HEALTH MANPOWER IN THE DEVELOPING COUNTRIES:
PROBLEMS AND NEEDS

by

A.A. Angara, M.D.
Assistant Director of Health Services
WHO Regional Office for the Western Pacific

1 Background document for reference use at the Technical Discussions on "Health Manpower in Developing Countries: Problems and Needs".
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td>1</td>
</tr>
<tr>
<td>1.1 General considerations</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Purpose</td>
<td>1</td>
</tr>
<tr>
<td><strong>CONCEPT AND PRINCIPLES IN THE STUDY OF MANPOWER RESOURCES</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>HEALTH MANPOWER IN THE REGION: FACTORS OF ASSESSMENT AND PROBLEMS</strong></td>
<td>4</td>
</tr>
<tr>
<td>3.1 Factors in assessing manpower</td>
<td>4</td>
</tr>
<tr>
<td>3.2 Status of health manpower</td>
<td>7</td>
</tr>
<tr>
<td>3.3 Other factors and problems</td>
<td>12</td>
</tr>
<tr>
<td><strong>APPROACHES TO MANPOWER PLANNING METHODOLOGY</strong></td>
<td>18</td>
</tr>
<tr>
<td>4.1 Analytical framework</td>
<td>18</td>
</tr>
<tr>
<td>4.2 Methodologies employed</td>
<td>20</td>
</tr>
<tr>
<td><strong>ISSUES ON HEALTH MANPOWER NEEDS</strong></td>
<td>24</td>
</tr>
<tr>
<td>5.1 Inventory of the health manpower resources</td>
<td>25</td>
</tr>
<tr>
<td>5.2 Government structure and health sector policy</td>
<td>25</td>
</tr>
<tr>
<td>5.3 National health planning</td>
<td>26</td>
</tr>
<tr>
<td>5.4 Education and training</td>
<td>26</td>
</tr>
<tr>
<td>5.5 Research</td>
<td>27</td>
</tr>
<tr>
<td>5.6 Role of international organizations</td>
<td>28</td>
</tr>
<tr>
<td><strong>ANNEX 1 - DISTRIBUTION BY POPULATION OF SELECTED HEALTH PROFESSIONALS IN COUNTRIES OF THE WHO WESTERN PACIFIC REGION (1966)</strong></td>
<td>29</td>
</tr>
<tr>
<td><strong>REFERENCE LIST</strong></td>
<td>31</td>
</tr>
</tbody>
</table>
1. INTRODUCTION

1.1 General considerations

Almost without exception but to differing degrees, most developing countries in the world today are concerned with national development. This has been generated by aspirations for higher living standards which only accelerated national development can hope to achieve.

It has been said very often that health is both a means to and an end of development. A malnourished population cannot possess the vitality to pursue sustained national growth. The continuing presence of endemic diseases will restrict the exploitation of virgin areas to extract raw materials for industry and commerce and to grow food for the labour forces and their families. Neither can material benefits gained from productive effort be enjoyed unless those who earn them possess good health.

Better living standards mean many things to many people. One of the requirements, however, is the availability of health care for the community. Community health care in terms of its personal and environmental components requires, among others, adequate and trained health manpower.

1.2 Purpose

This paper aims to provide an overview on health manpower in general and on the situation in the WHO Western Pacific Region in particular. The review will be made under the following headings:

(a) Health manpower and development: concept and guiding principles;
(b) Health manpower in the Region: factors of assessment and problems;
(c) Methods employed in health manpower planning;
(d) Issues concerned with manpower development needs.

/2. CONCEPTS ...
2. CONCEPT AND PRINCIPLES IN THE STUDY
   OF MANPOWER RESOURCES

Health manpower is a term which refers to individuals engaged in activities in the health and related sectors. It includes specifically professionals, auxiliaries and their aides. The term is not intended to apply to clerical or custodial personnel even though they may be employed in the health and related sectors. Certain categories of personnel lie in the gray area of health manpower since they are given responsibility for making health decisions although they have no training in the health disciplines, e.g., provincial health bureau directors, who are general administrators rotating from one departmental assignment to another.

Conceptually, development suggests growth (as manifested for example by increased output) together with the changes in the technical and institutional arrangements by which this growth is produced. In health manpower development the concern is not only in producing the future manpower but includes all the changes required to make production possible. According to Hall, the fundamental purpose of a manpower study is to anticipate the future demand for human resources at a time when decisions can still be made to meet it. Health manpower planning, as Baker has described it, is simply the process of trying to make sure that there will be enough health workers to meet, but not exceed, the future demand for health services.

It will be evident from the foregoing that manpower development cannot rely on inspired intuition. Only a careful, accurate and scientific process would satisfy its purpose. Health manpower is dependent on general manpower development and there must be facilities for general education so that manpower is available for further technical training. Health manpower is also subordinated at a later stage to the general policy on manpower allocation to the sectors. Its development is necessarily contingent on national health planning which...
is responsible for shaping the structure and functioning of services in the sector where the personnel will be utilized. It is evident that health manpower comes within the framework of national overall development since, ultimately, it is in the latter endeavour that decisions are reached on the priorities to be given to sectoral activities and on the allocations to be made from the national pool.

Increasing attention has been given to health manpower development in recent years. The trend is for most governments to increase their commitments in the field of health care and, in the circumstances, it would seem prudent to plan for the required future supply rather than to rely on what is available on the free market. Planning at least ten years in advance is generally recognized as feasible despite the rapid technological and structural changes in the health sector, hence planning for manpower is warranted. Planning is all the more necessary because inter-sectoral competition for the manpower potential is increasingly keen and many years are required to train health manpower.

The objectives of health manpower development would include:

(a) obtaining maximum productivity and effectiveness of the available manpower;
(b) understanding and thereby regulating the interaction between health manpower supply and demand by making appropriate adjustments as required;
(c) preparing an educational system that will adequately meet the quantitative and qualitative requirements of the health care services for manpower;
(d) establishing a surveillance mechanism for the continuing assessment of the health manpower situation and thereby ensuring timely adjustments.

Guiding principles in the study of health manpower resources are always useful and Taylor has invited consideration of the following:

(a) the study of the different manpower categories should not be conducted in isolation as inter-relationships /between ...
between them exist;

(b) the qualifications required, as well as the duties or functions of each manpower category and subcategory should be clearly defined;

(c) recognition should be given to the fact that certain duties or functions of a professional category can be substituted by another or by a subprofessional category;

(d) health manpower may be increased through additions to their number by education and training and through increased productivity (e.g., Fein has calculated that in the United States of America, a 3 per cent. increase in productivity would raise the effective supply of physicians by the equivalent of one year's graduating class);

(e) health practice studies are needed to test the validity of traditional practices and to improve service performance and productivity;

(f) further studies should be sought to understand the demand component of health manpower planning, particularly the means of quantifying the effects of socio-economic development.

3. HEALTH MANPOWER IN THE REGION: FACTORS OF ASSESSMENT AND PROBLEMS

3.1 Factors in assessing manpower

Health manpower requirements are a reflection of the demand for health services in the community. Their assessment necessarily entails among others, a review of community health attitudes, the health situation, population structure, health services structure, the status of health manpower and facilities for education and training.

Other factors related to health manpower development would be concerned with government policy, the duties of professionals and
auxiliaries, manpower productivity, the transfer of duties to a lower level, and the brain drain.

3.1.1 Community attitudes

In the developing countries there still prevails to a varying degree a competing demand for the services of the traditional as against the scientific medical practitioner. The traditional practitioner is frequently accessible in the rural area and often the only resource. In some countries, schools catering to the traditional herbalist exist and have government sanction. In the cities and larger towns, herbalist influence is being rapidly displaced by the scientific medical practitioner, partly because medical care facilities are accessible and partly because the population is better informed and receives a higher income. With the increasing provision of basic health services and hospital facilities in remoter areas, the trend among the rural people is to shift their reliance from the traditional to the scientific medical practitioner. In countries where the general health services have been expanded, problems of demand now exceed available manpower and the necessity for training the different health categories has increased to a degree not experienced previously.

3.1.2 Community health situation

This involves, among others, an analysis of morbidity, mortality and environmental health conditions.

One difficulty in the study of morbidity and mortality in the developing countries is the general dearth of accurate and complete information on vital and health statistics. Sufficiently reliable and comprehensive information is needed to assess the services load for which manpower will be required. Health records in the dispensaries and hospitals are generally not sufficiently systematized to permit ready processing. The more fundamental problem, however, is making correct diagnostic entries. The fact is that many reports are made by subprofessional workers who may be inadequately trained and do not
receive regular supervisory support from their professional homologues. Where private practice is active, the co-operation of medical colleagues in reporting morbidity needs further improvement. It should also be recognized that with the best intentions in the world, diagnostic accuracy cannot be improved when laboratory and other facilities are lacking. This is another area where improvements can be made.

Special studies and surveys are of assistance in problem definition, but they require qualified personnel and extra funds which many health departments cannot as a rule obtain. Although health department reports differ widely in content and quality, they are often valuable in providing an overview of the local situation and are useful guides in determining the point of departure for special studies.

Environmental conditions often give indications of areas of vulnerability to personal health. Improvements in environmental health entail, among others, an estimate of the required trained manpower to undertake or supervise the measures to be taken and to install the facilities to be provided.

3.1.3 Population structure

The age structure often provides indices for identifying the built-in health problems of the population. If there is a preponderance of the older age group, chronic disease conditions are important health problems. If predominantly young, as is often the case in the developing countries, the problems would be related to the health protection of mothers and children and include susceptibility among the young to communicable disease.

Population distribution is also related to the health situation. Rural populations often experience health conditions associated with communicable disease and inadequate environmental health facilities. Urban populations are likely to have a higher accidents rate and problems related to occupational health.
3.1.4 Services structure

A review of the organization of health services (e.g., hospitals, health centres, environmental health services, etc.) will indicate the staffing patterns existing and the numbers required as suggested by service demands. In a health plan, the direction of the development and expansion of the services will be explicit.

Information on the private sector, on the other hand, will give important clues to the geographical deployment of manpower as regards urban and rural areas, the degree of their utilization, the extent of specialization, the level of patients they attend, as well as their individual incomes.

3.2 Status of health manpower

3.2.1 Past and current manpower

As the categories and availability of health manpower, the general educational background, content of training programmes and classification of auxiliaries differ considerably among the developing countries, it is difficult to make valid international comparisons.

In general, all countries, even those which do not yet have full training facilities, aspire to having fully qualified manpower to staff their more senior posts. A few countries started a number of years ago to establish schools for medical education, e.g., China (Taiwan), the Philippines and Republic of Korea. Because of the numbers of medical practitioners already available, senior medical posts at all levels are now filled by fully qualified personnel. In these countries the private medical sector is also active and is able to contribute its share in providing medical care to the community. Medically qualified workers tend to concentrate in the larger communities, particularly in the cities, leaving the needs of the rural population unsatisfied. Because of the job incentives and attractions offered to private practice in the urban areas, governments have had to use auxiliaries to satisfy at least in part the medical needs of rural people.

/In several ...
In several countries and territories where medical professionals have been in short supply, expatriates have been recruited. Some governments, however, have or are developing educational programmes intended to convert existing medical courses not fully meeting university requirements into full medical professional courses. In Cambodia, training of officiers de santé has given way to the education of medical professionals. Earlier graduates are permitted to acquire a medical degree after completing additional course requirements. Fiji has lengthened its medical course to five years and designates its graduates as medical officers. In Papua and the Trust Territory of New Guinea, it is planned to convert the present diploma course to that of full medical professional education. Laos which, until 1969, has offered a course for assistant medical officers, is now introducing in its medical school professional medical education with the collaboration of another overseas medical school under bilateral arrangement.

The hospital assistants in Malaysia and the medical assistants in the British Solomon Islands Protectorate come within the medical auxiliary group. In Malaysia, the hospital assistant is trained for twelve to eighteen months with nurses. He then completes the remainder of his forty months of training as an apprentice to a medical officer. Medical assistants in the British Solomon Islands Protectorate are male nurses who take the three-year nursing course followed by a year's practice of which four to six months are spent learning public health. They are later assigned to the rural health centres.

The preparation of nurses is more varied. In the Republic of Korea, the Philippines and China (Taiwan), a growing number of nursing students are taking courses leading to a baccalaureate degree. Other programmes for nurses require ten to twelve years of general education for admission to a three to four-year nursing course offering a diploma or certificate; public health principles are increasingly being incorporated in these courses which are essentially hospital-oriented.

/In the Republic ...
In the Republic of Viet-Nam, midwives receive three years of training. In Cambodia, nurses and midwives are prepared in a three-year curriculum at state diploma level. In the Republic of Korea, a prerequisite to midwifery training is nursing registration. Midwives in the Philippines receive eighteen months of training following completion of high school. They are also required to pass a government qualifying examination. Nurses who aspire to become midwives, on the other hand, qualify after completing ten deliveries under supervision.

Sanitary engineers are often trained overseas, although some facilities exist in the Region. In the Philippines, for instance, the State University and a private institution offer a five-year course after high school; a qualifying government examination is mandatory as a prerequisite to licensing. China (Taiwan) offers a baccalaureate degree in civil engineering where sanitary engineering may be taken as a major subject.

The course for health inspectors in Malaysia is approximately one year, with another year under apprenticeship in the field. In Fiji, two types of courses for health inspectors are available. The assistant health inspector's course takes two years. The student must have a year of field experience before he qualifies for the regular health inspector's course which also takes two years. In the Republic of Korea, the six-month course for sanitarians is offered by a private university while in-service training is a responsibility of the Ministry of Health. In the Philippines, pre- and in-service training for sanitary inspectors takes twelve weeks.

There are others in the auxiliary group who, in some instances, are almost at the level of aides. In the Republic of Korea, the nurse aides are multi-purpose health workers while the tuberculosis and family planning workers are by training single-purpose workers. In West Malaysia, the sanitary overseers assist in the sanitation activities of the health centres, while the health supervisors in Sarawak have a broader
orientation in public health although their main concern is sanitation.

Dental nurses in Malaysia and Singapore undergo two years and four months of training.

Other health professions, such as dentistry and pharmacy, follow an educational programme in public and private universities along international lines and are required to qualify in a government examination before being licensed.

The diversity of the categories of health workers, particularly in the auxiliary group, reflects the unmet demands for health manpower. The growing commitments of governments inevitably tend to increase such demands. Where professional manpower has not been available, special and limited training of manpower has been organized according to immediate needs, thus producing a proliferation of various types of staff. It is in the light of this situation that planning for future manpower will have to start and this must entail a more concrete definition of the duties and functions of the auxiliaries as well as between professionals and auxiliaries. At the same time, a study of the utilization and improvement of the skills of those already in the service is required.

3.2.2 Current professionals/population ratios

Annex 1 of this document contains data obtained from the 1966 edition of the World Health Statistics Annual, which give a general idea of the distribution of selected professional groups (viz., physician, dentist, pharmacist, nurse) to national populations in the Region. These categories generally fulfill international criteria for basic education and professional course contents. The duties they normally perform in practice also follow observed international patterns. For these reasons, a reasonable degree of international comparison is feasible. Other categories, however, particularly at the auxiliary
level, do not satisfy the above-named general criteria hence international comparisons are not possible.

It will be seen from Annex 1 that although the ratio of professional categories appears satisfactory in the developed countries, an appreciable disproportion, which varies in magnitude, exists in most developing countries. In countries with more favourable ratios, serious problems of brain drain have arisen.

3.2.3 Education and training

A basic element in dealing with health manpower resources is the education and training of staff. In the less developed countries, modest beginnings have been made by providing on-the-job training or elementary courses for single or multi-purpose workers in the health centres and hospitals and, in the case of internationally-assisted activities, in pilot/demonstration areas. As the levels of basic education are improved, auxiliaries are trained at a gradually rising level to a point where they are able to work semi-autonomously.

As the educational level rises to the college or university, initiative taken by both government and private sectors has resulted in the development of institutions for professional training and specialization. This has increased the production of professionals. A complication of this rapid growth has sometimes been the failure to maintain quality standards for training as well as unregulated quantities of output. Unregulated production has often been due to lack of concrete long-range planning in the health sector.

Most health departments have facilities for the service training of their staff. This is justified because of the rapid medical and technological progress which requires a mechanism for updating the knowledge and skills of staff. Lack of funds and of other resources often leaves a gap in the activities which should be undertaken, such as raising performance standards, improving the curriculum and methods
of teaching and developing better techniques through research.

3.3 Other factors and problems

3.3.1 Government policy

3.3.1.1 Overall policy

Health care services are affected by government development policy. In general, governments aim at a balanced economic and social growth, although a school of economists criticize this as a deterrent to accelerated development, at least in the initial stages. In the few countries which have opted strictly for economic growth as top priority, progress in social development, including health, has understandably been held at almost a standstill. A commitment to development means provisions for general education as trained manpower is needed. Facilities for general education in the health sector facilitates the immediate training of auxiliaries although the potential for development among the professional categories may remain in abeyance.

Another important government policy with implications on manpower development concerns the practices and regulations of the civil service. In the public sector, such elements as qualification, security of tenure, adequacy of compensation, provision of incentives, promotional opportunities and pensions will strongly influence the quantity and quality of the manpower in the public service. They also serve as standards for the private sector. Where a private sector operates, manpower is attracted by economic goals which government policy may help to make possible.

3.3.1.2 Sector of health

The health policy, by indicating the direction and scope of government commitments in the health field, provides the guidelines upon which the health plan can be built. It also reflects the climate in which the private sector will operate.

/More concrete ...
More concrete aspects upon which to estimate the health manpower and the training facilities required can be derived from the health plan which considers the structure, services, programme and the allocation to be used. This provides a basis for determining the categories and numbers of the staff needed. The health plan is built and implemented in the context of the national development plan of which it is a part. Inter-sectoral relationships (e.g., training and utilization of personnel) and the achievements of national goals (e.g., opening new areas for cultivation, industrialization) influence the role, magnitude and direction of health development and therefore its manpower requirements.

In cases where a private sector has not been developed, there is a greater obligation for governments to bear the costs of organizing and operating all health services, the structure and coverage of which will be indicated in the national health plan.

When the private sector is active and there are educational facilities for training, more initiative is taken in the private sector to establish various types of services. In this situation, governments may take a relatively passive role, such as providing measures governing the facilities offered and by stipulating the quality of the education requirement and the services offered. In countries where medical facilities have reached a degree of sophistication, and where educational opportunities are available, the health professions may go in for specialization in the clinics, the standards of which are usually formulated and maintained by the profession or the specialists themselves.

3.3.2 Professionals and auxiliaries

One of the problems of health care administration is the inadequate delineation of the respective responsibilities of professionals and auxiliaries. Because of the differences in the health systems of countries, it would be realistic to seek individual country solutions.

A generally recognized principle is the fact that auxiliaries should be taught functions of a more or less routine character in a particular ...
particular field and should be provided with professional supervision. At an elementary level where the auxiliary's background and training are meager, close supervision is essential. With better training and more experience, the auxiliary may be given more autonomy in his particular field, although facilities for referrals should always be available.

In some countries, auxiliaries and even aides have been known to set up private practices of their own in remote rural areas. Situations of this kind have alienated the health professionals so that they do not encourage the formation of a strong cadre of auxiliaries in various fields and are reluctant to delegate to them routine duties. It should be recognized, however, that the basic issue here is the shortage of professionals and their inaccessibility to the great number of people living in remote areas. When facilities have improved, the problem now posed is likely to be resolved satisfactorily.

Another problem facing the auxiliary group is the great diversity of workers being utilized in specific fields. There are not only differences in educational background and training but also in the assignments of functions which overlap with each other. It is not infrequent to observe that duties assigned to personnel are incompatible with the earlier training they had received.

An approach to situations where both professionals and auxiliaries are engaged should be the clear definition of their respective functions whether in the public or private sector. This may involve legislation for some aspects and a technical analysis of the duties to be performed, including the level of skills required. For economic reasons, it is justifiable to delegate to auxiliaries work that professionals can safely dispense with, provided referrals to them are available.

3.3.3 Productivity and substitutability

One problem in the public sector is low performance productivity. One cause may be ascribed to traditional attitudes and habits which

/may not always ...
may not always be on par with the contemporary drive for economy and effectiveness. In some instances, the difficulty may lie in the lack of adaptation to local conditions of imported organizational structures and techniques. A better means of motivating manpower is also needed.

In any case, studies on such subjects as the suitability of existing staffing patterns in the light of actual duties, public response to available services, critical analysis of field techniques in use, etc., may be useful. Another consideration is whether the content of the training of the different manpower categories falls realistically within their assigned functions.

A common observation is the ineffective utilization of trained staff. It is uneconomical enough to assign a professional to tasks an auxiliary can perhaps handle with skill, but when a skilled worker is given tasks extraneous to his training (e.g., a nurse assigned clerical work), valuable resources are wasted. This contributes to low productivity in the service.

3.3.4 Brain drain

The migration of skilled manpower to another country offering better work opportunities is not a new phenomenon. In recent years, this migration has mounted to alarming proportions and the term "brain drain" has been coined. The adverse implications of this movement are at present internationally recognized.

A brain drain of varying magnitudes is probably experienced by most developing countries. In the health field, a number of those sent abroad by governments or their own families to study do not return after graduation. The brain drain is more pronounced in some countries in the Region where professional training at home had been available for some time in the past. It has been reported, for example, that among the 3325 physicians who achieved immigrant status in the United States of America in 1967, 1116 or one-third of the total, were Asians; among the latter, 550 or 40 per cent. had come from the Philippines.

/ The causes of ...
The causes of brain drain may be categorized thus:

(a) Practical, i.e., to improve their material situation. Living standards and per capita income at home usually remain at a minimum and there is little prospect for improvement because of slow development. In addition, choice jobs are few and often reserved for "old timers" in the service.

(b) Vocational, i.e., to improve their skills. Due to lack of teaching institutions at home, there is a desire to gain more knowledge by going overseas. Accelerated and unprogrammed manpower development at home may result in increased but poor quality graduates; the more dedicated of the latter seek improvement overseas.

(c) Human, i.e., to put an end to intellectual isolation. There are often insufficient opportunities for research and professional growth in the developing country. The desire to improve outside is often in the direction of the former "mother country". Another factor is a trait among the highly skilled of international mobility, particularly in the health professions because of their advantages in having individual personal contacts with foreign colleagues, better educational background and financial means to travel.

(d) Political. Many people desire to live in an environment free of political and social insecurity both for themselves and for their families.

On the side of the recipient countries, an important factor is their permissive attitude to immigration, partly as a means to supplement their local health manpower resources. Permissive measures granted include occupational preferences for highly trained immigrants and the issuance of waivers on foreign residence requirements.

A recent innovation which gives official sanction to the brain drain deals with bilateral arrangements between the recipient and home government. The terms of this agreement would provide for the exporting country to train at home its nationals for specific job...
categories with the technical and material support of the recipient country; the latter would then underwrite to import and offer job contracts to the trained personnel at attractive salaries.

A few countries support skilled manpower emigration because of the dollar revenue they receive. They also recognize that if this skilled manpower remains at home, they would only be immobilized and frustrated for lack of employment opportunities. In general, compulsory measures taken to cut off completely rather than regulate this outflow violate the principle of free individual movement enunciated in the United Nations Declaration of Human Rights.

Measures which can help limit outflow include the promotion of national development, educating the public about the use of skilled manpower and offering a higher remuneration. The developing countries may adopt such means as offering freedom from customs duty and other privileges to expatriate nationals, particularly in connexion with their personal and professional effects upon their return; setting up scientific pools of returning workers with provisions for remuneration until they find permanent employment, as in India; and offering expatriate nationals contracts for work at home. The imposition of an emigration tax on skilled workers leaving the home country has been suggested.

Regulating the brain drain needs the co-operation of the recipient countries so that measures are instituted which will limit the quantity of preferred manpower under their immigration laws. Some quarters have proposed that an "international fund" be established whereby recipient countries would make compensatory payments for the skilled personnel lost by the countries which sent them. The funds would be expended to improve working conditions and stimulate research.

Other measures which have been suggested are:

(a) fellowship programme regulations (contract to work for a fixed period, selecting only those with fixed

/employment and ...
employment and with firm roots in the country);
(b) collaboration between the exporting and recipient countries so that limited terms of work abroad are established and a guarantee given for repatriation after a fixed period;
(c) improving educational opportunities at home;
(d) promoting exchange programmes between teaching and research institutions in the exporting and recipient country;
(e) expanding facilities for training the personnel required to meet the needs of the developed country.

4. APPROACHES TO MANPOWER PLANNING METHODOLOGY

4.1 Analytical framework

Four elements are involved in the analysis of manpower. These are:

(a) Analysis and projection of the supply

This involves a study of the current supply and the schools and institutions responsible for their training. A projection of this manpower supply is made over a fixed time period.

Current supply and analysis include all types and categories of health workers. Consideration is given to the characteristics of individuals in the different categories, such as age, sex, educational background, immigration status, specialization, geographical distribution, income, productivity (e.g., number of patients seen by physician), etc.

Frequent sources of information for the current supply are the census, surveys, training and educational institutions, professional associations, drug companies, etc. Information on education and training institutions is available from the ministries of education and health, professional boards, etc.

Supply projection takes into account factors contributing to the increase and loss of health manpower, e.g., deaths, retirements, immigration ...
emigration, change of profession, etc., in the case of losses and immigration, increased productivity of institutions, etc., in the case of increments.

(b) Analysis and projection of demand

The concept of demand requires a little elaboration. "Biological demand" means the total burden of ill-health in a community as determined by the health professionals. "Popular demand" refers to what people think they require for health provision regardless of whether or not a technical basis exists. "Administratively and technically feasible demand" is that which is technically attainable and for which an appropriate administrative machinery is available. "Economic demand" represents one which the people can pay for. The term "effective demand" represents the net effect of all the forces and constraints which determine what persons or groups are willing to do in order to get what they want. When the supply is able to accommodate the demand, the terms used is "met demand". In an "unmet demand" the signs are high income of the manpower accompanied by excessive patient loads and prolonged working hours. Other evidences are personnel substitution, attraction of students to the health professions and low vacancy rates in budgetted positions.

Factors which increase the demand are population increase, demographic changes in age grouping, socio-economic growth and therefore rises in government and family incomes, urbanization, etc.

There are unpredictable factors that complicate the demand component, such as the changing pattern of disease, breakthroughs in medicine and technology, social changes in the community and structural and functional changes in government.

Demand projection makes some assumptions, such as conditions remaining approximately the same as in the current situation or making certain adjustments to meet changes anticipated from past trends, government policies and plans, improvements in education, disease prevalence, etc.

/(c) Trial ...
(c) **Trial balance of the demand and supply**

Results of the current manpower analysis and the demand and supply projections provide the means of identifying problems requiring remedial action.

(d) **Corrective measures for imbalances**

Discrepancies in the supply and demand may be susceptible to immediate or short-term adjustment (e.g., geographical distribution of manpower). Certain aspects, such as the introduction and development of new manpower categories or increase in the manpower supply, may require years to achieve.

Matching of the supply and demand should take account of the availability and economic use of the resources with which to reconcile the differences, e.g., expanding the enrollment or increasing the number of teaching institutions or making a realistic assessment of the productivity and utilization of manpower categories. A twenty-year plan is desirable because it offers a reasonable interval to accomplish set targets, particularly in the production of professional categories.

4.2 **Methodologies employed**

Methodologies have been evolved within the analytical framework outlined above. Examples of these are summarized below:

4.2.1 **Manpower/population ratio**

This method is probably the simplest. The basic assumption is that a balance exists currently between demand and supply. This situation may prevail in a developed country. It is employed to estimate short-term targets to maintain the existing ratio.

Its use has drawbacks in the developing countries where geographical distribution of manpower is uneven and the existing health services are frequently under-utilized because of communication difficulties, ignorance, etc.
4.2.2 Combined use of health manpower/population ratios and norms

In a brief study of the health manpower resources in a developing country in the Region, Chen employed the health manpower/population ratio he judged as applicable for the country's development requirements and resources. He adopted also norms deemed reasonable within the country's circumstances, e.g., patient-visits per physician per day, physician's visits per capita per annum, student/faculty ratio for teaching institutions, physician/bed ratio in a hospital, and ratios for physician/industrial plant of 500 or more employees.

Apart from the limitations already cited in the case of professional/population ratios, norms have validity when they are scientifically formulated and tested. Initially, norms may be set tentatively as suggested by the experts; later, however, a more objective basis should be provided with allowances for periodic revisions warranted by increased manpower productivity, changes in the organizational structure and technological innovations.

4.2.3 Methodology in a country with centralized economy

As government policy only decides the types of the health system in the public sector, formulation of a single model to meet future demand is generally sufficient. In the Union of Soviet Socialist Republics, the population and morbidity structures are first considered. Morbidity is assessed by analysis of the actual hospital and clinic demands as well as by sample surveys of morbidity in geographical areas. The health service structure and related services (e.g., environmental health) are considered in the light of their location and utilization. Scientifically-formulated norms are developed and updated by expert institutes to determine the staffing of hospitals and clinics, the ratios of health categories of personnel in relation to the different services operation, and staff working hours per day. Demand and supply are then balanced. When a shortage is anticipated, appropriate adjustment is made in the training and allocation of personnel. As the health plan has the force of law once it is approved by political authority, /execution ...
execution of the plan becomes a straightforward management detail.

4.2.4 Studies of methods in developing countries with mixed economy

During the decade of the sixties, the Johns Hopkins School of Hygiene and Public Health collaborated in health manpower studies and planning in three under-developed countries, viz., China (Taiwan) with Baker,1 Peru with Hall6 and Turkey with Taylor8.

The study in China (Taiwan) exemplifies a study of the private sector in which the effective demand was measured at the level of the consumer.

The assumption in this study was that each stratum of society would continue to demand essentially the same volume of services per capita in a future year as it did in the baseline year.

The method may be summarized thus:

(a) A stratified sample of 10,000 families was drawn from the entire island;
(b) Information on the demographic, social and economic aspects and on health services utilized was obtained from each family;
(c) From (b), an estimate of the annual per capita demand for each type of service was made for the different groups of the population classified according to income, age, education and residence;
(d) Models were then constructed ten and twenty years after the baseline year;
(e) Appropriate per capita demand factors were multiplied by the number of persons in each stratum to determine the volume of services to be demanded in the target years;
(f) The projected demand was converted into the manpower required to produce them, according to defined standards.

Observers have commented that this method requires accurate vital and health statistical information and entails a substantial financial outlay ...
outlay, neither of which may be available in many developing countries. The study is, however, considered most useful in countries with a large private sector.

In the Peru study, analysis of the effective demand was made at the level of government as consumer as it had adopted the policy that the Government could and should purchase health services for the benefit of the population. The baseline supply was determined by census. Projection of supply was estimated on the future output of the training institutions as determined initially by special surveys and taking account of attrition. Estimates of the latter were made using a life-table approximating the life expectancy of the professionals. This table did not, however, eliminate factors of emigration and early retirements. The cohort method provided the alternative method. This method was built upon the observation of groups of graduates over a ten-year period which was matched with the same groups who were active during the baseline year. Loss rates were then applied to each cohort professional category to estimate the remaining active workers one and two decades later. For the emigration factor, projections considered three alternative hypotheses, viz., the present rates would continue, the retention rates would improve and the retention rates would be maximal.

In the case of the Turkey study, data for the nurse supply were based on a sampling survey; the medical supply projections of ten and twenty years were made on three alternatives, viz., (1) the net increment over production allowing for attrition from the baseline year, (2) same as (1), but assuming the added production of five more medical schools as planned, and (3) taking account of the losses in educational resources from dropouts and repeaters.

To estimate manpower requirements in Peru, the concept of "rationalized demand" was adopted. This is a pragmatic synthesis of the demand components involving the following steps: (1) disaggregation of as many different components of the health manpower demand (e.g., in malaria eradication, analysis was based on biological need or demand /for eradication ...
for eradication), (2) independent projection of the target year of each of these components with the most applicable method in each case (e.g., analysis of the effective demand in the private sector; analysis of the staffing norms and targets for the production of services in the public sector), and (3) the re-aggregation of components in order to obtain the consolidated projection.

Analysis of the current demand considered the amount, kind and distribution of services as well as the resources consumed by the sector. The actual utilization was compared to the normative model adopted in the national health plan in order to detect imbalances. For future demand estimates three alternatives were projected: (1) according to the sectoral growth model formulated by the national planning office; (2) according to a moderate growth rate model laying emphasis on ambulatory rather than bed care services as in (1); and (3) the private sector demand was measured on the use of staff/bed ratio in the baseline year in regard to salaried personnel and on the estimate of manpower (e.g., doctors) based on the desired volume of services while maintaining a balance among those in the public and private sectors and the teaching institutions (in the case of the latter, taking account of the norms for teacher/students ratio).

In the Turkey study the three alternative assumptions employed in the health manpower demand projection consisted of: (1) minimum level corresponding to proportional increases to meet the existing manpower/population ratios during the baseline year; (2) intermediate level corresponding to the health ministry's goal of nationalizing and integrating the health services but allowing for the continuance of the private sector; and (3) maximum level which sought to achieve the health manpower standards recommended by the WHO Eastern Mediterranean Conference on Medical Education in 1962.

5. ISSUES ON HEALTH MANPOWER NEEDS

As in planning in general, certain prerequisites and concurrent action are needed for health manpower development. A few of the major issues may...
issues may be cited.

5.1 Inventory of the health manpower resources

It is important for developing countries to obtain information on the available manpower by categories and their attributes. Apart from censuses and special surveys, better record-keeping is required for the various institutions (national professional registries, the Civil Service, the professions, hospitals and clinics, teaching institutions, private business, etc.).

Consolidated manpower census information should be updated periodically and incomplete ones programmed for completion. It would be convenient to establish a working body closely associated with the planning agency to oversee and evaluate periodic inventories.

5.2 Government structure and health sector policy

Some governments are the sole providers of health services. In most developing countries the government is the principal employer of health manpower. A government's organizational structure, functions and policy necessarily affect demands for manpower use. The consideration of these factors is therefore essential in planning for manpower development.

Civil service rules (e.g., salary, tenure, qualifications, promotion opportunities) influence both manpower productivity and the stable operation of the health services. When satisfactory, they attract to government service the manpower potential and minimize the brain drain. The latter may be further minimized by the introduction of regulatory measures and by adopting means of attracting expatriate health manpower to return home.

The policy governing the use of health professionals and auxiliaries needs elaboration as regards their respective functions and educational qualifications. It should also promote job incentives and permit career opportunities, particularly for the auxiliaries.

/5.3 National ...
5.3 National health planning

The situation in many developing countries is not that they have not planned, but rather that the planning may not have gone through the rigours of the systematic process.

Manpower planning will be more realistic as health plans are methodically formulated. Planning should extend even in perspective beyond the usual five-year period because of the long duration of health professional training.

Sometimes manpower planning is undertaken ahead of the formal plan. If undertaken systematically, however, essential requirements for national health planning are covered at least in perspective form as regards structure, programmes, goals, standards and estimated resources. Planning for health manpower may therefore serve as a wedge in the more intricate process of national health planning.

A health manpower unit would be useful to the health planning organization in the Ministry of Health. This unit should collaborate closely with an advisory committee consisting of different disciplines to help in manpower problem identification, planning and evaluation. The unit should have liaison with the general manpower section of the national planning body and with other sectors, e.g., the planning unit of the Ministry of Education and with teaching institutions.

5.4 Education and training

Education of professionals is a function of educational institutions (public and private); that of auxiliaries is undertaken sometimes by private institutions but mostly by training centres of the health ministry.

Continuing consultations between the health and education ministries and with the teaching institutions will help in reconciling operational duties with the curricula. There is, additionally, a need for updating the curricula, not only in response to structural and functional changes in the health ...
in the health services but to keep up with medical and technological progress.

While responsibility for standards of quality performance rests with the health administration, it is implicit that a good quality of teaching contributes to better performance. Quality in teaching implies a good teaching force and availability of teaching tools and facilities. Regulations may be necessary to limit enrollment but the trend towards collaboration of twin institutions (national and foreign) in teaching and research in the developing countries is conducive to improved standards in personnel quality. In addition, the participation of staff from developed countries boosts staff morale and introduces broad perspectives not always available in the experience of developing countries.

Service training in the public sector may be run by separate units or managed by a specific unit in the health ministry. Initial trials in the Region involving assistance to public health institutes or schools of public health are being made to strengthen ministry training programmes. Ideally, refresher courses for individual staff should be scheduled periodically. When resources are lacking, priority in training should be given to new staff as well as those in the service who have not been exposed to new trends and experiences in their own fields.

5.5 Research

As manpower needs are influenced by service structure, functions and performance, it is clear that improvements in these areas can contribute positively to manpower development. Studies on these aspects may be undertaken through health practice research in the community environment usually covered by pilot/demonstration areas. Subjects for study can include staffing patterns (particularly the economic and effective use of auxiliaries as against their professional homologues), social anthropological enquiries into the health workers'...
workers' attitudes and incentives to work, formulating and testing standards of staff performance, etc. The results of these studies can find ready application in health planning and in the routine functioning of the health services.

Studies on the demand component are more complicated because of the interaction of the physical (e.g., availability of health facilities) and the social (e.g., community and manpower attitudes) aspects. There is also difficulty in quantifying these studies even though work along these lines is now being initiated, particularly in the developed countries.

5.6 Role of international organizations

The United Nations, through the Economic and Social Council, has reviewed the problem of the brain drain and the means for its solution. The functions of the International Labour Organization include a study of problems and the provision of advisory services in connexion with general manpower. Through programmes of international assistance, the United Nations and Specialized Agencies have awarded fellowships to nationals to enable them to acquire highly technical skills which expose them to the problems of the brain drain. On the other hand, advisory and consultant services given to countries have helped in organizing, among others, manpower studies and development and in establishing education and training institutions for the local training of personnel for national development.

WHO has participated in these activities. Through its fellowship selection policy, it is helping to minimize the risks of the brain drain mainly:

(a) through the selection of mature and career fellows who are already established in the national health services and are, therefore, imbued with a desire to return to their home environment;

(b) through the inclusion of provisions to ensure that fellows return to their country's service in the field of their specialization.
ANNEX 1

DISTRIBUTION BY POPULATION OF SELECTED HEALTH PROFESSIONALS IN COUNTRIES OF THE WHO WESTERN PACIFIC REGION (1966)

1. Physicians: Australia and New Zealand - 1:800; Japan - 1:900; Philippines - 1:1400; Singapore - 1:1800; China (Taiwan) - 1:2300; Ryukyus - 1:2400; Korea and Hong Kong - 1:2500; Macao - 1:2900; Brunei - 1:3500; West Malaysia - 1:5500; Cambodia - 1:23 000; and Viet-Nam - 1:37 400.

2. Dentists: Japan - 1:2800; Philippines - 1:3000; New Zealand - 1:3200; Australia - 1:3300; Singapore - 1:5600; Ryukyus - 1:9000; West Malaysia - 1:13 000; Korea - 1:16 000; China (Taiwan) - 1:16 200; Hong Kong - 1:20 000; Brunei - 1:20 800; Viet-Nam - 1:16 380; and Cambodia - 1:472 000.

3. Pharmacists: New Zealand - 1:1300; Japan and Australia - 1:1400; Philippines - 1:1700; Korea - 1:2700; Ryukyus - 1:3900; China (Taiwan) - 1:9400; Viet-Nam - 1:25 000; Hong Kong - 1:25 000; West Malaysia - 1:75 500; and Cambodia - 1:198 100.

4. Nurses: Australia - 1:200; Japan - 1:400; Singapore and New Zealand - 1:600; Brunei - 1:800; Hong Kong - 1:1000; Philippines - 1:1200; West Malaysia - 1:1500; Macao - 1:1900; Korea - 1:3000; Cambodia - 1:3700; Viet-Nam - 1:6000; and China (Taiwan) - 1:6200.

REFERENCE LIST


