

This report contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization

WHO Technical Report Series

842

NURSING BEYOND THE YEAR 2000

Report of a
WHO Study Group



World Health Organization

Geneva 1994

WHO Library Cataloguing in Publication Data

WHO Study Group on Nursing beyond the Year 2000
Nursing beyond the year 2000 : report of a WHO study group.

(WHO technical report series ; 842)

1. Nursing 2. Delivery of health care 3. Education, Nursing
4. Midwifery I. Title II. Series

ISBN 92 4 120842 2
ISSN 0512-3054

(NLM Classification: WY 16)

The World Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full. Applications and enquiries should be addressed to the Office of Publications, World Health Organization, Geneva, Switzerland, which will be glad to provide the latest information on any changes made to the text, plans for new editions, and reprints and translations already available.

© World Health Organization 1994

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. All rights reserved.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

Printed in Switzerland

93/9833 – Benteli – 7500

Contents

1. Introduction	1
2. Rationale and objectives of the Study Group	1
2.1 Rationale	1
2.2 Objectives	1
3. Background	2
4. Current global issues	3
4.1 Population growth and demographic transitions	3
4.2 Infectious and parasitic diseases	3
4.3 Health needs and the concept of vulnerability	4
4.3.1 Women	5
4.3.2 Children	5
5. Access to health care personnel and services	6
6. Trends in nursing and midwifery	7
6.1 The role of nurses and midwives	7
6.2 Implications for practice	10
6.3 Implications for education	12
6.4 Implications for research	14
7. Conclusions	16
8. Recommendations	17
8.1 Recommendations to WHO and Member States	17
8.2 Recommendations to WHO	18
8.3 Recommendations to Member States	18
Acknowledgements	20
References	20

WHO Study Group on Nursing beyond the Year 2000

Geneva, 12–16 July 1993

Members

- Mrs G. Betts, President, Sierra Leone Association for Maternal and Infant Health, Freetown, Sierra Leone
- Ms G. Biscoe, Chief Executive, Australian Capital Territory Department of Health, Canberra, Australia (*Rapporteur*)
- Dr M. Jato, Senior Lecturer, Faculty of Medicine, Yaoundé, Cameroon
- Dr H. Lapsley, Health Economist, School for Health Service Management, University of New South Wales, Kensington, New South Wales, Australia
- Dr W. May, Principal, Institute of Nursing, Ministry of Health, Yangon, Myanmar
- Dr H. Minami, President and Professor, College of Nursing Art and Science, Hyogo, Japan
- Mrs B. Misconiova, Chief Nurse, Ministry of Health, Prague, Czech Republic
- Dr S. Mokabel, Head and Professor, Nursing Department, College of Applied Medical Sciences, King Saud University, Riyadh, Saudi Arabia
- Dr R. Ndlovu, Senior Lecturer, Department of Nursing Science, University of Zimbabwe, Avondale, Harare, Zimbabwe (*Chairman*)
- Mr H. Rouis, Director, School of Public Health, Ministry of Public Health, Sousse, Tunisia
- Dr A. de Almeida Souza, Associate Professor, Department of Public Health, University of Brasília, Brasília Federal District, Brazil

Representatives of other organizations

International Confederation of Midwives

Sister A. Thompson, Treasurer, International Confederation of Midwives, London, England

International Council of Nurses

Ms F. Affara, Nurse Consultant, International Council of Nurses, Geneva, Switzerland

International Federation of Red Cross and Red Crescent Societies

Ms E. Ortin, Technical Adviser, Nursing, International Federation of Red Cross and Red Crescent Societies, Geneva, Switzerland

Secretariat

- Dr P. Archbold, Professor, School of Nursing, Oregon Health Sciences University, Portland, OR, USA (*Temporary Adviser*)
- Dr E. Goon, Director, Division of Development of Human Resources for Health, WHO, Geneva, Switzerland
- Dr M.J. Hirschfeld, Chief Scientist for Nursing, Division of Development of Human Resources for Health, WHO, Geneva, Switzerland (*Secretary*)
- Dr J. Robinson, Head and Professor, Department of Nursing and Midwifery Studies, University of Nottingham, Queen's Medical Centre, Nottingham, England (*Temporary Adviser*)
- Ms E. Tornquist, Lecturer, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA (*Temporary Adviser*)

1. **Introduction**

A WHO Study Group on Nursing beyond the Year 2000 met in Geneva from 12 to 16 July 1993. Dr Hu Ching-Li, Assistant Director-General, opened the meeting on behalf of the Director-General, and referred to the many changes in health and in the world at large over the previous years. He noted that much of health care, in both developed and developing countries, was provided by nurses, and the profession had gained increasing visibility in both the political and the social arena. Dr Hu hoped the outcome of the Study Group would allow this momentum to be maintained.

The major task of the Study Group was to give direction and advice on how best to meet the challenges of the next century, and to provide a clearer perspective on the role of nursing and midwifery in promoting health and health services beyond the year 2000. The Study Group's work was closely linked to that of a multidisciplinary Global Advisory Group on Nursing and Midwifery which was set up in 1992 to advise the Director-General on:

- developing mechanisms for assessing national nursing and midwifery service needs;
- assisting countries with the development of national action plans for nursing and midwifery services, including research and resource planning;
- monitoring progress in strengthening nursing and midwifery in support of strategies for health for all.

2. **Rationale and objectives of the Study Group**

2.1 **Rationale**

Most planning to date has focused on the goal of health for all by the year 2000. As that year approaches, it has become necessary to summarize past successes and failures and look further ahead. The Study Group was established to provide a global perspective on the role of nursing and midwifery in promoting health and health care services beyond the year 2000.

2.2 **Objectives**

The objectives of the Study Group were:

- to review the state of nursing and midwifery practice, education and research related to WHO's priorities;
- to recommend, where appropriate, goals for nursing and midwifery practice, education and research beyond the year 2000 in accordance with the recommendations of the first meeting of the Global Advisory Group on Nursing and Midwifery (1);

- to define the goals according to levels of socioeconomic development and cultural diversity across and within regions;
- to identify changes in the organization and delivery of health care services by nursing and midwifery personnel that could lead to greater effectiveness, efficiency and equity;
- to identify strategies required to bring about the needed changes in the organization and delivery of health care.

Study Group members were invited to pay particular attention to three main contextual issues:

- poverty differences within and between countries;
- population displacement, particularly from rural to urban areas, but also due to natural and man-made disasters;
- epidemiological and demographic transitions resulting in the increasing numbers of elderly people, changing and increasing chronic disease patterns, and financial and human resource constraints.

It was stressed that nursing issues could not be addressed in isolation or only within the health sector, but needed to be looked at within a societal perspective to determine how nursing could best contribute to better health.

3. **Background**

The World Health Assembly resolution WHA45.5 on strengthening nursing and midwifery in support of strategies for health for all (2) sought ways of addressing the following pressing issues:

- the growing demand for, and cost of, health care in countries around the world;
- the continued shortage of nursing and midwifery personnel and the urgent need to recruit, retain, educate and motivate sufficient numbers to meet present and future community health needs;
- the need to increase WHO's nursing and midwifery activities at all levels;
- the need to demonstrate commitment to nursing and midwifery as essential services in all countries, for the development and improvement of health-for-all strategies.

As one of its recommendations, the resolution urges Member States to “identify their nursing and midwifery service needs and, in this context, assess the roles and utilization of nursing and midwifery personnel”.

In examining countries' needs for nurses and midwives, current global issues must be taken into account, as must demographic trends, morbidity and mortality patterns, health care needs and available resources as well as the socioeconomic, cultural and political context of health care delivery.

4. Current global issues

4.1 Population growth and demographic transitions

A significant slow-down in the growth of the world population which began around 1970 is projected to continue, reaching an annual growth rate of 1.5% by 2000 and 1.0% by 2020 (3). Nevertheless, because three-quarters of people live in developing regions, the burden of population growth in these regions is probably one of the most important obstacles to achieving health for all. One in three people alive today is aged between 10 and 24 years of age. For every young person living in a developed country, there are four in developing areas. Twenty per cent of the world's young people live in China alone. One consequence of the huge increase in the number of young people in the developing world is the prospect of an even greater population expansion in the future. Between 1990 and 2025, the total urban population in developing regions is projected to increase threefold to 4000 million. The trend towards urbanization of populations and the growth of urban centres will have a major impact on the concept and delivery of health care services in the future.

As the rate of population growth has slowed, remarkable gains in life expectancy across the world have resulted in a global aging population profile. The continued decline in mortality has led in developed countries to an increase in the proportion of the population (currently 12.8%) aged 65 and over. By contrast, the proportion of the population aged 65 and over in developing countries is currently only 4.5%. However, the absolute numbers of elderly have risen dramatically in developing countries (to 182 million in 1990) and now exceed the elderly population (145 million) in developed countries (4). By the year 2000, the overall number of elderly people in the world is projected to reach 423 million, with 250 million living in developing countries. This transition is producing increased global demand for services for the elderly and for the treatment of chronic diseases. Increased affluence may bring not only longer life and the diseases of aging but also the need to provide care for more chronic ill-health throughout a person's life. For example, cardiovascular disease, cancer and diseases related to tobacco, alcohol and drug use are increasing in developing countries, and diabetes is increasing everywhere. Mental health problems and suicide are increasing too, particularly in developed countries (4).

4.2 Infectious and parasitic diseases

Epidemics of infectious and parasitic diseases continue to have devastating effects, especially among the poor. Poliomyelitis, measles, whooping cough and neonatal tetanus represent success stories in terms of immunization programmes, but special efforts are still required to make eradication a reality. In 1990, poliomyelitis disabled 200 000 children and the other three diseases accounted for about 2.6 million deaths (5).

Pneumonia kills approximately 4 million young children each year, often as a consequence of measles or whooping cough or as a result of early cessation of breast-feeding and the inappropriate nutrition of the young child (5). Cholera, leprosy and tuberculosis continue to result in avoidable deaths or major disabilities. Since 1985 the incidence of tuberculosis has started to increase in both developed and developing countries as a result of the association of tuberculosis and human immunodeficiency virus (HIV) infection. In countries most affected by HIV, the tuberculosis problem is assuming dramatic dimensions. In certain areas the number of diagnosed cases of tuberculosis has doubled over the past five years (4).

The malaria situation is deteriorating in many places compared with 10 years ago. More than 2000 million people, almost half the world's population, are exposed to varying degrees of malaria risk in 100 countries and areas (4). The most common waterborne parasites cause conditions such as schistosomiasis which, although easily treated with inexpensive modern drugs, lead annually to high levels of pain and severe morbidity for millions of people in Africa and the Indian subcontinent. Lack of safe water supply and sanitation contributes to the diarrhoeal diseases and intestinal worm infections which together make up 10% of the total burden of disease in developing countries (6).

The acquired immunodeficiency syndrome (AIDS) continues to spread with particular rapidity in developing countries, with major consequences for individuals as well as for communities and their economies. WHO projects cumulative totals of over 40 million people with HIV infection, including 10 million children, by the year 2000 (4). Projections show little difference between adult infection rates of men and women by the mid-1990s. In addition, there is a rapidly growing problem of orphaned sick children in communities that are affected by AIDS and that have minimal health care and economic resources.

4.3 **Health needs and the concept of vulnerability**

A complex array of cultural, political and socioeconomic factors influence the health status of populations. The concept of health-related vulnerability is reflected in patterns of morbidity, mortality and reproduction and is the product of simultaneous social and economic deprivation of various forms (7). All the major global health concerns involve groups that are vulnerable in some way in relation to others. This vulnerability can sometimes be the unintended consequence of development strategies in other sectors of society, such as the economy. Vulnerability may also be the intended consequence of aggression and war. Certain groups are especially vulnerable and, in addition to the frail elderly, they include women, children and non-economically productive persons in a society.

4.3.1 **Women**

Women are disproportionately vulnerable to disease. In comparison with men they fare less well in terms of disease prevalence, utilization of services and allocation of resources within the family. Such gender differences are found throughout the world from birth onwards (8, 9).

Türmen (10) notes that women's health status is too often characterized by neglect, abuse and victimization. Some conditions either affect only women or hit women the hardest, as in the case of female infanticide, genital mutilation, malnutrition and anaemia, early marriage, high fertility, abortion, sexually transmitted diseases, maternal mortality and morbidity, violence, rape and incest. Türmen goes on to propose for priority action three indicators which reflect the unequal health status of women – nutrition, fertility and maternal mortality.

Every year half a million women die of causes related to pregnancy and childbirth. Their deaths leave a million children motherless. Even though more women are reaching childbearing years in good health, maternal mortality and morbidity figures will continue to rise unless there is improved coverage and quality of care. A considerable proportion of maternal deaths are the result of unsafe abortion (6), and the associated mortality and morbidity will rise unless safe preventive measures are made widely available. The disparity between maternal mortality in developing countries and that in developed countries is greater than for any other major health indicator. Maternal mortality in 1988 varied from about 737 per 100 000 live births in the least developed countries to about 34 per 100 000 in developed countries. For example, a woman in sub-Saharan Africa who becomes pregnant is 75 times more likely to die as a result than a woman in western Europe (4). Despite improvements in coverage, in some developing countries less than 20% of deliveries are attended by trained personnel, many of whom are trained not as physicians, nurses or midwives but as birth attendants able to address only the most basic needs. In the developed world highly trained personnel and sophisticated equipment are available at levels in excess of that required for the majority of births, but in the developing world the needed facilities may not always exist and, even if they do, they are frequently too few and too inaccessible for most people.

4.3.2 **Children**

Despite gains in life expectancy, children living in poverty continue to experience disproportionately the effects of avoidable mortality and morbidity. One-third of the developing world's children suffer from malnutrition. The diarrhoeal diseases together kill approximately 4 million young children each year and they are also a major cause of child malnutrition (5). Every year, vitamin A deficiency results in a third of a million children going blind, and 60% of these children die within a short time of losing their sight. Iodine deficiency is a major health risk for one-fifth of the world's population, resulting in stunted growth, mental

retardation and defective speech, hearing and movement (5). The problems of malnutrition may arise from the consequences of poverty, but the cause may also lie in children's exposure to frequent infections and a lack of knowledge about the special feeding needs of the young child.

Children are frequently the group worst affected by local wars, conflict and disaster. UNICEF reports that unknown numbers of children have been killed, wounded, abandoned, orphaned or taken as hostages. Millions will never see their families again. Even in times of peace there is child exploitation in factories, sweatshops, agriculture or domestic service. An estimated 30 million children live on the streets of the world's expanding cities. They have run away, have been abandoned or are orphaned. Most of these children are deprived of health care and education; almost all face the difficult choice of either resisting or falling in with violence, crime, prostitution and drug abuse (5).

If nursing is to contribute effectively in the next century to the achievement of a level of health that permits all citizens to lead socially and economically productive lives, nurses and midwives must address the nature of their role with respect to the health needs of vulnerable groups.

5. **Access to health care personnel and services**

In view of the global diversity in health needs and the extremes of the range of gross national product (GNP) between different countries – in 1991, GNP ranged between US\$ 80 and US\$ 33 610 per capita (6) – it is not surprising that people's opportunities for access to medical, nursing and midwifery care are also strikingly unequal. In 1990, world spending on health totalled about US\$ 1700 billion, or 8% of global income. Spending within countries ranged from less than US\$ 10 per person in several African and Asian countries to more than US\$ 2700 in the United States.

Yet health spending alone does not explain all the variation in health among countries. At any level of income and education, higher health spending should yield better health, all else being equal. But there is no evidence of such a relationship. The *World development report* gives the following average ratios of nurses to population in 1984 (11) and physicians to population in 1990 (6) and ranges for the proportion of births attended by health staff in 1985 and for infant mortality rates in 1991 (6):

- Low-income economies
 - 1 nurse to 2180 population
 - 1 physician to 6760 population
 - 3 to 87% health personnel attendance at birth
 - infant mortality rate of 18 to 161 per 1000 live births.
- (If China and India are excluded from the above data, the average ratio of nurses and physicians to population in low-income economies is reduced to 1 nurse per 3670 and 1 physician to 11 730.)

- Middle-income economies
 - 1 nurse to 980 population
 - 1 physician to 2060 population
 - 19 to 100% attendance at birth
 - infant mortality rate of 11 to 115 per 1000 live births.
- High-income economies
 - 1 nurse to 140 population
 - 1 physician to 420 population
 - 98 to 100% attendance at birth
 - infant mortality rate of 5 to 9 per 1000 live births.

The search for better indicators continues. For example, the *World development report 1993* (6) presents a range of health data relating to demographic regions and economies. These include nurse to doctor ratios ranging from 0.3 to 16.4, with a world average of 1.4. The report suggests that, although doctors are needed for supervising essential clinical care and handling complications, most of the services in the minimum package of health services can be delivered by nurses and midwives. The World Bank suggests that a ratio of fully qualified nurses to physicians of between 2:1 and 4:1, and of one or two physicians per 10000 population is adequate. However, achieving an optimal skill mix of physicians, nurses, midwives and less qualified personnel is a major challenge.

6. **Trends in nursing and midwifery**

6.1 **The role of nurses and midwives**

In most countries nursing and midwifery personnel make up the largest single group of human resources for health in both hospital and community. In almost all countries there is imbalance in the supply of nurses, midwives, physicians and other health professionals. For nurses and midwives, the most frequent problem is shortage of personnel. Of course, shortage of personnel can reflect a wide variety of situations. For instance, a personnel shortage can be defined in terms of perceived health care needs, or in terms of demand from the health services sector. It may indicate maldistribution of the health workforce or imbalance among different categories of health workers. In many countries the number of different kinds of health personnel reflects the willingness or ability of governments to fund positions. In a recent (unpublished) opinion survey of nursing personnel resources worldwide,¹ respondents from 70% of

¹ Hirschfeld MJ, Henry B, Griffith H. *Nursing personnel resources: results of a survey of perceptions in ministries of health on nursing shortage, nursing education and quality of care*. Geneva, World Health Organization, 1993 (unpublished document WHO/HRH/NUR/93.4; available on request from Nursing, Division of Development of Human Resources for Health, World Health Organization, 1211 Geneva 27, Switzerland).

developing countries reported a shortage of nurses in the public sector, especially in rural areas. Reluctance to practise in rural areas exacerbates the shortage of health care personnel.

Some responses to the survey reported that many nurses leave the public sector for the private sector in search of better working conditions and pay, producing acute personnel shortages in the public sector. Yet many replies also indicated unemployment of nurses because positions had been cut in health services. While half the responses from industrialized countries reported a shortage of nurses, several also mentioned nurse unemployment caused by a cut in positions as a result of economic retrenchment or by over-supply of nurses as a result of inaccurate projections of need.

The cost-effectiveness of nursing and midwifery care across settings has been demonstrated in research reviews (12), but many countries still do not devote adequate resources to planning the effective employment and deployment of nursing and midwifery staff. The objective of human resource planning is to balance supply with demand – to ensure that sufficient (but not excessive) numbers of appropriately qualified personnel are available, in the right place and at the right time, to match the demand for their services. Demand for nursing and midwifery services is but one aspect of demand for health services in general, and must be measured in this wider context. Planning of human resources for nursing and midwifery cannot be properly conducted in isolation from planning for other health care workers or from planning of the service as a whole.

Three closely linked elements appear to influence the development of nursing: power, gender and the medicalization of health care. Nurses face these issues to varying degrees, depending on the stage of development of the country (13).

Nurses play a full part in policy-making and decision-making at all levels of the health care system in very few countries. Even in countries whose health ministries have large nursing departments, nurses must continually fight to ensure that their voice is heard. This lack of formal power at the top is reflected elsewhere, as in the lack of democratic decision-making among members of health care teams in hospital and community.

One means of addressing this problem would be for countries to create a multisectoral forum of relevant partners (e.g. health, education and finance sectors, as well as professional associations, regulatory bodies and consumers) involved in practice, research, education, management and policy development for nursing and midwifery services. This forum should meet regularly to develop, and monitor implementation of, a national plan to ensure that nursing and midwifery, as integral parts of the health service, can meet current and projected health care needs with available resources. The plan should specifically ensure nursing and midwifery participation in policy-making and decision-making at all levels. It should also address the changing needs of nursing and midwifery personnel, the preparation of

personnel for their tasks, and the development of educational systems that enable personnel to move to new career levels.

In nearly every country women are the vast majority of the nursing and midwifery workforce. Nursing everywhere is women's work and shares the characteristics of other female-dominated occupations – low pay, low status, poor working conditions, few prospects for promotion and poor education. For example, nurses' salaries in a third of the world's countries are lower than those of other occupations that require a similar level of education, and in some of the least developed countries salaries are actually decreasing. Pizurki et al. (14) contend that, of all the professions subject to sex-role stereotyping, nursing is the most severely handicapped in that "nurses are doubly conditioned into playing a subservient role: first by society generally, and secondly by the medical establishment".

The prestige associated with the practice of medicine in high technology environments compounds this situation. In spite of the rhetoric of the community care approach, acute curative interventions receive the lion's share of prestige and resources in many countries. Nurses are sometimes seen as medical assistants whose job is to carry out physicians' orders, and nursing in high technology settings is more prestigious and brings better pay than, for example, community nursing. This situation may be one of the reasons for the enormous shortage of community nurses, especially in rural communities. In the recent opinion survey of nursing personnel resources, 95% of respondents from the least developed countries and 83% from developing countries reported shortages of nurses in rural communities. In many of these countries, however, nurses and midwives do not work in rural areas because there are no positions for them there.

These issues provide the backdrop for the evolution of nursing and midwifery in the twenty-first century. The problems they pose must be considered along with the global trends in health needs and resources described in sections 4 and 5 above. As the Director-General of WHO has noted, "Until society values caring work and women's work more highly, and rewards them accordingly, measures taken to attract new recruits will not succeed; well educated, motivated women will continue to seek careers in occupations that have a higher social standing and higher remuneration. The social consequences of this for the health and well-being of populations will be disastrous" (15).

In discussing nursing and midwifery we must consider the changing approach to health care worldwide arising from new technology, growing demands and the pressure of lack of resources. Health care is becoming the province of all. Consumers of health care are demanding safe, affordable, comprehensive and acceptable service. At the same time, there is a growing movement towards self-care. In the next century individuals, families and communities will play a larger role both in determining and in meeting their own health needs. The roles of nurses and other health care providers will change as individual behaviour and lifestyle choices are seen as more

important for health. With increasing numbers of elderly and children, a range of informal care-givers will be needed. Everyone may need to be taught the basic skills and knowledge of caring, and everyone will be involved in matters relating to health. Traditional labels such as qualified/unqualified care-givers or formal/informal care will cease to be as important as they are today. Providers of care must seek partnerships with communities to help them plan and implement health services so as to ensure an equitable distribution of health care. Nurses and midwives must become enablers and facilitators by, for example, providing information and guidance to adolescents on safe sexual practices and educating communities on the consequences of early marriage, early pregnancy and unsafe abortion. Nurses will help people to help themselves and will do for people what they cannot do for themselves. The aim will be to make the best use of all available resources in order to provide the best possible health care for all.

This new approach will require great change both on the part of individuals who need care and on the part of those who provide care. This has major implications for the development of nursing and midwifery practice, education and research.

6.2 Implications for practice

The most effective use of health care personnel involves the appropriate mix of direct care-givers (nurses, doctors, etc.) with support staff, plus a suitable balance of staff of different disciplines. However, planning of the workforce, and more specifically planning for nursing and midwifery services, is impossible until answers are found to the basic questions of what the identified health needs are, what services should be provided and with what objectives, and what human, financial and material resources are available to support them. The answers to these questions may vary widely according to the socioeconomic, political and cultural context and in light of the health needs that are to be given highest priority. Thus a range of scenarios of nursing and midwifery practice may be needed so that countries can choose the approaches to practice and education that are most appropriate to changing conditions.

One extreme yet possible future scenario is that the very notion of nursing and medicine as separate occupations may disappear. Nurses, physicians and other health care professionals might be replaced by a generic health care workforce made up of workers trained to carry out a range of specific tasks for specific care groups. For example, a person who comes into hospital with a fractured femur could be cared for by one or two workers who handle the range of tasks from X-ray to discharge. In another future scenario, well educated nurses with broad general preparation and additional specialization may provide, directly or indirectly, a range of promotive, curative and rehabilitative services – including the management of other workers under their supervision. Between these two

extremes, there may be health care professionals with clusters of skills and with job titles we may not recognize today. Each of these scenarios raises questions about how best to ensure an appropriate cost-effective level of clinical or public health skills together with professional accountability.

In many countries government spending may be concentrated on selected groups of interventions (bigger or smaller in content according to available resources) provided chiefly through public facilities and focusing on primary care and prevention. At the same time, the trend towards private health care is increasing. It seems very likely that private health care will play a major role in both developed and developing countries in the future. There will thus be a growing need to monitor the quality of care of private medical, nursing and midwifery services. A recent study of 100 private physicians identified 80 treatment regimens for tuberculosis, of which only four followed WHO treatment recommendations (16).

In future it is likely that some tertiary care, specialist care and other services outside a country's basic health care package will rely to a great extent on private or insurance-based financing. Nurses with highly specialized training (whether they are called nurses or not) will be involved in this high technology tertiary care. At the same time, nurses with broad education will play an essential role in directing the range of public services. For example, the work of a community midwife might involve education about safe delivery, as well as development of women's health care programmes that would include prevention of unwanted early pregnancy and sexually transmitted diseases, family planning, nutrition and healthy childbirth.

Nurses and midwives in poor or remote districts often face a lack of basic services such as clean water, sanitation, immunization or basic drugs. Some lack syringes or needles to give an injection. Some lack facilities to maintain the cold chain with the result that vaccines become ineffective. On the other hand, nurses and midwives who work in highly technical environments may face problems related to the use of technology. They may have to make difficult ethical decisions about when not to use, or to stop using, technological intervention. At the same time the development and routine use of technology (e.g. dentures, joint replacements) may significantly improve life for the elderly and disabled. Thus health care personnel will increasingly need to consider whether particular technologies are effective, culturally acceptable and politically supportable. In addition, because of the problem of iatrogenic illness, nurses working in hospitals – both public and private – will need to monitor the quality of care and develop alternative approaches to improving outcomes for patients.

In the future, health care professionals such as nurses and midwives will be expected to provide increased coverage of health care to groups of patients who are poor, socially marginal or culturally different from the mainstream of society. If this challenge is to be met, the many reasons why nurses,

midwives and other health personnel have difficulty working in remote areas or with the disadvantaged (refugees, AIDS patients, the chronically mentally ill, the homeless) will have to be addressed. One reason is the desire for the higher status and higher pay associated with complex medical technology, but social and physical conditions are also factors. Nurses who are not in urban hospitals not only earn less but often live and work in situations where facilities are inadequate, without electricity, water or postal service. They may be concerned about substandard schooling and living conditions for their children in remote communities. In addition, nurses' security and safety in the workplace must be ensured. Awareness of these factors should help future governments create conditions conducive to equitable delivery of care.

Countries must consider developing regulatory systems for nursing and midwifery in order to:

- define the scope of nursing and midwifery and the categories of personnel;
- establish educational standards;
- take measures to check and maintain practitioners' competence;
- set up and maintain administrative mechanisms for dealing with such problems as disability and for taking disciplinary action in cases of misconduct and malpractice (13);
- address ethical concerns.

In some countries, nursing and midwifery practice is constrained by inflexible and out-of-date public service requirements which regulate employment and career pathways. Regulatory systems must be flexible so as to enable nurses and midwives to redirect their practice to meet changing health care needs (for instance, certified midwives should be able legally to undertake essential life-saving emergency measures when necessary).

6.3 Implications for education

Changing nursing practice to meet the health care needs of the twenty-first century calls for fundamental change in nursing education. The shape of nursing and midwifery education for the future will in part depend on a country's policy and planning regarding the health workforce. For instance, education of nurses will vary widely according to whether the nurse will be a highly specialized manager in a tertiary care setting, a direct care-giver under the direction of a manager, or a community nurse who not only provides care in the community but assists and enables people to meet their own health needs, fostering the maintenance and promotion of health and providing health education.

In many countries today, nurses and midwives are now educated at university level. Indeed, in some countries, the current trend is towards university education for all nurses. In others, however, the trend is towards

the use of a small core of highly educated nurses and a large number of auxiliary personnel, which means there is an overall lowering of skill levels. Systematic planning of a country's health workforce may lead to nursing programmes being developed at various educational levels in order to reflect the nursing contributions needed in a changing health care system. In some countries the variety of educational levels now represented in nursing is considered a weakness of the profession. In fact, it is a weakness if there is little differentiation in the role of the nurse in different practice settings. It is a strength when nurses are used in a wide variety of ways in a broad range of settings.

Discussion about levels of nursing education inevitably raises questions about the intellectual development of women and career mobility of nurses and midwives. There are related questions about the role of education generally and the role of training that is narrowly focused on teaching very specific tasks. Nursing education has for generations been one of the few avenues of education open to women. As such, it has provided employment opportunities and social and career mobility. On the other hand, developing countries need low-cost provision of care, and enhanced career mobility of nursing personnel through formal education may limit countries' ability to provide such services. If the differences in grade between qualified and other categories of nursing personnel are to become more distinct, then questions about the role of education in providing or obstructing mobility between grades must be addressed. Decisions about the numbers and levels of nurses and their education therefore involve far-reaching decisions about women's role in the social structure.

Placing basic nursing education in the university may improve the status of nursing, enhance recruitment of able students and ensure that all practitioners are broadly educated, become equal members of health care teams and are mobile. On the other hand, it may encourage elitism among nurses, prompt countries to increase the proportion of unqualified personnel and reduce the overall cost-effectiveness of the workforce. Thus, in deciding about basic nursing education, national authorities and the nursing profession may need to consider the overall need for nursing personnel, the level of general education in the country, the extent of opportunities for higher education and the training of other similar professions.

The issue goes beyond questions of professional competence to the question of women's entitlement to participate in all the benefits that only higher education offers them. The demand for nurses trained by cheaper, alternative educational programmes may therefore have to be set against the wider benefits of further education for women.

Crucial issues in planning nursing education include:

- an understanding of the nature of nursing, which has consequences for the value placed on different subjects in the curriculum and how they are taught and assessed;

- what constitutes nursing knowledge (whether it comes from a unique discipline, via the nursing process and models of nursing, or whether it is an amalgam of knowledge from several disciplines);
- an understanding of how best to foster the development of the nurse (13).

For instance, if nursing is viewed as derived from the humanities and the physical, social, medical and biological sciences (13) yet requiring understanding and application of knowledge and skills specific to one discipline, educational requirements will differ from those that would come from a definition of nursing as a purely technical skill.

The question of how best to foster the development of nurses raises other issues. When students are taken out of rural communities to be educated in a central, specialized location, many do not return to the rural community to practise. Even if they do return, their education and their exposure to outside influence often result in nurses being alienated from the community. On the other hand, multiple, widely dispersed, small schools of nursing operating without adequate resources are ill-equipped to provide good nursing education.

In planning nursing education, both the content and method should be considered (17). Countries may need to consider a variety of approaches – including problem-based learning, distance learning, self-directed learning, community-based education, continuing education credits and professional experience – in order to expand educational opportunities and career mobility for nursing and midwifery personnel.

6.4 Implications for research

In terms of research, the challenge to nursing and midwifery in the future is to show the link between inputs (by an appropriate mix of nurses, physicians and other health care professionals) and health outcomes. This calls for the inclusion of nursing and midwifery issues in health systems research to a far greater extent than before.

The lack of involvement by nurses and midwives in multidisciplinary research and the problems in developing appropriate research (in addition to costs and complexity) are related to traditional structures of power and status. In the past there has been considerable investment of professional power and status in particular forms of research focused on only one discipline. As a result, much research on nursing which has been highly developed in terms of methodological rigour has been too narrowly focused, in terms of both the health problems addressed and the wider issues of cost-effective care delivery. Some of the most highly developed research of this kind has been conducted in the United States of America, to which many nurses in developing countries look for research education and inspiration.

Unfortunately there is little research that documents the efficacy of nursing care activities, especially in relation to activities of other health care

providers. In part that is a consequence of the complexity of health services research, for a multiplicity of inputs may affect the outcome for the client. The context of health care, the type of health care provider and the processes used by providers must all be defined in relation to the outcome for the client. In addition, health systems research must recognize the complexity and breadth of clients' problems, the resources they possess to deal with the problems, and the processes they may use in addition to health care as they move towards health and healing. A special problem for multidisciplinary health services research is the lack of adequate consensual language to describe care delivery in relation to client outcomes.

Usually research on client outcomes focuses on a change in the health status of the patient/client that is attributed to an intervention by a health care provider or by the health care system. Client outcomes may include indicators of functional status, measures of quality of life, length of stay in hospital, utilization of resources, satisfaction with care delivery and so on. In the search for global indicators of health outcomes, the World Bank, in conjunction with WHO, has developed the concept of the global burden of disease (GBD). This concept combines losses through premature death with loss of healthy life resulting from disability. The GBD is measured in units of disability-adjusted life years, or DALYs (6). In future it seems highly probable that health care providers, including nurses and midwives, will be increasingly called upon to show the efficacy of their interventions in terms of such global outcome indicators.

As consumer satisfaction becomes an important variable in determining the beneficial outcomes of health care services, it will be important to determine whether health services are delivered in a manner acceptable to community norms and at costs that can be borne by the recipient. Improved health outcomes may be due not to delivery of health care but to an interaction of personal, socioeconomic and cultural resources in addition to the care. Among this mix of inputs, distinguishing the contribution of nursing care to health outcomes for the client will be a significant challenge in the future.

Meeting this challenge will require major reorientation of programmes for nursing and midwifery education. All nurses and midwives will need to be aware of and be able to appreciate research findings in order to see the relevance of research to nursing practice. They should be able to understand the benefits of research both to nurses and to the groups of clients they care for. A sizeable number of nurses and midwives will need to be enabled to develop research skills in order to participate as equal members in multidisciplinary research teams which address the health problems discussed in this report. In giving priority to research related to nursing and midwifery services, the aim will be to seek solutions to problems in health care situations where nurses and midwives are the principal care providers or make a major contribution. Consequently nurses and midwives at all levels of practice will need to be involved in

developing research questions and in conducting the research itself. A major question for health care researchers everywhere is how to develop locally appropriate methodologies in which local health care providers and communities can be involved.

A further challenge is to disseminate research results so that they can be used both in health care delivery and in policy formulation for nursing and midwifery care. Even in countries where research in nursing is encouraged and research results are regularly published in journals, much of what is currently written is over-technical and difficult to decipher and lacks clear discussion of the implications for practice. In some countries the problems of dissemination are more severe. There may be few channels for the communication of research results to those in practice and few practitioners who are prepared to read and critically evaluate research. In many countries the problem of disseminating research findings is compounded by the fact that the dominant scientific language is English, making published research inaccessible to large numbers of practitioners. In addition, the research journals never reach some countries or may never get to communities or hospitals where the research might be used.

The use of research to change practice and policy will require not only major efforts to disseminate research results widely in language that is easily understood by practitioners and policy-makers but also ongoing administrative support for change. Ideally, local and countrywide data sets will include nursing and midwifery input and output variables so that monitoring of the effects of changes in practice and management can be evaluated.

7. **Conclusions**

As the twentieth century closes, there is increasing inequity in income distribution and access to health care. The vulnerable are becoming more vulnerable, and the divisions between the technical and human aspects of health care are widening. The deterioration of national economies in many parts of the world, particularly in least developed countries, is reflected in rising infant mortality rates and falling standards of infant nutrition as well as a worsening of other indicators of health. Earlier gains in health and health care are being lost as costs escalate, resources shrink, currencies are devalued and the debt burden continues. While health has been declared a fundamental human right, many governments are unable to provide basic health care to their citizens.

Meeting the health care needs of the future calls for careful use of resources and the targeting of health care interventions at those population groups where they will have most effect. It will also require less hierarchical, more flexible health care systems that are multidisciplinary and indeed multisectoral in scope. Health care personnel must be prepared quickly to reorient education and practice to meet changing needs, working with

central governments, local authorities and communities in order to set priorities. All levels of health care personnel, including auxiliary personnel and informal care-givers, will need to collaborate in practice, education and research.

In the future, health care needs and the factors that affect health care delivery are likely to be complex, multifaceted and constantly changing. Health care systems will be radically different from those we now know. It is thus critical that WHO, Member States and all partners with an interest in the future of nursing and midwifery should anticipate these developments and begin the process of change without delay. This process also applies to the individual responsibility of nurses and midwives to be full partners in a caring and competent health workforce. It is essential to recognize the need for continuing review and evaluation in order to facilitate rapid response to change.

8. Recommendations

The recommendations of the Study Group on Nursing beyond the Year 2000 should be understood to include the need for continuing assessment and change. The recommendations have three strategic aims:

- a new multisectoral systems approach to health care delivery and full collaboration of health care personnel at all levels;
- a shift in the focus of workforce development in nursing and midwifery to reflect country health needs, with particular emphasis on vulnerable groups;
- revitalization and reorientation of nursing and midwifery education and practice to meet the challenges of the future.

8.1 Recommendations to WHO and Member States

1. WHO should encourage Member States to review their current strategies for providing basic health care, especially for vulnerable populations, to identify gaps in services, and to plan an appropriate mix of skills and responsibilities (including those of nurses and midwives) in order to provide the care needed in the future.
2. WHO should encourage governments to obtain the input of nurses and midwives in formulating health care policy at country, district and subdistrict levels. In order to ensure the appropriate involvement of these personnel in policy formulation, WHO and Member States should prepare nurses and midwives to deal with policy issues through leadership development and participation in policy forums.
3. WHO and Member States should explore the gap between approval of recommendations about nursing and midwifery at previous WHO forums and their implementation. For those recommendations that have not been implemented, the reasons should be analysed, alternative

strategies developed and a continuous monitoring system created, with indicators of progress.

4. WHO and Member States should continue to support the development of innovative, cost-effective programmes for nursing and midwifery education which focus on the development of critical thinking and a caring attitude. In particular, WHO should support management training and the development and use of relevant learning materials.

8.2 Recommendations to WHO

1. WHO, the WHO collaborating centres and other institutions should develop collaborative research, facilitate the exchange of relevant research findings, develop strategies to utilize the findings of research in practice and policy, collect and evaluate models of nursing development, and share successful models across countries.
2. WHO should encourage development of an international multi-disciplinary project that:
 - (a) identifies the core competencies in health and social sciences that are common to all health professions (e.g. ethics, communication, research, consultation skills, teaching skills);
 - (b) identifies the unique competencies for each profession;
 - (c) examines the implications of these findings for the education of the different health professions.
3. WHO should make a commitment to include nursing and midwifery care in special initiatives (e.g. safe motherhood, the sick child, urban health, sustainable development) and should monitor progress towards this goal.
4. WHO should act as a catalyst by working with Member States and donors to include nursing and midwifery issues in relevant health systems research and to seek needed funds for such research.

8.3 Recommendations to Member States

1. Member States should create a multisectoral forum of relevant partners (e.g. health, education and finance sectors, as well as professional associations, regulatory bodies and consumers) involved in practice, research, education, management and policy development for nursing and midwifery services in order to address the changing needs of nursing and midwifery personnel, their preparation and the development of educational systems that allow personnel to move from one career level to another.
2. Member States should continually assess their needs for health care personnel to provide community-based health care interventions, especially to vulnerable groups. The data obtained should be shared with health professionals, including nurses and midwives, so that they can redirect their practice and prepare personnel to meet future needs.

3. In view of the growing need for informal care-giving, Member States should be encouraged to include self-care and basic care-giving skills at appropriate points in school curricula.
4. Member States should ensure that students entering nursing and midwifery programmes have a good basic education and have reached a level of maturity consistent with the responsibilities of their work.
5. In deciding on the appropriateness of basic and postbasic education in nursing at university level, Member States should consider:
 - (a) future health care needs and the roles of nurses and midwives;
 - (b) the level of general education in the country;
 - (c) the educational patterns of other professions in the health care field.When appropriate, Member States should move basic nursing education to the university.
6. Member States should ensure that basic and continuing nursing and midwifery education focuses on knowledge and skills that are relevant to, and attitudes that are respectful of, the needs and values of local communities, and that innovations which are introduced through continuing education become part of basic professional education.
7. Member States should develop multidisciplinary programmes for management development within universities and colleges and in agencies at country, district and subdistrict levels.
8. Through flexible and enabling legislation and regulation, Member States should support the development of nursing and midwifery practice to meet changing health care needs. Member States should consider regulatory controls for nursing and midwifery auxiliary personnel.
9. Member States should review their public service regulations to ensure that a variety of educational pathways to nursing and midwifery are recognized, and that requirements are flexible in regard to changing functions, professional practice and career structures.
10. In their health systems research, Member States should include questions related to nursing and midwifery education and care, and should consider these a priority for funding. Member States should also encourage local communities to collaborate in developing research questions and in raising funds to support such research, in order to ensure its relevance to local needs.
11. Member States should develop information systems for the management of nursing and midwifery personnel as an integral part of countrywide health information systems.

Acknowledgements

The Study Group acknowledges the important assistance given to its work by Professor E. Abou Youssef, Regional Nursing Adviser, WHO Regional Office for the Eastern Mediterranean, Alexandria, Egypt, and Dr S.A. Bisch, Regional Nursing Adviser, WHO Regional Office for South-East Asia, New Delhi, India, and the considerable and essential input of the temporary advisers (Professor P. Archbold, Professor J. Robinson and Ms E. Tornquist). Professor Robinson's theoretical overview of the global health situation and policy provided the conceptual framework for the Study Group's discussions.

The contribution of the following persons in preparing background documentation for the Study Group is gratefully acknowledged:

- James Buchan, Senior Policy and Research Analyst, Royal College of Nursing, England (*World nursing "shortages" and human resource planning*);
- Anne J. Davis, Professor, School of Nursing, University of California, USA, and Ruth Stark, Suva, Fiji (*Health care ethics and international nursing*);
- Nelly Garzon, Professor Emeritus, School of Nursing, The National University of Colombia, Colombia (*World view of nursing education*);
- William Holzemer, Professor and Associate Dean for Research, School of Nursing, University of California, USA (*The impact of nursing care: a focus on outcomes*);
- Margretta Madden Styles, Livingston Professor of Nursing, University of California, USA (*Laws and regulations*);
- R. Margaret Truax, Nurse Scientist, Division of Development of Human Resources for Health, WHO, Geneva, Switzerland (*Management information systems for nursing/midwifery personnel*).

References

1. *Global Advisory Group on Nursing and Midwifery. Report of the first meeting, Geneva, 30 November to 2 December, 1992.* Geneva, World Health Organization, 1993 (unpublished document WHO/HRH/NUR/93.1; available on request from Division of Development of Human Resources for Health, World Health Organization, 1211 Geneva 27, Switzerland).
2. *Handbook of resolutions and decisions of the World Health Assembly and the Executive Board, Vol. III, 3rd ed. (1985–1992).* Geneva, World Health Organization, 1993:45–46.
3. *Health dimensions of economic reform.* Geneva, World Health Organization, 1992.
4. *Implementation of the Global Strategy for Health for All by the Year 2000, second evaluation. Eighth report on the world health situation. Volume 1: Global review.* Geneva, World Health Organization, 1993.
5. *UNICEF. The state of the world's children 1991.* Oxford, Oxford University Press, 1992.
6. *The World Bank. World development report 1993: investing in health.* Oxford, Oxford University Press, 1993.
7. *Cooper Weil DE et al. The impact of development policies on health: a review of the literature.* Geneva, World Health Organization, 1990.

8. Cook RJ. *Women's health and human rights: the promotion and protection of women's health through international human rights law*. Geneva, World Health Organization (in press).
9. *Women's health: across age and frontier*. Geneva, World Health Organization, 1992.
10. Türmen T. *Priority health issues affecting women: address by Tomris Türmen to the Global Commission for Women's Health, Geneva, 8 March 1993*. Geneva, World Health Organization, 1993 (unpublished document WHO/FHE/WHO/93.1; available on request from Women, Health and Development, World Health Organization, 1211 Geneva 27, Switzerland).
11. The World Bank. *World development report 1991: the challenge of development*. Oxford, Oxford University Press, 1991.
12. Buchan J, Ball J. *Caring costs: nursing costs and benefits*. Brighton, Institute of Manpower Studies, 1991.
13. Salvage J, ed. *Nursing in action: strengthening nursing and midwifery to support health for all*. Copenhagen, World Health Organization, 1993 (WHO Regional Publications, European Series, No. 48).
14. Pizurki H et al. *Women as providers of health care*. Geneva, World Health Organization, 1987.
15. World Health Organization. More than ever we need nurses [editorial]. *World health*, September–October 1992.
16. Urban slums and primary health care: the private doctor's role [editorial]. *British medical journal*, 1993, **306**:667–668.
17. Hammond M, Mazibuko R. Nurse education: in need of radical change for PHC? *Tropical doctor*, 1991, **21**:5–8.

World Health Organization Technical Report Series

Recent reports:

No.		Sw.fr.*
775	(1989) WHO Expert Committee on Drug Dependence Twenty-fifth report (48 pages)	6.—
776	(1989) Evaluation of certain food additives and contaminants Thirty-third report of the Joint FAO/WHO Expert Committee on Food Additives (64 pages)	8.—
777	(1989) Epidemiology of work-related diseases and accidents Tenth report of the Joint ILO/WHO Committee on Occupational Health (71 pages)	9.—
778	(1989) Health guidelines for the use of wastewater in agriculture and aquaculture Report of a WHO Scientific Group (74 pages)	9.—
779	(1989) Health of the elderly Report of a WHO Expert Committee (98 pages)	12.—
780	(1989) Strengthening the performance of community health workers in primary health care Report of a WHO Study Group (46 pages)	6.—
781	(1989) New approaches to improve road safety Report of a WHO Study Group (62 pages)	8.—
782	(1989) Monitoring and evaluation of oral health Report of a WHO Expert Committee (69 pages)	9.—
783	(1989) Management of human resources for health Report of a WHO Expert Committee (61 pages)	8.—
784	(1989) The use of synthetic antigens for diagnosis of infectious diseases Report of a WHO Scientific Group (73 pages)	9.—
785	(1989) Health surveillance and management procedures for food-handling personnel Report of a WHO Consultation (47 pages)	6.—
786	(1989) WHO Expert Committee on Biological Standardization Thirty-ninth report (184 pages)	22.—
787	(1989) WHO Expert Committee on Drug Dependence Twenty-sixth report (32 pages)	4.—
788	(1989) Evaluation of certain veterinary drug residues in food Thirty-fourth report of the Joint FAO/WHO Expert Committee on Food Additives (66 pages)	9.—
789	(1990) Evaluation of certain food additives and contaminants Thirty-fifth report of the Joint FAO/WHO Expert Committee on Food Additives (48 pages)	6.—
790	(1990) WHO Expert Committee on Specifications for Pharmaceutical Preparations Thirty-first report (79 pages)	9.—
791	(1990) Pesticide application equipment for vector control Twelfth report of the WHO Expert Committee on Vector Biology and Control (58 pages)	8.—
792	(1990) Prevention in childhood and youth of adult cardiovascular diseases: time for action Report of a WHO Expert Committee (105 pages)	12.—
793	(1990) Control of the leishmaniasis Report of a WHO Expert Committee (158 pages)	18.—
794	(1990) Educational imperatives for oral health personnel: change or decay? Report of a WHO Expert Committee (43 pages)	6.—

* Prices in developing countries are 70% of those listed here.

795	(1990) Effective choices for diagnostic imaging in clinical practice Report of a WHO Scientific Group (131 pages)	16.–
796	(1990) The use of essential drugs Fourth report of the WHO Expert Committee (57 pages)	8.–
797	(1990) Diet, nutrition, and the prevention of chronic diseases Report of a WHO Study Group (203 pages)	26.–
798	(1990) Chemistry and specifications of pesticides Thirteenth report of the WHO Expert Committee on Vector Biology and Control (77 pages)	9.–
799	(1990) Evaluation of certain veterinary drug residues in food Thirty-sixth report of the Joint FAO/WHO Expert Committee on Food Additives (68 pages)	9.–
800	(1990) WHO Expert Committee on Biological Standardization Fortieth report (221 pages)	26.–
801	(1990) Coordinated health and human resources development Report of a WHO Study Group (53 pages)	8.–
802	(1990) The role of research and information systems in decision-making for the development of human resources for health Report of a WHO Study Group (54 pages)	8.–
803	(1990) Systems of continuing education: priority to district health personnel Report of a WHO Expert Committee (50 pages)	8.–
804	(1990) Cancer pain relief and palliative care Report of a WHO Expert Committee (75 pages)	9.–
805	(1990) Practical chemotherapy of malaria Report of a WHO Scientific Group (141 pages)	16.–
806	(1991) Evaluation of certain food additives and contaminants Thirty-seventh report of the Joint FAO/WHO Expert Committee on Food Additives (56 pages)	10.–
807	(1991) Environmental health in urban development Report of a WHO Expert Committee (71 pages)	11.–
808	(1991) WHO Expert Committee on Drug Dependence Twenty-seventh report (21 pages)	6.–
809	(1991) Community involvement in health development: challenging health services Report of a WHO Study Group (60 pages)	10.–
810	(1991) Management of patients with sexually transmitted diseases Report of a WHO Study Group (110 pages)	14.–
811	(1991) Control of Chagas disease Report of a WHO Expert Committee (101 pages)	14.–
812	(1991) Evaluation of methods for the treatment of mental disorders Report of a WHO Scientific Group (80 pages)	10.–
813	(1991) Safe use of pesticides Fourteenth report of the WHO Expert Committee on Vector Biology and Control (31 pages)	6.–
814	(1991) WHO Expert Committee on Biological Standardization Forty-first report (84 pages)	11.–
815	(1991) Evaluation of certain veterinary drug residues in food Thirty-eighth report of the Joint FAO/WHO Expert Committee on Food Additives (70 pages)	9.–
816	(1992) Rheumatic diseases Report of a WHO Scientific Group (66 pages)	10.–
817	(1992) Oral contraceptives and neoplasia Report of a WHO Scientific Group (52 pages)	9.–
818	(1992) Vector resistance to pesticides Fifteenth report of the WHO Expert Committee on Vector Biology and Control (67 pages)	10.–

819	(1992) The hospital in rural and urban districts Report of a WHO Study Group on the Functions of Hospitals at the First Referral Level (81 pages)	12.–
820	(1992) Recent advances in medically assisted conception Report of a WHO Scientific Group (118 pages)	15.–
821	(1992) Lymphatic filariasis: the disease and its control Fifth report of a WHO Expert Committee on Filariasis (77 pages)	10.–
822	(1992) WHO Expert Committee on Biological Standardization Forty-second report (89 pages)	12.–
823	(1992) WHO Expert Committee on Specifications for Pharmaceutical Preparations Thirty-second report (140 pages)	17.–
824	(1992) WHO Expert Committee on Rabies Eighth report (90 pages)	12.–
825	(1992) The use of essential drugs Fifth report of the WHO Expert Committee (79 pages)	10.–
826	(1992) Recent advances in oral health Report of a WHO Expert Committee (42 pages)	7.–
827	(1992) The role of health centres in the development of urban health systems Report of a WHO Study Group on Primary Health Care in Urban Areas (42 pages)	7.–
828	(1992) Evaluation of certain food additives and naturally occurring toxicants Thirty-ninth report of the Joint FAO/WHO Expert Committee on Food Additives (57 pages)	9.–
829	(1993) Evaluation of recent changes in the financing of health services Report of a WHO Study Group (79 pages)	10.–
830	(1993) The control of schistosomiasis Second report of the WHO Expert Committee (93 pages)	12.–
831	(1993) Rehabilitation after cardiovascular diseases, with special emphasis on developing countries Report of a WHO Expert Committee (130 pages)	17.–
832	(1993) Evaluation of certain veterinary drug residues in food Fortieth report of the Joint FAO/WHO Expert Committee on Food Additives (68 pages)	10.–
833	(1993) Health promotion in the workplace: alcohol and drug abuse Report of a WHO Expert Committee (39 pages)	7.–
834	(1993) WHO Expert Committee on Specifications for Pharmaceutical Preparations Thirty-third report (35 pages)	7.–
835	(1993) Aging and working capacity Report of a WHO Study Group (55 pages)	10.–
836	(1993) WHO Expert Committee on Drug Dependence Twenty-eighth report (50 pages)	10.–
837	(1993) Evaluation of certain food additives and contaminants Forty-first report of the Joint FAO/WHO Expert Committee on Food Additives (61 pages)	10.–
838	(1993) Increasing the relevance of education for health professionals Report of a WHO Study Group on Problem-Solving Education for the Health Professions (33 pages)	8.–
839	(1993) Implementation of the Global Malaria Control Strategy Report of a WHO Study Group on the Implementation of the Global Plan of Action for Malaria Control 1993–2000 (62 pages)	10.–
840	(1994) WHO Expert Committee on Biological Standardization Forty-third report (223 pages)	31.–
841	(1994) Cardiovascular disease risk factors: new areas for research Report of a WHO Scientific Group (59 pages)	10.–