SYMPOSIUM ON WORLD MEDICINE

Epidemiology in Latin America

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ACCORDING to Paul (*1*) it took about 4,000 years for epidemiology to emerge as a separate discipline which, by about 1920, was ready to stand on its own feet among the medical arts and sciences. Yet the concepts and principles that underlie modern epidemiology are essentially those laid down by the distinguished founders of the science.

The analytic reasoning of Snow, Panum, Goldberger, and Frost, to mention but a few of the outstanding workers in this field, continues to be applied today in order to gain a better understanding of man in health and in sickness, and, I think, must be even more extensively applied if we are to acquire a fuller knowledge of man as a social being.

As early as 1878, Hirsch (*2*) was describing historical and geographic pathology as "a science which . . . will give, firstly, a picture of the occurrence, the distribution, and types of diseases of mankind, in distinct epochs of time and at various points of the earth's surface; and secondly, will render an account of the relations of these diseases to the external conditions surrounding the individual and determining his manner of life."

This description might well be accepted as a definition of modern epidemiology, for, as Frost (*3*) pointed out, it implies that epidemiology is essentially an inductive science concerned not merely with the distribution of disease but equally, or more, with fitting it into a consistent philosophy.

Epidemiology, like all sciences of which speculation is a component, may be defined in a variety of ways. Such a multiplicity of definitions mirrors the richness of the material with which epidemiology deals, embracing as it does all events relating to human life, regardless of their origin. No matter how we choose to define it, the science of epidemiology as understood today encompasses the totality of man's relationships with his mediate and immediate environment, both in sickness and in health. In this sense, it is synonymous with medical ecology.

Epidemiology thus involves and facilitates an interpretation of life. And since the principles on which it is based have remained constant, what is changing are the circumstances under which diseases occur or do not occur, spread or do not spread; that is to say, the changes in environment and in adaptation to it that are characteristic of all living things.

Today there are many opportunities for epidemiologic studies in the New World, especially in Latin America. We Latin Americans like to refer to the Americas, so far as the distribution of diseases is concerned, as a continent in transition, a continent where the major quarantinable diseases are waning. No cases of cholera have as yet been reported in this century. In 1960, only 250 cases of plague were notified and most of those were sylvatic in origin; there were 650 reported cases of louseborne typhus, about 50 cases of jungle yellow fever, and less than 5,000 cases of smallpox. The incidence of other communicable diseases and diarrheal diseases is higher than we would wish, but already in most Latin American countries chronic diseases are emerging as an important

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cause of death. Cancer, cardiovascular diseases, and accidents are now among the 10 major causes of death in these countries. There is an increase in life expectancy, growing industrialization, and rapid urbanization. But as a background to these rapid social changes, influencing health matters and being influenced by them, there stand the world's fastest rate of population growth, widespread illiteracy, a per capita income ranging from $100 to $500 a year, dependence on single commodity exports, inadequate investment, and the inevitable concomitants to these, poverty and misery.

There are many health problems in the Americas whose solutions are to be sought in the epidemiologic approach. In view of the geographic variations in diseases, there is not a single area in which epidemiology does not play an important role. I should like to mention, as illustrations, a few problems on which the Pan American Sanitary Bureau, Regional Office of the World Health Organization, is conducting basic epidemiologic studies.

To advance the epidemiologic study of diseases in the region, comparable mortality data are urgently needed. The appraisal of the quality of death certification, termed by Morris (*4*) "operational research," is now a matter of general concern. In the Americas we are going deeper into this problem, recognizing that the quality of death certification leaves much to be desired and hampers the comparability of mortality statistics. We plan to develop comparable data for selected cities by obtaining the complete clinical history and pathological findings for each death; medical certificates of death will be consistently completed and coded in accordance with international procedures. As a first step, investigators in 10 or more medical schools will develop centers in which teams of medical statisticians, epidemiologists, and pathologists will seek the essential data for epidemiologic studies. Once a full understanding of mortality has been obtained through age-adjusted death rates for specific diseases, research workers will begin to explore the factors responsible for such differences as are discovered. This coordinated research will enable selected medical schools to become centers for practical research and sound epidemiologic training. From such training centers, established preferably in departments of preventive medicine, a new generation of epidemiologists could come forth and could have a tremendous impact on medical science. A grant from the National Institutes of Health, Public Health Service, has been awarded for a planning conference to design these epidemiologic studies in the region of the Americas.

In cardiovascular diseases, regional research is underway to elucidate the natural history of atherosclerotic lesions found in population groups with widely different environmental and genetic backgrounds. Pathological laboratories in 11 countries, including the United States and several in Central and South America, are transmitting to a central laboratory specimens of aortas and coronary arteries obtained from necropsies. There they will be examined with a view to determining variations in atherosclerotic lesions according to age, sex, race, geography, nutritional state, and disease. This truly inter-American project is being carried out by the Institute of Nutrition of Central America and Panama and the faculty of medicine of Louisiana State University under the auspices of the National Institutes of Health. To date more than 2,500 aortas and coronary arteries have been examined.

As malaria recedes in the Americas under the impact of vast eradication programs, new epidemiologic difficulties are beginning to emerge, for disappearing malaria calls for new and intensive investigations. The fact that it is now possible to identify areas of stable malaria is evidence of progress, but that there are such areas despite well-conducted operations makes further epidemiologic research essential.

The persistence of malaria transmission in certain areas also demands further research on asymptomatic carriers, behavioristic changes in the anopheline's resting habits, outdoor transmission, and daytime transmission by certain vectors. The resistance of anophelines to insecticides and of plasmodia to drugs, as well as genetic variations in toxic susceptibility, are among the problems that confront us. Studies are also needed to evaluate medicated salt programs and to determine more accurately the therapeutic levels of antimalaria drugs for different species of plasmodia. The role of migratory laborers, of nomads, and of inacces-

sible populations in the persistence of malaria transmission is still to be determined.

Studies at the Institute of Nutrition of Central America and Panama show that a synergistic relation exists between malnutrition and infections such as diarrheal diseases, whooping cough, and measles, the total effect of which is a major cause of deaths in children under 5 years of age in many Latin American countries. Information about this relationship is fragmentary and circumstantial, and appropriate epidemiologic studies are needed to determine its scope as well as its implications for prevention. This problem is being investigated by INCAP in three communities in Guatemala. In the first, efforts are being made to reduce the burden of infectious disease by preventive measures, treatment, and improved sanitation. In the second, nutrition is being emphasized by the distribution of milk and other foods rich in protein and education in nutrition. The third community is being maintained as a control. It is expected that the results of this investigation will constitute a major contribution to our present knowledge in this field.

I should like to emphasize the acute need for epidemiologic research on medical care, especially in those Latin American countries where medical care activities are mainly financed from social security funds. Health needs and services must likewise be evaluated if long-range programs are to be planned. Virus diseases, mental illness, alcoholism, radiation hazards, and air pollution also offer enormous possibilities for research to determine their contribution to morbidity and mortality in the various countries. Such comparative epidemiologic studies would contribute to sound knowledge of the causation of diseases.

I wholeheartedly agree, so far as Latin America is concerned, with Morris (*4*) when he states that "epidemiology is today the Cinderella of the medical sciences" and that "the proposition must be advanced that public health needs more epidemiology; so does medicine in general, and, it may be said, society at large."

As to medical education, I do not feel that it would be unfair to say that epidemiologic thinking is given insufficient attention in the training of physicians and health officials. The dominant element in the teaching of medicine still appears to be the diagnosis and treatment of disease. Not enough attention is being given to medicine as a social science or to the study of man as a biological entity and a social being. As a result, analysis of the implications of health and disease for societies is only incidental to medical studies and is not impressed upon the mind of the student. He does not conceive of medicine as a harmonious balance between the prevention of disease, the treatment of the sick, and the promotion of health. The fulfillment of his responsibilities in modern society is more a matter of his intuition than the result of his understanding of disease in relation to the community.

In public health, epidemiology often becomes synonymous with communicable disease control. Practice and the application of knowledge overshadow analysis and speculation. Epidemiology is emphasized as a purely descriptive science. It is seldom being used to analyze common problems, irrespective of their origin, as they affect families, groups, and communities. Still less frequently is epidemiology considered an indispensable method for studying the workings of health services. The need to introduce more and better epidemiologic thinking into medical teaching and to prepare sound epidemiologists with a broad vision of the potentialities of the science is more than ever apparent. To this end, the international health organizations have a definite role to play, a role of major importance in restoring epidemiology to its true significance as a way of thinking and as an interpretation of life.

REFERENCES

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