be promising or effective. This

includes research on issues of policy (e.g., how to stimulate intersectoral cooperation) and practice (what are the requirements for successfully taking small-scale interventions, such as child-to-child programmes, to scale?). Another focus of implementation research can be termed "advocacy research." How, for example, are the optimal social and political conditions created for the advancement of school health programmes?

The vast majority of school health-related research has been descriptive in nature. Much has been learned about the health status of children, for example (8, 14), although key research questions remain with regard to the development of other indicators for assessing children's ability to learn and learning achievement; health behaviours; the school's physical and psychosocial environment; and the diffusion and implementation of programmes. The most important focus for descriptive research at present is at the national level to provide the data needed to inform the development of programmes or the selection and adaptation of interventions.

Although far less developed, in general, than descriptive research, a large amount of evaluative research has been carried out over the past decade. Much of this research has been concerned with school health education and school health services (15). Other evaluations have been, and are being, carried out to assess the effectiveness and cost-effectiveness of intervention packages designed to address specific health problems, such as helminthic infection. Other evaluative research has focused on ways to improve the physical and psychosocial environment of schools (13).

Least well-developed of all school health-related research is that focused on diffusion and implementation. This is the most important area for future research, if we are to maximize the value of what has been learned from all of the other studies (Nutbeam D, personal communication, 7.11.95).

## 1.5 Common Themes

Several common themes are reflected in many of the recommendations made in this background paper. They derive from the contributions of experts in the field and the research literature synthesized in this paper. Overall, they point to four outstanding needs for:

- Better data, especially at the national, state/province, and local levels, with which to plan school health programmes, and simple, flexible tracking systems with which to plan and monitor programmes and evaluate improvements in the health of school-age children.

- Theory-driven interventions and programmes built on the foundation of already existing promising practices.
- Systematic evaluations of the most promising interventions to assess their effectiveness and cost-effectiveness in changing health-related conditions and behaviours and, ultimately in improving both the health of school-age children and their ability to take maximum advantage of the educational opportunities afforded them.
- Examination of the relative contribution of coordinating the development of multiple components into an integrated approach (i.e., what is the added value of reinforcing health instruction, services, and environment?)

## 2.0 **What Indicators Can Be Used in Planning, Implementing, and Monitoring School Health Programmes?**

Five types of indicators are necessary for the planning, implementation, and monitoring of school health programmes. These indicators should serve as baseline data and inform the development of standards and performance measures with which to assess progress. Ultimately, two types of indicators—health status and learning achievement—are required to measure the outcomes of school health programmes.

It is important, however, not to elevate indicators to objectives in and of themselves. For example, one objective of a health promoting school is to reduce absenteeism. But absenteeism can be reduced by fiat, as by a government policy linking school attendance with the provision of social welfare benefits. Absenteeism may fall, but the school is no more health promoting than before (D. Piette, personal communication, 8.8.95).

The five types of indicators are:

- Children's health status
- Learning ability, attendance, and learning achievement
- Behaviours affecting health
- Quality of the physical and psychosocial health environment
- School health programme implementation

### 2.1 **Indicators of Health Status**

Among the types of indicators required, the most robust knowledge base presently exists with regard to health status. Through decades-long work



on the part of the World Bank, WHO, UNICEF, UNESCO, other UN and international agencies, academic researchers, and practitioners, a group of commonly used indicators has been developed, identified, and refined (14,15,16,17,19). They are listed here and described in detail in Annex 1 to this paper:

- Global Burden of Disease (GBD)—Measured in DALYs
- Disability-Adjusted Life Years (DALYs)
- Under-Five Mortality Rate (UFMR)
- Weight-for-age
- Weight-for-height (deficits in weight-for-height, which reflect loss of tissue and fat mass are termed “wasting”)
- Height-for-age (deficits in height-for-age are termed “stunting”)—In addition to its use as a measure of individual nutritional status, it is also believed to accurately reflect overall nutritional and socio-economic status.
- Total Goitre Rate (an indicator of iodine deficiency disorder)—One of the micronutrient deficiencies with serious consequences for education.
- Total Calorie Intake
- Access to Drinking Water and Sanitation Facilities

### 2.1.1 *Progress in the Field*

As UNICEF notes in its 1995 report (19), “If development in the 1990s is to assume a more human face, then there arises a corresponding need for a means of measuring human as well as economic progress...there is a need for an agreed-upon method of measuring the level of child well-being and its rate of change.” There has already been a great deal of progress in defining and refining the indicators mentioned above. The use of indicators such as height-for-age and weight-for-height has been instrumental in defining problems of child nutrition and pointing the way to effective and cost-effective solutions, many of which are well-served by using schools as sites for intervention. The utility of stunting as an indicator of nutritional, general health, and socio-economic status is of particular importance in determining what needs to be done on a country or local level. There is less of a need to continue refining these indicators, therefore, than a need to make their collection and, especially their use, an easy and economic process.

## 2.1.2 **Developing a Baseline Data Set**

As a result of a detailed analysis of the health, nutrition, and learning needs of school-age children in Honduras, the Action Group for International School Nutrition and Health has recommended the use of the national height census as the basic data set with which to assess baseline measurements and changes in health status (20). As noted above, stunting (a marker of lower than average height-for-age) is an indicator both of nutritional and socio-economic status. Also, stunting is frequently associated with parasitic infections, respiratory illness, and other health problems. In most countries, a height census can be carried out by teachers in the first grade of primary school and will provide a standardized and internationally comparable measure of the health status of the majority of school-age children. In addition, because the data are empirically determined, it should be easier to provide results that are disaggregated by sex.

The height census is one approach to the development of a database with applicability from the international to the local level. However, a future priority for methodological research is the development of other similarly useful and highly adaptable tools (18).

## 2.2 **Indicators of Learning Ability, Attendance, and Learning Achievement**

The World Declaration on Education-For-All, adopted at Jomtien in March 1990, pointed to the need "to define acceptable levels of learning acquisition for educational programmes and to improve and apply systems of assessing learning achievements." To fully assess the contribution that improved school health programmes can make to education, as well as the effectiveness of the health education component of school health, itself, indicators of health status must be complemented by indicators of children's ability to learn and their educational achievement. Ability to learn begins with a child's ability to attend and remain in school.

Other indicators of learning ability, attendance, and learning achievement are the following:

- Primary and secondary enrollment ratios:  
Compiled by UNESCO, these include a gross enrollment ratio (the total number of children enrolled in school at a specific level, without regard to their age) and a net enrollment ratio (the total number of children enrolled at a given level who fall within the

appropriate age range for that level). UNESCO also collects data on the percentage of children entering the first grade who eventually reach grade 5.

- The drop-out rate
- Absenteeism
- Literacy, Numeracy, and Life Skills:  
Since 1992, the joint UNESCO-UNICEF Monitoring Education-For-All Goals Project: Focussing on Learning Achievement, has worked with five countries (China, Jordan, Mali, Mauritius, and Morocco) to develop simple, workable, and sustainable methods for monitoring basic education. Literacy, numeracy, and life skills are the primary areas assessed, as well as other factors (e.g., personal characteristics, school and home environment, and factors of access and equity) that also influence learning achievement, and which are surveyed through questionnaires for pupils, parents, class teachers, and school administrators (21).
- Basic Learning Competencies (BLC):  
Working together, the national UNESCO-UNICEF Project coordinators, UN agency staff, and other international experts developed a common core of Basic Learning Competencies (BLC) to be assessed among a random sample of grade 4 students and schools in each country. (Each country was also able to survey students in any other groups of particular importance to allow for maximum flexibility.) The inclusion of life skills (i.e., problem-solving skills and social skills in a variety of areas, including health and nutrition) as one of the three core domains is especially important as this has not been the case in this kind of international project in the past (22). The development of national capacity to collect and analyze the data—and thereby to monitor the process and outcomes of basic education—has been a particular focus of the UNESCO-UNICEF Project as has been the use of data to analyze trends and their implications for policy-making. Thirteen additional countries have since joined the project.
- Assessing Change in Health Knowledge, Attitudes, and Skills:  
These are the standard measurements of learning achievement. (Basic Learning Competencies measure primarily knowledge and some skills.) The research base is very strong (23,24)—although the adaptation of existing tests with strong validity in one national or cultural context remains a task for formative research prior to their use (even within very dissimilar regions of the same country).

### 2.2.1 *Progress in the Field*

Much progress has been made in defining indicators of ability to learn and indicators of learning achievement, and in using those indicators of ability to improve educational programmes. The signal achievement in this area is our understanding of the relationship among a variety of nutritional deficits and a child's ability to learn. This knowledge has pointed the way to the development of effective intervention packages. More remains to be done, however, especially with regard to measuring ability to learn. Enrollment, attendance, and dropout rates are only the most easily collected such indicators; they are not subtle enough to assess a child's capacity to learn (10). At the same time, measures of learning achievement, which have been developed with great sophistication in industrialized countries, must be made more useful for school systems and education planners in developing nations. That is where the primary challenge for continued development of this area resides.

### 2.3 **Indicators of Behaviours Affecting Health**

Many of the knowledge, attitude, and skills assessments fall short of measuring actual behaviour. However, a primary goal of any health promotion programme is to influence and support behaviours consistent with a more positive lifestyle. Two methods have been used traditionally to assess (or predict) behaviour change. Self-reports of Behaviour have been used, usually in the context of short-term research or to track trends over time—although not among the same cohort of subjects. Measures of Behavioural Intent, which rely upon a student's assessment of how he or she would act in a given situation have also been used as a proxy measure of influence over future status. However, the development of true indicators for behaviour change is an area for future research. (25,26,27).

Research to date that has been the most useful in guiding the development of indicators of health behaviour includes those studies that demonstrate the clear interrelationships among "health compromising" behaviours that put an individual at risk, and the similar interrelationships among the "health enhancing" behaviours that serve as protective factors (28,29). Such research findings have led directly to the development of the life skills approach to health education, which seeks to build and reinforce the underlying skills and strengths with which children can make healthy decisions throughout their lives (30). Continued research into the risks posed by specific behaviours (e.g., smoking, alcohol consumption, drug use, risks for injury and violence) and the opportunities to enhance protective factors (e.g., self-esteem, the ability to communicate with

one's family) are especially important in developed countries—and increasingly important in developing countries—to prevent the majority of mortality and morbidity among children and adolescents (31).

The two major surveys that have been developed to assess the health status of school-age children or adolescents also probe health behaviours. The Youth Risk Behaviour Survey (YRBS), was developed by the US Centers for Disease Control and Prevention, and carried out every two years. In 1993, for example, the survey was conducted in 43 states and 13 cities in the US (32). The Health Behaviour in School-Age Children (HBSC) was initiated by researchers in England, Finland, and Norway in 1982 and has been adopted by WHO EURO as a WHO Collaborative Study. It has been conducted four times since 1983, beginning in four countries and most recently (the 1993–1994 survey) in 26 countries and regions. These two surveys are described in Annex 2 and 3, respectively.

The YRBS and the HBSC assess both health-risk and health-enhancing behaviours (33,34,35), including those pertaining to alcohol, tobacco, and other drug use; sexual behaviours that contribute to unintended pregnancy and exposure to sexually transmitted diseases, including HIV; dietary behaviours; physical activity; behaviours that contribute to unintentional and intentional injuries, and dental hygiene. A high degree of validity has been established for the survey instruments. As with instruments designed to measure learning achievement, the task for formative research is to adapt the YRBS and HBSC for use in countries other than those in which they were created.

### 2.3.1 *Progress in the Field*

The most important result of research into health behaviours and a critical piece of the foundation of school-based interventions was the understanding that different risk behaviours often occur together and that in similar fashion, different protective factors, skills, and behaviours can occur together and be mutually reinforcing. This knowledge made possible the development of the Life Skills Approach, as noted above. Work remains to be done to refine indicators of health behaviours and to develop assessment tools that are flexible and adaptable in a wide variety of settings. However, the primary focus for research is descriptive—the continuing collection of data with which to establish time trends and monitor outcomes of interventions.

## 2.4 Indicators of the Quality of the Physical and Psychosocial Health Environment

The fundamental ideas that a school's environment "affects the day-to-day health and well-being of those who interact with it" (36) and that an unhealthy school environment can compromise the quality of any health programme (37) are well established. Three elements combine to make up the school environment: the physical aspects; the psychosocial aspects of education, and the larger geographical and social community within which the school functions. Among these, the first is the most advanced with regard to indicators. Indicators and guidelines for water and sanitation quality can be found in many documents (38,39,40) and a variety of indicators has been established for other elements of the school environment, such as illumination (37). The priority for future research is to develop a simple, adaptable observational tool with which to assess the school environment that makes use of many of the factors already identified.

The development and measurement of psychosocial indicators, far less advanced than for the physical environment of the school, is discussed as a priority for future research below. For example, other students are an important part of the environment for any school child. How then, do disruptive children, those who are hard for a teacher to manage, or those who are clearly disaffected, affect the environment of those around them? Further, how does the school environment affect such children? Is it possible for teachers and other responsible adults to identify these children at an early age, intervene with them, and so prevent their likely dropping out of school early? These are questions for future research, but obviously they occur at the intersection of the individual child's health and mental health status, the psychosocial environment of the school, and the implementation of the overall school health programme.

### 2.4.1 *Progress in the Field*

Short of identifying potential new risks from the physical environment of schools (e.g., radon contamination), little research remains to be done to identify indicators in this area. For the psychosocial aspects of the school's environment, on the other hand, much needs to be done to clarify what is meant by such factors as open communication among students and faculty and, especially, how such factors can be assessed objectively. Another important avenue for continued research is in the use and further development of social mobilization tools to sensitize and move communities to take action to improve school sanitation and

hygiene. Thus, demonstrating the adaptability of the HESAWA (41) experience in Tanzania to other countries is an area of investigation that should be supported.

## 2.5 Indicators of School Health Programme Implementation

The US Centers for Disease Control and Prevention has recently completed the extensive School Health Policies and Programmes Study (SHPPS) (42) at the state, district, and school levels. Approximately 480 districts and 780 middle and high schools have been asked to participate. Detailed mail surveys and structured interview guides include items to assess the following components of school health programmes:

- **School Health Education:** curriculum content; placement of health education within the overall curriculum; duration of instruction; health education requirements for students; teacher preparation; and teaching methodologies. The instruments are designed to assess the extent to which school health education focuses on student acquisition of critical knowledge, attitudes, and skills.
- **School Physical Education:** requirements for students; curriculum content; teaching methodologies; duration of physical education instruction; class size; facilities; and the content of fitness training.
- **School Food Service:** the link between school feeding programmes and classroom nutrition instruction; other school efforts to promote good nutrition; education and training for personnel involved in food service and nutrition instruction; and efforts to comply with US government dietary guidelines.
- **School Health Services:** policies for provision and availability of services; maintenance of student health records; and accessibility of school nurses and other health services personnel.
- **School Health Policies:** policies and procedures related to violence-free, tobacco-free, and drug-free school environment and to HIV infection.

The data collected by the SHPPS have been analyzed and were published in a special supplement to the *Journal of School Health* (October 1995). Data presented by city and state can be used to assess progress toward meeting a variety of national health and education objectives. The data should be of particular use to educators, public health professionals, and decisionmakers at the local, state, and national levels. With the results of

the SHPPS analysis in hand—and especially in light of any revisions in the data collection instruments as a result of this first use—the instruments should be studied to identify questions applicable to different national and cultural settings. These can become the basis for the development of indicators of implementation. Although integration among components was not the primary focus of SHPPS (only one question on each questionnaire asked about collaboration with other components), preliminary analysis of the data suggests that such collaboration rarely exists, especially at the local level (L. Kann, personal communication, 11.7.95)

### 2.5.1 ***Progress in the Field***

As was noted in Section 1.4, research on implementation is extremely underdeveloped. The SHPPS study is therefore an important contribution, but much remains to be done. Research funds should be directed to this area especially.

### 2.6 **Priorities for Future Research**

Among the priorities for research are:

- Within each country, simple systems for the collection and analysis (especially at the local level) of enrollment and absenteeism data need to be established. Such data, especially if they are disaggregated by sex and age, can be used to highlight problems that can then be addressed. If comparable data can be collected and analyzed at the national and international levels, they will provide a reliable baseline against which to measure improvements in enrollment (especially among girls).
- There is a need for relatively simple, flexible systems with which to track the health of school-age children. The school is an ideal setting in which to collect data and develop data collection systems. These would improve the validity of global databases maintained by WHO, UNICEF, UNESCO, and others. More important, however, they are essential at the national level to the development, implementation, monitoring, and evaluation of school health programmes.
- As noted above, the development of indicators of the implementation of school health programmes is a priority. The SHPPS questionnaires should be explored as the basis for developing such indicators.



- The development of indicators to assess the health status, professional development, and satisfaction of teachers is extremely limited and should be a priority for research. Indeed, data on this subject are particularly lacking, whether on national or regional levels, or globally. Research in this area could potentially benefit from collaboration with ministries of education, ministries of health, and international organizations representing school personnel, such as Education International.
- There is a need, noted above, to systematize indicators for assessing the physical environment of schools and to create better indicators for assessing the psychosocial and community environment.
- Given the previous recommendation to develop integrated approaches to school health, there is a particular need to develop indicators to assess the organization, coordination, and management of school health programmes.
- Following from the previous need is the development of indicators with which to measure the effects of implementing integrated approaches.

## 2.7 Improving the Use of Data

In establishing systems for the collection of data, especially local-level data, it is critical that mechanisms be established to ensure that they are used. In too many education and health agencies throughout the world, whether in developed or developing countries, there exist "data graveyards." Potentially important and useful information, collected at great effort, lies hidden in record books, logs, on sheets of paper, or in computer files.

Overwhelming amounts of information are not reduced to the most important elements—those with the most relevance for developing, implementing, and evaluating programmes. This is one of the reasons for the parlous state of implementation research described above.

How such information is used to systematically support the advance of school health programmes is at least as important as the nature of the indicators and the manner in which data are collected. Similarly, in many developing countries, great lengths may be taken to collect information that is never analyzed or used. Thus, in Senegal, researchers from a Childwatch, International project discovered, in a government office in Dakar, boxes full of never-analyzed information, including "meticulous,

hand-written data on hundreds of children in especially difficult circumstances" (43). This study, the first of eight to be carried out, focused particularly on data about health and economic exploitation—Articles 24 and 32 of the Convention on the Rights of the Child, respectively (44).

The connections between data collection and some form of intervention and policy development are not often well made. It needs to be borne in mind that the purpose of collecting much of the research data mentioned in this paper is to inform the development of policies and practices in school health. Unless systems are established that support the use of data in improving health, then a major reason for investing in school health-related research will have been undermined.

### **3.0 What Is the Health Status of School-Age Children and the Nature of the Health Risks They Face?**

In 1990, there were approximately 1,080 million school-age children (defined as those between the ages of 5–14) in the world. They shared 11% of the global disease burden among all age groups (16). As noted by Bundy, however, calculations such as this using Disability-Adjusted Life Years (DALYs) need to be interpreted with caution because: (a) the data for 5–14-year-old children are largely based on extrapolation and (b) in the World Bank report calculations, age-adjusted data for 5–14 year olds were arrived at through "a crude estimation technique." (17). Also DALYs are incidence based. Therefore, if malnutrition begins in infancy, the burden carried with it is added to the disease burden of children under the age of five, even though there may also be serious consequences in later years.

Of the 150 million DALYs lost to the school-age group, 53% resulted from communicable diseases, 28% from noncommunicable diseases, and 18% from injuries, both unintentional and those resulting from acts of violence.

### **3.1 Causes of Mortality and Morbidity**

The primary causes of mortality and morbidity among school-age children are:

- HIV/AIDS and sexually transmitted diseases
- violence and injury
- alcohol, tobacco, and illicit drug use
- unintended pregnancy and poor reproductive health

- helminth infections
- poor nutrition and food safety
- poor sanitation and water control
- lack of immunization
- poor oral health
- malaria
- respiratory infections
- psychological problems
- problems associated with the lack of physical exercise

Among these major health problems, five stand out as being especially amenable to effective and low-cost intervention through schools: Protein-Energy Malnutrition (PEM), micronutrient deficits (especially iodine, iron, and Vitamin A), helminthic infections, sensory impairments of hearing or sight, and temporary hunger (10).

Overall, however, the disease burden among school-age children is not well understood, either globally or, especially, at the country level in many nations. Nutritional problems and helminthic infections have been the focus of much research and intervention studies. Current research about these problems and their consequences in reducing a child's ability to learn was described in detail by UNESCO in 1990 (8). Similarly, research into the behaviours that underlie the majority of mortality and morbidity among school-age children in industrialized countries has been summarized in numerous publications (15,45,46).

One of the most important aspects of research on nutritional problems and helminthic infections—the development of efficacious and cost-effective therapeutic and preventive interventions—will be discussed below. However, even with regard to what is known about the prevalence and consequences of these and other health problems, there are many important avenues for future research.

### 3.2 **Priorities for Future Research**

Among the priorities for research are:

- Reliable empirical estimates of the burden of disease in school-age children, including identification of the differing health problems of primary school children and adolescents.

- Identification of the major causes of mortality and morbidity in school-age children at the national level to assist in the design of school-health programmes.
- Assessment of the impact of physical ill-health on school attendance, cognitive development, and educational achievement, in order to assess the scale of this additional and age-specific burden on the school-age group.
- Assessment of the extent of perceived morbidity associated with common childhood conditions and their correlation with the quality of life adjustments used in estimating DALYs.
- Research to examine the question of how mild-to-moderate malnutrition and sociocultural, economic, and other environmental influences combine in affecting mental development and cognitive capacity.
- An assessment of the prevalence of hearing and sight impairment.
- Reliable estimates of the extent of many of the other health problems noted above at the country level.
- Research on the social, economic, and cultural factors that influence school enrollment and attendance by girls, in particular.
- Research into the differences in health status between those children in and those children not in school.

### 3.3 The Need for Simple Tracking Systems

As noted above, both the YRBS and the HBSC have generated enormous amounts of useful data about the health problems of children in the United States and Europe. For a majority of countries, and especially those developing countries in which the largest numbers of school-age children are located, and in which health problems are still primarily infectious in nature rather than based in lifestyle, the need is for simple and flexible systems that will provide regularly collected data that are available for use at the local, regional, and national levels.

In the Philippines, for example, the Department of Education, Culture, and Sports took the innovative step of providing each teacher with a "Daily Classroom Health Observation Form," which requires recording the name of each student, his or her ailment, the date it was "found," and the date it was "cured" (47). However, the data are aggregated at the national level; they are not used to plan locally, to identify special problem areas, or to inform what teachers do.

In Kenya, on the other hand, a series of studies was carried out between 1990 and 1994 to assess child health, nutrition, school environment, and educational participation in rural schools (37). The project was a collaboration of the ministries of education and health. The results of these assessments have been presented at both national- and local-level consultations organized by UNESCO in July 1994. In each case the consultations were designed to make the data available to, and provide a forum for discussing the results with, those in the best position to use the information to identify priority needs and to affect policy and practice changes. As a result, significant steps forward were planned at both levels.

The priority need for research is to take the experience of projects such as that carried out in Kenya and adapt the instruments and dissemination process for use in other countries. A second priority is to develop ongoing assessment and tracking systems for these data.

#### **4.0 In the Face of the Well-Known Under-Representation of Girls in School, What Are the Factors That Reduce Their Enrollment?**

Although as noted in *The Status of School Health* (WHO/HPR/HEP/96.1), there have been steady improvements in the number of school-age children attending school, the degree of increase among girls has been lower than that for boys. Sixty percent of the school-age children not attending school are girls. Because as Dr. Nakajima has stated, "Women's health is the surest road to health for all," (48) increasing the numbers of girls attending school is important even beyond the issues of equity and human rights.

##### **4.1 Research to Guide Practice**

The research evidence about the relative level of under-representation of girls in school is well-established. So, too, is the evidence of the many benefits to girls, themselves, their children, and society from increasing female participation in schooling (49,50,51,52):

- The single most important determinant of a child's health is a mother's level of education.
- Educated girls are healthier; when they become mothers they are better able to care for their children.
- Educated girls and women seek prenatal care earlier; they give birth to healthier babies, and bring them home to healthier environments.

- Education increases a woman's ability to create healthy households because there is an increased chance they will benefit from health information and make good use of health services.
- Education results in delayed first pregnancy, which in turn means a safer pregnancy.

It is common to explain girls' under-representation in schools in general terms as the result of economic, social, and cultural conditions (e.g., the need for girls to remain at home and care for siblings, the early age of matrimony, and parents' fears of special risks to which girls are exposed, such as early pregnancy or sexual abuse and violence). However, this tells us little about the precise nature of the constraints and how to overcome them.

A simple example, in which the nature of the problem and its solution are clear, even if the precise effect on girls' attendance has not been quantified, concerns the lack of water and sanitary facilities. This fundamental defect in the school environment is likely to have a disproportionate effect upon girls' attendance, certainly on the days during which they are menstruating and possibly in general.

Several established research findings from developing countries should be taken into account in creating programmes to increase girls' enrollment, retention, and health status. In areas with high prevalence of acute respiratory infection among school-age children, school-age female siblings are at particular risk of being required to miss school to provide household labour. This is also true in areas with a high prevalence of diarrhoea (8).

With regard to health status, recent studies have shown that girls have a higher rate of goitre—an indicator of iodine deficiency, one of the most potentially serious but easily remedied of the micronutrient deficiencies (8). They have a higher rate of dental caries (53), respiratory infections (54), and mental health problems (55) than boys. Some school feeding programmes have been shown to have a greater impact on female attendance and performance (56). Once girls get into schools, they tend to outperform boys at the basic education level. However, the longer they stay in the system these differences tend to diminish (8).

A research project is underway in Ghana in cooperation with the Partnership for Child Development to evaluate the social, economic, and cultural factors that influence girls' school enrollment and attendance. The applicability of that project to other countries and regions should be explored. The Women's Health Programme of the Liverpool School of Tropical Medicine is conducting research on the management of men-

stration and the morbidity associated with heavy menstrual blood loss to inform policies and practices in school health services programmes (57). Meanwhile, in many countries, locally collected enrollment and attendance data can be used to identify areas of especially low rate of female participation which can then become the priority for investigation and action.

## 4.2 **Priorities for Research**

The research priorities regarding under-representation of girls in school are as follows:

- Disaggregation and reanalysis by sex of available data on health status as a guide to planning.
- Local-level research into the extent and circumstances of sexual abuse and assault of girls within the school environment (or the fear of sexual abuse and misconduct within the school environment on the part of parents) and its effect on health status, absenteeism, and drop-out rates.
- The development, implementation, monitoring, and evaluation of nationally and culturally appropriate interventions to increase the school participation of girls, including programmes designed to maintain the enrollment of pregnant girls and those with young children.

## 5.0 **How Can Countries Assess the Infrastructure Available to Develop and Sustain School Health Programmes?**

Section 4.3 discusses the need for simple, flexible tracking systems with which to monitor the health of school-age children. Such data are a critical prerequisite for the development of effective school health programmes. But that information is not sufficient; the development of policies at the national level that will support the development and maintenance of school health programmes must also be based upon a clear understanding of what resources exist that relate to, or can be devoted to, school health. In many developing countries, the decentralization of systems outside of major population centers, as well as transportation and communication barriers make it difficult for planners at the national level to determine the nature of the resource base for school health.

Situation Analysis and Rapid Assessment, combined with strategic or action planning, are two approaches to accomplish this task. They are similar in conception and overlap, although they are different in complexity, intensity, and the extent of resources needed to carry them out.

Each approach has been well developed and implemented in a variety of sectors, from agriculture to environmental management. Neither has been applied to assessing a country's national, regional, or local infrastructure for school health programmes.

### 5.1 **Situation Analysis**

This is the more comprehensive and time- and resource-intensive of the two approaches. It relies on the collection and analysis of existing data, programme reports, analyzes of trends and prospects, and a variety of epidemiologic characteristics. These are supplemented with interviews of policymakers, and other key informants (including practitioners, consumers, parents, teachers, pupils etc.) and analyzes of the social and health information systems in a country. For example, within UNICEF, situation analyzes, which can take many months to carry out—and which are repeated every five years—are the basis for programming in each country in which the agency is active (58). The resulting data are important to inform the development of policy; however, simple and affordable approaches to collecting the data have yet to be developed.

### 5.2 **Rapid Assessment and Action Planning Tool**

The adaptation of the Rapid Assessment process to the field of school health holds promise. To be useful to countries and communities, the process should not end with assessment, but be coupled with action planning. Rapid assessment and action planning can resolve some of the limitations of a full situational analysis.

First developed in the 1970s, rapid assessment procedures were designed in response to the needs of decisionmakers in developing countries to plan effective programmes and policies based on an understanding of the individual and social behaviours of proposed beneficiaries, staff, and managers. The initial approach of rapid assessment evolved under the auspices of the United Nations University (UNU), UNICEF, WHO, and others. It has been applied to nutritional status (59), delivery of health services (60), food security (61), women's reproductive health (62), AIDS education (63), and diarrhoea management (64,65). It had never been applied to assess a country's or community's capacity to promote health through schools.

Rapid assessments—which are often completed within two months—utilize key informant interviews, informal interviews, focus group discussions, community interviews, and direct observations. They provide a cross-sectional view of current national health and social service structures and programmes by collecting direct information from people



about their experiences, opinions, feelings, and knowledge. The data from observations consist of detailed descriptions of people's activities, behaviours, actions, and the full range of interpersonal interactions and organizational processes (66). Rapid assessment methods typically produce a wealth of detailed information about a much smaller number of people and cases than does large-scale quantitative research. This increases understanding of the number of cases and situations studied but reduces generalizability. However, rapid assessments can quickly generate relevant information with a relatively low investment of resources (67). They are useful to provide timely, relevant information to decision-makers on pressing issues they face in project and programme setting (68).

### 5.3 **Developing a Rapid Assessment and Action Planning Tool (RAAPT) for School Health Infrastructure**

The Division of Health Promotion, Education and Communication (HPR) of the World Health Organization (WHO), the Pan American Health Organization (PAHO), Education Development Center, Inc., and the Ministries of Health and Education of the governments of Bolivia and Costa Rica are developing a RAAPT that national governments, other UN agencies, and non-governmental organizations can use to help assess and strengthen a country's capacity to plan, implement, and evaluate school health programmes, including efforts to improve the health of students, school personnel, parents, and members of the community.

Preliminary questionnaires and interview protocols have been developed and are being refined in collaboration with representatives of PAHO and EDC, as well as representatives of Bolivian and Costa Rican health and education programmes, NGOs, and community leaders. After this phase of formative research, a pilot-test took place in December 1995, during which US, Bolivian, and Costa Rican field investigators conducted focus group discussions and interviews with representatives of the Ministries of Health and Education; school health personnel at the national and regional level; school administrators, community members, teachers, students, and parents in selected local schools/communities; and leaders of organizations representing teachers. At the completion of the pilot-test, discussions took place with the key representatives and field investigators concerning subsequent refinement of the tool. The RAAPT is under revision in preparation for full-scale implementation in other countries. Results of the RAAPT will be used as the basis to develop national, regional, and local plans of action to improve school health within the limits of available resources and to seek additional resources for priority actions.

## 5.4 **Priorities for Future Research**

The development, pilot-testing, and refinement of the rapid assessment tool for school health infrastructure will continue to be a priority.

The development of other simple and affordable approaches to collecting data with which to inform policies and programmes in school health is also a priority.

## 6.0 **What Kinds of Research Can Guide Practice on School Health Environment, Health Education, and Health Services**

### 6.1 **Introduction**

In the last several decades a large and ever-growing body of research and writing on various aspects of school health has developed, primarily in Europe, the United States, Canada, and Australia. More recently, the literature on school health about and from developing countries has expanded as well (68,69). Amidst this abundance of material, however, that portion of the literature devoted to research has been largely categorical, focussing on single areas of health (e.g., nutrition, sexual behaviours, smoking).

Moreover, despite many discussions of the importance of integrating the various components of school health programmes, the research literature has been marked rather by an examination of categorical health problems addressed within single components. Relatively little research has been conducted on the integration of components, whether these are defined in terms of the three traditionally recognized areas of school health environment, school health education, and school health services, or subdivided into the eight-component model as described by Allensworth and Kolbe (70).

Nonetheless, if the integration of the components of school health programmes is a critical priority for research in the future, significant research findings in each of the three major components do point the way to important lessons for practice.

### 6.2 **School Health Environment**

Numerous studies confirm the central importance of the school's physical and psychosocial environment in affecting the health of students and staff and in enhancing or detracting from the goals of school health programmes (36,37,71,72). In terms of the physical environment, the absolute requirement for promoting health through schools is the avail-

ability of clean water and sanitary facilities. Once this has been achieved, many other factors—from illumination levels to noise levels—become important. Hazards, whether based on the site or location of the school or resulting from biological, chemical, or physical factors (e.g., temperature, humidity, sources of unintentional injury) are factors to be addressed in schools in every country and region.

Studies of the psychosocial environment provide several important guides to practice (73). Thus, a school striving to become a health promoting school has:

- Goals that are shared by all participants.
- A high degree of communication between and among students, staff, and administrators.
- An optimal degree of effective participation by students and parents in governance of the school—in the major concerns and decision processes, complementing and balancing the power of staff and administrators to the maximum extent possible.
- A high degree of cohesiveness, work morale, and autonomy.
- A sense of interdependence and mutual benefit among administrators, staff, and students as members of a team that is jointly responsible for the well-being of the school.
- A sense of safety and support for all.

### 6.3 School Health Education

Since the 1960s (74), the educational component of school health programmes has received the bulk of attention in the literature (75,76,77,78). In terms of effectiveness, a recent review of European and some US studies indicates that among those that evaluated behavioural change, at least short-term effects were reported with regard to sexual behaviour, general health, smoking, use of alcohol, use of marijuana, and exercise (79). The only programme they reviewed that produced long-term change was part of a community-wide intervention (80).

The most effective programmes exemplify several characteristics that serve as a guide to practice:

- Curricula are skills based, sequentially developed, and reflect the interdependence of the individual, peers, the family, and the community.
- They offer a positive and affirming approach to health and well-being.

- They emphasize affective, skill, and cognitive objectives.
- They reflect fundamental health concerns of students and teachers.
- They make use of a wide range of interactive pedagogic techniques.
- They include teacher training (generally most effectively provided through the use of training-of-trainer models) and ongoing technical assistance and in-service programmes.
- Classroom activities are supplemented by home and community assignments to enhance the students' view of health as a broad social process and to involve the family and others.

#### 6.4 School Health Services

Some form of health services is provided for students in virtually every country, although access and quality are highly variable within and among nations. Traditionally the province of the school nurse or the visiting health practitioner, school health services increasingly are being provided through multiservice school-based health clinics (81,82). Where clinics have provided reproductive health services, they have been successful in reducing pregnancy among high-risk adolescents (83).

Financing mechanisms vary from the US (in which health services are generally funded from separate budgets from other school programme components) to many European countries in which health services are funded through a line item in the overall school health budget. Despite such differences, there are some common principles that mark successful school-based health service programmes (adapted from reference 82):

- They are based on local assessment of needs and resources.
- The clinic and the school are committed to operating in a spirit of mutual respect and collaboration.
- The clinic provides comprehensive primary medical, mental health, social, and health education services to respond to the full range of children's needs.
- Access to such services through community providers is maintained during hours and longer periods when the health center is closed.
- The clinic maintains close and ongoing relationships with medical, mental health, social service, and legal service providers in the community.

- The clinic and the institutions with which it cooperates develop policies to ensure confidentiality of services.
- The school health services programme should be integrated with the other components of a health promoting school.
- The clinic must coordinate care with all of the other providers and health care institutions through which the student receives health services.

If these are elements that mark the best school-based health services programmes in developed countries, they are more often than not absent in many developing countries for which the provision of health services in any context is more difficult. A recent survey of school health services in a number of sub-Saharan countries conducted by UNICEF staff indicated that school health services: (1) are often not based on any assessment of need, (2) lack effective strategies for social mobilization of support, (3) are undercut by a lack of intersectoral collaboration, (4) suffer from fragmentation and duplication of interests on the part of donor agencies, (5) lack the appropriate mechanisms for monitoring and evaluation of services, and (6) are not sustainable (Lusakulira-Villeneuve, personal communication).

In Ghana, for example, a recent study found that there is no policy governing school health. Organizational structures are weak, and the absence of plans or programmes is serious. Although a few schools provide fully integrated health services, many do not have access to a regular provider of health services (37).

## 6.5 Priorities for Future Research

- There are few intervention studies that examine the effects of implementing multiple strategies combined in health promoting schools. Most interventions tend to focus on a single categorical area and single components. Research is needed to develop and test more coordinated models.
- Research is needed to determine which services can most efficiently and cost effectively be provided through school-based health clinics.
- Little research is available on how to influence schools to adopt and maintain quality programmes. Research is needed on the barriers to and facilitators of implementing school health programmes at the local and national levels.

- Policy research is necessary to determine the most effective ways to establish and maintain intersectoral collaboration and to coordinate the efforts of donor and volunteer agencies.

Meeting the health needs of those children not in school requires research on the extent to which school health programmes can be extended beyond the school itself.

## 7.0 **What Is Known About the Cost-Effectiveness of School Health Programmes and About Health-Problem Specific Interventions That Can Be Delivered Through Schools?**

### 7.1 **The Research Base**

The 1993 World Bank report, *Investing in Health*, notes that: "Until recently, little has been done to apply cost-effectiveness analysis to health. This is, in part, because it is difficult...Nonetheless cost-effectiveness analysis is already demonstrating its usefulness as a tool for choosing among possible health interventions in individual countries and for addressing specific health problems such as the spread of AIDS." With regard to the cost-effectiveness of prevention and intervention, including those elements of health services and education that can best be delivered through schools, the World Bank has been a major supporter of and collaborator in research (16,85).

In 1990, Jamison and Leslie reported research on the most significant health problems affecting the education of school-age children (86) and provided an overview of the costs and benefits of addressing these health problems through schools (87). They concluded that, "More investment in child health and nutrition will pay off well for education," because "Under a broad range of assumptions, these cost-benefit analyzes suggest that appropriate health and nutrition interventions in the schools are likely to prove to be a very high-yield investment" (87).

The World Bank's own major analysis of the cost-effectiveness of a wide range of public health and clinical measures for developing countries further strengthened that conclusion. Among six activities that the report characterized as highly cost-effective, five can best be carried out either wholly or in large part through schools: immunization; school-based health services; information and selected services for family planning and nutrition; programmes to reduce tobacco and alcohol consumption; and AIDS prevention. (The sixth, non-school related activity was regulatory action.)

Therefore, school health programmes are among the most cost-effective approaches to enhancing the health and development of school-age children.

As is indicated in the World Bank Health Sector Priorities Review (85), analyzing the cost-effectiveness of health programmes is a complex and evolving task. The methodology and techniques for measuring cost-effectiveness will continue to evolve and should demonstrate even more strongly the benefits of investing in the health of children through schools. However, even at the present state of analysis there is more than enough data to support strong arguments for policy development. "The challenge ahead," noted D.T. Jamison, "is that of designing and implementing instruments of government policy that will greatly expand the use" of cost-effective interventions (85).

## 7.2 **Cost-Effective Interventions for Specific Health Problems and the Role of Schools**

The Partnership for Child Development was formed in 1992 by WHO; UNDP; and the Rockefeller, Edna McConnell Clark, and James S. McDonnell Foundations. Working in partnership with Ghana, Indonesia, Colombia, and other countries, the Partnership is conducting operations research projects to determine how a package of interventions can be delivered to children through schools most effectively, at the lowest cost, and in sustainable programmes. The core package (also identified by the World Bank panel and other international agencies and experts) consists of anthelmintics, micronutrient supplements (chiefly iodine and vitamin A), and participatory health education to encourage and promote behaviours that can lead to improvements in health (88).

A similar package of interventions has been proposed by UNICEF working through the School Based Interventions Technical Support Group of its Health Promotion Unit. The package in this instance is defined as including information and Skills (skills-based health education), healthy environment (access to water and sanitation), medical and related services (including school-based treatment of similar health problems to those addressed by the Partnership, as well as improved access to health services), nutrition (micronutrient supplementation), and policy changes necessary to implement the Convention on the Rights of the Child. It is hoped that such programme packages can be developed in those African, Asian, and Latin American countries participating in the Bamako Initiative and designed to ensure, through policy reforms, access to affordable essential health services for the majority of the population—especially children (89).

### 7.3 **Potential Costs and Benefits of a Comprehensive School Health Programme in the USA**

In a recent study, a group of researchers from the US Centers for Disease Control and Prevention, Batelle (Centers for Public Health Research and Evaluation), and the University of Washington, Seattle used data drawn from exemplary programmes in the research literature to construct a model. The model comprised representative aspects of all of the exemplary programmes (defined as those that had reduced high-risk behaviour—smoking, substance abuse, and sexual behaviours).

Costs were calculated in terms of instructor salary and benefits, teaching and training time, and materials (but not facilities costs or those pertaining to evaluation). Benefits included both the difference in the proportion of students engaged in high-risk behaviours in control and intervention groups, as well as the direct and indirect costs that have been associated with diseases related to the behaviours. The researchers then used the model to assess the benefit-cost ratios for the smoking cessation programme, and incrementally, the substance abuse and sexual behaviour programmes, to determine the benefit-cost ratio of the integrated topics of the school health education programme.

The findings suggest that the potential benefits of selected components of such a programme are substantial. For every US\$ spent on changing smoking behaviour, the benefit was nearly US\$19. More than US\$5.50 was saved for every dollar spent on preventing other substance abuse and, for the sexual behaviour component of the programme, the ration was in excess of 5:1. For the integrated education programme as a whole, nearly US\$14 was saved for every dollar spent (98).

### 7.4 **Priorities for Future Research**

Every country has some form of ongoing school health programme, that could become the starting point for a more integrated approach (76). An international comparative study (1984–1987) of 31 countries indicated that similar problems exist across national boundaries (91).

A World Health Conference on Education for All in Thailand (1990) demonstrated that many countries in Africa, Asia, Europe, the Middle East, the Caribbean, as well as the USA, have attempted to implement school health programmes in the last decade and have faced similar obstacles to implementation of their school health component. Some of these include a lack of: (1) active support, commitment, and coordination from ministries of health and education and school officials; (2) national resources in terms of skilled personnel, training and materials; (3) mech-



anisms to supervise, monitor, and evaluate programmes; (4) research and infrastructure in the school health programmes; (5) well-defined national strategies for promotion, support, coordination, and management of school health programmes; and (6) innovative approaches in development of instructional material.

The primary task for research, therefore, is to identify the best, least expensive, and most highly adaptable approaches to overcoming these barriers. Some of the specific areas in which this research should be directed include the following:

- Because advocacy for policy and the development of policies supporting school health programmes is not static, there is a need to continue to make the case for cost-effectiveness as the tools of that approach become more sophisticated.
- Until now, the focus has been on the health of children themselves. Further research is needed to determine the extent to which schools are a cost-effective site for programmes designed to improve the health of teachers and other school personnel, as well as families and communities.
- As noted among the priorities in section 7.5, the extent to which school health programmes can effectively improve the health of out-of-school children is a topic for research; so too is the cost-effectiveness of such an approach.
- Further research and the development of effective guidelines for the use of minimum packages of interventions to be delivered through school health programmes are needed.
- Although the US study cited above provides a clear indication of the substantial benefits compared to costs of school health programmes, research is needed to determine whether it is possible to expect such cost-benefit ratios in the health and economic contexts of specific developing countries.

## 8.0 **What Is Known About the Diffusion of Innovations in School Health Programmes?**

The use of principles developed through many years of research in diffusion of innovation is of particular importance in guiding the development and implementation of school health programmes. As Rogers (92) noted:

Getting a new idea adopted, even when it has obvious advantages, is often very difficult. There is a wide gap in many fields, between what

is known and what is actually put to use. Many innovations require a lengthy period, often of some years, from the time when they become available to the time when they are widely adopted. Therefore, a common problem for many individuals and organizations is how to speed up the rate of diffusion of an innovation.

Research in diffusion of innovations indicates that successful adoption is related to the following characteristics:

- The perceived attributes of the innovation.
- The type of decision-making about adoption (e.g., optional, collective, authoritarian).
- The communication channel through which information about the innovation is spread.
- The nature of the social system into which the innovation is being introduced.
- The extent of efforts on the part of change agents and whether the impetus for change comes from within the social system (e.g., the school) or is pushed from without. The closer the relationship between the change agent and those at whom the innovation is directed, the greater the likelihood of successful adoption.

Research also supports the idea that change proceeds at different rates for different actors, systems, or even nations (as will be seen below). In broad terms and as ideal types, Rogers (92) characterized participants in the process as innovators, adopters, early majority, late majority, or laggards.

The first two examples discussed in Section 1.1 highlight two of the most important factors in the diffusion of any educational innovations to teachers. First, the innovation must respond to the felt needs of the teachers themselves in their professional role in the schools or it will not be adopted. Second, without training, the use of the innovative practice is likely to be ineffective and will not be sustained.

The Concerns-Based Adoption Model (CBAM), which is at the heart of the first example, recognizes that change is a process that takes time and proceeds unevenly (93). In acquiring new skills, efficiency tends to drop until, with support and practice, it stabilizes at a higher level than when the innovation was first introduced. Often, however, attempts are made to evaluate the results of the adoption process too early. Because the individual is struggling to use the new techniques or approaches and efficiency has been reduced, it appears that the innovation is unsuccessful.

What is true for individuals is equally—or perhaps even more strongly—the case for institutions. Resistance to change is firmly entrenched; change occurs because there is a perception that it is rewarding.

A single exposure to a new idea or technique is rarely sufficient to advance diffusion. Outside intervention to “push” a change will only succeed if there are individuals who are empowered to become champions for the innovation. Sometimes referred to as “early adopters,” these are the people who demonstrate the value and practicality of a new way of doing things.

However, this model represents only one possible way of looking at diffusion. In House’s schema (94) it is a “technical” as opposed to a “political” or “cultural” perspective. These perspectives act as interpretive frameworks for understanding innovation and through which different constituencies may view the process. Thus, they define the range of arguments that might be advanced for a course of action and from which policy is formed.

The technological perspective views innovation as a process from research through development, diffusion, and adoption. The political perspective is one in which innovation results from the conflicts and compromises among factional groups. Whereas the technological view posits an essential unity of purpose and values among researchers, developers, and practitioners, the political perspective tries to account for the possibility that each group has its own goals and interest, which may be in conflict.

Finally, in cultural terms, innovation is seen as a process of reconciling not the political interests of constituencies, but the values, norms, and experiences of distinct groups (e.g., teachers, administrators, students, and parents).

As with any such set of distinctions, these lenses are not mutually exclusive. Policy can and should be set by taking into account aspects drawn from each perspective. Only by doing so can the fundamental difficulty of the process of innovation be overcome. As House (95) frames it:

Innovations are acts of faith. They require that one believe that they will ultimately bear fruit, often without the hope of an immediate return. Costs are also high. The amount of energy and time required to learn the new skills or roles associated with the new innovation is a useful index to the magnitude of resistance.

Thus, successful innovations in school health will require—as do any innovations in any other aspect of education—that “everyone inside and

outside the school is going to have to put great energy over a period of time" into bringing about lasting change (96). Fullan (96) notes particularly the role that teachers' unions and professional associations can play in this regard. Nor should innovation be interpreted always as a "top-down" activity. Teachers' unions and professional associations can also spotlight innovative practices developed by teachers and health educators in their own practice that can be disseminated and adapted by others.

## 8.1 An Example of Successful Diffusion

There are few evaluations of the way in which the characteristics of the diffusion process have affected the development of coordinated and integrated approaches to school health programmes. There is, however, a substantial body of anecdotal evidence on which to draw in looking for guidelines for future practice.

The foremost practical example of the diffusion of an innovation with regard to school health programmes is the development of the European Network of Health Promoting Schools, beginning in 1991. Launched as a result of the Conference on the Promotion of Health Education organized in Strasbourg by WHO, the Council of Europe, and the Commission of the European Communities, the Network began with four countries. Today it encompasses more than 400 schools and 300,000 students in 33 countries, and has links to another 1,600 schools through various national and subnational arrangements (97).

The network was established by its three parent organizations as a mechanism to avoid duplication and to provide a coherent framework in which to foster innovation, develop supportive national environments, and support the development and diffusion of policies and best practices throughout the region. In 1990, a number of West European countries had already made some strides toward building health promotion programmes in the schools. However, they were not the early adopters when it came to the European Network.

Instead, the countries which earliest and most fervently embraced the innovation were in Eastern Europe: Poland, Hungary, the Czech Republic, and Slovakia. They were the most open to innovation, because they had the greatest perceived need for it. Beginning in the following year, as the innovation had started to manifest itself, nations representing Rogers' other types of adopters joined (98).

Beginning with a formal agreement between the ministries of health and education in each country, the network begins building champions and an

infrastructure from the national to the local level. Through that infrastructure and with assistance from WHO/EURO, the national programmes carry out extensive training and project development focussing on many of the research-based guides to practice noted in section 7, above.

It is now time to consider where the network has been, what it has accomplished, and future directions to set. Each of these needs is set forth in the ENHPS Strategic Development Plan for 1995-1997.

In terms of future research, the priority should be to evaluate the effects of the health promoting school (HPS) model on the health and learning of students and, where possible, to distill from that evaluation lessons that can be extended to nations and schools in other WHO regions. Indeed, the tools for such an evaluation are already under development. The EVA project, financed by the CEC and being carried out in collaboration with the International Planning Committee of the European Network, is designing protocols and experimenting with new methodologies that will allow national HPS programmes to use data from the Health Behaviour of School-Age Children survey for evaluation purposes (D. Piette, personal communication, 8.8.95).

## 9.0 **Conclusions**

### 9.1 **Research Is Needed About the Impact of School Organization on Health**

There is no research that links health to school organizational characteristics. The research knowledge about the characteristics of those schools and classrooms "whose pupils progress further than might be expected from considerations of intake" (99) is among the most robust that we have in our quest for educational reform. The knowledge base on school effectiveness provides a more contemporaneous and contextual interpretation of accepted notions of organizational health.

It has been demonstrated that the various characteristics of schools (the degree of academic emphasis, the availability of incentives and rewards, the teaching styles, etc.) combine to create a set of values, norms, and expectations that can, in their entirety, affect student learning (100). That there is a relationship between all of these factors and children's psychological health is self-evident, for example, even if the precise degree has not been adequately measured. Certainly, it has been noted frequently, if anecdotally, that in schools in which students are valued, in which there is a high degree of participation, and a healthy environment, such behavioural risks as violence and risks to education such as uneven attendance are reduced.

It is hoped that future studies will include indicators of students' health when measuring school effectiveness and organization.

## 9.2 Improving the Connection Between Research and Practice

Drawing on 188 research studies from 81 developed and developing countries, Hopp (91) concluded that, across national and regional boundaries, individuals in school health face similar problems. "Knowledge, educational approaches, and research methodology [are] transferable to widely disparate countries," she stated. She concluded that, "It is time all school health professionals profited from the collective wisdom."

As we have seen, there is much "collective wisdom" based in research on school health programmes that can guide the development and implementation of effective programmes. However, many priorities for future research have been identified. Not only must that research be carried out, but the knowledge gained must be transferred to practitioners to achieve meaningful results.

Unfortunately, notes Nutbeam (13), that transfer of knowledge "is less than optimal." In explanation, he continued:

There are too few rewards for researchers which encourage research with potential for widespread application, and systematic development of promising interventions to a stage of field dissemination. Alternatively, practitioners often find themselves in the position of tackling a public health problem where evidence of efficacy is either lacking, or has to be considered alongside a desire to respond to expressed community needs, or the need to respond to a political imperative.

In fact, the majority of intervention studies are designed to be carried out under highly controlled conditions. Such studies are favored in the academic literature, but are often not reproducible under realistic conditions. Alternatively, they can be successfully implemented, but only in limited circumstances and cannot be brought up to scale. This has been one of the consistent problems with child-to-child interventions, for example. The idea is extremely powerful and individual programmes seem to work well, but there has been no success at bringing them to scale.

There have been a growing number of demonstration studies, which attempt to reproduce experimental results in conditions that better approximate real life. But, as Nutbeam notes, these appear to be less attractive to academic researchers "who may be less comfortable with the uncertainties and lack of control" inherent in this form of research, even if their relevance to policymakers and practitioners is greater.

Least widely practiced are the dissemination studies designed to identify how successful demonstration projects can be taken to scale. Presumably, the research being carried out through the Partnership for Child Development will be taken to this stage in exploring optimum approaches to widespread use of the minimum package of health interventions discussed in section 8.2.

The Partnership itself provides one possible model for carrying out rigorous, yet flexible research that can unite academic specialists, practitioners, policymakers, and donors. The UNESCO Kenya project described in section 4.3 is another example of research tied closely to and designed to inform both policy and practice. Such examples can be encouraged by WHO, UNESCO, and UNICEF working to develop research priorities with private donor agencies. The possibilities for coordination and reduction in duplication are important, in addition to the potential benefits of specific research projects.

Additionally, improved training of practitioners in the use of research findings (as part of a broader emphasis on capacity-building at all levels within countries), and the rapid reporting of findings on the part of academic journals would all have salutary results, Nutbeam suggests.

Certainly much important research remains to be done and will require the combined strengths of the academic, policy, and practitioner communities, assisted by UN family agencies, international NGOs, donor agencies, and others. In combining these research strengths, the school health programmes can reach their true potential to improve the lives, health, and learning of a billion school-age children.

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## **Annex 1: Indicators of Children's Health Status**

### **Global Burden of Disease (GBD)**

Developed by the World Bank and WHO in 1993 based on 1990 data, GBD combines: (a) losses from premature death, defined as the difference between age at death and life expectancy at the same age in a low-mortality population, and (b) loss of healthy years of life as a result of disability. The units of measurement are DALYs (disability-adjusted life years). It is important to note that the DALYs assigned in 1993 were estimates, based on vital registration data (for countries with good registration systems), model-based estimates, and epidemiological estimates for specific diseases. The disability-related portion of the DALYs were based upon a series of expert estimates subject to several rounds of review.

### **Under-Five Mortality Rate (UFMR)**

Based on data compiled by UNICEF, this is the number of deaths of children under five years of age per 1,000 live births. It is the probability of dying between birth and exactly five years of age and, as such, is one measure of the children available to enter school at that age.

### **Weight-for-Age**

These data are compiled by WHO and Demographic and Health Surveys. Weight-for-age is the most commonly used indicator on standard growth charts. It shows nutritional status and can be used to identify cases of nutritional deprivation. (Moderate underweight is below minus two standard deviations from median weight for age of the reference population. Severe underweight is below minus three standard deviations from median weight for age.)

### **Weight-for-Height**

Compiled by WHO and Demographic and Health surveys, weight-for-height reflects current health status of an individual and can demonstrate current malnutrition. (Wasting reflects loss of tissue and fat mass and defines deficits in weight-for-height. Moderate wasting is below minus two standard deviations from median weight for height of the reference population. Severe wasting is below minus three standard deviations.)

## **Height-for-Age**

Compiled by WHO and Demographic and Health Surveys, height-for-age measures overall social conditions and chronic nutritional problems. (Stunting is the term used for deficits in height-for-age. In addition to its use as a measure of individual nutritional status, it is believed to be an accurate proxy measure for socio-economic status and general health status. Stunting is commonly reported as the proportion of children having height-for-age less than two standard deviations below the median WHO norms for specific ages within a population.)

## **Total Goitre Rate**

Compiled by WHO, this is the percentage of children aged 6–11 with palpable or visible goitre. It is an indicator of iodine deficiency disorder—one of the micronutrient deficiencies with serious consequences for education.

## **Total Calorie Intake**

These data are compiled by the Food and Agriculture Organization of the United Nations (FAO).

## **Access to Drinking Water and Sanitation Facilities**

These data are compiled by WHO and UNICEF.

## **Annex 2: Surveillance Activities for a National School Health Programme (USA)**

### **Overview**

To meet a wide range of data needs, the surveillance activities for CDC's national school health programme are broad in scope and equally emphasize national and state/local surveillance data. The activities are designed around a model of behavioural epidemiology (1) and incorporate three interrelated areas: (1) health outcomes, (2) health risk behaviours, and (3) programme characteristics. The surveillance activities are designed to answer the following questions:

- **Health Outcomes**—What are the leading causes of mortality and morbidity among adolescents at the national and state/local levels? Are these rates changing over time?
- **Health Risk Behaviours**—What are the rates of priority health risk behaviours among national and state/local samples of adolescents? Are these rates changing over time?
- **Programme Characteristics**—What school health policies and programmes are in place at the state, district, and school levels? Are these policies and programmes changing over time and are they effective?

The following describes the CDC surveillance activities designed to address each question.

### **Health Outcomes**

CDC summarizes health outcome data among adolescents through a monograph series, *Adolescent Health: State of the Nation*. This series was developed to help focus state/local policies and programmes on the leading causes of mortality and morbidity among youth and to help monitor progress toward attaining national health objectives that call for reductions in mortality and morbidity rates among youth.

The first monograph in the series, *Mortality Trends, Causes of Death, and Related Risk Behaviours Among U.S. Adolescents*, describes the leading causes of death among youth aged 10–24 and related risk behaviours among high school students by gender, race, and state (2). Two-page profiles are provided for each state. Additional charts and tables provide summary information for the entire United States.

The second monograph in the series, *Pregnancy, Sexually Transmitted Diseases, and Related Risk Behaviours Among U.S. Adolescents*, focus-



es on health outcomes associated with sexual behaviours (3). These outcomes include pregnancy, abortion, live birth, and sexually transmitted diseases (i.e., gonorrhoea, chlamydia, and AIDS) among 10 through 24 year olds. Four-page profiles are provided for each state. Emphasis is placed on describing changes in rates over time for each health outcome. These monographs are disseminated to national health and education organizations, state and local health and education agencies, and other interested groups.

### **Health Risk Behaviours: State/Local Data**

CDC's Youth Risk Behaviour Surveillance System (YRBSS) was developed to: (1) monitor priority health-risk behaviours that contribute to the leading causes of mortality, morbidity, and social problems in the United States, (2) assess how these risk behaviours change over time, and (3) provide comparable data among subsamples of adolescents, including both those who attend school and those who do not (4). The YRBSS monitors six categories of behaviours: (1) behaviours that contribute to unintentional and intentional injuries; (2) tobacco use; (3) alcohol and other drug use; (4) sexual behaviours that contribute to unintended pregnancy and sexually transmitted diseases, including HIV infection; (5) dietary behaviours; and (6) physical activity.

The core YRBSS questionnaire, the Youth Risk Behaviour Survey (YRBS), was developed in collaboration with every state department of education, 16 local education agencies, more than 20 federal agencies, and experts from academia. The questionnaire contains 84 multiple-choice questions, is self-administered, and has about a 7th-grade reading level.

In 1990, CDC began offering each state and the funded local education agencies fiscal and technical assistance to conduct the YRBS among representative samples of 9th- through 12th-grade students. Education agencies may add, delete, or modify questions, but during each survey year fewer sites are making modifications to the questionnaire. Many state education agencies work with their respective health departments to implement the YRBS.

Ownership of the data remains with the education agencies. Surveys were conducted by 24 states and 8 cities in 1990, by 29 states and 10 cities in 1991, and by 43 states and 13 cities in 1993 (5).

State and local education agencies are using these data to do the following:

- Inform the public of the need for effective school health programmes.

- Provide state boards of education and state legislatures with information supporting school health policies and programmes.
- Update and improve school health materials for teacher training and classroom instruction.
- Direct school health programmes to populations that are at increased risk.
- Promote collaboration with institutions of higher education that are responsible for preparing teachers.
- Help health agencies and community organizations develop effective community-based programmes to address priority health risk behaviours among youth.
- Monitor National Education Goal 7 which focuses on safe, disciplined, and drug-free schools (6).

CDC will continue to encourage education agencies to conduct the YRBS biennially throughout the decade. To help improve the quality of these surveys and increase the usefulness of the data, CDC provides several types of technical assistance to interested education agencies. For example, CDC developed the *Handbook for Conducting Youth Risk Behaviour Surveys* to help education agencies plan surveys; obtain clearance; select schools, classes, and students; notify parents; administer surveys; prepare data for analysis; and report survey results. CDC also developed PCSample, a PC-based computer programme to help programme directors in education agencies draw probability samples of schools and students. Workshops are provided to help education agencies conduct the YRBS by using the handbook and PCSample.

### **Health Risk Behaviours: National Data**

Besides collecting the state and local data described above, CDC routinely uses the YRBSS to collect data on adolescent health risk behaviours from representative samples of high school students nation-wide. The national YRBS was conducted in 1990, 1991, 1993, and 1995 (4) and will continue to be conducted biennially throughout the decade. National probability samples of 9th- through 12th-grade students are selected from public and private schools. Schools with a large proportion of black and Hispanic students are oversampled to provide stable estimates for these subgroups. Trained data collectors administer the survey during a single class period.

Another component of the YRBSS is the national household-based survey (7,8). In 1992, CDC and the Bureau of the Census administered the

YRBS as part of the National Health Interview Survey (NHIS). The supplement was conducted among 12 to 21 year olds from a national probability sample of households. Data were obtained from both youth attending school and youth not attending school and from college-age youth. School-age youth not attending school were oversampled.

The questionnaire was administered through portable cassette players with earphones. Respondents listened to the questions and marked their answers on a standardized answer sheet. This administrative approach helped compensate for reading difficulties among respondents, helped ensure confidentiality during household administration, and encouraged candid responses by circumventing a personal interviewer. Data from the survey are linked to other NHIS data collected from adult members of the household.

In spring 1995, a national survey of college students was conducted as the newest component of the YRBSS. A modified version of the questionnaire was mailed to a nationally representative sample of 9,400 college students in two- and four-year public and private colleges and universities. College students age 18-24 were oversampled. Results from this survey will be available from CDC. Although the YRBSS was not designed to evaluate the effectiveness of specific interventions, such as teacher training programmes or school curricula, it can help determine the impact of broad national, state, and local policies and programmes. National YRBSS data are being used to do the following:

- Measure 26 national health objectives for the year 2000 (9).
- Measure 27 model standards presented in Healthy Communities 2000 (10).
- Measure four primary goals for the American Cancer Society's comprehensive school health education initiative.

### **Programme Characteristics: State/Local Data**

Though many education agencies have successfully established school health programmes, determining the quantity and quality of the education provided has been difficult. In 1989, states and cities were first asked to conduct school surveys on the numbers of schools that provided HIV education and the numbers of students receiving such education.

In 1993, new School Health Education Profile questionnaires were designed with extensive input from state and local education agency personnel. The profiles monitor the current status of school health education, including information about school policies related to HIV educa-

tion and about the instructional content covered in classrooms. The new questionnaires allow schools to describe their health education programme in terms of requirements, duration of instruction, and the inclusion of skills-based instruction.

The *Handbook for Developing State and Local School Health Education Profiles* provides guidance for collecting data from school principals and health education teachers through scannable questionnaires, from education agency records, and from other information sources, such as focus groups. Education agencies are encouraged to reflect local needs by adding items to the questionnaires given to the principal and teacher. The School Health Education Profiles will assist education agencies to establish systematic procedures to monitor current status of health education in their jurisdiction and develop appropriate plans to enhance that status. Data from the profiles were collected in 1994 and will be collected biennially. Ownership of the data remains with the education agencies.

### **Programme Characteristics: National Data**

The School Health Policies and Programmes Study (SHPPS) was designed to provide an in-depth examination of five components of the school health programme (health education, physical education, health services, food service, and health policies) at the state, district, and school levels. For each of the five components, SHPPS included a mail survey that was conducted in all 50 states and among a nationally representative sample of approximately 400 school districts. In addition, for each component, SHPPS included on-site, structured interviews with school principals, health education teachers, physical education teachers, school food service directors, school nurses, and other appropriate personnel among a nationally representative sample of approximately 800 middle/junior and senior high schools.

SHPPS provides information on a wide range of topics, including how state and district policies are applied in schools, duration and content of health and physical education instruction, teacher and staff preparation, parental and community support, methods of instruction and service delivery, and characteristics of the supporting infrastructure. In addition, SHPPS provides data to monitor 13 national health objectives (9) that can be attained directly by schools and National Education Goal 7 (6). Reports from the study were published in the *Journal of School Health* (October 1995).

## Conclusion

The success of these surveillance activities ultimately will be determined by whether the data can help education and public health officials make sound policy and programmatic decisions. As evidenced by numerous state/local publications, data on student risk behaviours have been a driving force in establishing and refining programmes at the local level. It is too early to tell the impact of newer activities such as the *Adolescent Health: State of the Nation* monograph series and SHPPS. Continued monitoring of the utility of surveillance data will help define future surveillance priorities.

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## **Annex 3: Health Behaviours in School-Age Children (HBSC)—A WHO Cross-National Survey**

### **Abstract**

The study of Health Behaviours in School-Age Children was initiated by researchers from four European countries. Four surveys have been conducted. The first one was carried out in 1983 and covered four countries. The fourth data collection took place in 1993–1994, and comprised more than 100,000 pupils from 24 countries or regions within countries. The data provides researchers with opportunities to estimate cross-sectional prevalences and describe changes over time within countries. Furthermore, it enables researchers to carry out cross-country comparison cross-sectionally as well as longitudinally. The data have also been used for analyzing the intercorrelations of health behaviours as well as description of clusters of intercorrelations. Finally the data can be used for more analytical purposes, in other words, to identify important predictors of health behaviours. The long-term goal is to develop a body of knowledge that supports the development of effective and appealing interventions as well as adolescent involvement in health promotion. The institutions involved in the survey are encouraged to build cross-disciplinary teams and to emphasize the development of expertise and experience in health behaviour studies in particular as well as health promotion research in general. In all surveys questions regarding subjective health and psychological as well as somatic complaints have been included. The 1993–1994 survey is focused on pupils' perception of the school environment.

### **Introduction**

Health behaviours are to a large extent formed during adolescence. Smoking habits, alcohol consumption, levels of physical activity, eating habits, and sexual behaviours exemplify behavioural patterns that are related to health and disease. In order to combat lifestyle-related diseases and to promote health, health promotion and education activities targeting and involving adolescents deserve high priority.

Sometimes distinctions are made between the three kinds of information needed in order to design and implement appropriate action:

- Problem information—how widespread the use is of alcohol among pupils in secondary school, how large is the consumption of junk food, at what age do young people start smoking

- Casual information—what are the factors leading to early experimentation with drugs, how strong is the impact of cigarette advertising on the use of tobacco among young people
- Information regarding effects of intervention—how do we increase the effects of school-based health promotion, to what extent can mass media campaigns promote safe sex among adolescents

In 1982, researchers from a few European countries initiated a project focusing on problem information and casual information regarding health behaviours among school-age adolescents (1). In 1993–1994 as many as 24 countries participated in the fourth wave of data collections. An increasing number of reports and articles based on HBSC data have been published. The present paper describes the aims, rationale, theoretical orientation, and selected findings from the study.

## **Aims**

The aim of the study "Health Behaviours in School-Age Children — A WHO Cross-National Survey" (HBSC) is to improve and expand the body of scientifically-based knowledge about health behaviours of young people in Europe, and thereby to provide information useful for the planning and implementation of health promotion and health education among youth. The main source of information is a series of regular cross-national surveys. HBSC also aims at strengthening expertise for such research in both quality and quantity among the members of the project.

Another aim of the study is to develop national information systems on health and lifestyles among young people. The utilization of the information collected should be scientific as well as practical. Through the involvement of cross-disciplinary groups of researchers in the different countries, it is hoped that national groups with considerable expertise in this kind of applied behavioural and social research will develop. Through the interchange and comparison of data, findings, experiences, and ideas, it is expected that this field of research will develop rapidly beyond its present level and status. This international networking is of paramount importance in a relatively new field of research. Such a network is useful to assure exchange of information and sharing of experiences on theory, methodology, results, and implication/application of findings between countries and teams. Therefore, a further aim of the study is to maintain and develop the HBSC network.

Over time, the project will also have an evaluative and monitoring function. By analyzing time trends, it will be possible to show changes in

health behaviours in a particular country and to relate such changes to national policies and health promotion/health education actions. The study does, for instance, provide opportunities for comparing trends in health behaviours such as smoking between countries with different tobacco legislation.

### **Theoretical Perspectives**

The study is oriented towards the social and behavioural sciences. The philosophy of the study has been described as a lifestyle approach (2). A "grand" theory of health behaviours among adolescents does not exist, and the study has not been restricted to the concepts or the framework of any specific theoretical model. A common framework for the understanding of health-related behaviours has, however, been proposed (1). This framework can be labeled as a socialization perspective.

It is distinguished between three levels of analysis: (a) the person, (b) the environment (physical environment as well as social interaction), and (c) the larger society. These are classic and basic distinctions in the behavioural and social sciences (3).

The study itself centers around surveys in which most of the information gathered must come from the pupils themselves. Therefore, the data collections' main focus is on the person and his or her perceived environment. However, when discussing and elaborating on the findings, the objective environment as well as the macro social context is taken into account. Along these lines, inequalities in lifestyles must be understood in light of inequalities in society. Also, changes in health-related behaviours in a country must be related to national policies and the organization of health education and health promotion, as well as to other characteristics of the particular country.

Some of the theories relevant to the study of health behaviours restrict themselves to perceived aspects of the environment (4,5). Although most of the HBSC data on the environments of adolescents only describe how they perceive their surroundings, we have not restricted the conceptual framework of the study correspondingly. There are two reasons for also including objective environmental factors:

1. Discrepancies between objective and subjective conditions are sometimes of great importance. This is illustrated by the pluralistic ignorance phenomenon. When everyone publicly adheres to a norm that no one privately endorses, the situation is called pluralistic ignorance. Young people often perceive the majority of their peers to drink alcohol or smoke cigarettes regularly even when we know that both behaviour patterns occur regularly among only a



small minority of their peers. In a group of adolescents each of them may assume that the others are in favor of consuming alcohol at a party, and comply with this perceived norm. This may even be the case when a majority, in fact, prefers alcohol-free parties. An important challenge to health promotion and health education is to focus on and modify such "false" subjective norms.

2. One of the goals of the present study is to develop recommendations for health promotion action in schools, municipalities and neighborhoods. Such action cannot focus on subjective conditions exclusively. Ways to influence the lifestyles of young people through changes in objective environmental conditions must also be explored.

## Methods

Regular surveys (every 4th year) are conducted in an increasing number of countries (1). The study population consists of representative samples of at least 3,900 pupils aged 11, 13, and 15 years. The first HBSC survey focused on smoking, and took place in the school year of 1983-1984, after which it was adopted as a collaborative study by WHO. The second main survey focused on physical activity and psychosocial health and was conducted in 11 countries. The third survey, focusing on social integration/isolation, was conducted in 1989-90, and 13 countries participated. The fourth survey is on school as a work environment.

Each survey has an international (English language) standard questionnaire as its point of departure. The questionnaire is translated into the relevant languages, retranslated into English, and efforts are made to make the various versions as compatible as possible with the standard version. A core of questions focusing on health behaviours, reported health, as well as some selected demographic items is included in every survey. An additional set of questions constitute a "special focus" part of the questionnaire. The special focus part of the questionnaire is used in all countries, but changes from survey to survey over time.

The core questions allow for showing trends over periods of time and comparing trends across countries. The special focus questions allow for analyses of predictors.

The HBSC data bank, which is administered by the University of Bergen, constitutes an information system on adolescent health behaviours, and the results are used for planning interventions and for influencing health education and promotion practices. The HBSC findings

are communicated in national and international publications. The results have also been used in developing teaching materials (brochures, booklets, computer-based packages for schools, etc.).

## **Selected Findings**

### ***Prevalences***

A large number of national publications have described prevalences and trends in health behaviours among adolescents (6). A more comprehensive report covering a number of countries has been prepared and published by the Canadian HBSC group (7).

### ***Dimensions of Health Behaviours***

A number of studies have examined to what extent health behaviours are intercorrelated, and to what extent these correlations reflect underlying clusters or dimensions. Analyzes carried out on data from HBSC indicate that there are two such underlying dimensions: (a) addictive and risk-taking behaviours and (b) health enhancing behaviours (8,9). Intercorrelations and clusters of intercorrelations mean that health behaviours do not exist as separate and isolated domains, and thereby indicates the usefulness of the notion of "lifestyles." Furthermore, it may be argued that there could be similarities in the processes underlying different health behaviours. Finally, the intercorrelations may be used in advocating a more integrated and holistic approach to health promotion among adolescents.

### ***School Alienation***

The previous findings in the HBSC study have clearly demonstrated that despite large cross-country variations in prevalences of health behaviours, there is a striking similarity between countries regarding predictors of health behaviours. The relationship between health-compromising behaviours and school alienation is one example. The risk of becoming a smoker at an early age is particularly high among students who dislike school, score below average in school achievements and have no clear plans for further theoretical education after finishing obligatory school. These predictors are particularly important when smoking and use of alcohol are used as criterion variables (10). These findings have obvious implications for health, education, and promotion practices. Since school alienation is widespread among those who develop experimentation with addictive substances, health promotion aimed at influencing such behaviours must develop educational approaches and materials that also appeals to those who are fed up with school.

## ***Socio-Economic Status and Social Reproduction***

A comprehensive study of reproduction of physical activity is based on data from HBSC (11). When parents' occupations are rated as having lower socio-economic status, adolescents report being less physically active than others. Low levels of physical activity are also found among those who score high on school alienation. It may be hypothesized that inequality and inequity in physical activity and other health behaviours are reproduced from one generation to the next. Studies have shown that a wide range of health-compromising behaviours are more common among low-status segments of the populations in industrialized countries. Other studies have demonstrated that there is a strong association between parents and their offspring's lifestyles.

## ***Promoting Physical Activity***

A recent publication based on data from Nordic countries (Finland, Sweden and Norway) has shown that goals like having fun and being with friends are becoming increasingly important as adolescents grow older. It is recommended that programmes promoting physical activity among young people put less emphasis on competition and winning, and more emphasis on pro-social activities which include cooperation, having fun, and sharing (14).

## ***Social Isolation and Loneliness as Risk Factors***

Adselm Eder from the Austrian team (12) has carried out analyzes of the relationship between indicators of social isolation and loneliness on one hand and psychosomatic symptoms on the other. Young people who report having few friends and other characteristics of an inadequate social network obtain higher symptom scores. Loneliness is a particularly powerful predictor. In his report on "risikofaktor einsamkeit," Eder has found a remarkable cross-country consistency in these associations. Similar results have been confirmed in a separate analysis of the Norwegian data (13). This selection of findings, mainly from international publications, illustrate the usefulness of the data from HBSC. A large number of findings have also been reported in country reports. Over time, a substantial body of empirical as well as theory-based findings contribute to a broad picture and a deeper understanding of health behaviour and its predictors in the countries participating in the HBSC Study.

## ***International Coordination***

The HBSC study is a WHO collaborative study. Erio Ziglio at WHO-EURO is the WHO representative, researcher Bente Wold at the

Research Center for Health Promotion, University of Bergen is the international research coordinator, and Head of Research Chris Smith at Health Promotion Wales is the international administrative coordinator. NSSD (Norwegian Social Sciences Data Services) is the archive institution for the data bank.

### **The HBSC 1993–1994 Study**

The 1993–1994 HBSC international data file consisted of 102,799 students ages 11, 13, and 15 from 24 countries and regions within countries. The questionnaire used had two main parts:

- core questions (included in all four HBSC surveys) which consisted of demographic variables, health behaviours and lifestyle variables (e.g., smoking, use of alcohol, food habits, physical activity, leisure time activities etc.), and subjective health measures (e.g., reported health and happiness, psychosomatic symptoms, loneliness)
- focus questions (focus of the 1993–1994 survey, all questions asked in all countries) which cover the following four topics:
  - school as a setting (e.g., questions on how the public perceive aspects of the school such as the physical environment, organizational structure and social support from other students, and their teachers)
  - injury-related questions (type of injuries students have experienced, type of event, and type of place of the injury)
  - body image and psychosocial health (perceptions of one's body in terms of physical attractiveness, height, weight, satisfaction, emotional support from significant others, self-confidence, social competence, etc.)

The aim of the 1993–1994 HBSC study is to gain knowledge about which aspects of the school settings are perceived by the students as safe and good, and whether these settings are also linked to positive development as regards academic achievement and healthy lifestyles. The study provides baseline data on students' health and lifestyles and on their attitudes and perceptions of their school. The analyzes that can be done on these data will provide further insight into the associations between children's attitudes toward school and their health/health behaviours. Based on these insights, the results of the study form the basis of recommendations for education policy in order to promote a healthy and positive environment in schools for the students. The study provides a unique opportunity to discuss issues related to education for

health, and is thus relevant for health promoting schools regarding environmental strategies and health education. The study is also relevant for education policy in general, because the findings may be applied to the students' view of many aspects of their school, including how to create a better learning situation there.

Based on previous HBSC surveys, several of the participating countries have produced educational materials such as information folders and computer-based learning packages. Such plans also exist for the 1993–1994 study, which is expected to become even more popular with the schools because of the nature of this survey's topic.

### **Relevance for Europe as a Whole**

As all member countries have used the same international protocol, the data provide unique opportunities for comparing aspects of schooling among a large number of European countries, looking at similarities and differences in how pupils perceive their schools.

The study provides support for the new democracies in Europe that are engaged in this Pan-European survey, such as the Baltic countries, the Czech Republic, the Slovak republic, Poland, and Hungary. Their participation in the project fosters interest and competence in this type of study within their respective countries.

Many of the participating HBSC countries are also part of the European Network of Health Promoting Schools. The international 1993–1994 protocol and the national 1993–1994 HBSC data are being used in evaluation of school projects within this network.

Some non-European countries—including Canada, Israel, and Australia—have been given the opportunity to join the study. A separate network covering selected African countries south of Sahara is currently in the process of being established. This effort has been supported by the Headquarters of the World Health Organization.

### **Sources—Annex 3**

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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This not only helps in tracking expenses but also ensures compliance with tax regulations.

In the second section, the author provides a detailed breakdown of the monthly budget. It includes categories for housing, utilities, food, and entertainment. Each category is further divided into specific items, such as rent, electricity, groceries, and dining out. This level of detail allows for a clear understanding of where the money is being spent.

The third section focuses on the overall financial goals and the strategies to achieve them. It mentions the importance of saving for emergencies and long-term investments. The author suggests setting aside a portion of each month's income into a dedicated savings account to build a financial cushion.

Finally, the document concludes with a summary of the key points discussed. It reiterates the need for discipline and consistency in financial management. The author encourages readers to regularly review their financial statements and adjust their budget as needed to stay on track.

## Selected WHO Publications of Related Interest

Price (Sw.fr.) / Price for Developing Countries

School Health Education to Prevent AIDS and Sexually Transmitted Diseases. A Resource Package for Curriculum Developers Issued Jointly by the WHO Global Programme on AIDS & UNESCO, 1995 (275 pages) 18. / 12.60

School Health Education to Prevent AIDS and Sexually Transmitted Diseases. WHO AIDS Series, No. 10, 1992 (v + 79 pages) 12.60

Accidents in Childhood and Adolescence. The Role of Research. edited by M. Manciaux and C.J. Romer, 1991 (xiii + 217 pages) 35. / 24.50

The Health of Young People. A Challenge and a Promise, 1993 (x + 109 pages) 23. / 16.10

The Narrative Research Method: Studying Behaviour Patterns of Young People by Young People. A Guide to its Use, 1993 (38 pages) 8. / 5.60

AIDS Prevention Through Health Promotion. Facing Sensitive Issues, 1991 (viii + 78 pages) 16. / 11.20

Guide to Planning Health Promotion for AIDS Prevention and Control WHO AIDS Series, No. 5, 1989 (iv + 71 pages) 14. / 9.80

Prevention in Childhood and Youth of Adult Cardiovascular Diseases: Time for Action. Report of a WHO Expert Committee. Technical Report Series, No. 792, 1990 (105 pages) 12. / 8.40

Health Education in the Control of Schistosomiasis, 1990 (61 pages) 11. / 7.70

Hookworm Infection and Anaemia. Approaches to Prevention and Control Z.S. Pawlowski, G.A. Schad, and J. Stott, 1991 (vi + 96 pages) 19. / 13.30

Further information on these and other WHO publications can be obtained from Distribution and Sales, World Health Organization, 1211 Geneva 27, Switzerland.