TOWARDS A BETTER FUTURE

MATERNAL AND CHILD HEALTH

UNHCR Photo by S. Errington

WORLD HEALTH ORGANIZATION GENEVA 1980

The World Health Organization is a specialized agency of the United Nations with primary responsibility for international health matters and public health. Through this organization, which was created in 1948, the health professions of more than 150 countries exchange their knowledge and experience with the aim of making possible the attainment by all citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life.

By means of direct technical cooperation with its Member States, and by stimulating such cooperation among them, WHO promotes the development of comprehensive health services, the prevention and control of diseases, the improvement of environmental conditions, the development of health manpower, the coordination and development of biomedical and health services research, and the planning and implementation of health programmes.

These broad fields of endeavour encompass a wide variety of activities, such as developing systems of primary health care that reach the whole population of Member countries; promoting the health of mothers and children; combating malnutrition; controlling malaria and other communicable diseases including tuberculosis and leprosy; having achieved the eradication of smallpox, promoting mass immunization campaigns against a number of other preventable diseases; improving mental health; providing safe water supplies; and training health personnel of all categories.

Progress towards better health throughout the world also demands international cooperation in such matters as establishing international standards for biological substances, pesticides and pharmaceuticals; formulating environmental health criteria; recommending international nonproprietary names for drugs; administering the International Health Regulations; revising the International Classification of Diseases, Injuries, and Causes of Death; and collecting and disseminating health statistical information.

Further information on many aspects of WHO's work is presented in the Organization's publications.

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HEALTH: A DEFINITION

In order to understand the role and work of WHO in any field, it is imperative to define the term "health". Colloquially, health does not mean much more than the absence of illness, and health care is taken to mean merely measures and interventions designed to cure disease. The definition of health embodied in the Constitution of WHO is much broader and much more positive, namely "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

Such a definition, coupled with the growing realization that health and development are interrelated, has significant implications for the work of WHO. It means that health must also be considered in a non-medical perspective and that behavioural and environmental factors must be taken more and more into account. This does not mean that medicine and medical care are obsolete but that health must be viewed more broadly, with more attention being paid to factors that enhance health and to action that can be taken by the people themselves to preserve and promote their own health.

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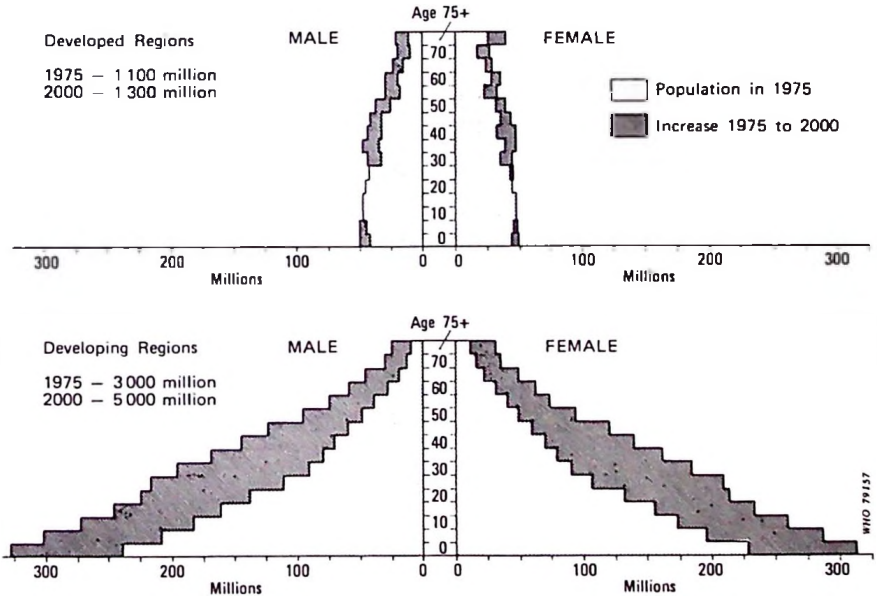
Mothers and children

Health cannot be attained where poverty and misery abound, where food and safe water are scarce, where housing is inadequate, and where public and community services are lacking or rudimentary. In such conditions, faced by two-thirds of the world's people, ill-health and premature death are the rule rather than the exception. Most severely affected by such risk factors are women of childbearing age and children, who together make up the majority of the population in almost all parts of the world today (Fig. 1). Mothers and children are especially at risk because of the particular vulnerability of certain stages of the process of growth and development. If family health is to be attained, the health needs of mothers and children must be considered the first priority.

Fig. 1

POPULATION BY AGE AND SEX (1975 AND 2000)



Source: Data from United States Bureau of the Census; published in *Department of State Bulletin*, October 1978.

Table 1

VITAL STATISTICS BY GEOGRAPHICAL REGIONS, 1978
(in millions unless otherwise stated)

Region	Life expectancy at birth (years)	Population			Annual number of births	Annual number of deaths of children aged		Deaths of children under 5 years as percentage of all deaths
		total	children aged			under 1 year (thousands)	1–4 years (thousands)	
			0–4 years	5–14 years				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
West Africa	42	128	24	34	6.3	1 010	564	55
Middle Africa	42	50	9	13	2.2	381	215	61
East Africa	45	124	23	33	5.8	845	629	60
Mid South Asia	49	879	145	232	32.5	4 423	1 609	46
Southern Africa	52	31	5	7	1.2	150	65	44
South-East Asia	52	341	58	91	12.6	1 463	352	41
Northern Africa	52	103	18	28	4.4	580	399	68
South-West Asia	55	92	16	24	3.9	423	128	48
Tropical South America	61	188	31	50	7.0	689	163	50
Middle America	63	87	16	24	3.6	256	79	48

Caribbean	64	28	4	7	0.8	53	8	27
East Asia	66	1 122	131	236	24.7	1 431	631	23
Temperate South America	66	40	4	8	0.9	66	9	21
Oceania	68	22	3	4	0.5	13	2	8
USSR	69	261	22	45	4.7	132	12	6
Eastern Europe	70	108	9	16	1.9	49	8	5
Southern Europe	71	137	11	24	2.3	56	9	5
Western Europe	72	153	11	25	1.8	28	6	4
Northern Europe	72	82	6	13	1.1	14	3	2
North America	73	242	19	43	3.6	54	10	3
World	60	4 219	565	957	121.8	12 115	4 901	25

Sources: Cols (1), (2), (5) — Population Reference Bureau Inc., Washington, DC; 1978 estimates.
Cols (3), (4) — Population Reference Bureau and United Nations (*Selected world demographic indicators*, 1975).
Cols (6), (7) — WHO (Division of Family Health) estimates based on data from various sources.
Col. (8) — Cols (6) and (7) and Population Reference Bureau Inc.

Notes: Totals were calculated before rounding, rounded figures may not add up to totals.
Col. (8) — Figure for northern Africa is greatly influenced by the estimated fall in the overall death rate (United Nations estimate).

Of the 122 million children born each year in the world, more than 12 million die before reaching their first birthday (Table 1); more than 10 million of these deaths occur in the developing world. Many of the risk factors for infants also endanger the life of the mother, contributing to high maternal mortality with consequent additional risks for orphaned children. Unsafe obstetric practices, including clandestine abortions, also increase maternal mortality.

Infant and maternal death rates may epitomize, more than any other indicator, the gap between the rich and the poor. In many countries, infant and maternal mortality rates have declined dramatically and the health conditions of mothers and children have made impressive progress, demonstrating clearly that the tragic waste of human life can be prevented if proper action is taken.

Why then does the health situation of hundreds of millions of mothers and children continue to be so poor? Why does maternal and child health care not receive the priority it should in so many countries?

The answers to these questions are related to the overall health and development situation. For example, the potential contribution of health to development is too often overlooked or underestimated; many countries face enormous constraints in terms of resources and the environment; natural and man-made disasters result in tremendous hardships for many populations; the health system of many countries is too weak or too inefficient to give proper support to action at the community level. Other reasons include a lack of appreciation of the basic principles of maternal and child health, its importance for health in general, and its role in overall development and an improved quality of life.

The tragic situation of the mothers and children in the developing world poses the greatest challenge to the achievement of the goal of "health for all by the year 2000" that was set by the World Health Assembly in 1977.

Principles of maternal and child health care

Knowledge acquired in the past few decades has clarified the biological and social bases underlying the health and health care of mothers and children. This knowledge has strengthened the scientific justification for maternal and child health care.

The basic principle underlying maternal and child health care is that there are specific biological and psychosocial needs inherent in the process of human growth which must be met in order to ensure the survival and healthy development of the child and future adult.

Maternal and child health care is *not* a form of service conveniently "packaged" according to the age and sex characteristics of a population group, nor is it a specific activity to deal with a given disease. It is, rather, a type of service concerned with the overall process of growth and development which is the foundation of human life. The very nature of this process is crucial for health or ill-health, for life or death.

Each stage of growth and development builds on the one before and influences the next. If the physiological and psychosocial requirements are not fulfilled at each stage, it becomes increasingly difficult to catch up or repair the damage; thus the body's potential to adapt in a healthy way throughout the process diminishes. The health of the child determines the health of the adult; the growth and development of one generation affects the next generation.

The process of healthy growth and development is in itself a normal one, provided crucial elements in the environment are in balance. Certain stages of this continuous process are more critical or rapid than others: consequently, they are more vulnerable. Mothers and children are considered vulnerable groups because of the special characteristics of pregnancy or young age in relation to growth and development. The word "vulnerability" refers to the potential for misdevelopment or danger.

The third trimester of gestation, the first year of extrauterine life, and puberty are particularly critical stages because of the rapidity of growth and development.

The concept of vulnerability has implications for any type of health care. It calls for preventive care, continuity of care for all, individual monitoring, and specific actions when deviations from normal progress are detected. At any point in time, from a fifth to a third of the population in most countries could be considered vulnerable. This fact is very important from the point of view of social and health planning.

Understanding the biological reasons for the vulnerability of mothers and children is not an academic exercise; it is essential in order to meet the fundamental health needs of a whole lifetime.

Child spacing is an important means of bettering the health of mothers and children. The positive impact of appropriate child spacing will be reflected in national socioeconomic development.

The overall quality of life predetermines, to a large extent, the healthy

growth and development of an infant. Unwanted or unwise pregnancies lessen the child's chances of survival in that they impose a health risk for the mother and, especially in underprivileged situations, decrease the resources necessary to support the wellbeing of the child. Prevention of unwanted or too closely spaced pregnancies is possible. Child spacing is an alternative that should be available to everybody. Relevant sectors and personnel should ensure the provision of information, technology and resources for families who want and need to space their children. The choice should be within the reach of all.

If preventive action is taken in pregnancy and early childhood, its effectiveness and impact on health are great.

The greatest part of the resources of health systems have traditionally been allocated to action on behalf of the non-healthy; because of the enormous and urgent demand from this part of the population, very little has remained for the protection and promotion of health. This has been particularly striking with maternal and child health care, which should be essentially concerned with the promotion of healthy growth and development and the prevention of ill-health.

Preventing illness and promoting health entail very basic and concrete measures which form part of a forward-looking orientation to life. Yet it is only in the past few decades that the necessary conceptual, scientific and practical foundations have been laid that have allowed families throughout the world to plan for their own future or for that of their children with any degree of certainty. The concepts involved in taking action now for a better life tomorrow have only recently been defined with any clarity.

New knowledge has also shown that many adult health conditions result from problems in childhood (*1*). This growing understanding demands a shift of priorities. National health authorities are increasingly realizing that child care is not just the cure of disease in sick children, but the prevention of potentially fatal diseases and incapacity in future adults on whom national health and prosperity will depend, and that greater investment in health care of children means reducing the need for resources devoted to curative health services, hospitals, and facilities for rehabilitation, now and in the future.

The healthy development of children is an investment in social development and productivity.

Underlying the preoccupation of development policy in the 1950s with economic growth was the assumption that a healthy work force was available. However, the prime necessity of maintaining a healthy population was often overlooked or grossly underestimated by the policy-makers, and the importance of ensuring child health as an investment for the future was largely ignored. As a result, the development plans of many countries—drafted in good faith in the 1940s and 1950s—have yielded little but disillusionment and frustrated hopes.

In contrast, there are a number of examples of countries which in the past few decades have made a concerted effort to promote the health of

their children as part of an overall priority investment in childhood; there is no doubt that this investment has been beneficial for these children (now adults), for their children in turn, and for the prosperity and development goals of the nation as a whole. The shift in the 1970s to a much greater emphasis on social development—with a concern for social justice, high levels of education and production, the organization of communities, and the participation of people in political and social processes—demands not only a physically healthy labour force but also a population with a high level of energy. A productive and energetic population cannot grow from unhealthy children.

Some factors affecting the health of mothers and children

Economics and the environment

The differences in health between rich and poor, which can be observed in all age groups, are particularly striking among mothers and children. Table 2 illustrates the relationship between crude fertility, infant mortality and economic development, and shows how great these differences are, but it does not show the pockets of high infant mortality in wealthy countries or the uneven distribution within developing countries.

Among the factors affecting maternal and child health are: agricultural policy and land ownership, which have a direct influence on nutritional status; an insanitary environment, including unsafe and insufficient water and overcrowding; and transport and communication difficulties. Moreover, urbanization, with its concomitant breakdowns of traditional structures, causes new health problems, such as exposure to pollution, the mental deprivation of children and the health consequences of their social deprivation, increased risks of sexual exploitation and drug abuse among the young, and so on. Cities are built for adults, and urban planners all too rarely recognize the importance of the physical surroundings for health and for accommodating children amid the concrete maze.

Table 2

INFANT MORTALITY, BIRTH RATES AND ECONOMIC DEVELOPMENT

Countries	Average GNP (US$ per capita)	Population (million)	Crude birth rate (per 1000 population)	Infant mortality (per 1000 live births)
Industrialized	5 950	1 350	16.2	15
Developing:				
High income	4 127	20	31.0	25
Upper middle income	1 498	108	23.8	35
Intermediate middle income	721	370	41.4	48
Lower middle income	384	215	45.0	88
Low income	151	554	46.6	129
Centrally planned economies	2 112	1 480	17.8	25[a]

[a] Excluding China

Source: *World atlas of the child*, Washington, DC, World Bank, 1979.

Social values and education

A society's traditions, cultures, philosophies and religions all shape and are shaped by people's understanding and conception of health, sickness and death. Various harmful effects have been observed as a result of, for instance, food taboos in the treatment of sickness in children and the eating practices of pregnant women, child marriage, and discrimination against female babies. On the other hand, there are positive aspects, such as the traditional bonding or close contact of mother and infant, and the value attached to cleanliness and personal hygiene in many religions. While changes in traditional family life-styles are inevitable, valuable practices such as breast-feeding should not be allowed to disappear. There is sound sense in creating the new by grafting on to what was best in the past.

The relationship between educational factors (formal and non-formal schooling, literacy, and traditional forms of education) and health is complex and not easily described. However, associations have often been found between high levels of infant mortality and low levels of education.

The family

Health largely depends on the family's social and physical environment, and its life-style and behaviour. The role of the family in health promotion and in prevention, early diagnosis and care of disease is of crucial importance. The major part of health actions is carried out by individuals and families before they come into contact with any health worker. The mother is usually the family's first health care worker. But women often have no access to information and technology, to income and education, and they are usually overburdened with work.

In more and more areas of the world today, man-made and natural disasters, including war and other violence, political upheavals, changing patterns of women's employment, and migration of men have far-reaching effects on the functioning of the family, especially with regard to childbearing and child-rearing. The support mechanisms which the family had provided for its members in the past are eroding because of economic and social pressures, with implications for the health of mothers and children.

In the past decade changes in patterns of socioeconomic development and the adoption of family planning methods by an increasing number of couples have had a significant impact on family structures and functions. These changes have influenced both women's and men's economic and social roles, as well as patterns of childbearing and child-rearing, and hence family health. In some areas changes in traditional family structure have led many more women to assume single-handedly the role of head of the family, with implications for their own health and that of the family as a whole.

Social support and health care

The many factors affecting the health status of mothers and children also include community and social support measures, ranging from neighbourhood-oriented day-care facilities to organized health care systems. Whether these are available and how well they function has an impact on the health of the family.

Table 3

WORLD POPULATION ESTIMATES
(1978)

	World (millions)	Developing Areas (millions)	Developed Areas (millions)
Women aged 15–49 years	1 005	727	278
Children aged 0–4 years	565	472	93
Children aged 5–14 years	957	778	179
sub-total	2 527	1 977	550
Total Population	4 219	3 105	1 114
Children 0–14 years and women aged 15–49 years as percentage of total population	60	64	49

Source: Population Reference Bureau Inc. & United Nations (*Selected world demographic indicators*)

Health status of mothers and children

Of the total world population, 24% are women of reproductive age and 36% are children below 15 years of age. While the proportion of women of reproductive age is about the same in all parts of the world, children under 15 years of age make up 24% of the population in the developed areas and 40% in the developing areas. Thus, while the actual percentage may vary from one country to another, these two groups together make up the majority of the population in almost all parts of the world today.

The lack of reliable data is a severe obstacle to a global analysis of health status. In addition, a drawback of existing data is that they are mostly expressed as national averages, whereas it is known that there are often large differences in health status between different population groups within the same country.

It is also increasingly being questioned whether mortality and morbidity data fully reflect health status, particularly in respect of young children for whom mere survival rates and specific disease rates are not very clear expressions of child health. New, positive indicators of health are emerging such as indices of human growth and development as well as maturation during adolescence. Birth weight is an important example; it reflects both the past and present health status of the mother and is sensitive in predicting the chances of an infant's survival and subsequent health.

The inadequacy of data on mortality and morbidity is most serious in those parts of the world where health problems are most widespread and severe. The inadequacies of the information are particularly marked for pregnant women and children, especially the newborn. These limitations should be kept in mind when interpreting the data reviewed below.

Maternal mortality and morbidity

In countries with a well developed health care system and where the maternal mortality rate is well documented, that rate is of the magnitude of 5–30 per 100 000 live births and is continuously decreasing. In most developing countries the information is only fragmentary but it is known that the situation is worse—and in some cases much worse. Evidence from special studies in a number of developing countries indicates that maternal mortality rates in excess of 500 per 100 000 live births are by no means exceptional. Rates of over 1000 per 100 000 have been reported in parts of Africa (Table 4).

It can be estimated that in areas with the highest maternal mortality, i.e., most of Africa and in West, South and East Asia, about half a million women die from causes related to pregnancy and childbirth every year, leaving behind at least one million motherless children. In Latin America, the maternal mortality rates are much lower, but several studies have shown serious under-reporting of maternal deaths; in some countries up to half of such deaths were not reported accurately.

Table 4

COMPARISON OF EXTREME LEVELS OF NATIONAL MATERNAL AND CHILD MORTALITY RATES

	Highest levels (1)	Lowest levels (2)	Ratio of (1) / (2)
Perinatal mortality[a]	120	12 - 15	8 - 10
Infant mortality[a]	200	8 - 10	20 - 25
Childhood mortality[b]	45	0.4 - 1	45 - 75
Maternal mortality[c]	1 000	5 - 10	100 - 200

[a] Per 1000 live births.
[b] Per 1000 population.
[c] Per 100 000 live births.

Source: WHO (Division of Family Health) estimates based on a variety of sources.

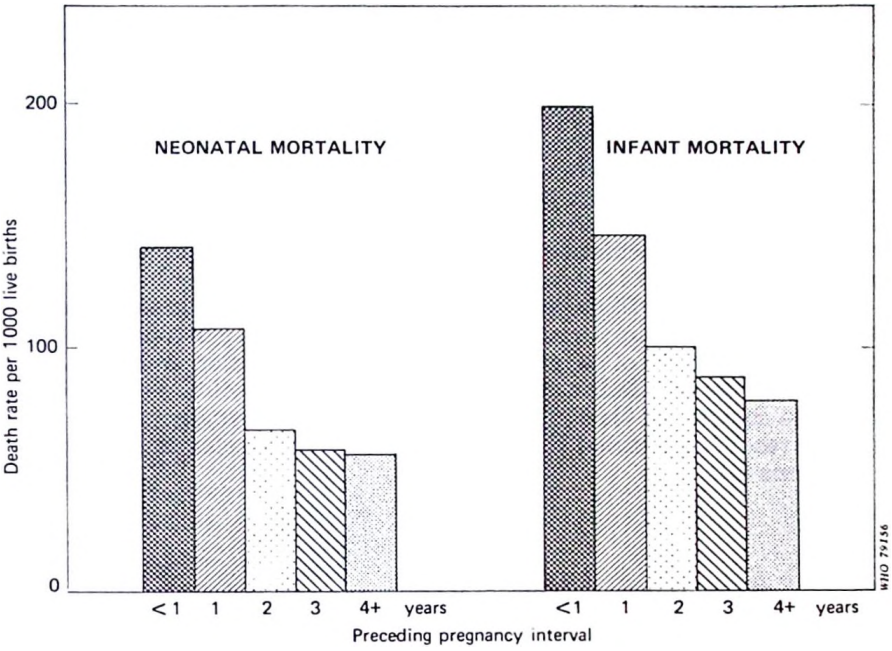
Causes of maternal death

Post-partum haemorrhage, often with anaemia as an underlying or associated cause, and sepsis are the most frequent causes of maternal death, directly related to the absence or inadequacy of prenatal and delivery care. In addition, hypertensive disorders of pregnancy are important, not only in the developed countries where they account for 25-35% of all maternal deaths, but probably even more in the developing countries. The etiology of toxaemia is not well known. It appears that the condition is more frequently associated with the first pregnancy, very young mothers and women over the age of 35, especially in women of very high parity. Anaemia and hypertensive disorders of pregnancy, in addition to their effect on maternal mortality, also cause high rates of fetal death and of low birth weight. Large numbers of pregnancies, short birth intervals, and pregnancies occurring at the extremes of reproductive age are in close relationship with a greater-than-normal risk of unfavourable outcome for both mother and child; this is manifested in, among other ways, higher neonatal and infant mortality rates. In a WHO study in rural India (*2*), it was found that the mortality rates were more than twice as high among infants born less than 2 years after the preceding pregnancy termination (abortion, fetal death or live birth) than among those born more than 4 years later (see Fig. 2).

Family planning can favourably influence the health, development, and wellbeing of the family, in particular of mothers and children. The health benefits of family planning result from (1) avoidance of unwanted pregnancies and the occurrence of wanted births that might otherwise not have taken place; (2) a change in the total number of children born to a mother; (3) achievement of an optimum interval between pregnancies; and (4) changes in the time at which births occur, particularly the first and the last, in relation to the ages of the parents and especially that of the mother.

Fig. 2

THE EFFECT OF PREGNANCY SPACING ON NEONATAL AND INFANT MORTALITY



Note: Preceding pregnancy interval = the interval between the termination of the preceding pregnancy and the birth of the infant.

Source: Omran, A.R. & Standley, C.C., ed. *Family formation patterns and health*. Geneva, World Health Organization, 1976, (data from South India sample, 1971–1975, 6541 women).

The role of illegally induced abortions as a cause of maternal death is well recognized but difficult to estimate, even approximately, because of the secrecy surrounding abortion as a cause of death. In Latin America, where abortion is illegal in most countries, it has been estimated that induced abortion is the cause of between one-fifth and one-half of all maternal deaths (*3*).

Maternal morbidity

Reliable data on maternal morbidity are even more scarce than those for maternal mortality, but some general observations can be made. Chronic malnutrition and anaemia, closely interrelated with acute and chronic infections such as malaria, infectious hepatitis, urinary tract

infections, and pulmonary tuberculosis, cause much suffering. Malaria in particular is very widespread. Pregnant women lose part of their acquired immunity, and malaria attacks are therefore often more severe in pregnancy. Malaria of the placenta increases the risks of abortion and low birth weight.

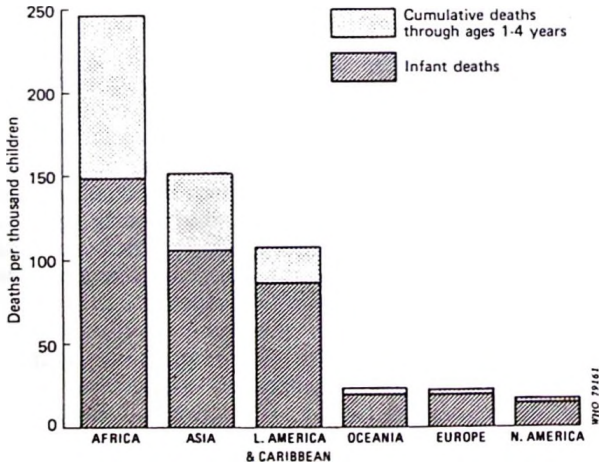
Anaemia is widespread among women of child-bearing age, both in developed countries and in particular in developing countries. In the latter the percentage of non-pregnant women with haemoglobin levels indicative of anaemia ranges between 10% and 100%, and in developed countries between 4% and 12% (*4*).

Almost all chronic diseases, such as hypertension, renal disease and diabetes, are aggravated by pregnancy. Addictive drugs, alcohol and smoking during pregnancy can lead to retardation of intrauterine growth and even to malformation. Psychological stress factors are also of increasing concern.

Involuntary infertility is a condition which causes great personal distress and has important social implications. In most parts of the world, about 2-10% of couples are affected, but in certain areas of Africa the percentage of infertile couples may be as high as 40%. It is thought that the causes of this high frequency include sexually transmitted disease resulting in tubal obstruction, as well as sequelae from obstetric conditions (*5*).

Fig. 3

PROBABILITY OF DYING BEFORE THE AGE OF 5 YEARS IN MAJOR REGIONS



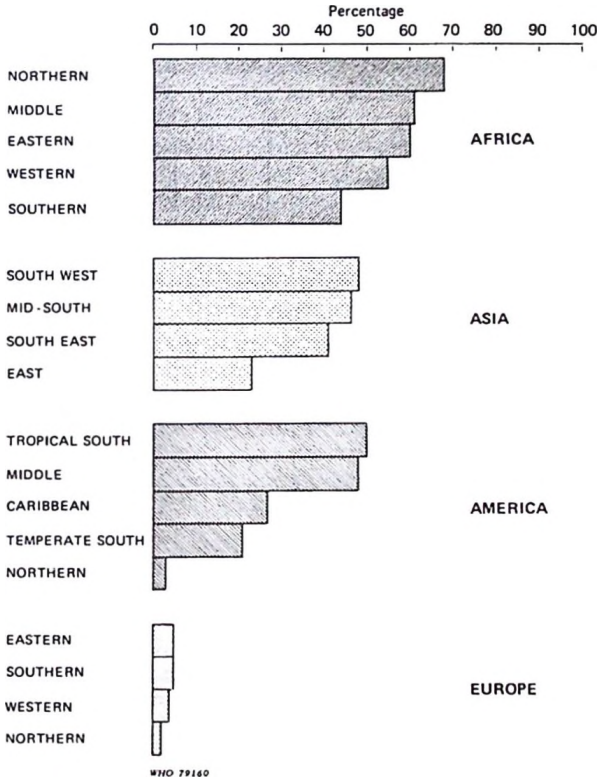
Source: WHO (Division of Family Health) estimates based on data from various sources.

Infant and childhood mortality (Table 4)

As mentioned earlier, of the some 122 million infants born each year, roughly 10% will die before reaching their first birthday, and another 4% before their fifth birthday. But the chances of survival are very unevenly distributed in the world. While the risk of dying before reaching adolescence is about 1 in 40 in developed countries, it is 1 in 4 in Africa as a whole, and even as high as 1 in 2 in some countries. There are vast differences between regions, in particular between Africa and South Asia, where life expectancy is below 60 years, and the rest of the world. In some of the former areas, nearly two-thirds of all deaths are those of children below 5 years (see Fig. 3 and 4).

Fig. 4

DEATHS OF CHILDREN AGED UNDER 5 YEARS
AS A PERCENTAGE OF DEATHS AT ALL AGES

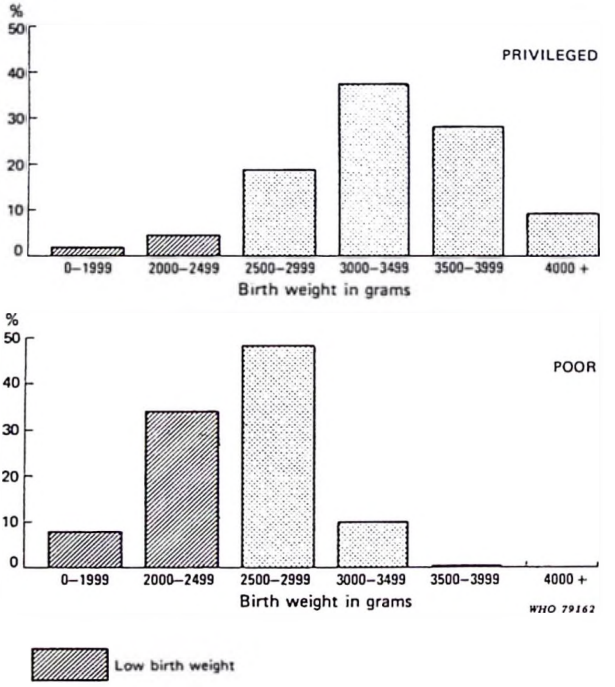


Source: WHO (Division of Family Health) estimates based on data from various sources.

Regardless of the level of infant and child mortality, the probability of dying is at its peak at the time of birth and immediately before birth, and except for a minor peak which marks the end of breast-feeding, it declines thereafter. Both the probability of dying and the main causes of death change rapidly during the early years of life. The conventional distinction between perinatal (28th week of gestation to 7th day of life), neonatal (first 28 days of life), post-neonatal (28th day to 1 year), infant (up to 1 year), and child (1-4 years) mortality is convenient from both the analytical and the programmatic points of view. Of particular importance is the different impact on mortality in each of these periods of adverse environmental factors, especially nutrition. In countries where infant and

Fig. 5

DISTRIBUTION OF BIRTH WEIGHTS OF INFANTS IN TWO CONTRASTING COMMUNITIES



Source: Based on data presented to a workshop on birth weight—*A novel yardstick of development*, organized by the Swedish Agency for Research Cooperation with Developing Countries and WHO, Sigtuna, Sweden, 16–18 June 1977 (see SAREC report No. R: 2, 1978).

child mortality have been reduced, mortality at the ages of 1-4 years has fallen first and most rapidly, while perinatal mortality has declined much more slowly.

Perinatal mortality now accounts for about 90% of all fetal and infant mortality in the developed countries with the lowest infant mortality rates, where more deaths occur in this short period (28th week of gestation to 7th day of life) than in the next 20 years of life. The underlying causes of perinatal deaths are linked to those of maternal deaths, i.e., poor health and nutritional status of the mother and complications of pregnancy and childbirth.

Perinatal mortality is also closely associated with low birth weight, defined as a birth weight below 2500 g; it affects mortality in the whole first year of life and probably also in the following few years, and it has adverse long-term effects on the development of the child. In a recent WHO review of available information (*6*) it was estimated that nearly 21 million infants of low birth weight are born each year. Globally, this means that about 1 in every 6 infants has a low birth weight, but the incidence is not evenly spread about the globe. In some parts of Asia the ratio is almost 1 in 2, while in parts of Europe it is only 1 in 17. Between these extremes the incidence ranges, by geographic region, from 31% in Mid-South Asia and 20% in Asia as a whole, to 15% in Africa, 11% in Latin America and the Caribbean, to 8% in Europe and 7% in North America. Of the 20.6 million low-birth-weight infants born in 1979, over 19 million, or 90%, were born in developing countries, mostly among the least privileged populations. There are strong indications that these babies contribute to a large proportion of deaths and childhood morbidity, the risk of mortality being up to 20 times higher than for other babies, both in the neonatal period and later.

Late neonatal (after the first week of life) and post-neonatal deaths are now uncommon in developed countries. In many developing countries, however, they account for almost two-thirds of all infant mortality. In many areas, tetanus may account for up to 10% of all neonatal mortality, but diarrhoeal diseases, closely followed by respiratory infections, are the leading causes of morbidity and mortality in the first year of life. Malnutrition, as an underlying cause, is also important; it has been cited as responsible for up to 57% of mortality at between 1 month and 1 year of age in some countries (*7*).

The most effective measure for the prevention of malnutrition and for protection against infection in infancy is breast-feeding. Evidence from the developing countries indicates that infants breast-fed for less than 6 months, or not at all, have a mortality 5-10 times higher in the second 6 months of life than those breast-fed for 6 months or more. Despite the marked advantages of breast-feeding, its popularity expressed in terms of the number of women who practise it and how long they continue breast-feeding has declined significantly in many parts of the world.

Historically, the decline has been particularly marked in highly developed countries but there is evidence to suggest that in these areas the trend is now changing and that the prevalence and duration of breast-

feeding may be increasing. In developing countries, where the value of breast-feeding is most marked and where larger proportions of infants are at risk of malnutrition and infection, data gathered by the WHO Collaborative Study on Breast-feeding indicate that in some urban areas relatively large proportions of mothers are not establishing breast-feeding. In the Philippines, for example, 33% of urban upper income and 15% of urban poor mothers who were interviewed had not breast-fed their youngest child. Of those that do, many wean their infants before 6 months. The prevalence and duration of breast-feeding among rural populations of developing countries, however, continue high although in some cases problems of nutrition and health status in infancy appear to be associated with the late introduction of appropriate and regular supplementary feeding (*8*).

Mortality at the ages of 1-4 years is much lower in all populations than infant mortality. In some areas with exceptionally high mortality levels, the probability of surviving from age 1 to age 5 may, however, be as low as 80%, mainly due to high death rates in the second year of life. During this second year the main underlying causes of infant mortality continue to be important. The infectious diseases of childhood, such as measles, whooping cough, and pneumonia, begin to appear in the second half of the first year or in the second year of life. Combined with malnutrition, these diseases lead to high case-fatality rates. For example, during the famine in the Sahel in 1973-1974, the case fatality from measles was estimated by WHO to be up to 50%. In other parts of tropical Africa the case fatality is 7-10%, which is still very much higher than in most parts of the world.

Childhood morbidity

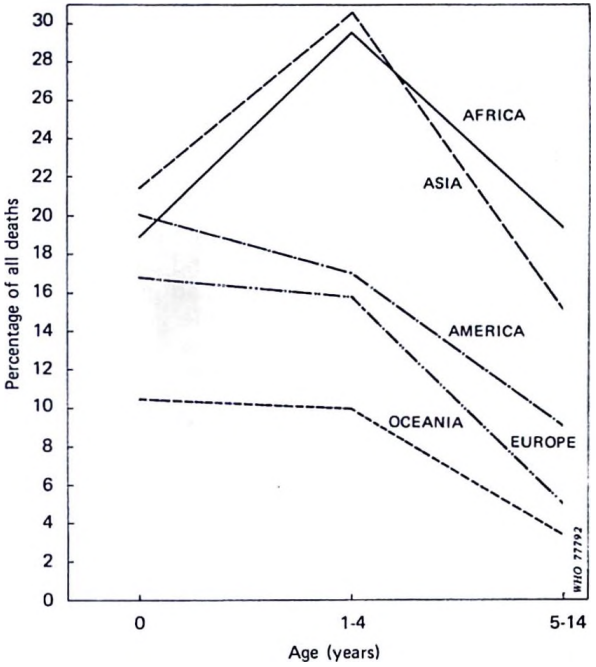
For every childhood death there are many episodes of disease and ill-health. Many common childhood diseases and conditions do not usually kill their victims but may cause serious chronic damage. Some of this is already apparent in childhood (blindness, paralysis), while other sequelae become manifest later in life (chronic heart disease, mental retardation).

In the developed world, accidents are the leading causes of death of children aged 1-4 years, and they also result in a substantial amount of disability. In the USA, for example, about 300 000 children are hospitalized annually because of head injury and some 20 000 of these suffer from some degree of permanent brain damage (*1*). There is every reason to believe that accidents among children are frequent also in the developing countries, especially burns and traumas as a result of home accidents and, to an increasing degree, traffic accidents.

Behavioural disturbances are another child health problem the importance of which is increasingly recognized in most countries (*9*). In some countries children abandoned by their families present severe social and health problems; for example, the International Union for Child Welfare has estimated that there are 2 million such children in Brazil and 1.5 million in India.

Fig. 6

DEATHS DUE TO ACUTE RESPIRATORY INFECTION



Note: Data show deaths due to acute respiratory infection as a percentage of deaths from all causes in the period 1970–1973.

Source: Bulla, A. & Hitze, K.L. Acute respiratory infections: a review. *Bulletin of the World Health Organization*, **56**: 481–495 (1978).

Malnutrition is the most widespread condition affecting the health of children, particularly in the developing countries. Some 100 million children under 5 years of age suffer from protein-energy malnutrition—more than 10 million of them from severe protein-energy malnutrition, which is usually fatal if untreated. The prevalence is highest in Africa, where it was estimated in 1974 that in some areas up to 23% of children aged under 5 years suffered from severe, and up to 65% from moderate, protein-energy malnutrition (*10*).

Other nutritional deficiencies include insufficiency of vitamins A and D. The extent of blindness in children, primarily due to vitamin A deficiency, is tragic. In spite of the abundance of sunshine, which promotes the synthesis of vitamin D in the body, children in parts of Africa and Asia suffer from rickets mainly because of traditional beliefs about child-rearing. This problem may also be found in migrant and other populations in the industrialized countries.

Adolescence

Overall mortality is relatively low in adolescence, compared with other phases of life, both in developing and developed countries, being generally higher for males than for females. However secular trends may be noted for some causes such as accidents and suicides which are increasing (*11*), causing high death rates for males aged 15–19 years in a number of developed countries.

For reasons that differ from country to country, and culture to culture, there is widespread experimentation by adolescents with alcohol and other drugs as well as with smoking. In many countries, about half the adolescents indulge in such exploratory behaviour. As to smoking, there have been some encouraging signs of a decline in recent years. In the USA in 1975, for example, 34% of the boys and 35% of the girls in the 13–19-year age group who had ever smoked had given up doing so (*12*).

The sexual behaviour of adolescents is undergoing rapid changes in many parts of the world, towards more and earlier sexual activity. In most industrialized countries and in many areas of Africa, the incidence of sexually transmitted disease among adolescents is more than twice as high as it is among those aged 20–29 years. A striking increase in the incidence of sexually transmitted diseases, especially gonorrhoea, has been observed since the 1960s (*13*).

Information on the frequency of teenage pregnancies in developing countries is limited. However, it is known that in some countries 50% of first births occur to mothers aged less than 20 years, as do 25% of the second births and 10% of third births.

Early teenage pregnancies pose special health risks not only for the mother but also for the child. Evidence clearly shows that maternal mortality rates are considerably higher for younger women, and that teenage mothers also run a high risk of losing their babies in infancy.

Developments in maternal and child health: Technologies and knowledge

Important advances in science and technology in the past few decades have opened up new vistas for maternal and child health. Their potential positive impact on the health status of mothers and children throughout the world is very promising, especially from the point of view of preventing deaths, disease and disorders. These developments, however, have benefited mostly urban populations in industrialized countries. Vast rural and peri-urban populations, mainly in developing countries, remain untouched by them.

In the industrialized countries, the technological progress has been rapid, with a trend towards increasingly sophisticated techniques and the development of potent curative drugs. In obstetrics, the main developments have been availability of life-saving oxygen, transfusion facilities and antibiotics, technology for fetal monitoring during labour, and improved techniques for the induction of labour and for obstetrical analgesia. These have been coupled with such negative institutional practices as separating the child from the mother after birth and inducing labour at the convenience of the physician or hospital staff.

The technologies developed, although beneficial when used rationally, have tended to interfere with a basically healthy, normal process. Moreover, these advances have called forth new and costly mechanisms and organizations to protect individuals and families against the ill-effects accruing from abuse, misuse or over-use of the new technologies and types of care. These ill-effects have been challenged both by the public on the grounds of cost and the inhuman nature of the care, and by clinicians on the grounds of their potential danger.

Prenatal and postnatal screening for metabolic, congenital or genetic disorders in the fetus and newborn has been made possible by sophisticated biochemical and cytological techniques and devices; amniocentesis is an example of such a technique.

Advances have also been made in the treatment of infertility. These have centred on the development of drugs for the treatment of women and men with impaired egg or sperm production, and highly sophisticated techniques for reconstructive surgery and embryo implantation. This technology which is costly, both in terms of money and skilled manpower, had had no impact in those areas of Africa where infertility is a priority problem for maternal and child health.

The care of the newborn has progressed greatly through better knowledge of the physiology of the kidney, gastrointestinal and lung function, and heat regulation. This has led to improvement in techniques of anaesthesia, intravenous nourishment, etc. Treatment of episodes of such diseases as meningitis and pneumonia is now very successful; some malignant diseases of the infant are controllable; and early surgical corrections of malformations (including heart and eye defects) are very effective.

Child psychology and psychiatry are becoming increasingly important in general paediatric care. The care of children with chronic disorders is more and more looked upon as part of family health. Likewise, institutional care of handicapped children is being replaced by various social support measures and services enabling families to assume a larger share of rehabilitation within the family circle.

Preventive technologies

Preventive technologies in maternal and child health have had far-reaching effects. Methods of fertility regulation have constituted an important area of research over the past 15-20 years. New drugs, devices and techniques have been developed but many problems related to side-effects are yet to be solved. Current research efforts are centred on improving existing methods and developing new, safe and effective methods which are simple to use or administer. Better technologies for abortion, such as vacuum aspiration and the use of plastic cannulae (small surgical tubes), have made the procedure safer and simpler.

Methods of fertility regulation are used by individuals numbering tens of millions throughout the world; their implications for health—both immediate and long-term—are numerous. The availability of effective modern contraceptive technology has not only contributed to improvements in health but it has also brought about radical changes in the lives of women.

Infectious childhood diseases can kill. In addition, many have after-effects that leave the survivors handicapped for life. The greatest success in prevention of disease in childhood has been the development of vaccines that protect children from common infectious diseases which can cause severe health problems later in life. Effective, safe vaccines have greatly reduced the incidence of diphtheria, whooping cough, tetanus, tuberculosis, measles and poliomyelitis. Improved techniques of immunization and of simple cold storage systems have also contributed to the effectiveness of immunization efforts.

The prevention of diseases and disorders resulting from nutritional deficiencies has been enhanced through the development of techniques for the fortification of foods, e.g., the fortification of sugar with vitamin A and of salt with iodine. These techniques have become widespread and have done much to reduce or even eliminate the incidence of some deficiences.

The development of a simple method of oral rehydration for treatment of diarrhoeal diseases in young children, although not a preventive technology *per se*, has the potential for significantly reducing the great number of deaths now caused by these diseases. With appropriate instructions the method can easily and safely be used by the primary health worker and family members.

Developments in knowledge

In recent years a better understanding of the process of growth and

development has emerged and made possible the identification of critical stages for normal healthy patterns. It is now recognized that many of the foundations of later health rest in those all-important first 40 weeks of life, starting at conception. Increasing attention is paid to the intrauterine environment, especially with regard to maternal nutrition, and the crucial importance of the last trimester of pregnancy as the main energy storage period of fetal life. It was less than 40 years ago that the possibility was widely recognized that environmental factors during fetal development, especially the first trimester, caused malformations in humans. This was underlined, among other observations, by the disclosures concerning the thalidomide tragedy, which drew attention to the still under-researched area of perinatal pharmacology.

In the 1970s, results of research made it increasingly clear how events in early life affect the health of the adult, and how many conditions can be prevented through early action (*1*). For example, dental disease in adulthood can be almost totally prevented by action in childhood. Early treatment of streptococcal infections in childhood can prevent rheumatic heart disease. In spite of the evidence that genetic factors play a role in essential hypertension, longitudinal studies suggest that the foundations of hypertension in susceptible individuals may well be laid in early life. The effects from one generation to the next of adverse environmental conditions—especially undernutrition—are manifested, for example, in delayed menarche in developing countries, as well as in the adverse effects of small stature of the mother on outcome of pregnancy.

Studies carried out in recent years have irrefutably demonstrated the synergistic effects of malnutrition and infection. These studies have also shown that malnutrition, especially protein-energy malnutrition, is a contributing or associated factor in more than half of childhood deaths. In industrialized countries overnutrition has become a major problem; because treatment generally fails, prevention becomes of prime importance.

Evidence of the importance of breast-feeding is leading to attempts to reverse the trend away from this practice in some areas, and to maintain the present level of breast-feeding in others. Studies on breast-feeding have conclusively shown that breast milk not only meets all the nutritional needs of the baby safely and adequately, but also provides the baby with defences (immunities) that protect against many of the illnesses of early infancy. Recent studies have also demonstrated the significance of early mother-infant contact, or "bonding", for infant and child development.

Research needs

Research in cell biology, immunology and pharmacology should yield more knowledge during the coming years. Future research efforts in the area of maternal and child health as part of the health care system should take into account developments in the social sciences and lay more emphasis on operational and health services research. A new balance has

to be struck so that research efforts are relevant to the health needs of the people and take socioeconomic factors into account. The process of socialization of the young child and the adolescent, for example, is not yet well understood. This topic calls for the involvement of researchers from many disciplines and it has great potential for improving the educational system. The many roles that women are called upon to play in the family and community must be better understood and supported for the benefit of society as a whole. Much more needs to be known about the quality and quantity of self-care in childbearing and child-rearing, and effective social support systems need to be studied and developed. The efficiency and effectiveness of the health care system should be studied at all levels in various settings. This will call for the study of approaches to community participation in decision-making, problem identification and programme implementation.

Recent trends in maternal and child health care

Maternal and child health care is no longer considered a separate entity in health services. The *content* of care is more and more being adapted to the priority health problems, sociocultural patterns, and child-rearing and childbearing customs. Furthermore, in the past decade family planning has increasingly been considered an integral part of maternal and child health.

The components of maternal and child health care will vary from one community to another as they are adapted to problems and solutions. Nevertheless, they might include the following essential elements: care during pregnancy and childbirth; promotion of breast-feeding and appropriate infant and young child nutrition; supervision of growth and development and prevention of infections, by immunization where appropriate; the prevention and the management of infant and childhood diarrhoea, which involves oral rehydration; family planning, including prevention and treatment of infertility; family health education in support of family self-reliance. In all countries the increasing dependence on costly and complicated medical equipment and the over-dependence on drugs are being questioned and more appropriate technologies are being developed.

Organization of care

New planning methods are being developed to permit more effective maternal and child health care; these include the "risk approach" being promoted by WHO. This approach can be considered a managerial tool for the flexible and rational distribution of existing resources, based on measurements of individual and community risks, and for developing local strategies and determining the appropriate content of maternal and child health care, including family planning. Inherent in this approach is the maximum utilization of all resources, including some human resources that are not conventionally involved in such care—traditional birth attendants, teachers, women's groups, and agricultural workers, for example (*14*).

Conventional maternal and child health services tended to be fragmented. The various components, immunization and family planning for example, were dealt with separately by different staff. Nowadays there is a general trend away from this fragmented approach towards "integrated", comprehensive health care in which every contact of mother and/or children with the health care system is seen as an opportunity to deal with the health problems of all members of the family, and to see each individual's problems and needs in the context of the family and community.

Manpower and training

The special category of "MCH worker" at the primary level is gradually being phased out. A wide range of workers from various

sectors, both formal and informal, are being considered for maternal and child health care. At the community level, these would include primary health workers, crèche staff, extension workers, grandparents, members of women's organizations, schoolteachers and traditional birth attendants. However, training in maternal and child health care has not yet been widely extended to workers in sectors other than health.

Availability and utilization of services

Much remains to be done in most countries to ensure universal access to health services and to meet the health needs of populations. Despite the efforts made by many developing countries to strengthen their health services, the bulk of resources are still for urban specialist and hospital care. For example, in a large Asian country only 32% of the rural population lived within a three-kilometre radius of any kind of health facility at the end of 1975, while the corresponding percentage for the urban population was 98%.

Services may also be underutilized for a variety of reasons, some of which relate directly to the lives of women, who are the main users. In many areas, women are overburdened: they spend their day working in the field, fetching water, preparing meals and procuring food for the family. They may have little energy and time left to seek health care, especially when it is not easily accessible. Also, in some societies, women prefer to consult or be examined by female health workers, who may not be available.

Care during pregnancy and childbirth

Care during pregnancy and childbirth is provided in different forms, with special clinics, outpatient and other services involved. Figures for births attended by trained personnel in developing countries show a wide range among regions: in Africa, the figures for countries range from 6% to 67%; in Asia from 3% to 95%; and in Latin America from 12% to 97%. These variations notwithstanding, the proportion of deliveries attended by trained personnel is rising steadily in many countries. However, a review by WHO of the most recent information suggests that in some parts of the world at least 50%, and in a few instances as many as 85%, of births are assisted by traditional birth attendants or relatives. In the past traditional birth attendants were generally not recognized by the health authorities. More and more countries are now devoting attention to their training and utilization, and making provision for supervision and referral.

Family planning

Recognizing the health and social benefits of family planning, more countries are integrating family planning within national health programmes. According to a recent worldwide survey, the percentage of women of childbearing age who practise family planning nearly doubled in some regions during the first half of the 1970s (*15*). In 1976, 34% of

couples in their reproductive years throughout the world were using some form of contraception regularly. As can be expected, there are great variations within and between countries; for example, over 50% of eligible women practised family planning in the Western Pacific Region, in Europe and in North America, whereas in West Africa the figure was only 3%. Some 360 million women, however, remain unprotected. A series of fertility surveys in all parts of the world showed a large proportion of women who did not want any more children, yet who did not have the information or the means to practise contraception. In fact, only half the couples of the world have sufficient knowledge to plan their families, according to information compiled by the International Planned Parenthood Federation.

Abortion

According to recent estimates, as of mid-1978, 9% of the world's population lived in countries where abortion was prohibited without exception, and 11% lived in countries where it was permitted only to save the life of pregnant women. Around 14% lived under statutes authorizing abortion on broader medical grounds, that is, to avert a threat to the woman's health rather than to her life (with mental health specifically mentioned in several countries), and sometimes on eugenic, or fetal, indication (known genetic or other impairment of the fetus or increased risk of such impairment) and/or juridical indication (rape, incest, etc.) as well. Some 25% of the world's population resided in countries in which social factors—inadequate income, substandard housing, unmarried status, and the like—could be taken into consideration in the evaluation of the threat to the woman's health or in which adverse social conditions alone, without reference to health, could justify termination of pregnancy. Countries allowing abortion on request without specifying reasons for at least some categories of women—generally defined in terms of age, number of children, and/or duration of pregnancy—accounted for 39%; in these countries, abortions on medical grounds were generally permitted beyond the gestational limit prescribed for elective abortion. No information is available for the remaining 2% of the world's people; it would appear, however, that most of them lived in areas with restrictive abortion laws (*16*).

Infertility

Increasing attention is being paid to the social, public health and service implications of infertility in developing countries. The frequency of infertility is probably higher than the figures indicate, and its treatment is too often a specialized service reserved for the privileged few. Research is being conducted to achieve a better understanding of the etiology of the problem and to indicate what conditions can be treated. This research has important implications for the development both of appropriate treatment and of services which can be made available to a wider segment of the population.

Infant and child care

In developing countries, national data for infant and child services are even more difficult to obtain than those for other components of maternal and child health care; and the "content" of such services varies. In general, however, it includes continuous supervision of the growth and development of the child; prevention and management of common infections and specific childhood diseases; and promotion of good nutrition. At the present time, it is estimated that less than 10% of the children born each year are immunized against the six common childhood diseases (pertussis, tetanus, diphtheria, measles, tuberculosis and poliomyelitis). It can be assumed that these 10%, at least, also receive appropriate preventive health care in other respects. But in spite of a growing realization of the importance of such care, the large majority of the world's young children come into contact with the health service only when they need curative care.

While the role of the mother and father in the development of the young child is recognized as a crucial one, adequate counselling in this matter is rarely provided to expectant mothers, let alone to fathers. Moreover, health services rarely provide for health education of families. This is mainly due to such factors as pressure of time, inadequate preparation of health workers, and lack of suitable educational materials.

Other relevant services and legislation

The health care of children is not limited to interventions through the health care system; other related social services are closely involved.

Day-care services/facilities: The day-care of children is becoming a pressing issue in some areas because of the growing trend towards work outside the home, or far away from the home environment, for both parents. This also entails a growing need for society to provide support for child-rearing.

In developing countries, there are very few examples of governmental efforts to implement day-care systems. Isolated efforts are made in the private sector; however, they primarily benefit the privileged classes. Nevertheless, in Africa there are examples of community-organized group care of children, involving women's groups or political organizations, in newly developed urban areas and in agricultural areas. Depending upon the sociocultural setting, other approaches are also being developed. They include organized systems of day-care in factories or industrial facilities, neighbourhood centres, cooperative self-help women's groups, and family-based day-care facilities for children of working parents in which older members of the family take part. WHO is currently studying these different approaches, their implications for maternal and child health, their financing, as well as the degree of community participation involved.

School health: While in the past the emphasis was on routine health examinations of schoolchildren, school health now concentrates on motiv-

ating children to develop healthy habits for their lifelong health. In addition, schoolchildren join in learning about health problems of their community as a whole, and in carrying out selected health activities for themselves as well as for other children and their families. Schools can effectively carry out specific activities such as updating of immunization, nutrition education, accident prevention, and screening for hearing and eyesight problems. The training of schoolteachers and other school employees to give health guidance is being increasingly emphasized by organized educational systems. WHO, in collaboration with Member States, is exploring the role of the school in extending health care to the community, and examining the potential role of education and health personnel in preparing children for better family life.

On the other hand, in areas where school attendance is low, and where the social environment is poor, the health needs of out-of-school children may be overlooked. This problem is likely to become more acute since it is estimated that by 1985 the number of children who receive no formal schooling whatsoever will have increased considerably. WHO is, therefore, exploring channels for reaching this group of young people.

Services for adolescents: Adolescents in most of the world are served through normal health service channels, or through special services such as school health services, though the latter do not exist in most areas for this age group. Innovative types of services for adolescents have been developed, mostly in urban centres in industrialized countries. They are usually provided through nongovernmental or voluntary systems of care, and have very limited coverage; they are also geared chiefly to special problem groups, including adolescents with problems related to drug addiction, juvenile delinquency, and teenage pregnancy.

Social legislation: During the past decade many countries, both developed and developing, have enacted legislation that upholds the right of individuals with respect to the availability of necessary services. International labour conventions governing maternity leave, flexible hours so that a mother may breast-feed her child, and the provision of day-care facilities for young children have now been implemented in almost all developed countries and some developing countries. In a few countries in Europe, for example, social legislation adopted in recent years enables mothers in outside employment to stay at home with full or partial pay for a year or more in order to care for her child. Legislation in one European country allows for the mother or father to stay at home for the first eight months of the child's life. Furthermore, legal developments since 1967 reflect a change in attitudes towards abortion and family planning.

Workers' health: Recent studies have shown that occupational conditions for women are often poor, with specific and serious effects on their health, particularly in relation to complications in pregnancy. Several types of industrial pollution have been shown to have deleterious effects on fetal development.

In conclusion, for maternal and child health care to be effective, it must be adapted to the life-style and socio-environmental conditions in each area or country, and planned to meet the specific needs of the populations concerned. The positive examples which are found on either a regional or national scale are convincing enough to indicate that it is possible to provide such care for many populations in the world which are now deprived of such care.

Maternal and child health and primary health care

The past decade has witnessed mounting worldwide concern about the rapidly changing family and population dynamics and their effects on health everywhere. There are still millions of people without access to any kind of health care who are eking out a meagre existence in adverse and unstable socioeconomic and political conditions, including rapid population growth.

The International Conference on Primary Health Care held in Alma-Ata (USSR) provided a forum for all those concerned with this crucial problem (*17*).

At Alma-Ata and in recent World Health Assemblies, the nations of the world have set the target of attaining an acceptable level of health for all by the year 2000, so that all peoples of the world can live socially and economically productive lives. They also endorsed the principles and approaches of primary health care as the key to achieving this goal. Underlying primary health care is the conviction that health and development are closely interrelated.

At the Alma-Ata Conference, primary health care was defined as "essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. It forms an integral part both of the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community."

The crucial importance of maternal and child health care within this approach can hardly be over-emphasized. The basic principles underlying the overall strategies and policies for primary health care are fundamental to the concepts of maternal and child health care: the intersectoral approach; the need for total coverage; the participation of individual families and communities; the maximum use of existing resources such as traditional birth attendants, women's groups and schoolteachers.

As the major and essential action for maternal and child health takes place within the family, the emphasis in the care afforded as part of primary health care must be to support community and family self-reliance, especially regarding the family's responsibilities in child-rearing, childbearing and self-care.

Action now

The knowledge and technology required to reduce greatly the rates of death of mothers and children, alleviate their suffering, and improve the quality of life for all people throughout the world are available now. Countries can set targets which can be measured, and the effectiveness of maternal and child health actions can be monitored through the use of suitable indicators. A large proportion of the major health problems of mothers and children could be prevented through the application of technologies already well-known.

What can be done: some examples

- **Maternal deaths could be brought to within a range of 1-3 per 10 000 births in all parts of the world.** Complications of pregnancy and childbirth could be reduced through: prenatal checks for every woman, to identify those who need extra care; nutritional supplementation (including iron supplementation) when required; attendance during delivery by a person appropriately trained.
- **Births can be spaced and timed, with advantages for maternal and infant health.** The information, and many effective methods, exist to regulate the timing and spacing of pregnancies. These could be made available to all couples at low cost. The means for choice could be within the reach of all.
- **The rates of low-birth-weight babies could be reduced to not more than 10% in all parts of the world.** The third trimester of pregnancy is of particular importance for the growth of the fetus. Alleviating the high-energy consuming tasks of women, increasing the energy intake, and controlling infections could raise birth weights greatly, and contribute to reductions in infant mortality. Families and communities could do much to help and governmental support could be provided, through such measures as maternity leave and child benefits. All members of society must share these responsibilities.
- **Neonatal tetanus could be controlled in all societies.** Immunization of women twice before the birth of the baby is sufficient to prevent neonatal tetanus. This could become the next worldwide success following the eradication of smallpox.
- **Vitamin A and D deficiency diseases could be prevented.** The scientific basis for preventive action has been known for over half a century. If all channels of communication were used to convey the information and if nutritional supplementation were provided where needed, the suffering caused by these deficiencies—the blindness and deformities—could be eliminated. With a concerted effort, this goal could be achieved.

- **Deaths due to diarrhoeal diseases could be reduced significantly.** The immediate application of the oral rehydration treatment could save millions of lives, giving young children a chance to survive the crucial weaning period. The rehydration can be performed within the family, thus greatly facilitating its widespread use.
- **Death and disabilities due to childhood diseases could be avoided.** Systematic immunization against diphtheria, pertussis, tetanus, tuberculosis, measles and poliomyelitis can effectively reduce the incidence of these diseases. Early identification and treatment of acute respiratory infections in the family and the community would significantly reduce mortality.

The Member States of WHO have set the target of immunizing all children of the world by the year 1990, while the United Nations Water Conference (1977) set the goal of safe water supply and sanitation for all by 1990. Exactly what impact these will have on infant mortality is not known. However, it is clear that in order for the impact to be significant they must be accompanied by other essential elements of maternal and child health care, including a substantial improvement in nutrition.

Other components of care are more complex by the very nature of the problems and solutions; they require time for people to absorb information and change behaviour. Some examples follow:

Prevention of accidents. Accidents are of concern to both developed and developing countries. Because they are the dominant cause of death of children over 4 years of age in many countries, a declining rate must now be aimed at. The health care system can give the diagnosis but must convince other sectors of their roles in preventing this "man-made disease".

The promotion of infant and young child nutrition. The promotion of breast-feeding is fundamental to preventing malnutrition in infancy, as is the control of the introduction and use of breast milk substitutes. The use of locally produced, nutritionally and culturally acceptable foods during the weaning period is essential. Knowledge about the dietary needs of children and about the timing of meals and the form (density) of foods can be conveyed to people. Simple growth charts to record the growth of children exist and can be kept by mothers.

Education. Knowledge about health and its determinants and preparation for parenthood should become part of general education, through formal and informal educational programmes, the mass media, etc. Information on the behavioural and psychosocial aspects of child development can help to prevent many mental health problems at later stages. Increased knowledge and information are essential for people to improve their own health. Education of the public in health costs little compared to the high price of ill-health.

Social legislation. The fact that women have a unique role in the creation of a new generation must not lead to the assumption that the whole responsibility should lie with them. There is no reason why women should carry the main burden, as well as pay the price of higher mortality, more ill-health, lesser opportunities in the labour market, or less pay. Men are partners in more than a biological way, and the duties and joy of caring for and being with children surely belong to both men and women. The future generation is the responsibility of society as a whole—men and women, parents or not. It is their duty to create the best possible conditions for the growing generation.

Training strategies for maternal and child health care. Strategies should be oriented to ensure that the training is socially relevant and addresses itself to the three main groups involved: (*a*) families, communities and the public at large; (*b*) workers in various development sectors, including policy-makers and planners; and (*c*) the different categories of health workers at all levels, including primary health workers, health auxiliaries, traditional birth attendants, and health professionals and specialists working at supervisory and referral levels.

Health research. As already noted, certain areas require new knowledge and appropriate technologies. In general, however, to meet the priority needs of maternal and child health, much is already known. In the years to come, the major research efforts will have to be geared to the application of this knowledge, with emphasis on health service research.

In summary, some of the major health problems of mothers and children could be solved "here and now" by the adoption of appropriate measures; others would require more time since changes in attitude and behaviour are called for. The attainment of all the goals enumerated above presupposes several things: a firm political will on the part of governments and supporting social organization; an increased budget for health with an objective and rational allocation for maternal and child health; a health care system that provides support to peripheral levels and the "have nots"; measurement of the impact of the health services on the health problems of the population.

WHO's role in the promotion of maternal and child health care

The Family Health Programme

The maternal and child health activities of WHO are carried out within the Organization's overall programme of family health. They are not only a natural concern of the Organization; they are an obligation under its Constitution, which states that one of WHO's functions is "to promote maternal and child health welfare and to foster the ability to live harmoniously in a changing total environment".

The objectives of that programme are:

- to promote family health, in particular to foster optimal physical growth, the psychosocial development of the child, improved reproductive health, and an enhanced quality of life;
- to support technical cooperation with and among Member States in developing and strengthening the family health component of the overall health system;
- to promote intersectoral development strategies for improving the health and social wellbeing of women, children and the family as a whole.

In pursuit of these objectives, WHO works in close collaboration with the other bodies of the United Nations system, in particular UNICEF, UNFPA, FAO, and UNESCO, and with bilateral agencies, nongovernmental organizations and similar bodies, such as the International Children's Centre, the International Paediatric Association, and the International Planned Parenthood Federation.

As part of the family health programme, the Organization's maternal and child health activities are carried out together with those more specifically concerned with nutrition, health education and human reproduction. They are also closely linked with other programmes such as those dealing with diarrhoeal diseases control, immunization, mental health, and health manpower development.

Through intercountry collaboration in all regions, WHO supports activities to promote more efficient and effective methods for the integration of maternal and child health care in all aspects of health development programmes; increased community participation in maternal and child health/family planning activities; better approaches to multidisciplinary and multisectoral programme development; and the inclusion of traditional practitioners in health delivery systems. The application of research findings, especially on new or adapted maternal and child health/family planning technologies is stressed.

Health services research in maternal and child health/family planning takes the primary health care approach. The collaborative programme on "risk approach" in maternal and child health care, which started in 1974,

may be taken as one example. By using indicators of risk, studies first establish the interrelationships between priority health problems and communities and individuals. This epidemiological knowledge is used to prepare new strategies, which are then tested in "real life" before being proposed for local or national application. The "risk approach" is action-oriented and serves as a tool for change in the health care system. Participation of health administrators, health staff and the community in this type of health services research ensures maximum utilization of the findings.

Training continues to be a major part of the maternal and child health programme, as part of WHO's support to national efforts in strengthening national institutions and self-reliance in health manpower development. The Organization's global and regional training activities in comprehensive maternal and child health/family planning are being oriented to reflect training more appropriate to the health problems and needs of the vast majority of the population. Training takes place in regional and national institutions in developing countries.

The programme of teacher-training in comprehensive maternal and child health includes activities which are tailored to the specific needs of national programmes. The focus in all regions is on health service needs, and priority is given to the training of those involved in health service delivery. Emphasis is placed on activities dealing with the synthesis of knowledge and exchange of information on physical and psychosocial development in childhood and adolescence, including nutritional aspects, for use in the planning and formulation of practical strategies for timely intervention programmes. There are six WHO collaborating centres concerned with teacher-training in four regions.

Local adaptation of the WHO growth chart (*18*) to measure child growth and development is also promoted. The chart is being used as a practical tool in many areas by primary health care workers as well as families. Studies are carried out on the epidemiology and social implications of low birth weight; the results will be utilized for the development of practical intervention strategies both during and before pregnancy in order to reduce the frequency of low birth weight and resulting morbidity and mortality. WHO also is studying the feasibility at the local level of using birth weight as an indicator for assessing maternal health and for predicting the future health of the child.

The WHO collaborative study on breast-feeding, mentioned earlier, carried out in nine countries, has provided valuable knowledge on the patterns of breast-feeding in various socioeconomic groups in different regions of the world. The results of this study are used for the promotion of appropriate infant feeding. The second phase of the WHO collaborative study, dealing with the quality and composition of breast milk, is in process. This programme of breast-feeding is complementary to a research programme in nutrition focusing on the weaning period.

In October 1979 a Joint WHO/UNICEF Meeting on Infant and Young Child Feeding brought together representatives of governments, numerous organizations of the United Nations system, nongovernmental organizations, the infant-food industry and scientists. The objective of this meeting was to discuss and summarize the current state of knowledge concerning appropriate infant and young child nutrition; the social health and environmental factors affecting it; contemporary trends in feeding practices, the factors contributing to them and their implication for action.

The statement and the recommendations formulated by the meeting have been widely circulated and were endorsed by the Thirty-third World Health Assembly; and follow-up activities have been undertaken or are planned in the following areas:

(*a*) the encouragement and support of breast-feeding;
(*b*) the promotion and support of appropriate and timely complementary feeding practices which make use of local food resources;
(*c*) the strengthening of education, training and information on infant and young child feeding;
(*d*) the development of support for improved health and social status of women in relation to infant and young child feeding;
(*e*) the appropriate marketing and distribution of infant formulas and weaning foods, including a code of marketing of infant formulas and other products used as breast milk substitutes.

The new focus of the nutrition activities is the improvement of nutrition and health through action at the community level, and as far as possible with local resources. The major thrust is to develop new knowledge and approaches and to translate them into operational activities within the framework of primary health care. This is done at the local level by national workers and institutions. The Organization is cooperating with countries in four priority areas:

(*a*) extending the use of nutritional surveillance systems;
(*b*) integrating nutritional activities within primary health care;
(*c*) applying measures to control specific nutritional deficiencies;
(*d*) developing national multisectoral food and nutrition policies and programmes within the framework of national development plans, in collaboration with other agencies.

The development of appropriate technology and practical guidelines relating to the management of the complications of pregnancy and childbirth and of specific, prevalent diseases of childhood is also a focus of activity. The findings of the WHO collaborative study on the epidemiology of the hypertensive disorders of pregnancy will be followed through intervention programmes, particularly as part of maternal and child health activities within primary health care.

Since the majority of the world's babies are born in developing countries and delivery takes place at home, a programme of activities has been initiated for the development of appropriate technology for perinatal care to be applied in the home and small rural maternity units.

WHO is collaborating with 94 countries which are expanding their immunization programmes in order to reduce significantly the incidence of the common infectious diseases of childhood. Special efforts are being made to train maternal and child health workers in immunization techniques in order to integrate these preventive measures in existing health services systems.

Since 1978 the Organization has been steadily expanding its activities for the control of diarrhoeal diseases. In the short term, the WHO programme seeks to reduce diarrhoea-related morbidity, mortality and malnutrition in children through the promotion of oral rehydration therapy and improved child care practices, and to develop new tools and techniques for better control through research.

Programmes on the health needs of adolescents are also being developed in interested countries in all regions. In addition, studies on reproductive health of adolescents, patterns of ovulation and menstruation, and use of fertility regulation methods are undertaken in countries in the Western Pacific, Europe and the Americas.

Technical cooperation with and among countries is promoted for the development of intersectoral programmes for children and youth; the enhancement of the health and status of women and their equitable participation in development; and social support measures for the family, including organized systems of day-care in factories or industrial facilities, neighbourhood centres, cooperative self-help women's groups, and family-based day-care facilities for children of working parents in which older members of the family take part.

WHO pursues activities related to women and family health in collaboration with countries and relevant United Nations bodies as part of the United Nations Decade for Women (1975-1985). New approaches to school health are being further developed to promote the integration of appropriate health learning in all aspects of educational programmes, including the participation of school-age children and teachers in health activities. Also, the routine physical examinations in the health programmes of many schools are being discouraged in their present form. WHO continues to collaborate with national agencies and organizations of the United Nations system in the health aspects of programmes for youth, both as beneficiaries and particularly as participants in health and development programmes.

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