HEALTH MANPOWER OUT OF BALANCE

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Introduction

The last four decades have brought unprecedented growth in the supply of health manpower, particularly of the professional categories, in virtually all countries. There has been a corresponding increase in the demand for health services in both the developing and the developed worlds. Economic prosperity after the Second World War brought considerable expansion of the workforce in many countries. It occurred more rapidly in the health labour force than in aggregate employment, so that in some countries the health sector has become one of the largest employers. Despite these positive health-related changes, important gaps have remained in population coverage and essential health services. Some imbalances within and between countries have been accentuated and new forms of imbalance have arisen.

Absolute equality or balance is hard to achieve in human affairs and may not even be a desirable feature of health manpower systems; some experts view manpower imbalances as a part of a dynamic system, providing stimulus for change, without which new ideas would not emerge. As a matter of fact, health manpower has never been in perfect balance anywhere. Qualitative and quantitative imbalance in varying forms and dimensions has always existed and inevitably will continue to exist. No country has a manpower production and distribution pattern that conforms to actual community health needs, whether such distribution is by geographical area, by occupation, by specialty, by level of care, or by type of health-care setting.

The overproduction of certain categories of health manpower is a relatively new and most disquieting form of imbalance. It is not yet well studied; its consequences are likely to be far-reaching and very harmful both for individuals and for society. The excessive migration of professional health workers from developing to developed countries, the so-called "brain drain", was a precursor of the present state of over-supply; in the richer countries, and in certain developing countries also, it acted as a safety valve that retarded an awareness of the problem and its consequences.

An international conference\(^2\) has studied this problem for the first time and has drawn the attention of decision makers, scientists and the public to the need to take urgent measures to deal with it. The conference has also urged countries to take the necessary steps to prevent the occurrence of imbalance where it had not yet appeared but is likely to do so. Qualitative and quantitative imbalances in the health workforce have appeared in many countries. Some imbalances within and between countries have been accentuated and new forms of imbalance have arisen.

This article, essentially based on working material and reports of the conference, highlights its most salient features and results.

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\(^1\) Health manpower out of balance: conflicts and prospects. XXth Conference of the Council for International Organizations of Medical Sciences (CIOMS), Acapulco, Mexico, 7-12 September 1986.

\(^2\) Chief, Health Division, Colombian Association of Medical Schools, Bogotá, Colombia.

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\(^3\) Health manpower out of balance: conflicts and prospects. XX\(^{e}\) conférence du Conseil des organisations internationales des sciences médicales (CIOMS), Acapulco, Mexico, 7-12 septembre 1986.

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From the outset of the preparatory work for the conference, it was realized that a dearth of information limited severely the appreciation of health manpower imbalances in most countries. The programme committee therefore arranged for an analytical review of the literature; a compilation and statistical analysis of published and unpublished data; and the preparation of 18 country studies as well as a number of papers on selected issues.

Although most participants were primarily concerned with medical and dental unemployment, they came to appreciate that this was only one dimension of the much wider problem of imbalance. They also realized that imbalances may exist for some time without being recognized or noticed; they do not occur suddenly, nor do they develop in a vacuum. Imbalance is often preceded by a confluence of political, social and economic predisposing factors. Once imbalance has set in it tends to increase rapidly. Concern about this state of affairs, very marked in some countries, is associated with poor understanding of the nature of manpower imbalance and of the means of predicting, preventing and surmounting it.

Nature and measurement of imbalance

Defining the magnitude of imbalance on an international scale is difficult in the absence of a standard operational definition, and because of the complex and multifaceted nature of the concept of balance as applied to health occupations. In the most general sense, health manpower balance (or lack of balance) refers to adequacy and suitability for their tasks as regards numbers and quality of health manpower. “Adequacy” and “suitability” are terms which raise a series of questions: adequate or suitable for what purposes, in what senses, from whose viewpoints, and at what point in time? Acknowledging these difficulties, the participants defined imbalance as a “discrepancy between the numbers, types, functions, distribution and quality of health workers, on the one hand, and, on the other, a country’s needs for their services and ability to employ, support and maintain them” (1).

The supply of health manpower may be inadequate in one or several ways relative to a specified health purpose or target, according to objective or subjective norms of care or performance. The norms or standards may be accepted nationally or may represent only the viewpoint of a profession, agency or interest group. Of course, any norm or standard makes certain assumptions about the structure and function of the health-services system to which it refers. Manpower balance is not an absolute idea: it is relative to a health target, since the training of health workers is a means of serving a population’s health needs and its demands for services.

The conference emphasized the pressing need to develop sufficient relevant information about health manpower to enable countries to determine past and future trends of manpower supply, production, distribution and employment of different categories of health workers. A monitoring mechanism should be established by countries in order to identify risk factors and early signs of imbalance, and undertake relevant remedial measures, as soon as possible.

A set of feasible indicators of imbalance based on accessible data needs to be developed. Health manpower imbalance has three dimensions: numerical, the over-supply or undersupply of one or several categories of health workers relative to what a particular country or community needs and can afford to train and employ; qualitative, a mismatch between training and job requirements as reflected by indicators of overqualification; numerical, the over-supply or undersupply of one or several categories of health workers relative to what a particular country or community needs and can afford to train and employ; qualitative, a mismatch between training and job requirements as reflected by indicators of overqualification;
underqualification or misqualification; and distribution, which may be geographical, occupational, institutional and by speciality. The participants suggested some indicators for each type of imbalance.

Factors involved
The conference indicated that the factors that contribute to the production (and a production) of highly trained health manpower continue to operate despite health-policy makers' commitment to adapt the production of health workers to policies for the attainment of health for all. A number of interacting societal and health-system factors were identified as reinforcing one another to create patterns of sustained and sometimes lopsided growth.

Among the societal factors, the sudden increase in birth rates and sustained economic expansion stimulated the flow of resources into the health sector and increased the demand for services, which, in turn, called for a greater supply of health workers. While greater public and private purchasing power increased the demand for and expenditure on health services, high incomes raised educational aspirations that resulted in an increased supply of health workers. Accelerated urbanization and industrialization have contributed to further increase both the supply of manpower and the demand for their services. Rapid scientific and technological advances fostered the change of medicine from an art to a science, reinforcing the status, power and authority of the medical profession. Technological changes in medicine were often adopted swiftly and enthusiastically even before they had been properly assessed. Moreover in many countries the role of government grew. Growth in funding of health care, often with associated increased provision for social security, reinforced the expansion of the health sector so that in some countries health care became the most subsidized social service. The economic difficulties experienced worldwide radically changed this picture. Average living standards fell in many developing countries and between 1981 and 1983 currency devaluations and high interest rates imposed formidable debt charges on government budgets, depleting export earnings. While some countries struggled to maintain the level of their health budgets or even increase them, austerity policies drove most developing countries to reduce spending on health care, and many were forced to reduce import of drugs and medical equipment. At the same time, industrialized countries with market economies had to maintain millions of unemployed, many of them young, educated people (2).

The first health-system factor recognized by the conference was medicalization—the ever-expanding domain of medicine and a steadily more encompassing definition of health which embraces not just the absence of disease but, as the Constitution of WHO puts it, "a state of complete physical, mental and social wellbeing". The "health-illness-medicine complex" has expanded because people regard life problems that are not medical as illnesses, with the result that health services are considered the primary solution. Former functions of parents, clergy, teachers, judges and social workers are now seen as medical functions. People believe that few conditions including unwanted pregnancy, marital problems, learning difficulties, drug addiction and a broad range of other social problems, cannot be cured or alleviated by physicians. Medicalization has not only broadened the scope but also raised the status of medicine; it reinforces the formation and the benefits of the profession, just as in the case of surqualification, subqualification or mauvaise qualification; and an aspect concerning the distribution, by zones géographiques, by professions, by établissements and by spécialités. The participants proposed some indicators for each type of déséquilibre.

Comment les déséquilibres se créent-ils?
La conférence a montré que les facteurs qui favorisent la production (et la surproduction) de la main-d'œuvre de santé, tout en contribuant à maintenir des agents de santé aux politiques visant à instaurer la santé pour tous. En fait, il y a interaction entre des facteurs de société, des facteurs liés aux systèmes de santé, d'une part et d'autre, qui se renforcent mutuellement et entretiennent des schémas de croissance soutenue et parfois disproportionnées.

Parmi les facteurs de société, la hausse brute des taux de natalité et une expansion économique soutenue ont provoqué un afflux de ressources vers le secteur de la santé et un accroissement de la demande de services qui, à son tour, a entraîné une augmentation de l'offre de personnels de santé. L'accroissement du pouvoir d'achat public et privé s'est traduit par une augmentation de la demande de services de santé et des dépenses, tandis que des revenus plus confortables incitaient les gens à faire davantage d'études, d'où une offre accrue de personnels de santé. L'urbanisation et l'industrialisation rapides ont donc favorisé cette augmentation de l'offre de personnels et de la demande de services.

Grâce aux progrès scientifiques et techniques, la médecine, d'un art, est devenue une science, ce qui a contribué à renforcer le statut, le pouvoir et l'autorité du corps médical. Les innovations technologiques ont souvent été adoptées précipitamment et avec enthousiasme, avant même d'avoir pu être convenablement évaluées. Par ailleurs, dans de nombreux pays, les pouvoirs publics ont pris davantage d'initiative. L'augmentation de crédits destinés aux soins de santé et le développement des systèmes de sécurité sociale ont consolidé l'expansion du secteur de la santé, faisant des soins de santé le service social le plus subventionné dans certains pays.

La crise économique mondiale est venue bouleverser le tableau. Dans de nombreux pays en développement, le niveau de vie moyen a chuté; entre 1981 et 1983, les dévaluations monétaires et la hausse des taux d'intérêt ont obligé les pays à s'endetter, grevant ainsi considérablement les budgets nationaux et épuisant leurs recettes d'exportation. Si certains pays ont réussi à maintenir le niveau de leur budget de la santé ou même à l'augmenter, les politiques d'austérité ont conduit la plupart des pays en développement à réduire leurs dépenses de santé et beaucoup ont été contraints de réduire leurs importations de médicaments et de matériel médical. Dans le même temps, les pays industrialisés à économie de marché devaient entretenir des millions de chômeurs, pour beaucoup jeunes et ayant fait des études (2).

Le premier facteur lié au système de santé recensé par la conférence a été la médicalisation — l'élargissement constant du champ de la médecine et de la définition de la santé, qui n'est plus seulement l'absence de maladie mais, comme le stipule la Constitution de l'OMS, «un état de complet bien-être physique, mental et social». La trilogie «santé-maladie-médecine» s'est élargie du fait que les gens ont tendance à considérer des problèmes non médicaux comme des maladies, auxquelles on peut apporter des solutions médicales. Les fonctions qui remplissaient autrefois les parents, le clergé, les enseignants, les juges et les travailleurs sociaux sont maintenant considérées comme des fonctions médicales. Les gens pensent que la plupart des affections (parmi lesquelles les on classe aussi bien les grossesses indésirées, les problèmes conjugaux, les difficultés d'apprentissage, la toxicomanie et toute une série d'autres problèmes sociaux) peuvent
image of medical practitioners as being omniscient and omnipotent.

The second health-system factor is medical dominance, which comprises at least three components: (i) trust, faith and confidence by the public in the medical profession; (ii) a position of authority based on exclusive command over a body of specialized knowledge; and (iii) dominance in the division of labour, i.e. control over the other health professions. To these may be added the privilege of self-regulation, whereby the profession regulates the behaviour of its members and monopolizes decision-making and the use of resources. Medicalization and medical dominance, combined with remarkable advances in science and health technology, have increased the scope and technological virtuity of medical care so much that hospitals and medical schools are often regarded as symbols of modern civilization.

In many countries physicians are the key practitioners, key allocators of resources and key decision makers in the health sector, and their values and interests govern what, how, where and to whom the system delivers.

Professionalization and fragmentation have reinforced the hierarchical character of the health workforce, with the greatest numbers at the lower levels and power and influence concentrated at the top.

Concern has been expressed that the increased representation of women may have contributed to oversupply. Another view (3) is that a growing proportion of women will contain the oversupply, because of their generally shorter working hours and smaller workloads than those of men. Health manpower substitution may have contributed to oversupply. A great increase in numbers of all health workers while there is an actual or projected oversupply of highly-trained health workers would aggravate manpower imbalance. Moreover unless the structure of a country’s health workforce and its pattern of work are taken into account, substitution may be untimely.

Supply/demand imbalance

Health professionals generally, and physicians and dentists in particular, had for some time thought they were immune to economic crisis and resulting unemployment. However, with rising poverty and unemployment and falling health budgets, oversupply in these professions became manifest. As Mahler pointed out (4), so long as health labour markets were growing and plentiful, countries overlooked issues of equity in health care, rationality in resource allocation, cost-effectiveness and suitability of training and deployment; doctors could do what medical technology enabled them to do and training institutions reinforced this concept of professional behaviour. Health leaders were hardly aware of these issues and gradually but inexorably imbalances arose. It is only now, with wide-scale economic retrenchment, that we have become acutely aware of them.

During the 1950s and 1960s, under the pressure of shortages of physicians, the number of new medical schools rose sharply and continued rising until the 1970s. The increase was three times faster in the developing than in the developed countries—an annual increase of 4.1% compared with 1.4%. For physicians, the annual rate of growth was 7.1% in the developing countries, almost twice the corresponding rate in the developed countries (3.9%). The annual rate of increase of new medical graduates in the developing countries was about 60% higher

être guéries ou soulagées par les médecins. La médicalisation n'a non seulement élargi le champ de la médecine, elle a aussi relevé le statut du médecin et renforcé l'image du médecin omniscient et omnipotent.

Le second facteur lié au système de santé est le pouvoir médical, qui comprend au moins trois éléments: i) la confiance totale du public dans le corps médical; ii) l'autorité que donne la détention exclusive de connaissances spécialisées; et iii) le pouvoir dans la division de travail, c'est-à-dire la maîtrise du corps médical sur les autres professions sanitaires. On peut ajouter à cela le privilège de l'autoréglementation, c'est-à-dire que la profession réglemente elle-même le comportement de ses membres et monopolise la prise de décisions et l'utilisation des ressources. La médicalisation et le pouvoir rendirent aux progrès en science et de la technologie de la santé, ont élargi l'étendue et la virtuosité technique des soins médicaux au point que les hôpitaux et les écoles de médecine font figure de symbole de la civilisation moderne.

Dans de nombreux pays, les médecins sont les principaux praticiens, les principaux dispensateurs de ressources et les principaux décideurs dans le secteur de la santé et c'est en fonction de leur échelle de valeurs et de leurs intérêts que l'on détermine ce que le système doit fournir et comment, où et à qui.

La spécialisation et la fragmentation des tâches ont renforcé la hiérarchisation du personnel de santé, les effectifs étaient plus nombreux à la base et le pouvoir et l'influence concentrés au sommet.

Certains pensent qu'une représentation accrue des femmes dans ces professions a peut-être contribué à la surproduction de personnels de santé. D'autres, en revanche, estiment que le fait que les femmes soient de plus en plus nombreuses dans les professions sanitaires risque de contenir la surproduction car elles travaillent généralement moins d'heures que les hommes et ont une charge de travail inférieure (3). Il se peut que la substitution des personnels de santé ait contribué à la surproduction. Une augmentation sensible des effectifs de personnels de santé connexes alors que le personnel hautement qualifié est en trop grand nombre, où le sera dans un avenir proche, aggraverait le déséquilibre. De plus, si l'on ne tient pas compte de la structure des personnels de santé d'un pays et de leur distribution, la substitution risque d'être inopportune.
than in the developed countries (6.8% and 4.3%, respectively).

After the early 1970s in the developing countries, the annual rate of growth of medical schools, physicians and new graduates decreased. The developed countries showed a similar trend, with the exception of numbers of physicians, which grew slightly more rapidly after 1975 (annual growth of 4.2% against 3.7% earlier). This increased growth in production and the very low population growth in developed countries are among the main contributors to the rapid increase of medical density noted in these countries, and in some developing countries (Tables 1, 2 & 3).

**Surplus of physicians, dentists and nurses**

The conference recognized that the statistics on unemployment of health manpower were scant and poorly documented and that only a patchy, composite picture could emerge from the unsystematically collected data available.

**Medecins, dentistes et infirmiers** en surnombre

La conférence a reconnu que les statistiques relatives au chômage des personnels de santé étaient peu nombreuses et peu fiables et que cette absence de collecte systématique de données n’autorisait à dresser qu’un tableau ponctuel et disparate de la situation.

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**TABLE 1. TRENDS IN NUMBERS AND PERCENTAGE RATE OF ANNUAL GROWTH OF MEDICAL SCHOOLS, DEVELOPED AND DEVELOPING COUNTRIES, AND WORLD TOTAL, 1955-1983**

<table>
<thead>
<tr>
<th>Groups of countries</th>
<th>Year</th>
<th>Number a</th>
<th>Annual rate of growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed countries — Pays développés</td>
<td>1955</td>
<td>405</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>1975</td>
<td>580</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>1983</td>
<td>605</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>1955-1983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing countries — Pays en développement</td>
<td>1955</td>
<td>241</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>1975</td>
<td>591</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>1983</td>
<td>748</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td>1955-1983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>World total — Total mondial</td>
<td>1955</td>
<td>646</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>1975</td>
<td>1 151</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>1983</td>
<td>1 353</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>1955-1983</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


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**TABLE 2. TRENDS IN NUMBERS AND PERCENTAGE RATE OF ANNUAL GROWTH OF PHYSICIAN SUPPLY, DEVELOPED AND DEVELOPING COUNTRIES, AND WORLD TOTAL, 1955-1983**

<table>
<thead>
<tr>
<th>Groups of countries</th>
<th>Year</th>
<th>Number a</th>
<th>Annual rate of growth %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed countries — Pays développés</td>
<td>1955</td>
<td>1 003 000</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>1975</td>
<td>2 085 000</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>1983</td>
<td>2 935 000</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>1955-1983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing countries — Pays en développement</td>
<td>1955</td>
<td>233 000</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>1975</td>
<td>977 000</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td>1983</td>
<td>1 586 000</td>
<td>7.1</td>
</tr>
<tr>
<td></td>
<td>1955-1983</td>
<td></td>
<td></td>
</tr>
<tr>
<td>World total — Total mondial</td>
<td>1955</td>
<td>1 236 000</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>1975</td>
<td>3 062 000</td>
<td>4.9</td>
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<tr>
<td></td>
<td>1983</td>
<td>4 434 000</td>
<td>4.7</td>
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<td></td>
<td>1955-1983</td>
<td></td>
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</tbody>
</table>

Physicians. The United States of America forecast an excess of 70 000 by 1990 and nearly 150 000 by 2000 (5). In Latin America and the Caribbean the medical workforce will virtually double in about 10 years, while the employment capacity of the health sector as it is organized at present is expected to remain stagnant or even decrease (6). Mexico increased its medical school’s from 27 in 1970 to 46 in 1975 and 56 in 1986. The output of graduates in 1981, at more than 13 000, exceeded by a factor of 3.5 the number of new posts established in the health services in the same year. The corresponding figures for 1984 were almost 10 000 and 4.4. The 1984 output was entering a “market” with four times as many unemployed medical graduates. This accumulated total of 39 193 unemployed represented 17.5 times the number of new posts established in the health system in Mexico for 1984. Yet nowhere have physicians been produced more rapidly or in greater numbers than in India. From fewer than 20 medical colleges in 1947, and no more than 2 000 graduates a year, there are today 106 medical colleges with an annual output of over 13 000 graduates. The doctor/population ratio improved from 1:6 000 in 1951 to 1:3 000 in 1986, and is projected to reach 1:2 300 by 2000. From barely perceptible unemployment in 1970, the number of unemployed doctors has soared to 40 000 today. Declared vacancies exist for no more than 20-25% of the graduates produced annually (7). India’s Fourth Plan (1970-1974) referred to a continuing acute shortage, while the Fifth Plan (1975-1979) referred not to shortage but rather to poor distribution. However, the Sixth Plan (1980-1984) referred to “the growing unemployment of graduate doctors and to the Government’s policy not to increase the number of medical schools or their capacity”.

Italy is said to be severely affected and the figure of 45 000 unemployed physicians is often mentioned; the corresponding figure for Spain is 23 000. However both these figures are poorly substantiated and must, therefore, be interpreted with caution.

Japan foresees a surplus of physicians by the year 2000 and afterwards a rising degree of oversupply, reaching between 10% and 40% of its stock by 2025 and continuing to increase afterwards. Reports from Bangladesh refer to a rising figure of 5 000 unemployed and underemployed medical graduates. Morocco, with a population of 24 million and a mere 3 500 physicians, has 500 unemployed. Associations of unemployed physicians have been formed in a number of countries, such as Argentina, Bolivia, Chile, Mexico and the Netherlands.


L’Italie est, paraît-il, gravement touchée et l’on cite souvent le chiffre de 45 000 médecins sans emploi; en Espagne, ils seraient 23 000. Toutefois ces chiffres ne reposent pas sur des statistiques très fiables et doivent donc être interprétés avec prudence.

Le Japon prévoit un excédent de médecins en l’an 2000, puis une surproduction croissante, qui pourra aller de 10% à 40% d’ici 2025 et continuer encore à augmenter après cette date. Au Bangladesh, les rapports font état de 5 000 diplômés en médecine sous-employés ou sans emploi et ce chiffre ne cesse d’augmenter. Au Maroc, qui compte une population de 24 millions d’habitants et à peine 3 500 médecins, 500 sont sans emploi. Des associations de médecins sans emploi ont été constituées dans plusieurs pays, notamment en Argentine, au Bolivie, au Chili, au Mexique et aux Pays-Bas.
The magnitude of the problem is illustrated further by data from the country studies prepared for the conference. Pakistan reports 6,000 and Egypt 4,000 unemployed physicians. The Republic of Korea projects an estimated surplus of 26,500 physicians in the year 2000, based on minimal demand for services, and 4,200 based on a maximum demand estimate.

Most of the 16 countries studied for the conference have adopted a containment policy with regard to physician training, as shown in Table 4. The unemployment situation among physicians would be worse were it not for increased numbers of females among new graduates; many female graduates do not practise or only do part-time work and therefore contribute to reducing the surplus of manpower.

Dentists. There has been a rapid increase in the supply of dentists during the last few years in a number of countries. The dentist to population ratios, however, show great variations among countries with different levels of development. At one end of the spectrum are Argentina, Brazil, Canada, Cuba and the United States with more than 40 professionals per 100,000 population. At the other extreme are such countries as India and Pakistan with a ratio of 1 per 100,000. Canada foresees an increasing surplus of dentists until the year 2000. Egypt reports unemployment among dentists, although the availability ratio is only 20 per 100,000 population, but owing to the population's low income and the economic crisis, many dentists cannot make a living from private practice and, hence, are unemployed (1).

The conference estimated that at present the full-time equivalents of oral health manpower directly treating the public in the highly industrialized countries come to about 650,000. It is estimated that over the next 40 years, this number will have to be reduced by about 77%, to 150,000, provided that their duties are not extended into other technical areas and that they are working at full capacity.

The main reason for oversupply and unemployment of dentists in the industrialized countries is the radical change in the morbidity pattern of dental disease. Since the 1940s the prevalence of dental caries and periodontal diseases has diminished remarkably. Recent trends suggest that the reduced amount of oral health care which will be needed will be polarized between self-care and minimal simple interventions on the one hand, and much more L’ampleur du problème est illustrée par les données provenant d’études de pays préparées pour la conférence. Le Pakistan fait état de 6 000 et l’Egypte de 4 000 médecins sans emploi. La République de Corée prévoit en l’an 2000 un excédent de 26 500 médecins au maximum et de 4 200 au minimum selon la demande de services.

La plupart des 16 pays étudiés ont adopté une politique de limitation de la formation des médecins, comme en témoigne le tableau 4.

La situation de l’emploi chez les médecins serait encore pire si le nombre de femmes n’avait pas augmenté parmi les nouveaux diplômés; en effet, beaucoup de femmes n’exercent pas ou n’exercent qu’à temps partiel et contribuent donc à absorber l’excédent de main-d’œuvre.

Dentistes. Le nombre de dentistes a rapidement augmenté ces dernières années dans plusieurs pays. Le nombre de dentistes par habitant varie cependant sensiblement selon les pays et leur niveau de développement. Ainsi, en Argentine, au Brésil, au Canada, à Cuba et aux États-Unis, on compte plus de 40 dentistes pour 100 000 habitants alors que des pays comme l’Inde et le Pakistan n’en comptent qu’un pour 100 000 habitants. Le Canada prévoit un excédent croissant de dentistes jusqu’en l’an 2000. L’Egypte fait déjà état de chômage chez les dentistes; bien que le nombre de dentistes par habitant ne soit que de 20 pour 100 000; mais en raison du faible niveau de revenus de la population et de la crise économique, beaucoup de dentistes ne peuvent pas vivre de leur métier et sont donc au chômage (1).

La conférence a estimé qu’à l’heure actuelle, le nombre de personnels de santé bucco-dentaire dispensant directement des soins au public (en cumulant les postes à temps partiel) dans les pays industrialisés se situait aux environs de 650 000. On estime que dans les 40 années à venir, ce chiffre devra être réduit d’environ 77% et ramené à 150 000, si les attributions de ces personnels ne sont pas élargies à d’autres domaines techniques et s’ils continuent de travailler à plein rendement.

La principale raison de la surproduction et du chômage des dentistes dans les pays industrialisés tient au changement radical du tableau de la morbilité dentaire. Depuis les années 40, la prévalence de la carie dentaire et des parodontopathies a beaucoup diminué dans les pays industrialisés, ce qui fait que le total des services de soins de santé bucco-dentaire nécessaires par unité de population a considérablement diminué. Les tendances récentes laissent supposer que le volume restreint de soins de santé bucco-dentaire sera assuré en partie au moyen d’interventions minimales ou

TABLE 4. TRENDS AND TYPE OF POLICY FOR PHYSICIAN TRAINING IN SELECTED COUNTRIES

<table>
<thead>
<tr>
<th>Country — Pays</th>
<th>Reference year</th>
<th>Number of diplômés</th>
<th>Trend concerning formation</th>
<th>Consignment policy limitee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina — Argentine</td>
<td>1983</td>
<td>4 587</td>
<td>Undefined — Non précisé</td>
<td>Undefined — Non précisé</td>
</tr>
<tr>
<td>Brazil — Brésil</td>
<td>1983</td>
<td>7 239</td>
<td>Stability — Stable</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>Canada</td>
<td>1984</td>
<td>1 238</td>
<td>Stability — Stable</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>Colombia — Colombie</td>
<td>1984</td>
<td>1 742</td>
<td>Increase — Augmentation</td>
<td>No — Non</td>
</tr>
<tr>
<td>Cuba</td>
<td>1985</td>
<td>5 800</td>
<td>Reduction — Reduction</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>Egypt — Egypt</td>
<td>1981</td>
<td>10 000</td>
<td>Increase — Augmentation</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>India</td>
<td>1983</td>
<td>14 099</td>
<td>Reduction — Reduction</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>Mexico — Mexique</td>
<td>1985</td>
<td>4 000</td>
<td>Increase — Augmentation</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1984</td>
<td>2 697</td>
<td>Reduction — Reduction</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>Philippines</td>
<td>1983</td>
<td>1 940</td>
<td>Increase — Augmentation</td>
<td>Yes — Oui</td>
</tr>
<tr>
<td>Republic of Korea — République de Corée</td>
<td>1985</td>
<td>18 486</td>
<td>Reduction — Reduction</td>
<td>Yes — Oui</td>
</tr>
</tbody>
</table>

5 In the reference year — L’année de référence.
Source: Country studies — Études de pays.
sophisticated technology on the other hand. This suggests the need for a shift towards a much higher ratio of dental auxiliary to professional oral manpower than the present 1:7, which will entail even more drastic reduction of the need for this professional category than the 77% mentioned earlier.

At present the developing countries have only 270 000 oral health personnel, most of them dentists, for a population three times greater than that of the industrialized countries. However, provided that prevention is used to best effect and there is a well-balanced distribution, future needs for dentists are unlikely to be significantly greater than the present number. Already, there are indications of an oversupply of dentists in a number of countries.

**Nurses.** The availability of nurses ranges from as low as 5.8 and 22.6 per 100 000 population for Pakistan and India, respectively, to as high as 206, 392 and 595 for Canada, Cuba and the United States, respectively. Intermediate levels are to be found in Argentina (133), Colombia (113), Mexico (113), Brazil (93) and the Republic of Korea (60).

Nursing differs from medicine in two important ways — it has little social or political influence, and nurses mainly work for salaries in institutions. Consequently, as regards numbers, functions and distribution, nurses are very dependent upon a country’s health-care organization.

Almost all countries have seen a growth in their nursing force in recent decades. Greater or lesser growth has depended on national economies and the structure and organization of health-care systems. It is not so much the demand for nursing services as the capacity of the health system to absorb nursing personnel (nurses, midwives, nurse-midwives, nursing aides) that determines the rate of employment. The increase in the supply of nurses has been spectacular in some of the oil-exporting countries — 110% between 1965 and 1980 — owing mostly to immigration from India, Pakistan, the Philippines and the Republic of Korea. In general, most countries appear to have shortages of nursing personnel; some, e.g., Colombia and Mexico, appear to be training too many in relation to the estimated future effective demand for their services.

**Conceptual framework**

The process whereby manpower imbalances develop has been compared to the epidemiological concept of the national history of disease. It progresses from a state of health (balance) through prepathogenic (presence of risk factors) and early pathogenic (early imbalance) stages to a late pathogenic (severe imbalance) stage. This analogy permits a conceptual framework to be established (Fig. 1), by helping each country to interpret it; (ii) by providing a general framework for describing imbalance and showing how it may progress through its various stages; and (iii) by using the framework to determine means of dealing with imbalances.

As the essence of the framework is prevention it can help countries to avoid imbalance, or to stop its progress. The concept may be applied: (i) by helping each country to recognize its own vulnerability to imbalance and showing how to interpret it; (ii) by providing a general framework for describing imbalance and showing how it may progress through its various stages; and (iii) by using the framework to determine means of dealing with imbalances.

While the majority of the participants considered the above analogy useful to explain the phenomenon of imbalance to a medical audience, a few felt that it should not be taken too far, considering that a biological model of what is, in effect, a social phenomenon may fail to show all factors related to the dynamics of labour markets and of health and education systems.

Based on the above concept, the conference classified diagnostic indicators, levels of prevention and proposed intervention (Table 5).
For each stage of imbalance the framework includes three dimensions: indicators, preventive actions and interventions. In the prepathogenic stage, predisposing influences and risk factors are at work although the problem of imbalance has not yet become manifest. The insistence of a given society on ready access to an ample supply of physicians, combined with budget constraints and the lack of coordinated health manpower planning, may put a country at risk of serious overproduction of physicians. At this stage, primary preventive steps could be undertaken. What is needed here is a more specific definition of possible risk factors and a better understanding of the nature and scope of preventive actions that could maintain manpower balance.

Moving to the early pathogenic stage, identification of symptoms and their early detection become of primary importance in order to prevent progression to more severe forms. What indicators can be used to identify and characterize imbalance and what interventions can contain it? What indicators or measures will reveal the more advanced forms of manpower imbalance beyond the stage of early detection? What types of complications develop in the late pathogenic stage and what type of interventions might limit the damage, minimize the adjustment problems and contribute to rehabilitation?
The conceptual framework suggested a logical progression of events starting with the risk of oversupply long before oversupply becomes visible, and with options for intervention, some tried and some yet to be developed, for averting or containing health manpower imbalance. Of critical importance are the linkages between agreed-upon health targets or programmes and the production/utilization of the categories of health manpower that are quantitatively, qualitatively and price-wise most appropriate for achieving the goal of health for all through primary health care. It is for this reason that the health manpower imbalance model—the stage, indicators, levels of prevention and interventions—must be considered in relation to health systems' targets, programmes and budget on the one hand, and sociopolitical and economic contexts on the other.

Conclusions and recommendations of the conference

Manpower is the cornerstone of any health system and, unless manpower-development patterns are appropriate to people's health needs and social circumstances, countries will never be able to achieve a level of health that will allow their people to lead socially and economically productive lives.

Health manpower imbalance can be defined in different ways, and the definition will have different implications for different countries, according to socioeconomic and political circumstances and social circumstances, countries will never be able to achieve a level of health that will allow their people to lead socially and economically productive lives.

Le cadre conceptuel suggère une progression logique des événements, qui commence par le risque de surproduction bien avant que la surproduction ne devienne visible, et propose des modes d'intervention, dont certains ont fait leurs preuves et d'autres restent à mettre au point, afin d'éviter ou de maîtriser ces déséquilibres des personnels de santé. Il est essentiel notamment qu'il y ait un lien entre les objectifs et les programmes sanitaires approuvés et l'utilisation des catégories de personnels de santé les plus appropriées quantitativement, qualitativement et financièrement. Le modèle de déséquilibre des personnels de santé doit être considéré comme une référence à la définition des objectifs du système de santé, des programmes et du budget de la santé, d'une part, et du contexte socio-politique et économique de l'autre.

Conclusions et recommandations de la conférence

Les personnels sont la pierre angulaire de tout système de santé et si les schémas de développement des personnels ne sont pas adaptés aux besoins sanitaires et sociaux de la population, les pays ne seront pas en mesure d'atteindre un niveau de santé qui permette à leurs habitants de mener une vie socialement et économiquement productive.

Le déséquilibre des personnels de santé peut être défini de plusieurs façons et cette définition aura des répercussions différentes selon les pays et selon la situation socio-
Health manpower imbalance was recognized to be a diverse and complex phenomenon, with three dimensions: numerical, over- or undersupply of one or several categories of health workers in relation to what a country or community needs and can afford; qualitative, a mismatch between training and job requirements; and distributional, which may be geographical, occupational, institutional and by specialty. The conference singled out the qualitative type of imbalance as the most persistent type, and particularly heavy in consequences.

| TABLEAU 5. LE DÉSÉQUILIBRE DES PERSONNELS DE SANTÉ: INDICATEURS, MESURES PRÉVENTIVES ET INTERVENTIONS |
|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| INDICATEURS DE STADE | PRÉPATHOGÈNE FACTEURS DE RISQUE | PATHOGÈNE PRÉCOCE SYMPTÔMES | PATHOGÈNE TARDIF COMPLICATIONS |
| 1. Préférences sociales | 1. Possibilités limitées de formation de diplômés | 1. Chômage des professionnels de la santé, principalement des médecins |
| 5. Absence de planification coordonnée | 5. Refus d’affronter le problème et résistance au changement | 5. Grèves |
| 6. Restrictions budgétaires | | 6. Emigration et changement de profession |

NIVEAU DE PRÉVENTION

MESURES GÉNÉRALES:

1. Renforcer les systèmes de personnels de santé
2. Lier la production de personnels de santé à la prestation de services de santé

PROTECTION SPÉCIFIQUE:

1. Surveillance des différents types de déséquilibre
2. Recherche systématique des facteurs de risque et sensibilisation

INTERVENTIONS:

1. Intégrer les services de santé et le développement des personnels
2. Améliorer les méthodes de travail et mettre au point des normes pour établir un équilibre
3. Développer la recherche sur les personnels de santé liée au processus de décision
4. Elaborer des plans d’action pertinents et réalisables en vue de l’instauration de la santé pour tous
5. Mettre au point des modèles de dotation en personnel techniquement valables, socialement acceptables et financièrement réalisables
6. Mettre au point des programmes de recyclage et d’éducation continue

1. Limiter la production en retardant la création de nouvelles écoles de médecine et en restreignant le nombre d’admissions
2. Examiner les flux migratoires et les modifier si nécessaire
3. Redéployer le personnel de santé conformément à la stratégie de la santé pour tous
4. Encourager le partage des emplois
5. Restriction des incapacités
6. Encourager la retraite anticipée

1. Réduction des incapacités

1. Reduire les personnels de santé en recommandant des spécialisations et de l’obtention des diplômes
2. Encourager la retraite anticipée
3. Limiter les heures de travail et la charge de travail des praticiens
4. Encourager le partage des emplois
In discussing overproduction the participants agreed that it is a highly complex problem closely related to political, sociodemographic and economic factors. Employment patterns, changes in organizational structure, expectations of the labour force, as well as ways in which countries plan for, train and manage their health workers, affect levels of production and of absorption capacity. The overproduction of physicians, more than that of other categories of health professionals, has been viewed in a historical perspective. The associated factors have been identified and discussed: the rapid rise in population, economic prosperity, and scientific and technological advances following the Second World War as well as the expansion of the role of governments in health-services delivery, including expanded provision of social security and service coverage in countries. All of these events combined to stimulate both the demand for training and countries’ capacity to provide it. The global economic recession and the resulting increase in unemployment were not foreseen in the 1950s and 1960s, nor was the decline in fertility rates in some countries. These and other factors have precipitated mismatches between the supply of certain categories of health professionals and effective demand for their services.

The health professions alone have not been responsible for these imbalances. Society in general has contributed to them, inasmuch as people have been unaware of, or have ignored, their negative effects. Conventional health manpower planning failed to ensure and maintain balance. Educators are not particularly interested in manpower plans, and they make education an end in itself. The large employers—national health systems—are passive recipients of trained manpower; there is also too little feedback from the employers to planning and education. This lack of integration between the various elements of the manpower-development process has led to incongruities, irrelevances, and imbalances in the planning, production and management of health manpower.

The excessive migration of highly-trained health manpower from developing to developed countries and oil-producing countries which prevailed in the 1960s and 1970s was considered a precursor of current imbalances and, even though the flow has tapered off, the traditional source countries must plan for specialization facilities and appropriate career structures in order to keep their professional health workers.

It was the consensus of the conference that the present state of the art offers no magic solution or international norm to either prevent or control imbalances of health manpower. While health manpower imbalance is not a new phenomenon, it is clear that the recognition of health manpower overproduction and resulting unemployment is fairly recent—most countries do not have a sufficient information base to enable them to characterize their supply of health manpower and monitor changes in the supply/demand balance. World experience in this domain is limited and poorly documented. However, the scant data available show that there is already a sizeable overproduction of physicians in many countries, both developed and developing, with a growing rate of unemployment or underemployment, or both.

Means for the control of imbalance are consistent with efforts to maintain the supply of health manpower and the demand for their services in line with the national strategies to achieve health for all. The latter calls for national health manpower systems and statistical institutions, with the cooperation of international agencies where necessary, to undertake the preparation of national indicators of various types that could help to prevent or arrest the excessive migration of highly-trained health manpower. While the overproduction of physicians is a serious problem, the traditional or traditional medical manpower, the flow has tapered off, the traditional source countries must plan for specialization facilities and appropriate career structures in order to keep their professional health workers.

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prospective imbalances. This is related to the provision of a manpower-information baseline, through the systematic collection of relevant data supplemented, as necessary, by decision-linked research. Comprehensive and continuous monitoring and feedback mechanisms should be established to keep decision makers responsible for health manpower planning, production and management duly informed of any possible risk or sign of imbalance.

The overriding conclusion of the conference was that the prevention and management of imbalance requires the reorientation of national health manpower systems to ensure that they respond fully to the strategies for achieving health for all. Such systems should integrate functionally all the policies, programmes, institutions and resources that, in each country, have a bearing on health manpower planning, production and management, independently of the location and organization of the bodies responsible for these functions. It should be the aim of such systems to keep in balance the supply of health workers and the effective demand for their services. In some cases, radical and comprehensive interventions may be needed, even though some may be politically sensitive and distasteful to the professions and interest groups concerned.

The conference adopted the following 11 recommendations of which six relate to preventive actions and five to curative actions. Preventive actions

1. Governments should undertake, as a matter of priority, the strengthening of their national health manpower systems and ensure that they respond fully to the strategies for the achievement of health for all through primary health care.

2. There is an urgent need to develop sufficient relevant information about health manpower.

3. Countries need to develop a set of reliable and workable national norms and indicators of imbalance, based on accessible data and nationally relevant, appropriate mechanisms to identify and monitor changes.

4. A radical departure from the type of health manpower planning of the last two decades is needed, i.e. that is more participatory, and easier to understand, communicate, manage and implement. Above all, plans are needed that go beyond simple extrapolation of numbers to provisions of concrete qualitative and quantitative guidance to educators and managers so that they can implement the plan successfully.

5. The highest standard of education for any country is that which is most responsive to local needs. Countries should reorient learning objectives and curricula accordingly.

6. Manpower must not only be planned and trained but skilfully managed as well.

Curative actions

7. When there is impending or actual oversupply of manpower, measures should be taken urgently to restrict or adjust production to bring the supply into line with future prospective demand for services.

8. Oversupply can also be reduced by controlling the inflow of foreign graduates.

9. Many developed countries have considered sending their surplus of health workers to develop countries where they are in short supply. However, recipient countries must examine this form of "cooperation" very critically indeed to ensure that it does not become a form of "dumping" of unemployed health workers.

10. Governments should redeploy excess manpower by creating new posts in areas with shortages. The potential nationaux susceptibles d'aider à prévenir ou à freiner les déséquilibres. En même temps, il faudrait mettre en place une base d'informations sur les personnels, reposant sur la collecte systématique des données pertinentes, complétée le cas échéant par la recherche liée au processus de décision. Des mécanismes globaux et continus de surveillance et de rétro-information devront être établis pour tenir les responsables de la planification, de la production et de la gestion des personnels de santé dûment informés de tout risque ou signe éventuel de déséquilibre.

La principale conclusion de la conférence a été que la prévention et la gestion des déséquilibres exigent une réorientation des systèmes nationaux de personnels de santé afin qu'ils s'inscrivent parfaitement dans les stratégies en vue de l'instauration de la santé pour tous. De tels systèmes devraient être intégrés dans toutes les politiques, tous les programmes, les établissements et les ressources qui, dans chaque pays, ont une incidence sur la planification, la production et la gestion des personnels de santé, quelles que soient l'organisation et la situation des organes responsables de ces fonctions. Par ailleurs, ces systèmes devraient viser à maintenir l'équilibre entre l'offre d'agents de santé et la demande réelle de services. Dans certains cas, des interventions radicales et globales peuvent s'avérer nécessaires même si certaines risquent d'être politiquement délicates à appliquer et risquent de déplaire aux professions et aux groupes d'intérêt concernés.

La conférence a adopté les 11 recommandations suivantes (six ont trait à des mesures préventives et cinq à des mesures curatives).

Mesures préventives

1. Les gouvernements devraient entreprendre en priorité de renforcer leurs systèmes nationaux de personnels de santé et s'assurer qu'ils sont tout à fait conformes aux stratégies en vue de l'instauration de la santé pour tous au moyen des soins de santé primaires.

2. Il est urgent de recueillir suffisamment d'informations pertinentes sur les personnels de santé.

3. Les pays doivent élaborer un ensemble de normes nationales fiables et applicables ainsi que des indicateurs des déséquilibres reposant sur les données accessibles et des mécanismes pertinents et adaptés visant à recenser et à surveiller les changements intervenus.

4. Il convient de se démarquer radicalement de la planification du personnel de santé des 20 dernières années, au profit d'un processus qui fasse une plus large part à la participation et qui soit plus facile à comprendre, à communiquer, à gérer et à appliquer. Il faut surtout des plans qui allient au-delà de la simple extrapolation de chiffres et fournissent des directives concrètes (tant qualitatives que quantitatives) aux enseignants et aux gestionnaires afin que ceux-ci puissent mettre en œuvre le plan avec succès.

5. Le niveau d'enseignement le plus élevé pour un pays est celui qui répond le mieux aux besoins de celui-ci. Les pays doivent réorienter les objectifs d'apprentissage et les programmes d'études en conséquence.


Mesures curatives

7. Lorsque l'on se trouve face à un excédent de personnel réel ou imminents, des mesures doivent être prises d'urgence afin de restreindre ou d'ajuster la production et de ramener l'offre de personnel au niveau de la demande prévue.

8. L'excédent de personnel peut également être réduit en contrôlant l'entrée de diplômés étrangers.

9. De nombreux pays développés ont envisagé d'envoyer leur personnel de santé en nombre dans les pays en développement qui en manquent. Mais les pays bénéficiaires doivent considérer cette forme de « coopération » avec méfiance et s'assurer qu'il ne s'agit pas là d'une manière de « se débarrasser » du personnel de santé sans emploi.

10. Les gouvernements devraient redéployer le personnel excédentaire en créant de nouveaux postes dans les régions
tial of such interventions for evening out geographical distribution and expanding coverage of health services is evident. However, care should be taken not to adopt such an approach merely to solve the employment problem of a particular occupation and in the absence of effective demand.

11. More radical actions may be required, though they might prove politically sensitive and distasteful to the professional groups involved. However, they may be necessary in the presence of severe complications. These could include such steps as restricting licensing of those who graduated in other countries even if they are citizens of the country concerned, introducing re-licensure of practitioners, lengthening the training periods at all levels of training, forcing early retirement, limiting opportunities for graduate education, and reducing the workload of individual practitioners.

A great deal of research, and national and international cooperation, is needed to implement nationally the fundamental recommendations put forward by the conference.

REFERENCES — RÉFÉRENCES


