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Problems of Preventive and Social Medicine

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The question of Social and Preventive Medicine will be tackled from a broad concept which includes the promotion of health, prevention of the onset of disease, early detection and arrest of morbid processes, limitation of disability, and the rehabilitation of the sick and the disabled. It is not necessary to recapitulate the overwhelming evidence, both historical and contemporary evidence, in favour of the preventive approach to medical care. Although it had a relatively late start, preventive medicine, its basic science of epidemiology, and associated disciplines of medical statistics, medical sociology, health education, applied microbiology etc., have made rapid advances in recent years. The objectives of preventive medicine are being achieved through the use of various modern tools including immunology, chemotherapy, environmental control and communications science. Modern techniques of preventive medicine which were initiated largely in developed countries have had significant impact on the health of populations in developing countries. Especially in the tropical countries, these measures have had significant victories against major health problems. Perhaps the most dramatic example of this occurred in West Africa. Less than two centuries ago, in parts of this area, the survival of the European was reckoned in days and weeks rather than in months or years; now Europeans live, thrive and raise families in an area that was notoriously described as the White Man's Grave.

It is, however, disappointing that many of the lessons learnt about the value of the preventive approach, many successful demonstrations of the effectiveness of preventive medicine, have not been vigorously and consistently applied in many developing countries. Many people in developing countries continue to suffer from the persistent menace of disease, disability and premature death. In comparison with developed countries, infant mortality is 5 to 10 times as high, child mortality rate is 10 to 40 times as high, and maternal mortality is 50 to 80 times as high, mostly due to preventable and remediable conditions.

In this presentation, I will briefly review some of the problems of social and preventive medicine, with particular emphasis on factors which inhibit

the successful implementation of preventive services in developing countries, and I will also consider how some of these problems can be solved in the context of local resources and available foreign aid.

The issue falls naturally into two major areas:

A. Under-utilisation of available technology

This refers to insufficient and inappropriate application of proven remedies, a failure to apply available technology. This *application gap* is one of the most painful ironies of life in developing countries. What factors are responsible for this wide gap between knowledge and application? How can this gap be closed? These questions will be considered later.

B. Available technology ineffective

This refers to unsolved health problems where the available technology is not effective or is too cumbersome in practice. The availability of new technology – methods that are more effective, cheaper, safe and simpler to apply, would assist in the solution of some of the persistent health problems in developing countries. For example, with regard to communicable diseases, the combination of environmental sanitation, artificial immunisation and the use of chemoprophylactic and chemotherapeutic agents has led to the conquest of some major epidemic diseases, but others continue to pose a serious threat. For example, the emergence of drug-resistant strains of malaria and strains of mosquito vectors resistant to insecticides have posed difficult problems which have slowed down, halted, and even reversed gains in malaria control and eradication programmes. Similarly in schistosomiasis, new drugs and molluscicides have been highly effective in certain situations, these measures have proved impracticable or ineffective in other areas. In the case of tetanus, basic immunisation with 3 doses of alum adsorbed toxoid, suitably spaced, followed by booster doses, virtually guarantees full protection against tetanus infection; but there is a pressing need for single dose formulations of tetanus toxoid to simplify logistic problems, to make it possible to protect many persons who cannot be reliably reached on repeated occasions to complete complex immunisation schedules. Often public interest in mass immunisation programmes wanes after the initial novelty has worn off, and subsequent attendance records show exponential decay. The poor serological response to oral polio vaccine in some tropical countries is another example of the need for technological advance. Oral live vaccine against poliomyelitis has usually proven less effective in tropical countries; a new vaccine which is effective locally or new techniques of applying available vaccines are required.

These and other examples illustrate the need for more medical research to help solve health problems in developing countries.

Causes of the application gap

Why is there such a large gap between what is known and what is applied in the area of preventive and social medicine in many developing countries?

Why do children continue to die of tetanus, including tetanus neonatorum, malaria and kwashiorkor? Why is it so difficult to transfer knowledge of nutrition from the test-tubes in the nutritional biochemistry laboratories into the cooking pots in the traditional village?

1. Financial problems

One important obstacle is financial. Although many governments recognise the value of preventive measures, they do not have sufficient funds at their disposal to carry out some of the preventive measures they desire. The need for adequate quantities of safe water is universally recognised but the capital costs are sometimes prohibitive. Immunisation programmes sometimes fail because of shortage of equipment, vaccines, transportation and other logistic support. Vector control programmes are sometimes suspended when funds for the purchase of pesticides are exhausted.

One factor responsible for the shortage of funds is that the government may be spending too low a proportion of its budget on health. It is not necessarily wise to increase the proportion of the budget that is spent on health because of the competing needs for education, agriculture, industry and other technological developments. In some developing countries the health budget is below U.S.\$ 2 per head per annum; others spend up to U.S.\$ 10 per head per annum. In the more developed countries of Europe and North America, more than ten times this figure is available for health care (BRYANT, 1969).

2. Allocation of resources within the health sector

How much should be spent on preventive medicine and how much on curative medicine? This issue is often debated but it is not easy to make firm recommendations. Some aspects of the programme of the health department cannot be easily classified into these water-tight compartments – “Preventive” and “Curative”. Some of the expenditure on preventive activities such as the provision of water supplies may be shown under the engineering works services. In spite of these difficulties, some broad features are evident. Expensive curative therapy often accounts for a substantial part of health budgets in developing countries. Such activities are often given preference over preventive programmes: intensive care units rather than tetanus prophylaxis; open heart surgery rather than a programme for the control of rheumatic fever; large urban hospitals rather than rural health centres.

3. Uneven distribution of health services

One marked feature of the health services in many developing countries is the gross disparity in the health services available to different groups within the population. There are marked urban/rural differences; sometimes marked socio-economic stratification in the access to and utilisation of health services; and also wide regional and local variations. At one end, the lucky

minority have access to the most modern health care as measured by the concentration of high level personnel, easy access to modern hospitals and other health institutions, and also the opportunity to utilise health services outside their country for specific problems which cannot be treated effectively locally. At the other end, a large majority of the population have scant contact with the health services of the nation.

Many observers have drawn attention to this problem which has evoked a wide variety of reactions. This phenomenon must not be viewed in isolation. It must be examined against a broad socio-economic background. In some cases it is a historical relic of uneven development – areas of the country may have made rapid advances with regard to education, urbanisation and industrial development, thereby creating a heterogeneous community. This feature is not unique to developing countries but it tends to be rather prominent in view of the rapid rate of change in some areas whilst other areas evolve more slowly. It is still apparent in developed countries which have produced national health schemes aimed at providing each citizen access to good medical care (TUDOR HART, 1971).

4. Heterogeneity of health problems

One important consequence of rapid but uneven development is a marked heterogeneity of the health problems. Whilst traditional health problems remain unsolved, new health problems associated with the modern industrial society are being introduced. Developing countries now concurrently face unsolved traditional health problems as well as those of the modern industrial society. Whilst parasitic and endemic diseases persist, they face such hazards as road accidents, atmospheric pollution and urban juvenile delinquency. Sometimes one problem succeeds another but occasionally the new problem compounds the old one. In Ibadan school children the predominant dental health problem is peri-odontal disease but the children of well-to-do parents are relatively free of this problem but show high prevalence of dental caries. Areas cleared of yaws and other endemic treponematoses now report a rising incidence of venereal syphilis. It has been suggested that the well-nourished children who are being saved from protein-calorie malnutrition are reared on atherogenic and diabetogenic diets and habits with consequent rise in the problem of diabetes, ischaemic heart disease, cerebral arteriosclerosis and peripheral vascular diseases. For the health planner there are competing claims of the need to control traditional health problems whilst dealing with the newly acquired ones. There is the temptation to set up two intensive care units in each large hospital of developing countries: a medical unit mainly for the treatment of tetanus and paralytic poliomyelitis and a surgical unit for the victims of road accidents!

5. Ineffective replacement of traditional systems

As part of the phenomenon of transition, there is a breakdown of traditional systems which are not as yet adequately replaced. Some of these have signi-

ficant implications for social medicine. For example, with the disintegration of the extended family, the care of the sick, the disabled and the elderly now poses problems that were previously absorbed within the extended family system. In this transitional phase, before private insurance schemes and social security systems become well established, major socio-medical problems may occur. In villages one may find that the traditional social pressures ensure a higher standard of environmental sanitation than in some of the poor urban areas where traditional systems have broken down but have not been adequately replaced by the modern health inspectorate. Some mothers have abandoned breast feeding even though they have not the knowledge or financial resources to make artificial feeding safe for the child.

Solutions

The solution of health problems in developing countries will be assisted by the discovery of new knowledge and techniques but more especially by the vigorous and appropriate application of existing knowledge. More effective health services can be operated by improving the scientific basis of decision making in the health planning process. Some of the difficult decisions facing Ministries of Health in defining priorities and allocating resources will be simplified by the use of epidemiological techniques for defining the distribution and determinants of ill health, the needs and demands for and the effectiveness of health services.

A. New Technology

There is a continuing need for new technology; new drugs for the prophylaxis and treatment of malaria, new measures – chemotherapeutic, environmental or perhaps immunological – for the control of schistosomiasis, new methods of producing cheap nourishing food in abundant quantities. Some of this research work, especially the applied and operational aspects, are being carried out in the developing countries but much of the basic research work on parasitology, entomology, clinical pharmacology, etc. is still being done in the developed countries.

B. Application of existing knowledge

The basic strategy should be to utilise existing knowledge for the: –

(I) *Elimination of major epidemic diseases like cholera and smallpox*: This would mainly depend on a sanitary revolution, mass immunisation and improvement of personal hygiene.

(II) *Protection of high risk groups*: This requires the development of personal health services for the protection of such groups as pregnant women and children.

(III) *Control of community-wide diseases*: This involves careful epidemiological assessment for the effective control of endemic diseases like hookworm and goitre.

(IV) *Progressive improvement in the health status of the community*: This will depend on the steady improvement in the quality, quantity and distribution of medical care, the general development of the community with regard to income, education and other socio-economic factors, and also favourable changes in the environment, both on the microscale in individual homes and on the macro level, in the community at large.

Role of foreign aid

The role of foreign aid in developing preventive and social medicine can be considered under two major headings:

Firstly, there is the provision of some critical requirement – staff or equipment to initiate or assist public health programmes.

Secondly, assist where appropriate, to determine the priorities for health action. This is a delicate issue because in the final analysis, the determination of health priorities is the prerogative of the national government. Well meaning suggestions from outsiders could in some circumstances provoke resentment. There is a proper place for advice and consultation in a form that is acceptable. Apart from such formal consultations, foreign aid can and does exert a subtle influence on the ranking of health priorities. If for example, the recipient country finds it easier to obtain foreign aid in the form of sophisticated equipment for curative therapy or for abstruse investigations (e.g. equipment for open-heart surgery, electron-microscopes, auto-analysers) rather than support for their preventive medicine programmes, this might have the effect of distorting national priorities. Some of these equipments are mere “white elephants”, with the running costs consuming the resources of the recipient country both in personnel and materials. On the other hand appropriate forms of foreign aid can serve to reinforce the proper emphasis on the preventive aspects of the health programme.

Personnel

Practical help may be given by providing or training health personnel at all grades from auxiliary to professional personnel including highly trained specialists. The needs vary from country to country. Some countries now train their own graduates but cannot offer post-graduate training; others require help in training basic health workers and paramedical personnel. Non-medical graduates in such disciplines as medical sociology, statistics, sanitary engineering, malacology and entomology are particularly scarce. Foreign aid should aim to achieve a multiplier effect by training educators, who can continue with the task of training others.

Equipment

Foreign aid has also been useful in the form of equipment – drugs, vaccines, injector guns, and means of transportation. This helps to ensure continuity; special public health programmes that are thus buffered by foreign aid may

be spared the vagaries of local budgets which tend to be pruned when there are other competing demands for funds.

Major engineering and other development projects

Major engineering projects such as the building of dams are often financed partly from foreign aid. The need to include a health component in such major projects has been recognised in recent years. It is now widely recommended that aid granting bodies should encourage a proper allocation to health services as part of such programmes; some organisations are already insisting on this practice.

Social and preventive medicine in many developing countries is retracing some of the historical steps taken by more developed countries. The problems encountered include shortage of funds, rapid urbanisation and other changes in pattern of life which tend to create new health problems, and the widespread difficulty in assigning to preventive measures the appropriate priority.

Summary

The health picture in many developing countries is characterised by the widespread occurrence of preventable and remediable diseases. Whilst huge funds are often spent on expensive curative therapy, relatively small sums of money are available for preventive services. Furthermore, one commonly finds that well proven measures for the control of diseases are often neglected; lessons learnt about the values of environmental sanitation in the control of epidemic diseases, and of immunisation in the conquest of some specific infections, are not universally or vigorously applied. Some of the factors – socio-cultural, economic, political, and administrative – which are responsible for this wide gap between knowledge and application in the health programmes of developing countries were outlined and discussed.

Zusammenfassung

Die Entwicklungsländer weisen eine weite Verbreitung von verhütbaren und heilbaren Krankheiten auf. Während oft grosse Beträge für eine kostspielige kurative Therapie aufgewendet werden, stehen relativ kleine Geldsummen für die Präventivmedizin zur Verfügung. Im übrigen stellt man gewöhnlich fest, dass bewährte Methoden, wie eine Krankheit an der weiteren Ausbreitung gehindert werden kann, oft vernachlässigt werden. Die erworbenen Kenntnisse über den Wert sowohl der Umgebungssanierung für die Eindämmung der epidemischen Krankheiten als auch derjenigen der Impfung für die Bekämpfung spezifischer Infektionen werden oft nicht intensiv genug angewendet. Einige der soziologisch-kulturellen, ökonomischen, politischen und administrativen Faktoren, welche für die grosse Kluft zwischen theoretischer Kenntnis und praktischer Anwendung im Gesundheits-

dienst der Entwicklungsländer verantwortlich sind, werden ausgeführt und diskutiert.

Résumé

Les pays en voie de développement présentent une grande fréquence de maladies que l'on peut éviter et que l'on peut guérir. Mais, tandis que des sommes souvent importantes sont dépensées pour une médecine curative, il n'y a que des ressources modestes qui sont à disposition d'une médecine préventive. Et l'on observe en général que des méthodes éprouvées, qui peuvent empêcher la propagation d'une maladie, sont souvent dédaignées. Les connaissances acquises sur la valeur de mesures sanitaires dans l'entourage immédiat du malade pour circonscrire des maladies épidémiques, ainsi que la vaccination pour lutter contre des infections spécifiques, ne sont souvent pas appliquées avec assez de rigueur. Puis l'auteur discute des facteurs sociologiques et culturels, économiques, politiques et administratifs, qui sont la cause de l'abîme qui sépare dans les pays en voie de développement les connaissances théoriques de l'application pratique.

Riassunto

I paesi in via di sviluppo sono caratterizzati da una larga diffusione di malattie prevenibili e curabili. Mentre spesso grosse somme di denaro vengono adoperate per una costosa terapia curativa, solo somme relativamente piccole sono messe a disposizione della medicina preventiva. Si può del resto constatare che vengono spesso trascurati metodi provati, atti a contenere l'ulteriore espansione di una malattia. Le conoscenze acquisite sul valore del risanamento dell'ambiente allo scopo di arginare la diffusione delle malattie epidemiche, così come quelle che dimostrano l'importanza delle vaccinazioni nel combattere le infezioni specifiche, non vengono spesso applicate con sufficiente intensità. Si espongono e si discutono alcuni dei fattori socio-culturali, economici, politici ed amministrativi responsabili del grande abisso tra conoscenze teoriche e realizzazioni pratiche nel servizio sanitario dei paesi in via di sviluppo.

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