

Managerial Process for National Health Development

Information Support to Broad Programming

Guiding Principles followed by Anylanda



The Managerial Process for National Health Development: Guiding Principles for Use in Support of Strategies for Health for All by the Year 2000, *Health for All Series No. 5*, outlined various components that make up this process. The present document provides greater details on the information support process followed by ANYLANDA, a low income developing country and describes the process involved in identifying the kind of information needed, where it was likely to exist and how it was collected, analysed and finally presented to the technical Planning Group and to the political policy makers.

The document is intended for pilot application in a number of countries before being finalized.

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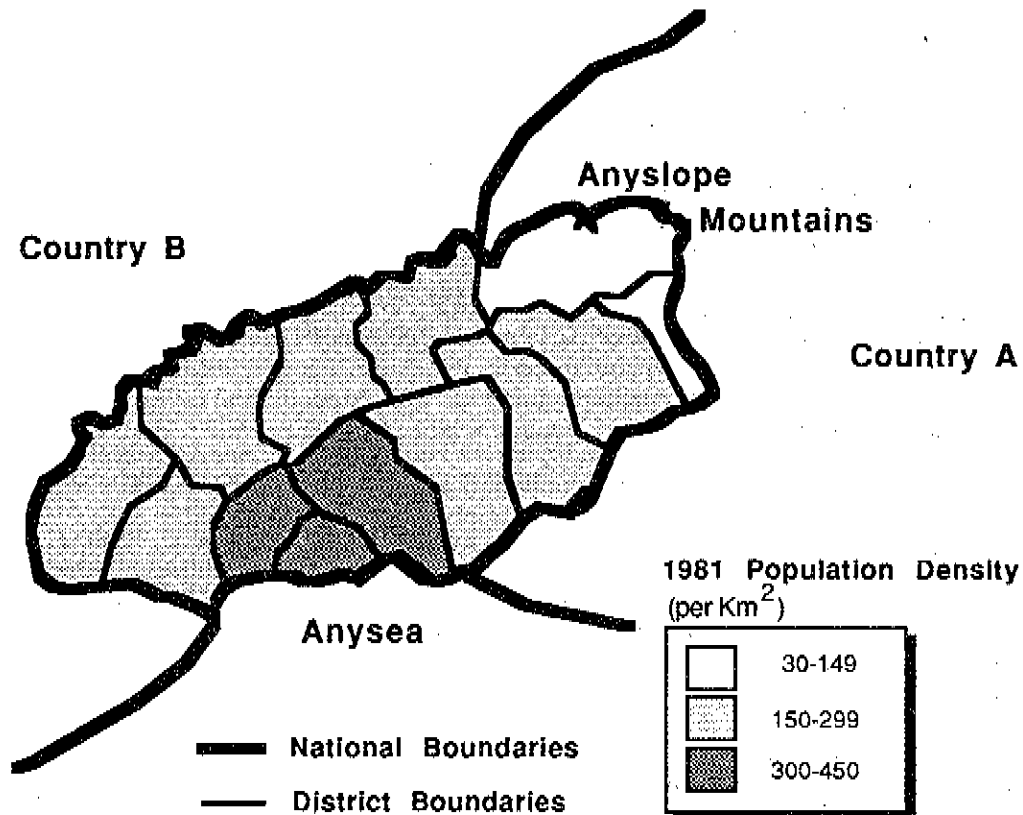
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1 Introduction

Socio-political and Administrative Setting

AnylandA is a low income newly independent country lying on the southwestern slopes of the Anyslope mountains. It has an area of 50 000 km² with an estimated population of 14.9 million in 1986. The country is geophysically divisible into three areas - the mountainous areas in the east, the tropical fertile plains and the coastal areas in the south (Fig. 1). The plains and coastal areas are intersected by a network of rivers. Transportation is mainly by road and, in many areas, is disrupted during the rainy season. The population is not evenly distributed and its density in 1981, according to the 1981 population census, varied from 100 persons per sq. km. in the mountainous areas to 400 in the coastal areas. The population has been growing annually at 3.2 percent during the period 1980-1985. The urban population makes up little more than 10 per cent of the total population but is concentrated in the coastal areas and in the capital city. The literacy rate among the population aged 10 years and above was about 42 percent in 1981 but is increasing steadily with the primary education being made free for children of 6-10 years. At least ten different languages and dialects are spoken in AnylandA but more than 50 percent of the population list Anylang as their mother tongue.

Fig. 1: AnylandA Area: 50 000 km²
 Population (1986 estimated): 14.9 million



AnylandA is one of the poorest countries in the world with a per capita GNP of US\$ 102 in 1985 and an annual GNP growth of 3.0 percent during 1980-1985; annual government expenditure is being supported to the extent of at least 60 percent by the externally financed capital assistance. Agriculture, with most of the output consumed by the producers themselves, accounts for two-thirds of the Gross Domestic Product, employs 93 percent of the labour force, and supplies 80 percent of exports. Industrial production contributes about 10 percent of GDP but 70 percent of the total industrial production comes from small units processing agricultural commodities.

Political instability and a rapid succession of governments marked the period between 1976 and 1980. Since 1981, following a favourable referendum to the Constitution, a democratic system with a three-tier structure varying from the village or town council to the national council has been functioning. The President is elected by the councils and he/she appoints the Prime Minister and the Council of Ministers, who implement and carry out executive functions on the basis of policies determined by the national council. The President is the Chairman of the National Development Council with the Prime Minister as the Chairman of the National Planning Commission. The National Social Services Coordination Council functions under the auspices of the National Development Council and guides health services, youth services, women's services, children's welfare services, handicap services and community services at the national, district and local levels. This National Coordination Council is the vital link between the public and private sectors in respect of all social services including health. It is thus the most important channel for supporting community involvement and participation in development programmes and activities. Administratively, AnylandA has 13 districts but, for development purposes, they are grouped into five regions with a Commissioner and Chief District Officer functioning respectively as the administrative heads of the region and of the district. Many development agencies of the government have regional offices which formulate plans, monitor activities and evaluate the performance. The implementation of public sector development programmes of various ministries and directorates are undertaken by their district organizations. Large projects cut across the districts and are coordinated by the regional offices, where possible, or by the national level, where necessary.

National Health System

The health system at the **national** level consists of the Ministry of Health with its Department of Health Services having various units and divisions, e.g., Nutrition, Health Education, Epidemiology, and Health Laboratories. Also at the national level are national hospitals (tertiary referral level) including the University hospital as well as the Integrated Health Development Project, Family Planning and Maternal and Child Health Project, Malaria Control Programme, Expanded Programme of Immunization (EPI), and the Tuberculosis and Leprosy Control Project. At the **regional** level, there are regional hospitals; regional Directorates of Health Services are also being established to become functional starting 1987. At the **district** level are the district hospitals, district health offices, district family planning/MCH offices, and district malaria and EPI offices. District hospitals provide the secondary level of referral care. At the village or town council levels, there are health centres with EPI/MCH clinics. Finally, at the **peripheral community** level, there are health posts with nurse-midwives and auxiliary health workers who provide, to the community, domiciliary care with emphasis on MCH and family planning, immunization, control of communicable diseases, nutrition surveillance and counselling, education concerning diseases and their control, provision of minor treatment, supply of essential drugs and demonstration and counselling for proper sanitation and use of safe water. They support the work of community health leaders who are volunteers from the communities providing on-the-spot health care and counselling.

The Planning Division of the Ministry of Health coordinates the planning, programming, monitoring and evaluation of all activities in the health sector. A joint Government/WHO Health Council is headed by the Secretary, Ministry of Health, and includes the Director-General of Health Services, Director-General of Traditional Medicine, Chief of Health Planning, Under Secretary of

the National Planning Commission, Dean of the College of Medicine, Under-Secretaries from the Ministry of Education, Agriculture and Rural Development and from the Ministry of Finance and Planning, representatives from the National Medical Association, the National Nursing and Midwifery Federation, the Pharmacy Board, the Federation of Women's Clubs, the National Farmers' Union and from AnylandA Church Health Services, the WHO Programme Coordinator, and representatives of other international agencies as appropriate.

2 Development Policies

National Development Policy and Plan

The **development policy** of AnylandA is aimed at a rapid increase in production and employment and at meeting the basic minimum needs of the people. The objectives of the Sixth Five-Year Development Plan covering the period 1982-1986 had the following objectives:

- to increase production at a higher rate;
- to increase opportunities for productive employment;
- to fulfil the minimum basic needs of the people.

The strategy included measures to increase production, widen the scope of employment opportunities and share the benefits of development among low income and disadvantaged population groups. The Seventh Plan covering the period 1987-1991 has the same objectives and is expected to follow the same strategy. However, investments and efforts are now directed to help fully utilize the infrastructure already created and concentrated on those programmes that are likely to rapidly boost production within a short span of time. Also emphasis is being given to strengthen the foundations of the economy and to increase the level of investment in the creation of essential basic requisites for speeding up the tempo of development in the years to come. To this end, development planning has gradually shifted the emphasis of its investment allocations from public infrastructure to area-based package programmes for agricultural growth and integrated rural development schemes.

An important recent development is the devolution of planning and implementation responsibilities for local development schemes to the rural committees themselves. The Local Government Act of 1982 is being vigorously implemented and the district councils are accorded considerable administrative, supervisory and financial control over various line departments at the district level in matters of plan formulation and project implementation. The Act provides for the formulation of annual and five-year district development plans with active involvement of the village and town councils and technical support from the regional offices.

National Health Policy and Strategy

Following the resolution in 1979 of the World Health Assembly on the Global Strategy for Health for All by the Year 2000, concerned over the unsatisfactory national health situation but recognizing the possibilities and opportunities to improve the health of its citizens significantly, the Government of AnylandA adopted a national policy to achieve Health for All by the Year 2000 through provision of essential care to all the population using the primary health care approach. The National Planning Commission is actively involved in this effort and has set up a HFA/2000 Steering Committee headed by the Chairman of the Planning Commission with the Minister of Health as the Secretary. It has a broad based representation from various Ministries like Agriculture, Education, Transport, Communication, Forestry and Finance and from professional

associations and interest groups. A Core Group under the leadership of the Planning Division of the Ministry of Health was formed to provide technical support to and serve as the Secretariat of this Committee. It was decided in 1984 that this Committee should formulate a long-term strategic plan of action for Health for All that could provide guidance for developing the country's health system.

Managerial Process for National Health Development (MPNHD)

The Committee noted that, even if the broad goal and the key to reaching it could be identified, a managerial process had to be followed in order to formulate and implement the strategy for reaching the goal in a manner that was consistent with the country's own health situation, resources, social and economic conditions and political and administrative mechanisms. This was found specially important in view of the emphasis given by the government to decentralized decision-making and to involving the communities in this function. The Committee was briefed on the ongoing national health improvement activities, on the need to bring these isolated activities around a health development framework and on the managerial process for national health development (MPNHD) as outlined in a WHO document that described different components of the process and their interrelationships as well as the mechanisms required in order to provide continuity in the process.¹ The Committee decided to adapt and apply these guiding principles of the MPNHD to the national health development activities and noted that the **Broad Programming** component of this overall managerial process would be relevant to translate the national health policies, comprising goals, priorities and main directions for reaching priority goals, into a long-term and comprehensive plan of action with time-phased objectives and targets; setting forth decisions for strengthening health system development and the patterns of programme organization and coordination; defining intersectoral and organizational actions to be taken; specifying the roles and characteristics of supporting services and institutions for the delivery of country-wide programmes that reach the entire population; and developing programmes in such a way as to finance the strategies for Health for All, and the delivery of country-wide programmes representing national priorities.² The Committee carried out in 1986 this **Broad Programming** activity for formulating their national HFA strategy.

Decision points and information

The Steering Committee observed that broad programming that could assist in the formulation of national health strategies to give effect to policies for Health for All would involve identification of priority problems, choice of strategies to deal with them and the formulation of a country-wide programme with a timetable for its implementation. This required decisions on specific health problems and population groups deserving priority attention, on objectives in relation to these priorities and on resources to be provided to attain these objectives. It would also involve decisions on community involvement, appropriateness of technology and on intersectoral linkages. The Steering Committee agreed that, to assist in arriving at a decision, a situation analysis was needed but the Committee also noted that any situation analysis would require information which, if not properly identified and selected, could lead to a collection of a mass of data that would make the analysis an end in itself rather than a basis or support for making decisions. It decided that they would agree on a certain number of critical decision points in broad programming and proceed with the identification of relevant information, preferably but not exclusively quantifiable, for national decision-making.

The present document on AnylandA focuses on one of these decision-points, viz. **identification of priority health problems and the population groups deserving priority attention**. This required a situation analysis involving an assessment of the current national policies for socio-economic development and policies relevant to community involvement and intersectoral linkages, the health policies that resulted from these overall development policies and

of the socio-economic, demographic and epidemiological situation as well as the health resources and health services situation.

This document describes the information support process involved in making available relevant information by identifying "the kind of information needed, where it was likely to exist and how it was collected, analysed and finally presented" to the HFA/2000 Steering Committee, for arriving at a decision.

3 Information Support Process

The Core Group, directed to carry out a situation analysis, decided that for information support process, it would consider various aspects of a given decision-point, disaggregate each of these aspects to different information components and then to information elements that could, singly or in combination, describe the situation. For example, to determine health problems and population groups deserving priority attention, they decided to consider the following four aspects:

- **Main Public Health Problems;**
- **Health Resources;**
- **Health Service Coverage;**
- **Health Service Effectiveness**

As regards **main public health problems**, they considered the epidemiological, demographic and socio-economic components or dimensions of the problem and identified relevant information elements for each of these components.

For **health resources**, the information components were health finance, health manpower, health facilities and training institutions. For **health service coverage**, they related to coverages by MCH including immunization services and by environmental improvement activities. For **health service effectiveness**, they related to the effects of different disease control programmes on the priority health problems.

The Core Group made extensive references to *HFA Series No. 4 on Indicators*, in identifying relevant information elements and related indicators.³ It also agreed that the needed information should be elaborated with an assessment of whatever information was readily available and then selectively collect additional information required. No massive data generation activities for the specific purpose of broad programming were to be undertaken, but where necessary, simple sample surveys to provide rough estimates for indicator values that might be missing were resorted to provided they were not subject to seasonal or short-term variations. Precision was of secondary concern as long as the indicator values could be obtained for a recent year and be used to give a rough indication of the current situation, to examine present trends and on the basis of extrapolations of these trends and other predictions, forecast the possible evolution of relevant conditions in the future. As far as possible, efforts were made to extract relevant information from one or more available sources which together could provide an indication of the situation though not precise values. Where estimates were available from the publications and studies of the UN and other international agencies they were verified or reconciled with any data, especially statistical series, which the government, viz. Central Bureau of Statistics, discerned as official data. Only if cleared by the relevant national agencies, were these estimates used for the *broad programming*. Annex 1 gives a sample of the form used by the Core Group in gathering information from various agencies.

The information support process followed by AnylandA consisted of six hierarchically related steps

to make available the information needed for a given decision-point. The first five steps were concerned with:

- Step 1: Information needed and its relevance;**
- Step 2: Information collection and validation;**
- Step 3: Information analysis;**
- Step 4: Information presentation;**
- Step 5: Information Interpretation.**

The sixth step related to the overall **conclusions**. It brought together the findings and their interpretations from different pieces of information and synthesizing them to provide a rational basis for arriving at a decision.

The first five steps in the information support process are described below for each of the four aspects viz. main public health problems, health resources, health service coverage and health service effectiveness. Chapter 4: **Conclusions** highlights selectively and by example, how the different information from each of these aspects have been brought together to assist in arriving at a decision.

Main Public Health Problems

The Core Group considered information describing the following three situations as being relevant for determining the main public health problems:

- **Epidemiological situation**
- **Demographic situation**
- **Socio-economic situation**

It also tried to identify, as examples, a few simple, specific and sensitive indicators such as *infant mortality rate* to describe the epidemiological situation, *population growth rate* for the demographic situation and the *per capita GDP* for the socio-economic situation which singly, or in combination, would provide the type of information needed for decision-making in a given area. For each of the above three components, the Core Group identified the minimum information requirements and where possible corresponding indicators to give a quantified description of them, collected relevant data or values for these indicators from appropriate agencies and/or using efficient and simple procedures, analysed them and presented the information to the users at technical planning and political policy making levels.

Epidemiological situation

The Core Group decided that the specific product that should emerge from an analysis of the epidemiological situation was a *disease statement* expressing, as far as possible in numerical terms, the current magnitude and probable future trends of the diseases and conditions existing or emerging in the country.

Epidemiological situation

Step 1: Information needed and its relevance

The Core Group recognized that the data related to the commonly used yardsticks of mortality, natality and morbidity etc. for determining the health status were either incomplete, unreliable or lacking in the absence of systematic reporting and recording. Decennial censuses and limited special purpose survey results as well as the data from hospitals and possibly health posts from different parts of the country might be the only sources. Given this limitation, the Core Group decided on

the following as the **minimum** required to get an idea of the national picture of disease situation:

- **Infant mortality rate;**
- **Maternal mortality rate;**
- **Life expectancy at birth;**
- **Leading causes of mortality;**
- **Leading causes of morbidity;**
- **Incidence of communicable diseases being under control programmes.**

Infant mortality rate was chosen as the simplest proxy indicator reflecting not only the magnitude of those health problems which are directly responsible for the deaths of infants, such as diarrhoeal and respiratory infections and malnutrition, along with other specific infectious diseases and perinatal conditions but also the level of health of mothers, the level of antenatal and postnatal care of the mother and infant, family planning policy, the environmental health situation, and in general, the socio-economic development of a society.⁴ In view of the concern over the unreliability in the recording of the ages at death particularly among the children, **child mortality rate** was excluded from consideration. **Maternal mortality rate** was included as an indicator of the risk to mothers during pregnancy and childbirth as it is influenced by general socio-economic conditions, unsatisfactory health conditions preceding pregnancy, complications of pregnancy and childbirth and by availability and utilization of health care facilities for prenatal and obstetric care. **Life expectancy at birth** as a positive health indicator of long term survival and a good and general indicator of the level of living was added on. It was noted that, for the country concerned, this was influenced significantly by the infant mortality.

Leading causes of mortality and morbidity were taken to get an idea of the public health importance of particular diseases and to initiate or strengthen the preventive and curative measures where feasible. Since a number of disease control programmes were in operation for a long time, **incidence of communicable diseases** which were being controlled by the Ministry of Health through specific disease control programmes was included as an indicator to provide an insight on the effectiveness of these programmes. The Core Group used *HFA Series No. 4 on Indicators* extensively as a reference in assessing the usefulness of these indicators in determining the priority health problems.⁵

Epidemiological situation

Step 2: Information collection and validation

Infant mortality rate (IMR)

In the absence of a good vital registration system, reliable routine data were not available.

Based on 1981 Population Census, the **Central Bureau of Statistics (CBS)** provided the national estimate for IMR for 1981 but with no breakdown by geographical areas or population groups. A community based nutrition project of the Ministry of Health carried out a survey in 1985 and provided estimated IMR by population groups for 1985.

Since the Core Group wanted this data by population groups the CBS was approached to assess their validity. Following CBS clearance, it was decided to use the survey data for analysis.

Information Element 1:

Infant mortality rate (IMR)

by: whole country for: 1981 and 1985

Maternal mortality rate (MMR)

Extensive search and discussions led to the conclusion that no reliable data were available for this. The latest available estimate was based on a study carried out in 1984 by the Ministry of Health when the value of MMR was 8.5 per thousand live births.

The Core Group agreed that some indication should be available about the geographical variations in maternal deaths so that problem areas and, if possible, population groups could be identified. Recognizing their limitations particularly as regards the accuracy, completeness and frankness in the certification of the causes of death, it decided to obtain data on those maternal deaths that occurred in 1985 among hospital inpatients and among those under MCH care provided by the health posts. Data on maternal deaths were available for 1985 and the data by the place of residence were also available for those maternal deaths that occurred in the hospitals. Using village health leaders, maternal deaths among those under MCH care were also obtained. The data were grouped by geographic areas and then by regions.

Information Element 2:

Maternal mortality rate (MMR)

by: geographic area, and by regions
for: 1985

Life expectancy at birth

Based on the 1981 population census, the **Central Bureau of Statistics** provided the national estimate for 1981 by sex. No breakdown by geographical areas or population groups was available.

Since basic data and tabulations were available with the CBS, the Ministry of Health assigned a staff to compute these values by population groups following the procedures outlined in the *HFA Series No. 4 on Indicators*.⁶

Information Element 3:

Life expectancy at birth

by: sex and population groups
for: 1981

Leading causes of mortality

Since no national morbidity and mortality statistics existed, the Core Group decided to start with whatever data were available from hospitals. It noted that only 10 hospitals with 350 beds out of a total of 24 hospitals with 925 beds regularly sent their returns to the Ministry at the central level. These reporting hospitals covered a number of hospitals from each region and included the 66 hospitals under the Ministry of Health. Though the representativeness of data could not be verified on the basis of the available information, it was felt that some tentative conclusions could still be distilled. Since the disease picture derived from these data would necessarily be biased, the Core Group decided to supplement these data by

- grouping the hospitals by the five regions into which the country was divided for administrative purposes and studying the disease pattern from the reports/returns received from them and by hospital-size in terms of the bed-capacity as an indicator of the provision of specialized care, and
- carrying out a survey of a selected number of households in the country.

The Group selected randomly two hospitals and two health posts from each region and elicited information from those attending the ambulatory care services at these units during a given week about any deaths that might have occurred in their households during 1986. Hospitals in the capital district were excluded from this survey. Only those households where deaths were stated to have occurred during 1986 were visited. The Core Group formed, for the purpose, five teams with two paramedical personnel each to visit the selected households in these five regions to obtain information about deaths, such as age at death and cause of death using lay-reporting techniques.⁷ (see section *Leading causes of morbidity* below)

Information on leading causes of mortality were thus obtained:

- from hospital inpatients (for 25 reporting hospitals) for 1981 and for 1986
- from rapid survey of households of selected ambulatory care attendances in two hospitals and two health posts from each region for 1986.

The above information had been cross-checked and found to be reasonably consistent. The leading causes among hospital inpatients were related, where possible, to those among ambulatory care attendances in the same hospitals and the findings were judged to be consistent and meaningful for use in the decision-making process.

Information Element 4:

Leading causes of mortality

by: regions
for: 1986

Leading causes of morbidity

The Core Group realized that any description of health in terms of mortality only would be misleading, and in the context of the **Health for All** goal, the contents of essential health care to all people would be determined by the burden and pattern of ill-health in the country. It felt that assessing morbidity rates through epidemiological surveys or getting an indication of the relevant differential magnitudes of disease incidence through health systems surveillance was either not feasible or too complex for a resource starved country like AnylandA.⁸ Since morbidity data even from the hospitals were not available the Core Group carried out a **simple, rapid but reliable** morbidity survey in 1986 of the ambulatory care attendances at the hospitals and health posts. Excluding the general and university hospital in the capital of AnylandA, two hospitals and two health posts were selected from each of the five regions. These health institutions and units were the same as those used for the mortality survey. The same team of two paramedical personnel selected for the mortality survey carried out this morbidity survey by interviewing, using a **standard questionnaire**, the ambulatory care attendances over a one week period, at the selected units for the signs and symptoms presented and their duration. For the hospitals and for the health units where the doctors were available, the clinical diagnosis of these attendances were also recorded. As stated earlier this survey and the one related to mortality were combined to form a single morbidity and mortality survey and the whole operation including compilation was completed in about six weeks. This yielded the estimates on leading causes of morbidity for 1986/87.

The Core Group assigned a medical officer to assess the consistencies in the findings and it was found that they were consistent, given the socio-economic characteristics of the region, presented symptoms and their duration.

Information Element 5:

Leading causes of morbidity

by: whole country - regions
for: 1986

Incidence of communicable diseases being controlled

Data were also obtained from various *vertical* disease control projects and programmes. These projects and programmes undertook periodic surveys and collected routine data but were not forwarding them to the Division of Epidemiology and Statistics. The Core Group briefed the Directors of the Malaria Control Programme, Tuberculosis Control Programme, Diarrhoeal Diseases Control Programme and of the Maternal and Child Health Division about the broad programming activity and the information requirements for the purpose. The Division of Epidemiology and Statistics was given the responsibility to collect relevant data from these programmes. Data were collected from the following:

Malaria Control Programme

Information Element 6:

Population at malaria risk

by: whole country
for: 1980 to 1985

Information Element 7:

Annual parasitic infection

by: whole country - total and excluding imported cases
for: 1980 to 1985

Tuberculosis Control Programme

Information Element 8:

New (bacteriological) case detection

by: whole country
for: 1980 to 1985

Information Element 9:

Number of registered patients under treatment

by: regions
for: 1980 to 1985

Diarrhoeal Diseases Control Programme

Information Element 10:

Total number of diarrhoeal cases reported per month

by: whole country

for: 1980 to 1985

Concern was expressed by this programme director on the completeness of coverage. Following a special study carried out in 1985, it was noted that the number of cases occurring in the areas served by the health posts chosen to represent those functioning in different regions in the country were actually three times the number of those reported. This study also provided data on the age of the cases and of deaths. Additional data obtained were thus

Information Element 11:

Number of diarrhoeal cases and deaths

by: age and region (based on location of chosen health post)

for: 1984 and 1985

Maternal and Child Health Division

This division was also responsible for the activities under the Expanded Programme on Immunization which were carried out as an integral part of the MCH programme. This division had their own routine reporting system from where the information on the following were obtained.

Information Element 12:

Incidence of immunizable diseases, viz. number of reported cases of Diphtheria, Pertussis, Tetanus, Poliomyelitis, Tuberculosis and Measles

by: region (based on location of health posts) and age

for: 1980 to 1985

Apart from the above data collected routinely by the MCH Division, it undertook, in 1985, a coverage evaluation survey using the cluster sampling technique to get a good estimate of coverage of the eligible children by immunization services.⁹ The survey was also used to obtain some idea about infant deaths due to the above diseases following a detailed questioning of informants and using the *lay reporting* technique. This yielded data on

Information Element 13:

Total number of live births

by: whole country - sex

for: 1984 and 1985

Information Element 14:

Infant deaths due to immunizable diseases

by: whole country - sex

for: 1984 and 1985

Based on the routine monthly reports received by the MCH division on MCH services data were also made available on

Information Element 15:

Percentage of live born babies with birth weight less than 2 500 g among those delivered by government nurse-midwives.

by: regions (based on reports of health posts)
for: 1984 and 1985

It was expected that even these data would provide an indication of the distribution and trend of malnutrition in the country.

Epidemiological situation

Step 3: Information analysis

The first step in the analysis of data was the compilation and organization of data to bring out variations among population groups or geographical areas and trends over time. In respect of those indicators for which data were not available for more than a year, the values were compared with the targets implied in the HFA global and regional indicators. As regards the leading causes of mortality and morbidity, the Core Group decided to consider only those leading conditions (excluding ill-defined signs and symptoms) that together account for about 70% of the total. Proportional mortality was computed using data related to hospital inpatients, outpatients and to those attending the health posts in each of the five regions using the procedure outlined in the *HFA Series No. 4 on Indicators*.¹⁰ For each of these categories, the percentage values corresponding to each cause were ranked and the leading ones accounting for a total of about 70% were selected for each of the categories. There was considerable overlap and it was decided to group them into a meaningful few. Though cause detailed groups differed for hospitals and health posts, an attempt was made to relate them where feasible and relevant. For diarrhoeal diseases, data on cases and deaths among those aged under 5 years were separated and related to the total number of children under 5 years to obtain an overall rough estimate of incidence and mortality rates respectively. (See Information Element 11, page 11).¹¹ Similarly for the six immunizable diseases, the number of reported cases was divided by the eligible population viz. children less than one year to get a rough estimate of the incidence rates. Survey data were used to estimate the infant mortality rate due to immunizable diseases and to compute the proportion of infant deaths due to immunizable diseases to all infant deaths.

The outcome of this step was the identification of diseases, particularly infectious and parasitic diseases, most of which could be prevented, and diseases of the respiratory system as the major health problem. They were generally widespread in the regions resulting in an overall low life expectancy and a high infant mortality.

Epidemiological situation

Step 4: Information presentation

Most of the data were tabulated in a standard format as given in Table 1. As regards the leading causes of mortality, the Core Group decided to present the data as a pie chart for the overall value (Fig. 2), as bar diagrams for regional values to bring out differentials (Fig. 3).

Table 1: Epidemiological situation by population groups, AnylandA - latest available data

Information element	Population group, geographic area, or region	Value	Reference year	Global or regional target
1. Infant mortality rate (per 1 000 live births)				
	Total	152	1985	50
	Population Group A	300	1985	50
	Population Group B	153	1985	50
	Population Group C	102	1985	50
2. Maternal mortality rate (per 1000 live births)				
	Total	8.5	1984	3
3. Life expectancy at birth (years)				
	Total	45	1981	60
	Male	47.5	1981	60
	Female	44.5	1981	60
etc...				

Fig. 2: Percent distribution of deaths by disease groups, AnylandA, 1986

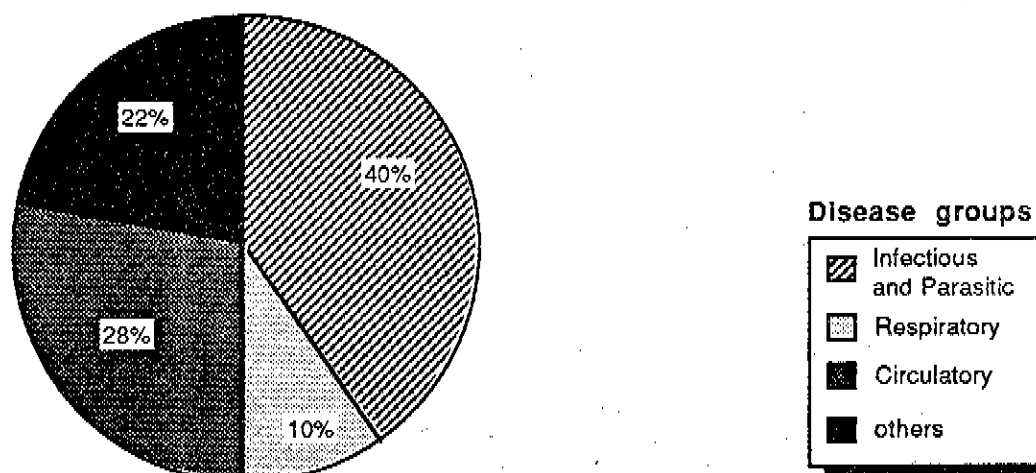
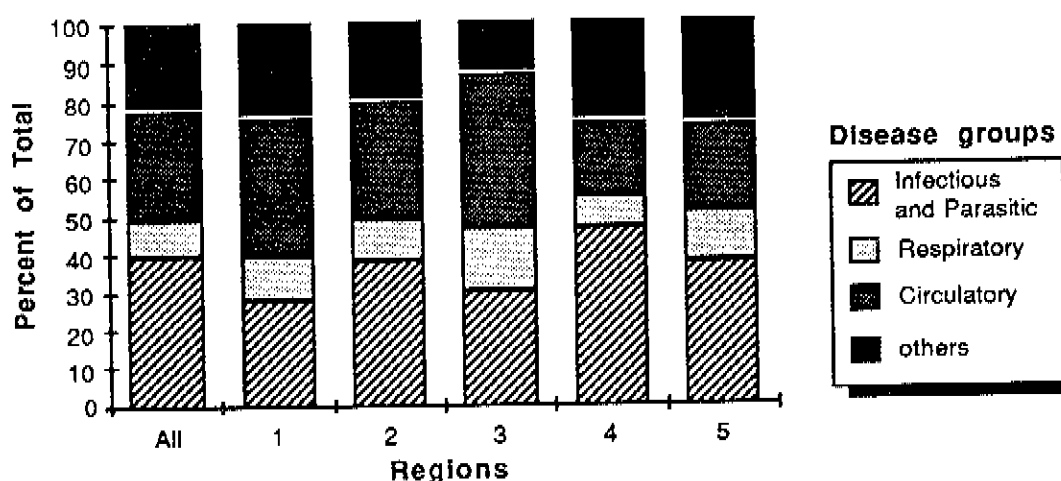


Fig. 3: Percent distribution of deaths by disease groups in each region, AnylandA, 1986



Epidemiological situation

Step 5: Information Interpretation

Infant mortality was higher at 150 per 1 000 live births with population group A living mostly in the mountain areas having the highest rate of 300. Maternal mortality was also higher at 8.5 per thousand live-births. The data on maternal deaths among hospital inpatients and among those under MCH care provided by health posts showed that this rate was higher among those in mountain areas and in population group B living in plains and coastal areas. The data also brought out the positive relationship between higher parity and higher infant mortality amongst these two population groups. The Core Group noted that the leading cause of hospital morbidity was complications of pregnancy, childbirth and the puerperium. They also noted that about 40% of infant deaths was due to immunizable diseases - and that at least 17% of hospital deaths was due to *certain causes of perinatal morbidity*. At least 80% of deliveries taking place in the hospitals had never been under MCH care though their localities were in the same as those of the health posts. Also about 15% of babies delivered by the government nurse-midwives had a birth weight below 2 500 g.

The Core Group also noted that there had been no major shifts in the causes of mortality (among hospital inpatients) between 1978 and 1981 and that, except for coastal areas, the patterns of mortality were similar in the other four regions; conditions originating in the perinatal period and infectious and parasitic diseases most of which could be prevented appeared to be the major health problems. Malaria continued to be a serious problem in the plains while tuberculosis and diarrhoeal diseases were uniformly distributed all over the country. During monsoons when rivers get flooded, gastro-enteritis became rampant particularly in the plains and coastal areas.

The Core Group surmised that the major health problems related to

- pregnant women and infants, and
- infectious and parasitic diseases preventable through immunization and/or improvement of the environment, e.g., water supply and sanitation.

Demographic situation

The Core Group agreed that the specific outcome from this step should be a description of population in terms of its composition and how it was changing, where people were living, how fast the population had been growing and how the population was likely to be distributed in future years.

*Demographic situation***Step 1: Information needed and its relevance**

The Core Group noted that population censuses had been undertaken in the country in 1961, 1971 and 1981 and that reasonably reliable data could be obtained for population. It identified the following as the minimum requirement for a quantified description of the population:

- Population size and its spatial distribution
- Age and sex structure of the population
- Urbanization
- Population trends and growth rate

Population size and its distribution among various regions or among different population groups would be used to assess the magnitude of the problems and their variations within the country. Their values would also be used as denominators in computing various rates such as overall mortality and morbidity. They would also assist in identifying over-populated areas in terms of population density that could be relevant for the location and development of health infrastructure and in general for the organization of health care delivery.

The Core Group was concerned over the global trend towards the ageing of the population and thus decided on an analysis of information on changes, if any, in the **age structure of the population**. It would also assist in identifying the kind(s) of health care services that should be developed and/or given priority and for formulating plans for the purpose. This was also needed for computing dependency ratios.

Given the developmental activities in the country, the Core Group chose **urbanization** as a measure of the movement of population from rural to urban areas; urban areas being defined in terms of population size of 20 000 and above. This would be needed to develop the kind of services geared to the health needs of the population in urban areas, such as urban primary health care. It would also help in providing a perspective for the future orientation and strengthening of the health care services and particularly for the development of health manpower resources.

Population trends and growth rates would be used to examine the growth of the population in the past and in the future and hence their implications to health strategy, particularly as regards the direction the health systems development should take and the associated requirements for health resources.

*Demographic situation***Step 2: Information collection and validation**

The Central Bureau of Statistics (CBS) was the agency responsible for population censuses and demographic statistics in the country. It worked closely with the National Commission on Population (NCP) and provided statistical support in data collection, processing and analysis for population policy formulation and implementation. The Bureau carried out a population census in 1981 and had made population projections for the next 50 years. The Core Group decided to obtain the needed data from the Central Bureau of Statistics. Since the Bureau had no formal *publications* programme, extraction of relevant data from the official publications was not possible. Data had to be obtained from the original sources or from internal working documents of the Bureau. The Core Group agreed that the Division of Epidemiology and Statistics should take the responsibility and assign appropriate staff for extracting relevant data from the internal documents of the Bureau. The following data were thus obtained:

Information Element 16:

<p>Total number of persons in the country by: regions for: 1961, 1971 and 1981 to 1985 Also population projections for 1991-2031 at ten year intervals</p>
--

Information Element 17:

Percentage distribution of population

by: age and sex groups
for: 1971 to 1981

Information Element 18:

Percentage distribution of population

by: urban and rural areas
for: 1971 to 2031

Information Element 19:

Population size and growth rate

by: districts
for: 1961 to 1971; 1971 to 1981

The above data were reviewed by the National Commission on Population and had been used in their official publication *National Population Strategy*. The data had been scrutinized and validated by the Commission and hence were accepted by the Core Group.

Demographic situation

Step 3: Information analysis

The data were compiled and the patterns of distribution of population by region, by age and by urban/rural areas were studied. As regards age, the pattern was also studied in relation to sex for the age group 15-44 years.

Changes over time in the patterns of distribution were studied as well as the trends in the overall population of the country. The outcome of this phase had been the recognition that the population was growing fast, people were moving from mountainous and hilly regions to the plains, the population growth in urban areas was not significantly different from the overall growth and that the female population in the reproduction age group of 15-44 years was growing relatively fast. The Core Group recognized its implications for future increases in population growth and their impact on the government's efforts in alleviating poverty and fulfilling the basic needs.

Demographic situation

Step 4: Information presentation

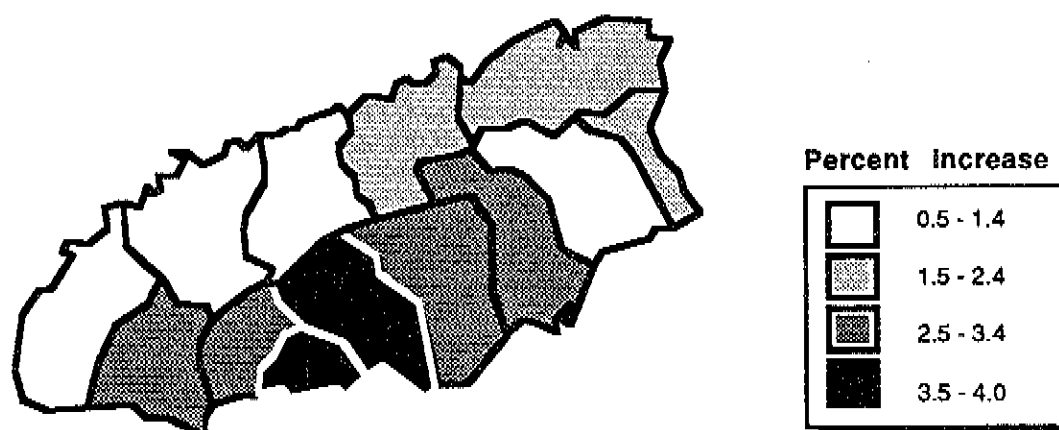
Most of the data were presented in tabular form, but to bring out differential population changes, the presentation was made as in Fig. 4.

Demographic situation

Step 5: Information interpretation

Population had been increasing fast with an annual growth rate of 3.2 percent. Though population control measures had been introduced, they have not been very effective. During the next 20 years, the proportion of children under 15 would increase from the present 42% to 45% if there would be no fertility drop. The proportion of population living in rural areas was about 90% in 1981 and population movement to urban areas had been slow.

Fig. 4: Annual percentage increase in population by districts, AnylandA, 1971-1981



The Core Group also noted that

- no major development programme that could accelerate the movement of population from mountain areas to plains and coastal areas was planned, and
- the female population in the reproductive age of 15-44 years would be growing and would influence the magnitude of problems of pregnant women and infants as outlined under **Epidemiological situation.**

Socio-economic situation

The specific product expected from this step was a concise description of the current level and expected trend of selected social and economic conditions that would influence or determine and thus have close links to the health conditions. In view of the complexity in interrelationships among socio-economic and health factors, the Core Group decided to limit the analysis to those expected to change the most during the coming years.

Socio-economic situation

Step 1: Information needed and relevance

The Core Group decided on the following as the minimum information relevant for the purpose:

- **Per capita GDP and income distribution**
- **GNP and its growth rate**
- **Adult literacy rate**
- **Food consumption**
- **Housing, particularly water supply and sanitation**

The size of the national economy is usually expressed in terms of one of the national accounting aggregates such as the **gross domestic product (GDP)** or **gross national product (GNP)**. GDP measures the total final output of a country's economy - that is, all goods produced and services rendered within its territory by residents and non-residents - without regard to its allocation among domestic and foreign claims. Its value is calculated before deductions are made for depreciation and other capital consumption allowances. Gross national product (GNP) is the measure of total domestic and foreign output claimed by residents of a country. The difference between the GDP and the GNP is the *net factor income from abroad* which is defined as the

income received from abroad by residents as compensation for factor services rendered, less similar payments made to non-residents who contributed to the domestic economy. Dividing these gross GDP or GNP values by the corresponding mid-year estimated population, gives the per capita values. The Core Group preferred to use **per capita GDP at current market prices** to reflect the average income level of the population since GDP measures the total output produced within the national territory and the net factor income from abroad had not been a significant part of the national economy. This was also used to serve as a background variable since, in practice, many health variables seemed correlated with this general measure of human welfare. To supplement this gross average, some measure to reflect disparities in income was also needed. The Core Group was reminded of a study on regional income carried out in 1984. On enquiry, it was learned that the Centre for Economic Development and Administration did carry out a study in collaboration with the United Nations Industrial Development Organization (UNIDO) on regional development and that they had estimates of per capita income based on the *flow-of-product* approach for each of the five regions.¹² The Core Group then decided that the range of per capita income over the five regions could be used as a proxy measure of **income distribution**.

Gross National Product (GNP) and its growth rate were chosen to reflect the size and growth of the national economy from which the share of health (however defined) must be drawn. Gross national product was preferred to gross domestic product since the net factor income from abroad has been increasing over the years. The country was also receiving a large amount of foreign aid from various multilateral and bilateral agencies.

Literacy as a basis for an elementary understanding of nutritional and health needs and of how to prevent or control common health problems was considered relevant. It is also one of the three indicators used by the World Bank in computing the Physical Quality of Life Index (PQLI).¹³

The Core Group preferred female adult literacy rate as the appropriate indicator because of the negative correlation between high female literacy rates and high infant mortality rates reported in a health care study but agreed to use adult literacy rate for both sexes as an alternative, should data not be available on the former."

Food consumption was chosen because of its influence on health status, particularly for low income groups. Since no single satisfactory indicator was available, **per capita food availability** was chosen as the best available one.

Adequacy of housing was considered relevant and the proportion of households for which the number of persons per room falls below some national standard, such as two persons per room, was felt to be an appropriate indicator. The Core Group felt that, though **water supply and sanitation** was not within the purview of the Ministry of Health, the standard of accommodation in terms of the **of safe water supply and adequate sanitation facilities**, would be more appropriate and decided to use the percentage of population having access to these facilities as indicators.

The Core Group noted that information for the social and economic indicators had to be obtained from sources other than the health sector. The Central Bureau of Statistics had data on some of the indicators but they were not up-to-date. It was agreed to contact relevant national agencies directly for obtaining the data and to scrutinize them in collaboration with the Central Bureau of Statistics.

Socio-economic situation

Step 2: Information collection and validation

The National Planning Commission, particularly their Centre for Economic Development and Administration, provided data on the following:

Information Element 20:

Per capita Gross Domestic Product (GDP) in current prices

**by: whole country
for: 1975 to 1985**

Information Element 21:

Per capita income

by: regions
for: 1984

Information Element 22:

Gross National Product (GNP) and its growth rate in constant prices

by: whole country - total economy
for: 1975 to 1985

Both the National Planning Commission and the Central Bureau of Statistics confirmed the validity of these data.

Based on the 1971 and 1981 population censuses, the Central Bureau of Statistics provided data on adult literacy rate by sex for 1971 and 1981. The Ministry of Education, particularly the National Centre for Educational Planning and Human Resources Development, was contacted to ascertain the validity of these data. Apart from confirming their validity, they referred the Core Group to a study, carried out in 1983, by the National Centre. This study further analysed the 1981 population census data and yielded regional values for adult literacy. Thus data on the following were available:

Information Element 23:

Adult literacy rate

by: sex and region
for: 1971 (for sex only) and 1981 (for sex and region)

While the Central Bureau of Statistics provided data on per capita food availability, discussions with the Ministry of Agriculture brought out the findings of a National Household Survey on Food Consumption carried out in 1985. The data available were:

Information Element 24:

Per capita food availability

by: whole country
for: 1975 to 1985

Information Element 25:

Per capita calorie intake per day

by: regions
for: 1985

The Department of Drinking Water and Sewage was approached for information about access to those facilities. Based on the information they collected in the context of the International Drinking Water Supply and Sanitation Decade, the following was extracted from the Water Decade Report, 1986.

Information Element 26:

Percentage of population served by safe water within 15 minutes walking distance

by: whole country - urban and rural areas, and by regions
for: 1980 and 1984

Information Element 27:

Percentage of population with sanitary facilities in home/immediate vicinity

by: whole country - urban and rural areas, and by regions
for: 1980 and 1984

Socio-economic situation

Step 3: Information analysis

Data collected were organized in a form meaningful for analysis. Values of the indicators were studied not only over time or regions but also in relation to the corresponding values of other indicators. The range of values over the regions, for per capita income, adult literacy rate, per capita caloric intake per day and for percentage of population served by safe water within 15 minutes walking distance and percentage of population with sanitary facilities in home/immediate vicinity were computed where relevant data were available. To study the relative growth in population, GNP and in per capita GNP, index numbers were computed using 1979 as the base year.

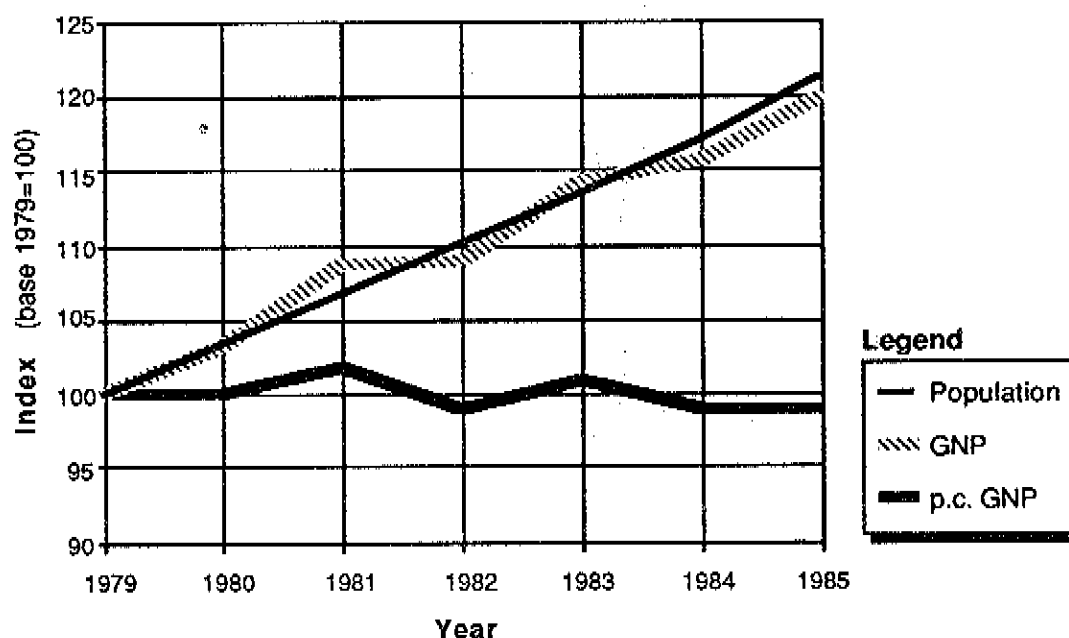
Socio-economic situation

Step 4: Information presentation

Most of the data were presented in a tabular form. However, to bring out disparities in relationships between different indicator values the Core Group preferred to use graphs and maps for presentation. For example, population size, GNP and per capita GNP were presented as in Fig. 5 which brought out the deterioration in the level of per capita GNP over the years.

Also the Core Group used maps to present the distribution of population by adult literacy rate for both sexes and for females only (Fig. 6) with a view to identify areas with a relatively high female literate population for the purpose of organizing health training programmes.

Fig. 5: Growth of population, GNP and of per capita GNP, AnylandA, 1979-1985



Socio-economic situation

Step 5: Information Interpretation

The Core Group noted that, given the low per capita GDP of about US\$ 102, there had been little economic development with population growth of 3.2% neutralizing the economic growth of about 3%. Agriculture would continue to remain a dominant sector in the foreseeable future but the National Planning Commission projected a substantially higher growth rate for the agricultural sector during 1985-1990, given that the implementation strategy during this period would be through a better utilization of existing infrastructure and a judicious use of external financial assistance for accelerating agricultural production. It was also recognized that the country would have to depend on external financing for further development. Access to safe water and sanitation facilities was low but was improving more in urban areas in the plains and coastal areas rather than in the rural mountainous areas. The adult literacy rate for females was low and per capita calorie intake per day was the lowest in mountain districts. They noted, however, the anticipated increase in literacy rate among females due to primary education being made free for all children, and a possible improvement in the per capita calorie intake per day in view of the expected acceleration in agricultural production.

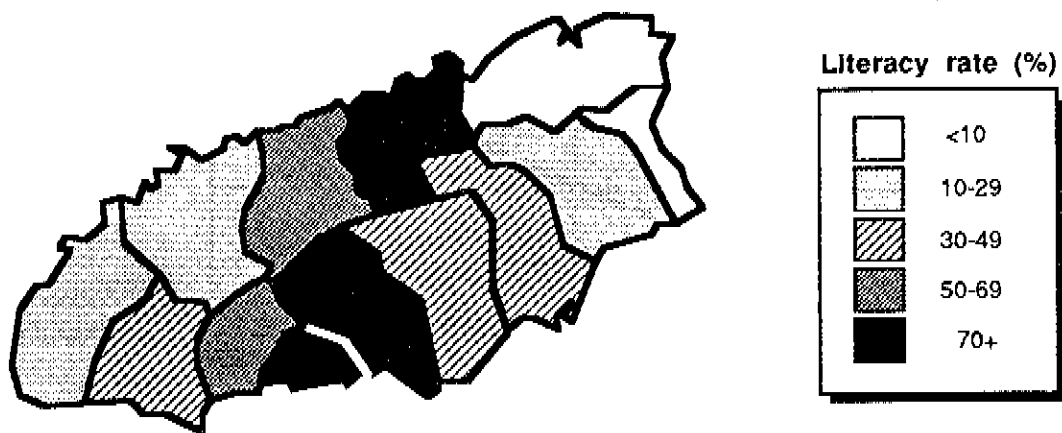
The Core Group was not optimistic about any additional resources allocated for social sectors except possibly for education.

The Group decided to take note of the following:

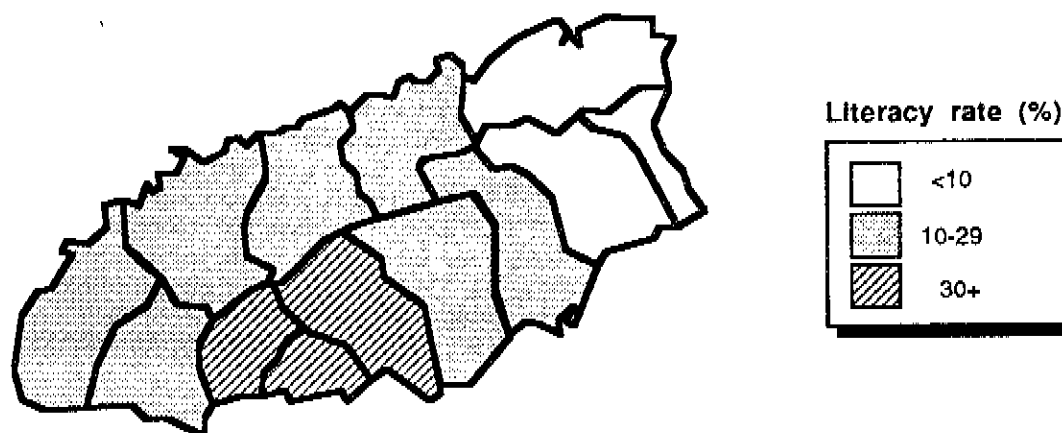
- no additional resources could be expected for the health sector;
- female literacy rate and calorie intake though low at present would be increasing all over the country;
- low access rate for water supply and sanitation facilities.

Fig. 6: Adult literacy rate, AnylandA, 1981

- Both sexes (aged 10 years and above)



- Females only (aged 10 years and above)



Health Resources

The Core Group decided that information describing the current and future health resource situation could be categorized into the following four components:

- Health finances;
- Health manpower;
- Health facilities;
- Manpower sources - training institutions.

For each of the above four components, minimum information requirements were identified by the Core Group and where feasible, corresponding indicators to give a factual description of them were specified. Relevant data or values for these indicators from appropriate agencies were collected.

The specific product expected from an analysis of health resources was an indication of the trend over a period of years and of some boundaries for the potential growth in these resources. It was noted that per capita GDP and growth of GNP over the years would supplement this information (see Section on Socio-economic situation, page 17).

Health finances

The Core Group made extensive reference to the WHO publication on the financing of the health sector particularly as regards the types of policy options they would consider to decide on the relevant information needs.¹⁵

Health finances

Step 1: Information needed and relevance

The Core Group recognized that national agencies other than the Ministry of Health had been providing health care and that people had been spending their own resources as well for health care. Though the ideal indicator would be *per capita total health expenditure* and *percent GNP spent on health*, the Group noted that data were not available for these indicators. They requested the Institute of Public Health to undertake a study on the basis of a Contractual Technical Services Agreement. For immediate use, the Core Group decided to use information available on the **total government budget, allocation to the health sector and on the total health expenditure**. Since the health budget and expenditure of national agencies other than the Ministry of Health were not separated from those of other activities, the Core Group decided also to confine their attention to the budget allocation and expenditure of the Ministry of Health. It was felt that the **percentage of the health budget of the Ministry of Health to the total government budget** could be an indicator of the government's commitment to its statements of intents and that the **actual health expenditure** when related to the budget would reflect the absorptive capacity of the government to implement its budget.

A considerable part of the development activities seemed to be supported by foreign aid from multilateral and bilateral agencies while domestic resources were used mainly to support regular expenditure. These external resources were tied to specific developmental, particularly infrastructure construction, projects. To study the pattern of expenditure, it was decided to divide the total expenditure and health expenditure to regular or recurrent and development components; the latter was further divided to foreign aid and government inputs.

Health finances

Step 2: Information collection and validation

The Core Group noted that the Director of Financial Affairs of the Ministry of Health was not associated with the Core Group and decided to request for his participation in the Broad Programming activities. The Core Group briefed the Director of Financial Affairs and assigned to him the responsibility for obtaining relevant financial data. The Division of Epidemiology and

Statistics was asked to collaborate closely with the Financial Affairs Division of the Ministry of Health and support them in gathering relevant data. The Core Group noted that the financial years of AnylandA started from April of a given year and ended in March of the following year.

From its own sources, the Ministry of Health obtained data on

Information Element 28:

Total government budget and expenditure

by: whole country - regular or recurrent and development activities

for: 1980/81 to 1985/86

Information Element 29:

Government health budget and expenditure

by: whole country - regular or recurrent and development activities

for: 1980/81 to 1985/86

From the Research Department of the Central Office of the National Reserve Bank, the Core Group obtained data on

Information Element 30:

External resources - total and for the health sector (in US\$)

by: whole country - agencies involved and specific development activities

for: 1980/81 to 1984/85 and estimates for 1985/86 and 1986/87

Health finances

Step 3: Information Analysis

Based on the data obtained, the Core Group computed separately for regular and development components, the percentages of total health budget to the total budget and those of health expenditure to the health budget. It also computed the rate of growth of the total government budget, the total health budget and health expenditure (regular) for 1982/83 to 1985/86. The proportion of development budget to total budget, external funds to total budget and external funds to development budget were also calculated. In the absence of data on the total resources, including private expenditure, used in health care services, it was not possible to compute *percent GNP spent on health*. The trend in the health budget over the period 1980/81 to 1985/86 was studied by relating the health budget to the total government budget and to the population respectively. The Core Group wanted but could not derive health expenditure for urban and rural areas or for different population groups so that they could relate the values to health status indicators and study the disparities. Though raw data on health expenditure by regions were available, the Core Group decided, in view of the difficulties involved in analysing the health expenditure data, to approach the Institute of Public Health to deal with this aspect.

Health finances

Step 4: Information presentation

The Core Group had all the data presented in a tabular form but decided to present the total government budget, development allocation and foreign aid component (Fig. 7a) as well as the health budget, development allocation in health and foreign aid component for health activities (Fig. 7b) in graphical form for use by the HFA Steering Committee. A bar chart to bring out the increasing proportion of the total development expenditure to total government expenditure and health development expenditure to health expenditure was also presented as in Fig. 8.

Fig. 7a: Total government budget, allocation for development activities and foreign aid component, AnylandA, 1982/83 - 1985/86

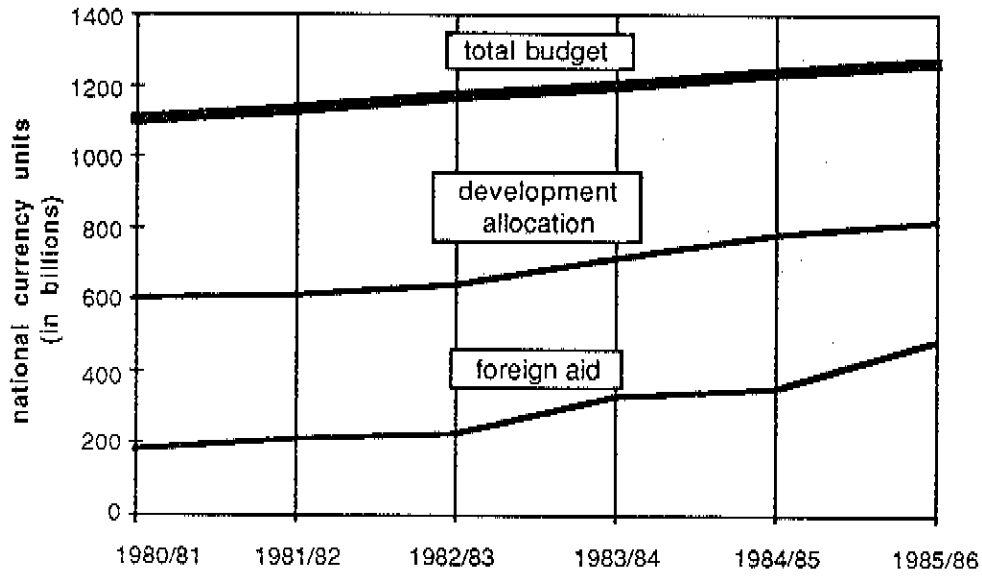


Fig. 7b: Total government budget, health budget and allocation for development activities in health, AnylandA, 1980/81 - 1985/86

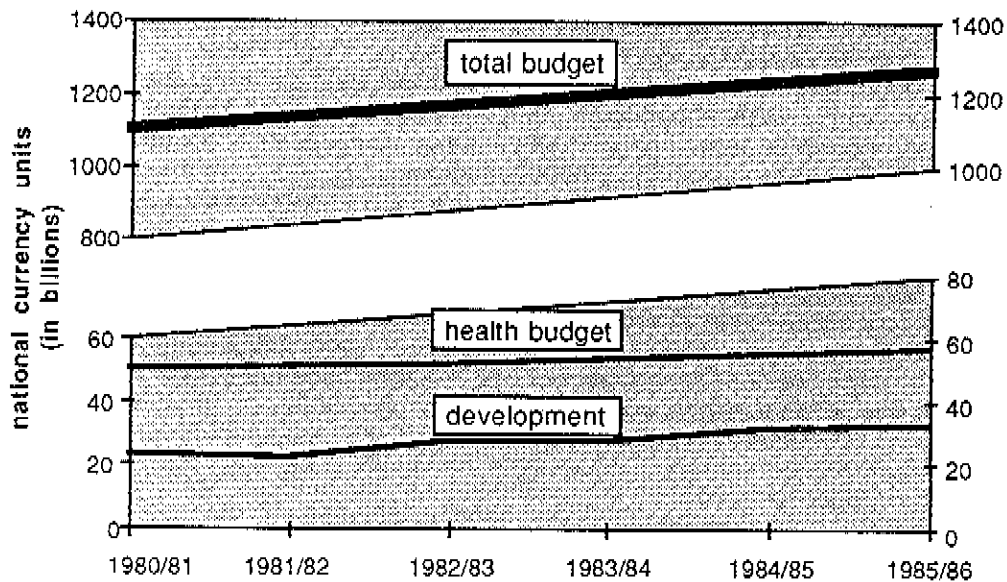
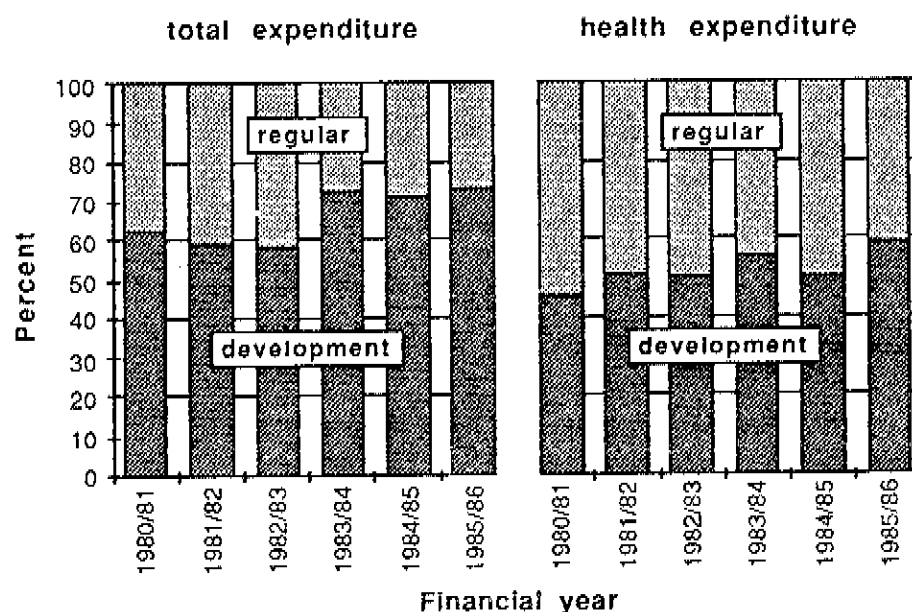


Fig. 8: Government expenditure for development and regular activities, AnylandA, 1980/81 to 1985/86



Health finances

Step 5: Information Interpretation

The Core Group noted that the expenditure on health was slowly but steadily increasing at a rate of about 2% per annum over the last 5 years, which was much lower than the annual population growth rate of 3.2%. Though the percentage of the Ministry of Health budget to the total government budget had increased during this period, the percentage of health expenditure of the Ministry of Health to the total government expenditure decreased. The rate of implementation of the health budget was also low at about 80%. While this indicated the possibility of using the additional unspent health allocation for other health related activities, the Core Group decided to look into the possibility first of improving the absorptive capacity of the existing programmes of the Ministry of Health to fully utilize the existing budget. They noted that the rate of growth of development expenditure was much faster than that of regular expenditure resulting in the new health institutions lacking resources for operational support and in some instances functioning much below their capacities. At the same time, even the amounts budgeted for health were not spent fully. While it was a fact that the external funding agencies were dedicating resources as capital investments for the development of new infrastructures, the Core Group noted that with some prudence, the unspent allocation could, initially, be used to compliment the external funding agencies' inputs, by providing the needed financial support to the functioning of these new infrastructures. The Core Group recognized, however, that the manpower availability might be an overriding constraint for the underutilization of the budget.

The Core Group concluded that .

- growth in health expenditure was lower than that of the population
- rate of implementation of health budget was only 80%
- level and growth in development expenditure even in health was more than that in regular expenditure.

Health manpower

Health manpower

Step 1: Information needed and relevance

The Core Group decided that the objective of a review of health manpower resources should be to get an idea about the size, composition and trends in the health manpower available as well as its distribution. This was considered a prerequisite for coverage by health care and as an indirect indicator of resource allocation patterns particularly when information on actual expenditure was not available. However, there had been no adequate health manpower plan. Data related to the **number and types of health personnel** and their geographical location would bring out the areas and regions where health manpower resources were concentrated. Given the differential distribution patterns for various categories of health personnel, the problems associated with the redistribution of appropriate resources could be more clearly formulated so that deployment policies could be decided on. The growth of manpower in relation to the population could be studied using the **population ratio to health personnel** by geographical areas. **Health workers ratio to doctors** was to find the consistency if any in the growth of different categories of health manpower. It was felt that rational manpower production and distribution policies had to be formulated following the detailed programme component of MPNHD based on the outcome from broad programming taking into account major health concerns in the regions and health manpower distribution realities. The Core Group noted that a large part of health care was also provided by **traditional medical practitioners** and decided to collect data on their number and distribution as well. There was also a concern over the utilization of the available manpower.

Health manpower

Step 2: Information collection and validation

The Core Group found that data on at least the essential health manpower viz. doctors, nurses, nurse-midwives, auxiliary health worker and health inspector (or equivalent), was available but not up-to-date, even in respect of manpower under the Ministry of Health. The Ministry of Health data included the geographical location of health institutions and units where their manpower were functioning. To supplement and validate whatever data they had, a questionnaire was sent to all health institutions - hospitals, health centres and health posts, and to training institutions and vertical programmes, to provide data on the existing and projected health manpower. In addition, the Core Group approached the National Medical Association (NMA) and National Nursing and Midwifery Federation (NNMF) for data on doctors, nurses and nurse-midwives along with their geographical location. The Union of Traditional Medical Practitioners was approached for data on the number of the traditional medical practitioners as well as their locations from where they were functioning. It was noted that these data would related to all registered personnel, not necessarily actually practising in the country. The following data were obtained:

Information Element 31:

Number of health personnel

by: category of personnel and their geographical location
for: 1985

Information Element 32:

Number of health personnel in the Ministry of Health

by: category of personnel and their geographical location
for: 1980 to 1985 and 1986 to 1988 (projections)

Information Element 33:

Number of traditional medical practitioners formally trained

by: whole country
for: 1980 to 1984

In addition, data on health inspectors were also available but the specific locations from where they functioned as well as the geographical areas covered were not identifiable.

Ministry of Health data were compared with the NMA and NNMF data and were found to be consistent. The Core Group decided to use the Ministry of Health data for detailed analysis realizing that the NMA and NNMF data would not reflect the manpower resources actually providing health care in the country.

Health manpower

Step 3: Information analysis

The Core Group computed the rates of growth during 1980 to 1985 of total doctors and of nurses for the whole country as provided by NMA and NNMF and compared them with those in the Ministry of Health. It also computed, for 1985 and for those working under the Ministry of Health, the population ratio to health personnel and health worker ratio to doctor for each category of health worker viz. nurses, nurse-midwives and auxiliary health workers. Not only the distribution of health manpower among the various geographical areas were studied but also the patterns of their distributions. From available data, an attempt was made to separate the number of doctors in the Ministry of Health, in government institutions other than the Ministry of Health and the rest assumed to be in the private sector. It was possible to get from the National Medical Association, a list of active members with their place of work and affiliations. Though the data were not complete and precise, the Core Group decided to get an idea of the growth of doctors in the three areas, viz. Ministry of Health, other government institutions and the private sector. The analysis provided the Core Group with the growth rates of doctors for the whole country, of those in the Ministry of Health institutions, and outside and for those outside, in terms of those in government institutions other than the Ministry of Health and the rest, presumed to be in the private sector.

It also computed the growth rate during 1980-84 in the number of traditional medical practitioners and compared it with that in the number of doctors as given in NMA records and with that in the number of doctors in the Ministry of Health institutions and units. The Core Group computed, for the period 1980-84, ratios of traditional medical practitioners to doctors in the Ministry of Health institutions and found them to be increasing. In the absence of data on the geographical distribution of these traditional medical practitioners, the differentials in their spatial spread compared with the doctors even in respect of those under the Ministry of Health could not be studied. On enquiry with the Union, it was found that the traditional medical practitioners continued to play a significant role in the provision of health care in the mountainous areas and to a certain extent on the plains.

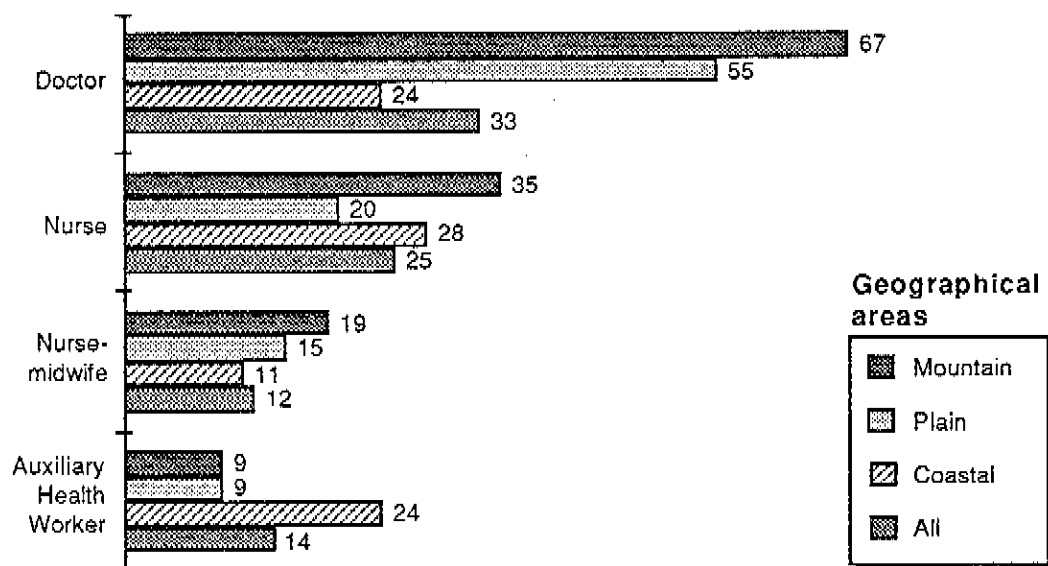
Health manpower

Step 4: Information presentation

The Core Group decided to present the data on the growth of health manpower and increasing disparities in manpower development as in Table 2 and on the distribution of health personnel in institutions and units under the Ministry of Health in a tabular form as in Table 3. It was intended to show the unequal distribution and mix of health manpower in various types of health institutions. Data on the population ratios to various categories of health personnel was presented in two ways, by kind of health personnel for each of the geographical areas and by geographical area for each kind of health personnel (Fig. 9). The objective was to bring out the access of population to various kinds of health personnel in different geographical areas.

Fig. 9: Population (in 1 000's) per health personnel of different categories and by geographical areas, AnylandA, 1985

- by category of health personnel



- by geographical area

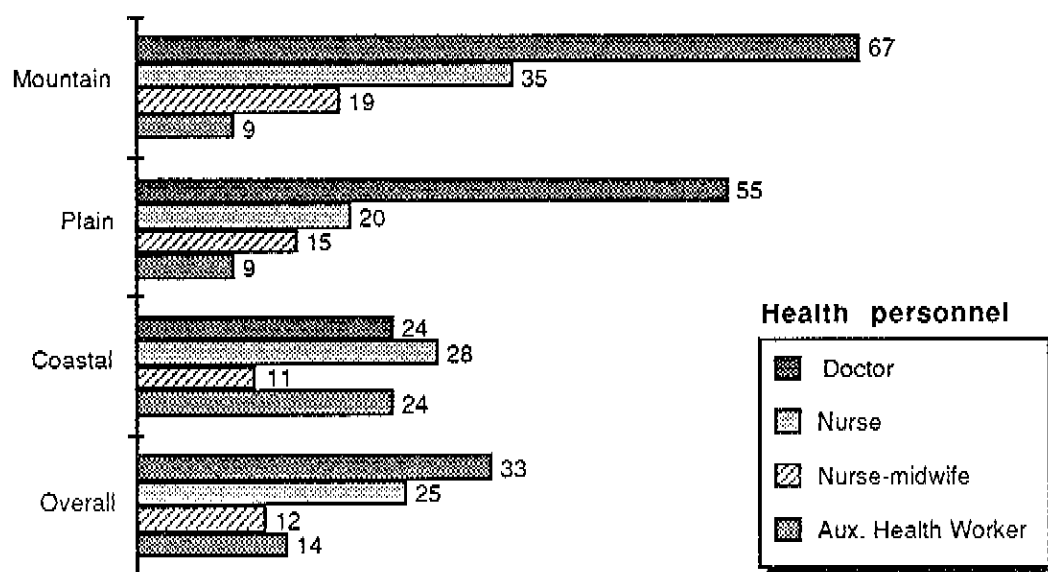


Table 2: Growth of health manpower, number of doctors, population per doctor and ratios of nurse, nurse-midwife and auxiliary health workers per 100 doctors

AnylandA, 1980-1985

Ministry of health										
Year	Total doctors		Doctors		Nurses		Nurse-midwives		Auxiliary health workers	
			number	ratio to total doctors	number	per 100 doctors	number	per 100 doctors	number	per 100 doctors
	Population per doctor (000s)	number	ratio to total doctors	number	per 100 doctors	number	per 100 doctors	number	per 100 doctors	
1980	400	31	350	87.5	350	100	200	57	300	86
1981	450	28	350	77.8	370	106	300	86	350	100
1982	500	26	360	72.0	400	111	400	111	400	111
1983	600	23	370	61.7	450	122	500	135	500	135
1984	750	19	400	53.3	500	125	900	225	800	200
1985	800	18	435	54.4	565	130	1155	266	1052	242

Health manpower

Step 5: Information interpretation

The Core Group noted that the health manpower was not equally distributed among different areas, particularly in respect of doctors and nurses who were concentrated mainly in coastal areas (Fig. 9). A comparison of the growth of doctors in the Ministry of Health institutions and that of doctors in units and institutions outside the Ministry showed that the rate of growth of doctors in the health institutions and units under the Ministry of Health was less than that outside the Ministry (Table 2). This brought to the forefront the need to review the policies and procedures in the Ministry of Health as regards the recruitment, remuneration, deployment and career development of the health personnel particularly of the doctors so that the terms and conditions of services with the Ministry of Health could be made more attractive in relation to other Ministries. The question of the rapid growth of doctors in the private sector was raised. It was not possible to separate their numbers from the ones related to ministries and agencies other than the Ministry of Health. The ratio of traditional medical practitioners to medical doctors was computed for 1980-1984 only to find that they were almost constant during this period. The Core Group felt that this reflected the continuing popularity of the traditional medical practitioners in the country particularly in the rural areas and decided that in any further development of health systems in the country, traditional medical practitioners should be considered as an integral component of the health care delivery and that the role they could play in achieving the national HFA goals should be identified and supported.

From Table 3 it was noted that, even within the Ministry of Health, health personnel were not properly distributed over different categories of health institutions. There was also concern over the utilization of manpower in these institutions. The Core Group was referred to an activity analysis study undertaken in 1985 by the Ministry of Health in a district in the plains, of doctors, nurses and auxiliary health workers. It provided data on the percentage distribution of time spent by these health personnel on various types of health care activities. The finding was that the doctors were effectively using only about 30% of their time in clinical activities in district

hospitals; the remaining 70% was spent on administrative and personal activities. Doctors at the health centres spent about 80% of their time for clinical activities. Nurses and auxiliary health workers had at least 20% slack time with 40% of the time of nurses being spent in information related activities. Better utilization of existing health manpower was considered a priority.

Table 3: Distribution of health personnel in institutions under the Ministry of Health AnylandA, 1985

Staff category ¹	Number in Ministry of Health Institutions ²						All
	National hospitals (6)	Regional hospitals (5)	District hospitals (13)	Health centres (20)	Health posts (745)	MOH admn.	
Doctors	168	140	60	5	-	62	435
Nurses	250	110	100	67	-	38	565
Nurse-midwives	200	250	208	80	417	-	1 155
Aux.health worker	120	150	50	221	490	21	1 052
Health inspector	-	-	-	30	-	8	38
All	738	650	418	403	907	129	3 245

¹ Excludes supportive staff in diagnostic and treatment services

² Figures in brackets give the number of institutions

Health facilities

While a composite indicator of the provision of health care would be an ideal one, the Core Group realized that no satisfactory indicator of this kind existed and that they would break down the general concept of "health care provision" and analyse each aspect of it using meaningful indicators.¹⁶ One way would be to separate different levels of the health system viz. in terms of health facilities and personnel assigned to it. A distribution of these facilities by geographical areas particularly when related to the population in these areas would bring out the inadequacies and inequalities in location of these facilities.

Health facilities

Step 1: Information needed and relevance

The Core Group decided that the minimum information needed would be the number and type of health facilities such as hospitals, health centres, health posts, hospital beds etc. and their geographical locations to find out if facilities were concentrated in any given regions or areas, e.g. urban. Information relating facilities to health manpower was also needed to find deficiencies in the staff of these facilities. When the facilities in each region were related to the population of the regions, indicators such as *number of hospital beds per 1 000 population* etc. could be computed for each region to assess the availability of services and their types. It was not only the availability of services such as *hospital beds* but also their utilization that was of particular concern to the Core Group. Indicators like bed occupancy rate, length of stay and bed turn-over rates should also be available to know the relevance of these facilities in a given situation and thus assist in deciding on the financing of these facilities using social security or health insurance schemes. Values over the past few years and forecasts or plans for the future would also be useful if available.

*Health facilities***Step 2: Information collection and validation**

The Planning Division of the Ministry of Health had data on

Information Element 34:

<p>Distribution of health facilities</p> <p>by: regions and types</p> <p>for: 1983 to 1986</p>

Data on hospital beds by type, occupancy rate, turnover rate and length of stay were also available for 1984 and 1985 by regions.

*Health facilities***Step 3: Information analysis**

Given the above data on the distribution of hospitals, hospital beds, health centres and health posts, the **population ratio** to a hospital, hospital bed, health centre and to a health post was computed for 1984 and 1985 for each of the regions. The number and type of health personnel were related, for each of the regions, to various categories of health facilities and differential ratios of health personnel to facilities were computed for 1985. (see **Health manpower**)

*Health facilities***Step 4: Information presentation**

Data on the number of health facilities by type and relevant population ratios were presented in a tabular form but the population-facility ratios for each region were also provided as a bar diagram to bring out the differential pattern in the distribution of health facilities.

*Health facilities***Step 5: Information interpretation**

The Core Group noted that there was an increasing tendency among the external funding agencies to finance the construction of health posts and health centres instead of hospitals in the capital city or in the zonal cities. Even for these health centres and health posts, the available manpower resources were inadequate now and given the trend in health manpower production in the near future as well. Also the existing manpower had not even been properly distributed among the various health institutions/units. Some regions had health facilities with very few or no relevant health staff to deliver the service, for example health centres had no doctors, health posts no auxiliary health workers and hospitals providing obstetric services had no nurse-midwives. Far too many technical health staff were also in the Ministry of Health administration.

The Core Group noted that

- instead of constructing more facilities, priority should be given to strengthening the existing facilities and to the proper staffing of health institutions and units and
- a rational manpower development and allocation policy had to be formulated.

Manpower sources - training institutions

The Core Group noted that most of the higher level medical manpower such as doctors were being trained outside the country and that the first batch of medical graduates from the local Medical College would come out only in 1989. However, the Institute of Public Health was training nurses, nurse-midwives, auxiliary health workers, auxiliary midwives and health inspectors in addition to pharmacy and laboratory assistants. It was decided to get relevant information from the Ministry of Education. The following data were obtained:

Information Element 35:

Capacity and actual intake of students for medical education

by: medical programme

for: 1984 to 1986

From the Institute of Public Health, data were obtained on

Information Element 36:

Capacity, intake and output for health worker training

by: category

for: 1980 to 1986

Ratios of intake to capacity and of output to intake were computed for each category of health workers to see if there was any scope for better capacity utilization. Data were presented as a table.

Since any analysis of the manpower situation as a basis for formulating manpower policies and plans was complex, in view of the number of stock variables, such as number of medical graduates in the country at a given point of time, and flow variables, such as number of students enrolled in medical colleges during a year, that had to be taken into account, the Core Group decided to award a post-graduate research fellowship to a member of the staff of the Institute of Public Health for work on this aspect.

The Core Group noted that the number of students enrolled in the first year for nurses, nurse-midwives and health inspectors was less than the number authorized and that in subsequent years, there had also been a high number of drop-outs. The Core Group also noted that the intake could be increased substantially provided the enrollment criteria could be modified to make them relevant to the course of study. The high attrition rate should be tackled as a matter of urgency. Also the Core Group recognized the apparent differentials in the growth rates of professional manpower and supportive health personnel such as nurses, nurse-midwives and auxiliary health workers etc. and decided on the need for coordinated development of health manpower in the country. They also recognized that medical graduates should start coming out, as from 1989, from the newly established medical college.

Health Service Coverage

The Core Group agreed that a specific outcome from a consideration of this aspect should be an indication regarding the utilization of services by, or the actual coverage of, the eligible population through primary health care activities. Since there was no satisfactory indicator of the provision of comprehensive care that included all the eight elements of PHC, the Core Group decided to break down the general concept of *coverage or health care provision* and study certain essential components of it. It chose to consider the availability of health personnel and of health facilities, accessibility of safe water supply and sanitation and utilization of maternal and child care services. It noted that in AnylandA, the norms that defined minimum levels of the standard of care that could constitute adequate coverage was lacking in respect of a large number of health care services. Hospital standards did exist, however, and only those hospitals satisfying these standards were licensed to function. Manuals of operations or procedures did exist for the health care services but they were all under revision and updating. Given this situation, the Core Group decided on the following information elements - most of which were obtained for other components:

- Environmental health;
- Health manpower;
- Health facilities;
- Maternal and child health services.

Environmental health

Population served by safe water within 15 minutes walking distance
(Information Element 26, page 20).

Population with sanitary facilities in home/in immediate vicinity
(Information Element 27, page 20).

See the section on **Socio-economic situation** (page 17) for further details.

Health manpower

Population per health personnel ratio (Information Element 31, page 27).

See **Health manpower** in section **Health Resources** (page 27) for further details.

Health facilities

Population per health facility of a given type (Information Element 34, page 32).

See **Health facilities** in section **Health Resources** (page 31) for further details.

Maternal and child health services

The Core Group decided to confine their attention to a study of the **utilization** or actual coverage defined as the proportion of people in need of a service who actually received it in a given period, usually a year.¹⁷ They had the report of a Health Care Evaluation Study carried out by the Ministry of Health in 1985.

Maternal and child health services

Step 1: Information needed and relevance

It was agreed to limit the coverage information to that related to **MCH services** including **immunization**. Information was needed on the coverage for antenatal, delivery and infant care as well as immunization coverage of eligibles at least for each of the six EPI diseases. It was realized that these data had to be supplemented with those relevant for **quality of care**, at least in terms of:

- frequency, viz., average number of consultations per episode of, say pregnancy;
- selectivity, viz., percentage of eligibles with a higher risk for a given set of criteria and provided a specific type of service to total eligibles given that service;
- continuity, viz., percentage of eligibles given **all** the essential services to total eligibles given one or more services. For example, percentage of mothers under antenatal care by trained health personnel and attended at childbirth by trained health personnel - or percentage of children immunized against **all** the six EPI diseases.

The Core Group referred to the WHO document on Health Care Coverage and noted that their recording system was not such as to facilitate any extraction of relevant data for computing coverages.¹⁸ The possibility of generating these data as an integral part of health care activities was also recognized, and the Institute of Public Health was requested to design a system for the purpose.

Maternal and child health services

Step 2: Information collection and validation

The Ministry had no data in a meaningful form in the existing records or reports which could be extracted and compiled to generate values for coverage indicators. As a part of a health development project, the Ministry had carried out an evaluation of health care services in the project and non-project area. The Core Group decided to use the findings of this study on the following:

Information Element 37:

Percentage of mothers with at least one consultation during the antenatal period with a trained health personnel

by: whole country
for: 1984

Information Element 38:

Percentage of mothers attended at childbirth by trained personnel

by: whole country
for: 1984

Information Element 39:

Percentage of pregnant women immunized against tetanus

by: whole country
for: 1984

From the Coverage Evaluation Survey carried out in 1985 by the MCH Division they had

Information Element 40:

Percentage of eligible children immunized against diphtheria, whooping-cough, tetanus, poliomyelitis, measles, and tuberculosis

by: whole country
for: 1984

Maternal and child health services

Step 3: Information analysis

No detailed analysis was carried out. The Core Group decided to use the findings and conclusions of the Health Care Evaluation Study which incorporated and synthesized the findings of the EPI Coverage Evaluation Survey carried out in 1985.

*Maternal and child health services***Step 4: Information presentation**

Available data were presented in a tabular form.

*Maternal and child health services***Step 5: Information interpretation**

The Health Care Evaluation Study and Immunization Coverage Evaluation gave low values, i.e. less than 20% for all the four indicators of coverage viz. antenatal consultation, attendance at delivery, child immunization and tetanus toxoid administrations to pregnant women. Though coverage for the first dose of DPT was high at 60%, the coverage for all three doses was only 20%. As stated earlier, the access coverage for safe water and adequate sanitation facilities was also low.

The Core Group noted that, given that the overwhelming priority problems were related to those of mothers and children as well as to socio-environmental factors, priority should be given to the strengthening of

- maternal and child care services, and
- environmental improvement measures.

Health Service Effectiveness

The Core Group noted that an effect of a health care intervention would be expressed as the difference in respect of some relevant health indicator, between populations with and without such care.¹⁹ The members were concerned that no information was available in this regard even in respect of their health programmes considered as priority ones. They called upon the National University Institute of Public Health to initiate activities in this regard and decided to omit this aspect from the situational analysis part of Broad Programming at this stage but that it should be taken up once information becomes available.

4 Conclusions

The Core Group prepared a list of all the information elements collected and used in this broad programming phase, reviewed that list and found it to be comprehensive and containing most of the essential information required for a meaningful outcome (Annex 2). It synthesized the findings from an analysis of information as described in Section 3 (see **Information Support Process**, page 5), rearranged the findings to facilitate decision-making and presented them as follows to the HFA Steering Committee:

- Major health problems related to pregnant women and infants and to infectious and parasitic diseases preventable through immunization or environmental improvement measures. (See **Epidemiological situation**, page 6)
- High population growth resulting from high parity which was also associated with high infant mortality rate. (See **Epidemiological situation**, page 6)
- Low coverage by maternal care and immunization services. (See **Health Service Coverage**, page 33)
- Low access to safe water supply and adequate sanitation facilities. (See **Socio-economic situation**, page 17)
- Infectious and parasitic diseases like TB, Malaria etc. requiring continuity in the provision of care, were of priority concern. (See **Epidemiological situation**, page 6)
- Resources not properly distributed and used. (See **Health Resources**, page 23)
- Possibility of getting additional financial resources for health was nil. (See **Health Resources**, page 23)
- Increase in adult literacy rate even among female population following the policy on free primary education. But multiplicity of languages and dialects would pose a problem. (See **Socio-economic situation**, page 17)
- Implementation of the Local Government Act of 1982 leading to devolution of planning and implementation responsibility to local committees. (See **National Development Policy and Plan**, page 3)
- Development policy aimed at meeting basic minimum needs including health. (See **National Development Policy and Plan**, page 3)
- Inclusion in the Seventh Five-year Development Plan (1987-1991) of measures to share the benefits of development among low income and disadvantaged population groups. (See **National Development Policy and Plan**, page 3)
- Investment allocation directed to area-based package programmes for agricultural growth and integrated rural development schemes. (See **National Development Policy and Plan**, page 3)

The Steering Committee noted that the high population growth not only neutralizes the low economic growth but was also responsible for high maternal and infant mortality rates - and hence reductions in population growth rates should be given priority.²⁰ Since the major health problems were concerned with mothers and infants, these population groups should be the target groups in re-orienting and strengthening the existing health care delivery. Infectious and parasitic diseases, particularly malaria and tuberculosis, should be given emphasis. Since deaths due to

diarrhoea and immunizable diseases formed a large proportion of infant mortality, attention should be given to these infant and childhood diseases, including improvement of the environment. Realizing that frequent flooding of rivers caused health hazards, the Committee felt that the opportunity should be taken of the government's strategy to involve the communities in controlling and preventing the effects of frequent flooding by mobilizing and organizing community resources. Initially these could be involved in dealing with health hazards but then community-based health activities could also be developed, particularly in the context of the national policy on devolution of management responsibilities to communities.

The Committee decided that priority should be given to an integrated health programme that would provide, through a PHC infrastructure, an increased health care coverage to the population and would emphasize family planning and MCH services including those directed to

- reduction of incidence of communicable diseases particularly malaria, TB, leprosy, measles, tetanus and diphtheria
- reduction of deaths due to diarrhoea, especially among children

and that, given the resource constraints, attention should be focused on a better and fuller utilization of the existing infrastructure and on the development and use of appropriate resources to that end.

5 References

1. Managerial Process for National Health Development: Guiding Principles, HFA Series No. 5
2. Broad Programming as a part of the Managerial Process for National Health Development: Guiding Principles, WHO document MPNHD/81.3
3. Indicators for Monitoring Progress Towards Health for All by the Year 2000, HFA Series No. 4, pp 18-37.
4. HFA Series No. 4, p 68.
5. HFA Series No. 4, pp 36-37.
6. HFA Series No. 4, pp 70-73.
7. Lay Reporting of Health Information, Geneva, WHO, 1978.
8. HFA Series No. 4, pp 37.
9. For a simplified description of the method used, see *Evaluate Vaccination Coverage*, Training for Mid-level Managers, World Health Organization Expanded Programme of Immunization.
10. HFA series No. 4, p 79.
11. HFA Series No. 4, p 79.
12. In simple terms, the *flow-of-product* approach to national income estimation involves the summing up of the money values, at market prices, of the personal consumption expenditure on goods and services, government expenditure on goods and services and investment expenditure.
13. Grant, James P. (1978): *Disparity Reduction Rates in Social Indicators - a proposal for measuring and targeting progress in meeting basic needs*, Overseas Development Council, Monograph No. 11
14. Foege, W.H. and Henderson, D.A. (1986): *Management Priorities in Primary Health Care in Review of Infectious Diseases*, Vol. 8, No. 3
15. Mach, E.P. and Abel-Smith, B. (1983): *Planning the Finances of the Health Sector - A manual for developing countries*, WHO, pp 81-85
16. HFA Series No. 4, p 26.
17. HFA Series No. 4, p 27.
18. See National Assessment of Health Care Coverage and its Effectiveness and Efficiency, WHO document SHS/83.7, p 56.
19. National Assessment of Health Care Coverage and its Effectiveness and Efficiency, WHO document SHS/83.7, p 7.
20. In spite of a high IMR of 152 per 1000 live births and MMR of 8.5 per 1000 live births, the population growth rate was high at 3.2 per cent per annum because of the high birth rate of 50 and a death rate of 18; total fertility rate was 6.3.

Annex 1: Form Used in Collecting Data

Managerial Process for National Health Development Information Support to Broad Programming

1. Responsible Agency _____ 2. Indicator _____
(give name)

3. Definition of the Indicator _____

Population group or area	Values for previous, present and future years
Whole country	

If values are not available by population groups, state if basic data are available so that disaggregated values can be computed if necessary.

Annex 2: Information Support Process for Broad Programming Information used by AnylandA

Decision Point: Health Problems and Population Groups Requiring Priority Attention

Information Component	Information No.	Information Element Description	Level of Disaggregation	Reference Year(s)	Nat. Agency* or Dept.	Sources of Information: Publications	Other
1 Main public health problems							
Epidemiological Information	1	Infant mortality rate	National Population Groups	1981 1985	CBS/MOH MOH	Population census Nutrition Survey	- -
	2	Maternal mortality rate	National Regions	1984 1985	MOH MOH	MMR study	- Rapid Survey
	3	Life expectancy at birth	National Population Groups	1981 1981	CBS MOH/CBS	Population Census	- Special Computation
	4	Leading causes of mortality	National Regions	1986 1986	MOH MOH	Health Bull. 1986	- Rapid Survey
	5	Leading causes of morbidity	Regions	1986	MOH	-	Rapid Survey

Incidence of communicable diseases being controlled

Malaria

6	Population at malaria risk	National	1980 to 1985	MOH	Health Bull. 1986	-
7	Annual parasitic incidence	National	1980 to 1985	MOH	Health Bull. 1986	-

* CBS = Central Bureau of Statistics

MOH = Ministry of Health

NPC/CEDA = National Planning Commission - Centre for Economic Development and Administration

MOE/NCHRD = Ministry of Education - National Centre for Human Resources Development

MOA = Ministry of Agriculture

DODS = Department of Drinking Water and Sanitation

NRB = National Reserve Bank

UTMP = Union of Traditional Medical Practitioners

Tuberculosis						
8	New bact. cases detection	National	1980 to 1985	MOH	Health Bull. 1987	-
9	Cases under treatment	Regions	1980 to 1985	MOH	Health Bull. 1986	-
Diar. Diseases Control						
10	Cases reported	National	1980 to 1985	MOH	Health Bull. 1986	-
11	Diar. Dis. cases and deaths	Age and regions	1984 and 1985	MOH	Special study on Diar. dis.	-
Maternal and Child Health						
12	Incidence of immunizable (EPI) diseases	Regions and age	1980-1985	MOH	Health Bull. 1986	-
13	Number of live births	National - Sex	1984 and 1985	MOH	Immunization coverage eval.	-
14	Infant death due to immunizable diseases	National - Sex	1984 and 1985	MOH	Immunization coverage eval.	-
15	Babies with birth weight less 2 500 g.	Regions	1984 and 1985	MOH	Immunization coverage eval.	-
Demographic Information						
16	Population	Regions National	1961, 1971 and 1981-1985 1991-2031 (10 yr intervals)	CBS CBS	Population Census Internal documents on Population Policy	-
17	Population distribution	National - age and sex	1971-2031	CBS	-do-	-
18	Population distribution	National - urban and rural	1971 and 1981	CBS	Population census	-
19	Popln size and growth rate	Districts	1961-1971 and 1971-1981	CBS	Population census	-

Socio-economic Information	20	Per capita GDP	National	1975 to 1985	NPC/CEDA	Internal documents on Development Plan	-
	21	Per capita income	Regions	1984	NPC/CEDA	-do-	-
	22	GNP and growth rate	National	1975 to 1985	NPC/CEDA	National Economic & Social Dev. 1985	-
	23	Adult literacy rate	National - Sex Regions	1971 1981	MOE/NCHRD	Human Resource Dev. study - 1985	-
	24	Per capita food availability	National	1975-1985	CBS	National Economic & Social Dev. 1985	-
	25	Per capita calorie intake per day	Regions	1985	MOA	National Food Consumption Survey 1985	-
	26	Popln served by safe water within 15 mins walking distance	Regions Urban and rural	1980 and 1984	DODS	Water Decade Report 1986	-
	27	Popln with sanitary facilities in home/ immediate vicinity	Regions Urban and rural	1980 and 1984	DODS	Water Decade Report 1986	-
2 Health Resources							
Health finances	28	Total Govt budget and expenditure	National - Regular and Development	1980/81- 1985/86	MOH	Health Budget, 1986/87	-
	29	Govt health budget and expenditure	National - Regular and Development	1980/81- 1985/86	MOH	Health Budget, 1986/87	-
	30	External resources for health sector	Agencies and dedicated activities	1980/81-1984/85 1985/86 and 1986/87 estimates	NRB	Internal document on External Aid	-
Health Manpower	31	Number of health personnel	National - Category and location	1985	MOH	Health Bull. 1986	National Med. Assn, UTMF, Nat. Nursing & Midwifery Fed.
	32	Number of health personnel in MOH	National - category of personnel	1980 to 1985 1986 to 1988 (projections)	MOH	Internal Manpower Study, 1986	-

33	Number of traditional medical practitioners	National	1980 to 1984	UTMP	List of registered personnel, 1986	-
34	Distribution of health facilities	Regions - type of facility	1983 to 1986	MOH	Internal Planning Division data	-
35	Capacity and intake for medical education	National	1984 to 1986	MOE	Annual Report of MOE, 1986	-
36	Capacity, intake and output of other health personnel	National - category	1980 to 1986	MOH	Annual Report of Institute of Public Health, 1986	-
3. Health Service Coverage						
Environmental Health						
See elements 26 and 27						
Health manpower						
See elements 31-33						
Health facilities						
See element 34						
37	% mothers with at least one consultation during AN period with trained health personnel	National	1984	MOH	Health care evaluation, 1985	-
38	% mothers attended at childbirth by trained personnel	National	1984	MOH	Health care evaluation, 1985	-
39	% pregnant women immunized against tetanus	National	1984	MOH	Health care evaluation, 1985	-
40	% children immunized for DPT, polio, measles, TB	National - immunization type	1984	MOH	Immunization coverage evaluation, 1985	-

4. Service Effectiveness - Omitted from consideration at this stage of Broad Programming activity.