PLANNING

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In September, 1963, a group from the two Americas met in New York, under the sponsorship of the Pan American Health Organization and the Milbank Memorial Fund, to explore ways of making a study of health manpower requirements and resources in a Latin American country. That group discussed many aspects of the health problems of nations—how they can be measured, the relevance of such measurements to health planning and the study of health manpower requirements, and the changes that may prove necessary in medical education to prepare the profession for the tasks ahead.

Basic to the formulation of national health manpower plans, they saw need for the following:[1]

1. A profile of the health of the people, measured in terms of mortality, morbidity and other health indices—all related to demographic characteristics—age, sex, education, economic status and place of residence.
2. A picture of health services currently supplied—the effective demand—including physician visits, hospitalization and other services, again related to demographic data.
3. A picture of unmet health service needs and demands.
4. An inventory of present health manpower resources, estimates of functional productivity and projections of future supply.
5. A parallel picture of supply and utilization of hospitals and other health service facilities.

6. An appraisal of educational resources available and the manpower pool on which they draw.
7. A study of education requirements for the future.
8. An assessment of the economic resources available for health services and education for such services.
9. Establishment of goals for health achievement related to present and projected resources and determination of the manpower requirements for those goals.

The Round Table agreed that such a study, on a pilot basis, should be undertaken in a Latin American country. Within a few months Colombia had been chosen as that country, a decision based in large part on the existence of imaginative leadership in the Colombian Ministry of Health and Colombian Association of Medical Schools, their joint concern about the organization of health services and their demonstrated ability and interest in working closely together.

PRELIMINARIES

In January, 1964, a group visited Colombia to look into the feasibility of making a pilot study on health manpower in that country. Preliminary plans were developed at those meetings for a group of interrelated studies under the co-direction of the Ministry of Health, to be represented by Alfonso Mejia, and the Association of Medical Schools, to be represented by Raul Paredes. These studies were to be undertaken with the participation of the schools of medicine and nursing, the national statistical department, the hospitals and the local health services. More specifically, the Ministry was to have primary responsibility for demographic and mortality studies, a national health survey, studies of nursing resources, health services institution and socioeconomic studies, while the Association of Medical Schools would undertake primary responsibility for studies of medical resources, medical education and nursing education.

The National Health Survey, then, was planned and carried out under the direction of the Ministry of Health, with the very active participation of the seven medical schools of the nation, acting both collectively and individually. It was not an isolated research enterprise, but an integral part of a fairly comprehensive study designed to give a base for planning to meet national health manpower needs.

The design of the present Round Table calls first for the presentation and discussion of methodology of the Colombian national health sur-

vey, to be followed by discussion on selected findings and of implications for health planning. This review will be limited, then, to what was done in the Colombian study, and why it was done that way.

Subsequent papers will deal with the general design of the health survey, by Aurelio Pabón; the design and selection of the sample, by Garrie Losee and Luis Carlos Gómez; the household survey, by Aldemar Gómez; and the clinical examination, by Carlos Agualimpia.

MAJOR DECISIONS

The most important decision was that the survey, using probability sampling, should be national in scope. A household interview and a clinical examination were to be included, with a sample of some 10,000 households containing approximately 50,000 members for the interview survey, and a subsample of 5,000 individuals who were selected for clinical examinations.

A second major decision was to use medical students as interviewers for the household survey, and residents in internal medicine and pediatrics as the clinical examiners. That decision was made in part because of the limited availability of well-educated people for purposes of interviewing and, of equal importance, because it was believed that the study would offer a unique opportunity for medical students and young physicians actually to get out into the country and to see what people were like in their homes and what their health problems were in relation to the places in which they lived.

Survey Content

In accordance with the original guidelines, the survey was designed to provide data on the perception of illness, the physical status and the receipt of health services, as well as on education, occupation, dwelling conditions and other social and economic characteristics of the population.

The sample design and the questions included permitted analyses of health characteristics in relation to five major geographic areas of the country, by age group and sex, by urban-rural residence, by economic grouping, by occupation, by educational status. And, uniquely for a population of this size, the study will permit analysis of the relationship between the perception of illness by individuals, their health status as evaluated by physicians with the aid of laboratory findings, and the receipt of health services.

Timing

Planning for the health survey was carried out within strictures of time, money and staff. Conversations in Colombia began in January, 1964, and the study was started in July of that year. From the summer of 1964 until the summer of 1965 (the first year), national planning and pretesting took place. The Health Survey itself took place in the second year (summer, 1965, to summer, 1966). The third year (summer, 1966, to the present) was a period of analysis and preliminary presentation of results to national and international audiences. Now the findings are being used as a basis for national health planning by the Ministry of Health, as a basis for program development in schools of medicine by the Association of Medical Schools and for the development of experimentations with new kinds of teams to provide health services to population groups that now suffer from the lack of services.

Budget

The budget available for the national health survey was limited. In terms of experience in the United States, the budget was fantastically low. The total expenditures for the survey were only $168,000 (United States currency). This low expenditure was achieved in part because the time of the medical student interviewers was donated, although the figure does include travel and per diem expenses of those students. Also, the budget does not include some of the contributions of consultant time that were not met through the Colombian budget.

Unit costs for the household interviews have been computed at $8.33 per family, and $1.40 per individual. The cost of the clinical evaluation was $17.80 per individual examined. In terms of cost of the entire universe, the household interview and the clinical evaluation together represent a cost of 0.9 cents for each person in Colombia.

Staffing

Finding and training the staff for the project was a major problem. When the project was officially undertaken, Alfonso Mejia had to find for the central office a director of household interviews, a director of clinical examinations, statisticians, a dentist, health educators, a field operations analyst and other supporting staff. For the field operations each team required a public health physician as supervisor, an environmental sanitation inspector as field administrator, six medical student interviewers, a public health dentist, two examining physicians, residents in internal medicine and pediatrics and two dispensary assistants,

a laboratory assistant and a nursing auxiliary. These teams were assembled in a variety of ingenious ways. The public health physicians, sanitation inspectors, dentists and nurse auxiliaries were primarily borrowed from regional and local public health units. The medical students and medical residents were provided by their teaching institution, which awarded the student academic or training credit for the field experience. Because of the difficulty in securing well-qualified laboratory assistants, and because of the need to have the procedures of these workers highly standardized, the Colombia National Institute of Health undertook two training courses, each of four weeks duration, for laboratory assistants. On the completion of these training programs the best students were selected for participation in the field work.

Consultants for the design of the study were drawn in the United States from the Division of Public Health Methods and the National Center for Health Statistics of the Public Health Service, and from the Census Bureau. These included specialists in sample design, schedule design, interviewer training, field staff logistics, household interviewing, clinical examination, data processing and analysis. Physicians from several countries also served as consultants as did the staff of the Pan American Health Organization and the Milbank Memorial Fund.

Study methods

The development of the sample design was a basic problem in a country that did not have a recent census, and in which travel was often difficult. The solution of the problem of sample design was one of the achievements of the study. Forty primary sampling units were selected for interviews and clinical examinations.

The field work was planned to cover two half-samples of the country, the first in the fall of 1965, the second in the winter and spring of 1966. In each of the 40 primary sampling units, an average of about 240 households were interviewed and 130 individuals examined.

The complete operation was pretested in the small town of Fusagasuga and the surrounding countryside and in Bogotá, the national capital. The test was conducted with the participation of the prospective field supervisors, who thus received practical training in field procedures. It tested the feasibility of the local operating procedures, the effectiveness of the survey methods, procedures and techniques and the precision and utility of the information secured.

Field training was related to the calendar of operations and to the needs of the institutions supplying personnel. Thus medical students

and certain other staff members received their preliminary orientation and training in their own schools.

In the field four or five teams worked simultaneously, with operations for each team beginning at staggered dates, so that staff from the central office could participate in the preparations at each center. The cycle in each primary sampling unit lasted for about three weeks.

Meeting the time schedule was no easy task. Some of the units could be reached only by airplane. Some were in areas that were not accessible to airplane, but required traveling by jeep over mountain roads. Some interviewers took to horseback, others to canoes. Clinical examination sites had to be found or improvised. Interviewers had first to persuade, and then to arrange for persons selected for the clinical sample to get to the examination center. Thus, major logistical problems were encountered in reaching the units, in conducting interviews and in carrying out the clinical examinations. Ingenuity triumphed.

Near the Ecuadorian border, the sisters of a convent moved out to provide housing for the survey staff. UNICEF loaned cars and the Army loaned helicopters.

For each of the 40 units, segmentation activities and a cartographic review were made one or two months before the beginning of the field work. At that time the environmental sanitation officer subsampled the rural segments of more than 15 dwellings to reduce the number of selections to about ten. Several weeks before the beginning of activities in each of the sampling units an officer from the central office made a visit of from one to three days to establish contact with the local authorities and persons of influence within the community, to explain the program, secure commitments of cooperation and participate in the final field training and practice.

In view of the scarcity of health educators and the newness of the idea of the household and clinical examination it was essential that all participants in the survey engage in continuous educational work. A variety of educational activities were undertaken by the staff to develop public understanding and acceptance of the scope and importance of the survey, and to encourage participation. These included presentation of the survey to many groups in the community, including the mayor and his staff, clergy, school staffs and the press, radio and television. Ingenious special incentives were employed to encourage the participation of individuals selected for clinical examination, which included free transportation and payment of wages lost because of the time required for the examination under certain circumstances, and food sup-

plements (CARE packages) were given or medical care was provided to certain individuals. The team also undertook to forward the findings of the clinical examination to physicians or institutions authorized by the patient. Persons who seemed unwilling to participate in the study were given particular attention, not only by the official sources, but also by such methods as having a person who had been examined go back to his own neighborhood and talk to another who had refused examination, to explain to him both what examination entailed and how important it was that each individual participate.

The high response rate—97.2 per cent participation for the household survey and 95.6 per cent for the clinical examination—was a tribute both to the competence and dedication of the staff and to these educational activities.

After three days of preliminaries in each area, household interviews began on the fourth day, and clinical examinations on the seventh, by which time it had been possible to select candidates for the clinical examinations from the household for which interviews had been completed.

The simultaneous scheduling of interviews and clinical examinations facilitated community cooperation, encouraged collaboration among the interview and clinical staff and helped solve the problems arising from procedures requiring two contacts with the patient, such as tuberculin testing. The clinical examination, whenever possible, was established in a hospital or health center, although in some areas the space secured was fairly primitive. Interviewers worked from these same centers, setting forth on foot, by minibus or, in some areas, on horseback, or in a plane, a launch, or even a canoe. Procedures were established to assure that each household and segment was indeed covered and the interviewer did not overlook selected dwellings.

An important aspect of the field operations from the point of view of medical education was the scheduling of clinical epidemiological meetings. These meetings, held in the evenings, gave the field team greater understanding of the operations of the survey, emphasized the social value of preventive medicine in public health, and the usage and advantage of epidemiological methods and were a fine tool to educate medical students in the social aspects of health and disease. One such conference was held in Socorra, a small town reached by a thrilling drive over the high Andes. The case selected for discussion was of a man in his thirties who had leprosy. The young medical student first described the household situation—a household in which the father, a

policeman, had three years of education, the mother none; in which the mother had had four pregnancies and several miscarriages in the course of three years; and in which, of the four small children, three had fairly serious physical defects. The clinician then discussed the father's leprosy and some of the familial implications of the clinical findings and the epidemiology of leprosy in Colombia. The whole group of students and clinicians then engaged in an active round-table discussion. It was apparent that these young people never before had such an opportunity to see health problems in a meaningful relationship to a family and the community, as well as in relation to the individual human being. The Colombian medical schools have indicated that the kinds of perception gained by medical students in these field operations are having a substantial effect on the teaching in their institutions.

An important aspect of the methodology of the survey was the way in which the consultants were used. Their availability made it possible to conduct the study in a minimum of time, with a maximum of reliability and usefulness. The effectiveness of the consultants was due not only to their individual specialized knowledge, but no less to: 1. the use of persons with a wide variety of complementary skills, as a group, in a continuing relationship; 2. the arrangement for intermittent visits of consultants for periods of one week to a month, so that it was always clear that the consultants were helpers and not operators; and 3. the scheduling of short visits by members of the Colombian staff to the United States, where they discussed their problems with specialists in the Census Bureau and the National Center for Health Statistics, and where they saw in operation household surveys and clinical examinations of the United States National Health Survey.

The most important problems encountered in the conduct of the study were those related to staffing, which affected planning, the administration, the supervision and the analysis of the study. Some of the problems were inherent in an undertaking with so little lead time, and one with no assurance of job continuity. The lack of a competent full-time data processing specialist to act as advisor to the study and as liaison between the study group and the census organization was a major deficiency in the study. Also evident was the need for a statistical group to give more adequate time to the design of schedules, the formulation of plans for analysis, the development of tabulating plans and specifications and more pretesting and preliminary analysis. The effect of these omissions has been a delay in the analysis and use of much potentially valuable data.

In reviewing the whole enterprise, the consultants believe that several important trends have emerged.

1. The large (and successful) ad hoc technical assistance program;
2. Unusually "kibitz-free" project; the major problems were technical ones, as they should be; no interference by administrators, nor serious budget squeezes;
3. Development of the nucleus of a health statistics center in Colombia;
4. Benefits to scientific community of Colombia—a new awareness of surveys as a scientific tool in medical and social fields;
5. The innovations of the sample design—having the clinical sample as a subsample of the household sample was one; another was the use of two half-samples and application of two-stage controlled selection;
6. The carrying out of this complex operation within two years starting with no staff and no organization.

The findings of the National Health Survey are discussed elsewhere from the methodological point of view, but it should be stressed here that the design of the sample and the schedules will permit an analysis of the relationships of the perception of health and disease by the individuals and by physicians aided by laboratory findings, and the receipt of health services in relation to such variables as age, sex, education, economic status, household environment, urbanization and geographic region. Because the survey made use of many of the definitions and procedures of the National Health Survey of the United States, a basis was also provided for comparison of findings in the two countries, as well as in other countries that are using or that may use a similar methodology.

REFERENCES

[1] This section is adapted from Health Manpower and Medical Education in Latin America, *Milbank Memorial Fund Quarterly,* 42, 61–63, January, 1964.