

Rural Health Needs



Report of a Seminar held at Pokhara,
Nepal, 6-12 October 1977

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*Cover: An interviewer with the Nepal Health Manpower Development Research Project
questions an elderly woman about her health in a small village in the Pokhara Valley of
Nepal.*

Credits: All photographs, including cover, by Marilyn Campbell.

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The views expressed in this publication are those of the individual author(s) and do not necessarily represent the views of IDRC or Tribhuvan University Institute of Medicine.

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Foreword

In recent years, the trend in most countries has been to develop rural areas. Health planners, educators, and implementers of services have attempted to meet this goal. However, very few data were available on which to base their actions in relation to rural health needs. The Nepal Health Manpower Development Research Project intended to identify health needs as perceived by the community as well as to do an inventory of the services already offered to the community by health facilities in their districts. In addition, one of the objectives of this project was to develop a methodology related to this particular topic that would be useful in Nepal and other countries. In the first part of this publication, the report of the findings of one of the three districts investigated is presented.*

Representatives from six other countries were invited to a seminar to share their experiences of health care delivery in their respective countries and to learn of the Nepal project. The summaries of their experience comprise the second part of this publication.

Recognition should be given to the Program Officer and his team whose dedication to and interest in the project assured its successful completion. The people of the villages involved in the project also deserve warmest thanks for their ready cooperation and involvement.

The setting of the meeting, the Pokhara Valley of Nepal, was truly conducive to a feeling on the part of the participants of being integrated within a rural community, and we thank the participants for their contribution to an open and frank discussion of health care delivery problems common to all.

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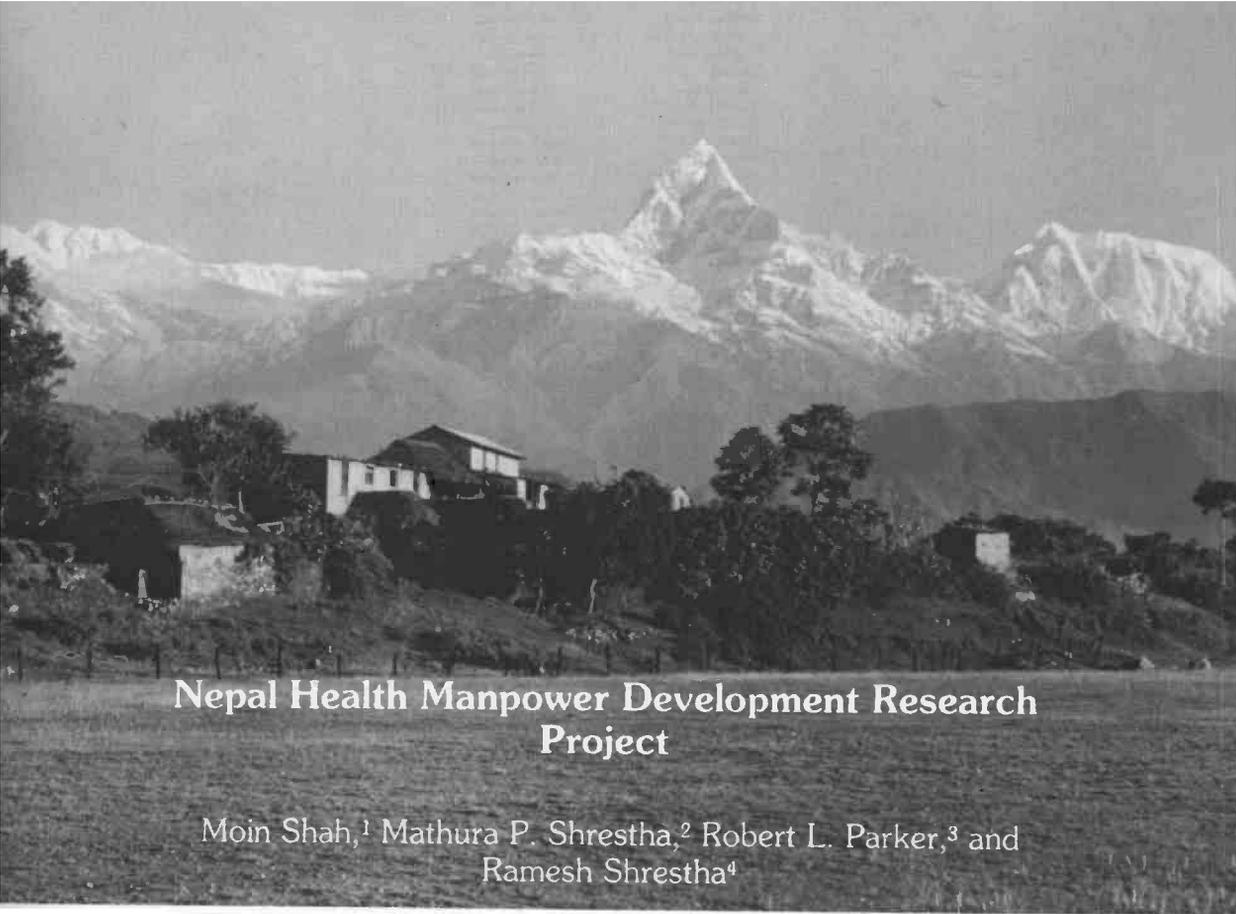
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Nepal Health Manpower Development Research Project

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The Nepal Health Manpower Development Research Project was initiated in 1973 by the Institute of Medicine of Tribhuvan University in Nepal to collect information useful for health planning and the development and modification of training programs.

The specific objectives of the project were to:

(1) develop an inventory of the present supply of health manpower by numbers, level of training, geographic and functional distribution, their career pattern, and the origin and magnitude of attrition;

(2) study the existing felt health and family planning needs of Nepalese communities, health care utilization patterns, unmet demands of health care, community satisfaction with existing health services, and the health care expenditures of the community;

(3) identify the health problems and needs of Nepal as felt by health personnel in rural districts and to identify the actual roles and functions performed by health institutions and health personnel; and

(4) utilize the outcome of such studies in planning or modifying the curricula and training programs of the Institute of Medicine.



Moin Shah

Three districts in Nepal were investigated during the course of the project: Tanahu and Dhankuta, which are both hilly districts, and Bara, a district in the terai (plains and foothills) bordering India. In both Tanahu and Dhankuta districts a household survey and health services studies were carried out to obtain estimates of rural health needs, health services utilization, health care expenditures, and the activities of government health personnel. In Bara district, only the household survey was undertaken.

The following report provides details on the procedures followed in Tanahu and summarizes the results of the studies undertaken in that district.

Design and Organization of Tanahu District Studies

Household Survey

Design

Two groups of villages were identified, one around the district hospital in Bandipur and the other around a health post in Sabhung. Villages with better access to other health posts or hospitals (in another district) were eliminated. From each group, two subgroups were identified: strata I was within 1 hour's walk of the district hospital; strata II was 1-3 hours from the district hospital; strata III was 1 hour from the health post; and strata IV was 1-3 hours from the health post. Four villages with 25-35 households were chosen randomly for each strata for the health survey. Thus, in total, eight villages were sampled around the hospital and eight around Sabhung Health Post. All the households in the sample villages were surveyed, except those unoccupied or with only minors present or unable or unwilling to respond at the time of interview. The household survey thus includes 453 households comprising a total of 2775 individuals.

The survey was conducted in the form of an interview of the responsible and eligible respondents of each household with the help of a standardized questionnaire. The questionnaire was in two parts. First, a household part (Appendix 1) provided general information about the household including age, sex, marital status, occupation, education, immunization status, long-term disability of household members, health personnel visits during the last month, water supply and storage, latrines and drainage, births including antenatal, natal, and postnatal care, problems and cost of such care during the last year, 1-year mortality and problems leading to death, family planning acceptance and practice, and illness in the household for the 2 weeks prior to the interview. The second part (Appendix 2) was filled in for each member of the household listed as ill in the household questionnaire. It contained a detailed chronological history of any problems, the total duration of sickness including duration within the last 2 weeks, disability within the last 2 weeks, any consultation and visits per consultation, type of consultation or practitioner and name and address of the consulted person, fees for each visit, the cost of medicine, travel, and other health-related expenditures. Questions were also asked about the result of treatment, satisfaction or cause of dissatisfaction with the treatment received, any self- or home treatment, reason for not consulting if there was no treatment, and expenditures for self- or home treatment. Because of problems of recall, we concentrated only on information from the 2 weeks prior to the interview.

Organization

Two main teams were formed, each headed by two supervisors. One team surveyed the villages around Bandipur Hospital and the other those around Sabhung. The project program officer took overall command of field operations for both teams. After an initial visit to all six health posts and Bandipur Hospital to collect data for the health facilities study, the household survey was conducted village by village. After completion of the household survey, the second institutional visits were done to repeat certain parts of the studies. Hand sorting and tabulation were mainly done at Kathmandu by the research project staff after initial field tabulations had been done.

Quality Control

The quality of any interview depends on the adequacy of the training of the interviewers. After developing a training manual for the questionnaires and forms, we trained the interviewers with repeated cycles of theory and practice, using role playing and pretests in rural villages and health posts. Even in the field the initial surveys were closely watched and intensive interpersonal discussions were conducted right in the field. We also conducted a meeting in Bandipur where all interviewers, supervisors, and most of the district health personnel were present to discuss the possibility of underreporting and other field and research problems. The recommendations of the meeting were very constructive and included suggestions like using the help of village school teachers, social workers, and panchayat leaders, informal chats before the interview, repetition of the questions in simpler terms, and sleeping in the same village the previous night. At times the interviews were conducted in groups that would include other family members, namely children and elderly relatives and even neighbours. On these occasions, each member was asked to complete or correct the information given by the household head during the interview. A few households were interviewed twice taking different respondents and using different interviewers. This, along with a close watch by the supervisors and at times by the program officer, constituted the main method of ensuring the reliability of data collected.

Health Facility Study

Design and Methods

For this study, six health posts, currently functioning for at least 1 year prior to the study, one district hospital at Bandipur, four Family Planning/Maternal Child Health (FP/MCH) clinics, four ayurvedic dispensaries, and three National Malaria Eradication Organization units were sampled.

Over 100 health technical personnel were identified as working in these facilities. Of these, 40 were selected for interviews. The following methods were used to study the health facilities and their personnel.

(a) Interview

A standardized questionnaire (Appendix 3) with three parts was devised for the interview of health personnel. Modifications were made after pretests in the health posts near Kathmandu. The first part collected background information about the health personnel. The second part assessed their perception of the health problem in their district, including the main causes of mortality and morbidity and the utilization pattern of health services. Information was also asked about adequacy of supplies, equipment, and buildings. The

third part of the questionnaire dealt with the responsibilities and activities of health personnel and the health institution, as well as their training experience and ability to perform these functions. Most of these interviews were carried out during a first visit to the health facilities, prior to the start of any of the other data collection.

(b) Work Sampling

This method was devised to identify the actual function and activities of health personnel in a quantitative fashion providing a time dimension. Intermittent instantaneous observations of each person studied were made every 2 minutes through 1 or 2 working days. Details of the precise activity at the moment of observation were recorded. In addition to this observation a continuous count of persons served by age-sex groups was done, as well as a summary of activities performed outside of working hours. The latter was determined on a recall basis for the previous day.

The work sampling was done at least 1 full day on each of 28 health personnel. In addition, 13 were observed a 2nd complete day. These days of observation were done on two separate visits to the facilities.

(c) Task Analysis

This observational study supplemented the data obtained from work sampling. It consisted of two parts — one for the analysis of personnel activities in the health facility, and the other for their activities in the community. It recorded the time taken for each patient consultation or home visit. In addition, details of consultation or visits were recorded on a checklist.

As with the case of work sampling, task analysis was repeated on each of two visits to a facility.

(d) Service Record Forms

Four different service record forms were devised to record data from the health facilities' own statistics:

Form W — This collected general descriptive information about the facility. It included the actual expenditure and the staffing pattern for the previous year.

Form X — This form was used to collect information on the type of health problems presenting at the facility by age-sex groups. For the Outpatient Department of the hospital, health posts, and ayurvedic dispensaries, the form was filled for 24 randomly selected days during the previous year covering 2 days each month and each of the 6 different working days of the week for each of the seasons. This form was also used for 28 consecutive days during the time of our study. In the case of the hospital, all inpatient admissions during 1 full year were also recorded.

Form Y — This form was used to record the total attendance by age-sex groups for each month of the previous year. All the health posts, ayurvedic dispensaries, the district hospital, and two FP/MCH clinics were included.

Form Z — This form was used to tabulate the number of Outpatient Department attendances from different villages around the facilities made during 28 days of the study. This permitted calculation of the volume of visits to the health facility by time distance zones.

Individual Health Worker's Service Information Form — Two forms (A and B) were devised to count the activities for each health worker for the 28-day study. Form A was for personnel engaged in medical care and FP/MCH, and form B was for personnel engaged in malaria eradication, smallpox eradication,

TB control, leprosy control, health education, environmental sanitation, and supervision. Each of the 28 rows of the form described 1 full day's activity giving counts of service contacts for various functions. Thirty-two health workers were able to maintain these records during the 28 days.

(e) *Control Form*

This form recorded the name and designation of each of the technical personnel assigned to the health facility, the amount of leave of absence during the last year and also during the 28 days of the study, and their housing facilities. The form also indicated how many of the various studies the individual had been involved in, such as interviews, work sampling, task analysis, and service records.

Organization of Field Work

For the health facilities study, the two field teams were each divided into two subteams with three members each, including one supervisor. Each subteam studied one health post and one ayurvedic dispensary, one FP/MCH clinic, and one National Malaria Eradication Organization unit wherever applicable. Two subteams were grouped together to conduct the health service study at Bandipur Hospital. Similarly, the other two subteams conducted the study at the larger units of Damauli and Khaireni. The health service studies were done on two separate visits for all health posts and the hospital with a gap of 28 days between visits. The second visit provided the opportunity to repeat work sampling, task analysis, complete any unfinished interviews, and collect all service records filled out by staff during the 28 days. Control forms were filled after all the forms and interviews were completed.

Quality Control

There are few ways of checking the reliability of observational studies and service record data. The following measures, however, were taken in this study to overcome this problem.

(a) Training of the observers was intensive with repeated practice and pretests in different health posts near Kathmandu both under supervision and independently. Each observer participated in translating to Nepali and retranslating to English all the forms and training manuals developed for the purpose.

(b) The work of the observers was carefully supervised by the head of each subteam. Sometimes supervisors conducted observations while the observers watched. Any shortcoming was promptly pointed out and corrected. Sometimes simultaneous observations by two observers were synchronized.

(c) Each of the forms was checked in the field shortly after completion, at which point any incomplete information or inadequate or unclear information or any discrepancy was pointed out and corrected. Final verification or check was done by the Program Officer.

(d) Some of the forms were rechecked or verified by supervisors and the Program Officer with the respective health personnel or office register.

(e) Any new experience or information leading to more appropriate or correct probing or interpretations were added in subsequent observations of the other health personnel.



Ramesh Shrestha

Findings

Interpreting the many findings of this study and drawing reasonable conclusions from them are activities requiring the participation of a wide variety of individuals familiar with the health system in Nepal. However, to provide a preliminary stimulus for discussion, some general conclusions can be summarized from the viewpoint of the research team:

- There is a very high level of untreated morbidity and disability in rural areas of Nepal. Utilization patterns suggest a definite preference for government services at the district hospital level. Utilization of traditional sources of care assume prominence only in isolated areas at a distance from health posts or the hospital.
- The overriding factor determining use of services is distance. So constant is this effect that the findings can be used to estimate the number and location of facilities that would be required to provide specific levels of coverage.
- Costs are not a barrier to the use of health services, as most people willingly spend money in the market for medicines unavailable at the government health services. Currently patients spend on the average over Rs. 5* for medicines as a result of a visit to a government facility. If even a part of the money currently being spent outside the government health system could be utilized for government health services, these services could be expanded considerably. However, there may be those who cannot afford even these levels of expenditure, for whom some provision for adequate care would have to be made.
- As high as 70% of the need for care might be preventable. Serious attempts should be made to weigh the value and effectiveness of preventive programs in contrast to the gigantic task of satisfying the unmet curative needs.
- Health services in the homes are minimal except for malaria control programs. In spite of the difficulties of travel, the efficiency of selected home contacts needs to be carefully weighed against the dominance now of fixed curative services. This becomes especially valid when the large amount of time spent by health workers waiting for patients is considered. However, ways must be worked out to reduce the excessive travel time related to field work.
- Maternity care is predominantly a function of the family. Government facilities, traditional healers, or midwives play a minor role. Any program designed to improve this care in Tanahu or similar areas must recognize this fact. Home contacts and education on using available facilities may have to go hand in hand.
- There appears to be a significant reservoir of couples expecting to use family planning for whom services should be made available. This is in spite of the finding that most of the population has to learn that there are methods for spacing or controlling the number of children they have.
- Although health personnel are trained to provide services involving multiple functions, there is almost complete preoccupation with curative services. If this is to be changed, careful consideration must be given to the appropriateness of training programs and the organization,

*Rs. 1 = ca. U.S. \$0.08.

supervision, and delivery of services. This certainly should include attempts to increase productivity above the current level of 30% in direct service time to the clients. Increases in the current low levels of supervision are undoubtedly part of the answer.

- There appears to be a need for a concerted effort to improve the community's knowledge and understanding of health. Recognition of this by health personnel was almost universal with some expressing the desire to be better prepared to provide health education.
- A corollary finding is the need for health personnel to have a better understanding of the community. Incorporation of a number of the findings of this study into orientation and training programs for health personnel should be useful in meeting this need.

Making Research Count: Identifying Practical Implications in Research Findings

In the final analysis, applied research can only be justified if it is "applied." The very definition of applied research connotes practical use of its findings. Unfortunately many of the findings of applied research never get tried out in the real world of large-scale health care delivery systems. In this workshop we have already reviewed some of the major reasons for this lack of application: inadequate definition of the problems to be studied, selection of areas that are not of real concern to health planners and administrators, inappropriate or inadequate design and implementation of research studies, and collection of information that does not reflect the true conditions of a population or its health services.



Robert L. Parker

Another important reason for nonimplementable findings is the very nature of research itself. In this modern age we tend to expect quick and valid answers to all our questions if we just rigorously apply the scientific method to our investigations. Unfortunately, research, especially in areas of social concern, is not that well developed. Even in the physical sciences, research is always a gamble. Negative or nonmeaningful results are a fact of life confronting all who do research. This does not mean that we have to be overly pessimistic about the usefulness of research; good research is still much better than a trial-and-error approach to solving problems. But in spite of our best efforts in design and implementation we must guard against excessive expectations that can bias our interpretations of results. All too often findings and suggestions from field studies have been touted as the answer to specific problems only to have them fall flat when tried out in "real life" situations. Healthy skepticism is a useful approach to all research findings. But it must be directed toward identifying and separating out the useful products of research and not waste time dwelling on findings it identifies as useless.

This then leads to a third major obstacle to implementing research findings and the main concern of this paper. Many well-conceived and productive research projects have failed to be applied because their findings have not been translated into practical actions that could be understood by individuals

responsible for their implementation. Too often administrators or planners are heard to complain, "These are very interesting findings, but what do they mean in practical terms? How can I use these findings to improve health services?" It is in this area of interpretation and generation of meaningful applications of findings that a careful and systematic approach is needed as much as when designing and carrying out the research itself. Usually much of our interpretation of findings is intuitive and based on our own experiences. This probably is one of the most important ingredients in the process of interpretation, especially when individuals with extensive and appropriate backgrounds are involved. However, a number of important steps can be useful in assisting and making the empirical aspects of interpretation more effective.

(1) When interpreting research findings, be sure those involved know what questions the research was trying to answer. This may seem obvious, but many findings have been ignored or wrongly interpreted because they were used to answer questions they were not intended to answer. It is always better if those responsible for interpretation and implementation of findings are involved or aware of all aspects of the research right from the start.

(2) After each of the research questions has been identified and well delineated, all pertinent sources of data in the study that may provide answers to each question should be identified and reviewed in terms of actual implementation during the study and probable validity of the data collected.

(3) The findings from each of the sources of data that are related to a specific question should then be summarized as simply as possible, using a minimum of statistics. More complex analysis or data presentation should be used only when questions cannot be answered by the summarized findings.

(4) Using the findings, list all reasonable interpretations and answers to the research question and identify the most probable of these. If additional analysis or even new studies are required before the research question can be reasonably answered, these should be spelled out in detail.

(5) Based on the most probable interpretations of the findings, develop a list of changes in the system being studied that might be implemented throughout the system or in part of the system on a trial or demonstration basis.

The success of the above steps depends heavily on the skill of those summarizing the findings, the involvement of a good cross-section of experienced persons in the interpretation process, the effective use of group consensus techniques, and the widest possible dissemination of the findings so that reactions from individuals and groups not directly involved in the interpretation process can also be taken into account.

Data Collection Methods and Their Uses in Health Services Research

Applied research in the health field usually involves four major types of data collection. These are community (population-based) surveys, surveys of health personnel, observational studies of health service activities, and use of existing or special records and reports. The types of questions that each of these methods tries to provide answers for are summarized in Table 1. In this table, data provided by each method are categorized into five basic types: (1) *health needs* of the community; (2) use of *resources*, both manpower and material; (3) the *activities* of the health service system; (4) health services provided; and (5) the *impact* of these services on the health of the community.

Table 1. Types of information provided by different data collection methods.

| Data collection methods | Types of information | | | | |
|---|--|--|---|---|--|
| | Health needs | Health resources | Activities | Services | Impact |
| Community surveys | *What are the morbidity, mortality, disability, and attitude patterns in the community? Who are the persons requiring preventive or other types of services? What are the environmental, social, economic, and demographic characteristics of the community? | *Who provides health services in a community and at what cost to the individuals involved? Where are the services provided? Why are they used or not used? | What is involved when services are received? What is the content of any interaction? | How many and what types of services have been received and why are these services chosen or provided? | *What are the changes in health indicators (morbidity, mortality, etc.) that are a result of the services? Is the community satisfied? |
| Observational studies and health personnel surveys | What are the numbers and types of problems presenting at a facility? What are the types of problems seen or recognized by health personnel? | *Who provides care, how much time is provided, what are the resources utilized, and where are the services provided? | *What activities are involved in providing services and how are these activities divided by time and category of health worker; in what sequence do they occur; what is the nonproductive or waiting time involved? | *How many and what type of service and service contacts are provided and to whom? | What are the results of the services as perceived by health personnel? |
| Records and reports | What are the numbers and types of problems seeking care from a facility? Who are the individuals requiring care? | *Who provides care, how much time have they been available, what are the resources utilized, including financial, and where are the services provided? | What was involved in the delivery of care, what was done, what advice given? | *How many and what types of services were provided and to whom? | What are the changes noted on revisit? |

The data in the table marked with asterisks (*) indicate the most useful types of data generated by a particular method. As can be seen there is a good deal of overlap between the methods in their ability to provide different types of information. Where there is this overlap a decision about the method to be used will often hinge on much more specific details of the variables to be examined as well as questions of cost and feasibility of application. In general, however, community surveys are best utilized for determining health needs, impacts of services, and the broad availability and use of health resources. Observational and health personnel studies provide the best data on manpower inputs and details of health service activities. Records and reports are usually the most efficient sources of information about resources used and services provided in health systems maintaining such records.

Pitfalls in Applied Research — Lessons from the Nepal Experience

When any research program is implemented in a developing country, it consumes some of the country's scarce resources. Thus it is the responsibility of the research workers to design research programs to provide immediately usable solutions to existing problems. Besides the need for careful and systematic planning and programming for a research study, careful execution is necessary to meet the research objectives more precisely and more completely. Research studies involve team work with the team sharing collective responsibility. Each member of a research team should be well motivated and practical. He should not only understand clearly the nature and purpose of the research study he is involved with but should also be able to take appropriate decisions when faced with difficulties or problems especially during the operational phase.



Mathura P. Shrestha

Improperly designed research, poor preparation, incompetency of field staff, underreporting or misreporting, concealed information, incomplete or inconsistent data or information, and difficult working situations all produce biases that may jeopardize a research study. These problems should be prevented or minimized. How they are coped with will depend on the situation. However, the following general approaches to these problems should be carefully considered.

Research Design

The test instruments and research methodology should be prepared according to the research objectives but adjusted to the conditions of the study area. They should be field-tested or pretested before conducting the actual research study. In addition, there should be provision for constant improvement and modification of the instrument and methodology to make the research design more effective and more consistent. Modification itself, however, should only be done to better attain the research objectives. The data thus obtained should be the same if repeated in the same area and time and should be comparable to previous similar studies in other places. In addition the

research should be acceptable to the population being studied. In those areas of information where sensitivity may arise, solutions should be found and tested with repeated field trials that do not encroach on the feelings of the sample population.

Manpower for Research Studies

As already stated, a research study involves team work. Each member of the research team, especially the data collectors or interviewers, should have a clear-cut understanding of all aspects of the research study, especially how to collect valid information. To develop competent data collectors, interviewers, or observers, they should participate whenever possible in some way in the development of the research instruments from the initial stages, like translating, drafting, and participating in problem-solving discussions. Field staff, especially supervisors, data collectors, interviewers, or observers, should be properly motivated. They should be persistent, patient, and willing to do the job to the best of their ability. They should always try to identify themselves as part of the community or study population. For example, when they have to work in a rural community they should eat and live much the same way as the members of the community and try to copy their way of life. The development of this type of attitude is easier said than done. But this attitudinal development is necessary for them to be acceptable to the community and to gain the community's confidence. They should be able to establish good rapport with the community using local customs of politeness and conversation. They should respect the tradition and way of life of the study population. In addition they should always try to get (and should be able to get) the cooperation of primary or other school teachers, social workers, village leaders and elders, and other related individuals and agencies. The insights and experience of these leaders developed after a long span of time with the people and locality should be beneficial. Though there is often a tendency by a field team to ignore such community leaders this type of cooperation whenever utilized has always been very valuable for our field study.

Other skills to be developed for field staff are the ability to take initiative, to explain the purpose of the study well so that the study questions are properly understood, to observe or to probe into certain casual relationships, to verify peculiar or abnormal findings, and to modify the ways and means to complete the information in difficult or different cases. All these show the need to prepare different levels of field staff very carefully and thoroughly. We have always found this to be a challenge.

Sampling and Timing

Site selection and sample generations of the study area should be based on the research objectives and feasibility. Timing too should be consistent with the study design as well as field conditions. Major festival days should be avoided. During busy seasons interviewers should be prepared to work during morning or night hours. At the same time scheduling should be such that continuity is maintained and the research team's time is properly utilized.

Logistic Problems

In Nepal this problem is intimately related to the difficult geographic terrain. An interviewer or observer almost always has to make difficult treks through the mountains, streams, rivers, muddy fields, boulder beds, and jungles. After a day's hard walk he often finds that the village he has just reached cannot accommodate him. In the villages of Nepal the pattern of accepting or

accommodating visitors differs widely. Normally a village cannot accommodate more than four or five visitors a day. Even then food is scarce and villagers have usually nothing to sell. In most of the villages in hilly and mountainous regions visitors are welcomed and most houses have a corridor built, often open, to accommodate or to receive visitors (in such corridors household members also meet, rest, work, and discuss their affairs). However, the villages in the terai area normally do not entertain outside visitors and their houses often do not have such extra space. Visitors in this case need to find odd places like panchayat buildings, schools, or a community hall for accommodation. All the supplies usually have to be carried in on human back. Sometimes porters are not available. Interviewers and supervisors have to carry their own personal belongings such as sleeping bags, clothes, etc. even if porters are available because of the cost of such transportation.

All these indicate the need for proper planning and scheduling, staff movement, and organization. The team should be properly equipped with required forms, light-weight sleeping bags and other personal effects, flashlights, candles, utensils, etc. They should also carry some food even though they will be ready to eat what the villagers eat. A sufficient number of forms should be brought and they should be simple, light, and functional. Investigators and their papers should also be adequately protected from rain. But certain things like tents and "luxury" appliances should not be brought, for these things may isolate the interviewers from the community. Logistic considerations should be studied to keep the team and supervisors highly mobile. It would be helpful if the team members took some lessons from nomads!

Community-Related Problems

This is one of the most important problem areas about which field staff should be thoroughly acquainted. Community-related problems that were not anticipated should be tackled in the field itself after joint discussions among the interviewers and supervisors and other agencies involved in the community's affairs. The community might have been exposed to several similar studies by other agencies and its members might not see any need for the study in question and may not like to be bothered. There may be a tendency in the community to conceal certain information. This tendency may be unintended or unconscious. For example, a child's diarrhea and pot-bellied appearance, an old man's cough, a woman's back pain may appear to a respondent in the community too natural and too trifling to bother mentioning or they may be forgotten because of recall problems or nervousness. It may be intentional because of shyness, fear, and false beliefs or superstition that any condition occurring in the family, especially among the women and children, should not be discussed. There may be certain legal implications or social taboos attached to certain problems like birth control, abortions, miscarriages, separation, and injuries as a result of a family squabble (usually wife beating).

One might find it quite difficult to adapt to attitudinal diversities in communities and their varied culture and customs. There may be the problem of overreporting or misreporting if the community expects some local benefits from the research study such as a new health post. Sociopolitical rivalry in a community may affect the study. For example, an interviewer staying in a household might have to face certain disbeliefs from rival households. The problems mentioned above may not always be avoidable but should be solved to the best of the team's ability, which depends very much on their willingness to be innovative and creative in handling such situations.

Supervision

Multitier supervision is necessary for an accurate study. Supervisory responsibility is not a simple concept. Problems like what to supervise and how to supervise need always be rethought and reformulated. Supervision should not be taken as routine work but should be seen as an important procedure to improve the quality of the study and ensure that the study achieves its objectives. Supervision should help improve techniques, monitor and assure progress, provide learning opportunities, reinforce appropriate attitudes and morale, and provide regular logistic support.

In addition supervision itself should be measurable. A supervisor of a research study should know in detail all aspects of the field operation, have done the field work himself, be exceptionally competent, mobile, careful, and trustworthy. In Nepal, we have developed a comprehensive supervisory pattern for our research study but still we realize that supervision is one of our weaknesses.

Repeatability or Validity Testing

This is another area we have had problems with. Generally a community does not want to be bothered twice for the same purpose. In addition, supervisors and interviewers are invariably tired after completion of interviews and they are in a hurry to go to other areas or to go back home. In our case, a system of checking was developed for the study but was utilized only to check discrepancies or to ensure completion of the data. No measurable repeatability or validity tests were done. In view of the above constraints, we are planning to continue repeatability and validity testing with some sort of examination or observational survey. If one or two well-trained and well-oriented community physicians are sent to a certain proportion of the interviewed households to reinterview as well as to conduct physical examinations of the household members, this might solve some of the above problems as well as provide additional valuable information not available from interviews. But this kind of backup survey needs to be field-tested before we can determine how much help it will be.

On-the-Spot Monitoring

Preparation of initial field tabulations and continuous statistical monitoring of the entire study are necessary. If certain kinds of underreporting or misreporting are identified or suspected, field operations should be temporarily suspended and a solution to the problem should be found before restarting the field survey. Meeting with the district health personnel at Bandipur when problems were encountered in the survey of health needs in Tanahu District provided important insights that helped the team improve the interviewing. However, initial field checks or monitoring are not always done conscientiously. This can be avoided if the team understands the importance of such monitoring.

If, through monitoring, an instrument or methodology is identified as incompatible with the existing field conditions, there should be no hesitation in looking for the reason and changing or modifying the methodology if necessary, ensuring, however, that the major study objectives or design are not violated.

Finally, it is worth repeating that staff in applied health research must be physically and mentally prepared to go and live with the rural population and learn from their way of life. Only when this occurs will the results truly reflect the health needs and practices of the people who eventually must benefit from the research.

Appendix 1. Household census form.

HOUSEHOLD SURVEY HOUSEHOLD CENSUS FORM ¹ HEALTH MANPOWER DEVELOPMENT RESEARCH PROJECT ID NO. ²

DISTRICT ⁶ SAMPLE ST. ⁶ PANCHAYAT WARD/VILLAGE ⁹ HOUSE NO. ¹¹
 NAME (RESPONDENT) RELATION TO HEAD OF HH ¹⁵ ETHNICITY ¹⁴ RELIGION ¹⁶

NAME (OBSERVER) ¹⁷ DATE ¹⁹
 DATE MONTH YEAR

| S. NO. | NAME | SEX | AGE | | | REL TO HEAD OF HH | EDUCATION | OCCUPATION | LOCATION OF WORK | IMMUNISATION | | | DISABILITY | | | | | DAYS AWAY | | Residential Status | | | |
|--------|------|-----|-----|----|----|-------------------|-----------|------------|------------------|--------------|--------|-----|------------|---------|----------|---------|------------|-----------|--------|--------------------|----|----|----|
| | | | 27 | 28 | 29 | | | | | 30 | S. POX | BCG | Other | Spee-ck | Hear-ing | Visi-on | Paral-ysis | Men-tal | Others | | 44 | 45 | 46 |
| 26 | | | 27 | 28 | 29 | 30 | | | | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | | | | |
| D 1 | | | | | | | | | | | | | | | | | | | | | | | |
| D 2 | | | | | | | | | | | | | | | | | | | | | | | |
| D 3 | | | | | | | | | | | | | | | | | | | | | | | |
| D 4 | | | | | | | | | | | | | | | | | | | | | | | |
| D 5 | | | | | | | | | | | | | | | | | | | | | | | |
| D 6 | | | | | | | | | | | | | | | | | | | | | | | |
| D 7 | | | | | | | | | | | | | | | | | | | | | | | |
| D 8 | | | | | | | | | | | | | | | | | | | | | | | |
| D 9 | | | | | | | | | | | | | | | | | | | | | | | |
| D 10 | | | | | | | | | | | | | | | | | | | | | | | |
| D 11 | | | | | | | | | | | | | | | | | | | | | | | |
| D 12 | | | | | | | | | | | | | | | | | | | | | | | |
| D 13 | | | | | | | | | | | | | | | | | | | | | | | |
| D 14 | | | | | | | | | | | | | | | | | | | | | | | |
| D 15 | | | | | | | | | | | | | | | | | | | | | | | |

CODE IN FIELD SEX MALE = 1 FEMALE = 2
 AGE CODE COMPLETED YEARS UNDER 1 = 00 OVER 98 = 99
 MARRIED = 1 WIDWED = 3
 UNMARRIED = 2 OTHER = 4

IMMUNISATIONS: <1Yr = 1, 1-3 Yrs = 2, 3+Yrs = 3, UNCERTAIN = 4, NEVER = 0
 DISABILITY: NONE = 0, PARTIAL = 1, TOTAL = 2
 DAYS AWAY: CODE ACTUAL DAYS AWAY DURING 14 DAYS, OVER 14 DAYS = 99
 RESIDENTIAL STATUS: NORMAL RESIDENT = 1, TEMPORARY AWAY = 2, TEMPORARY PRESENT = 3

(con't.)

NAME (RESPONDENT) _____

NAME (OBSERVER) _____

1. HAS ANY HEALTH WORKER OR MEDICAL PRACTITIONER VISITED YOUR HOUSE IN THE LAST ONE MONTH FOR THE FOLLOWING:-

| WHO VISITED | NO. OF VISIT | WHAT WAS DONE |
|--|--------------|---------------|
| a) FOR FEVER CHECKS ETC. (MALARIA F. WORKER) | | |
| b) FOR VACCINATION (S.P. VACCINATOR) | | |
| c) FOR COUGH CHECK ETC. (T.B. WORKER) | | |
| d) FOR SKIN CHECK ETC. (LEPROSY WORKER) | | |
| e) MOTHER & CHILD CHECK (MCH VISIT) | | |
| f) FAMILY PLANNING H/AIDS ETC. | | |
| g) OTHERS (SPECIFY) | | |
| _____ | | |
| _____ | | |
| _____ | | |

2. COMMENT THE FOLLOWING AFTER INQUIRY & OWN OBSERVATION:

2.1 SOURCE OF DRINKING WATER: _____

2.2 HOW DRINKING WATER IS STORED: _____

2.3 PLACE WHERE THE HOUSE HOLE MEMBERS USUALLY MOVE THEIR BOWEL _____

2.4 GARBAGE DISPOSAL: _____

CODE

3. DID ANY WOMAN IN YOUR HOUSEHOLD GIVE BIRTH IN THE LAST ONE YEAR ? (MENTION EACH MARRIED WOMAN IN THE CENSUS FORM. INCLUDE DAUGHTERS-IN-LAW WHO ARE TEMPORARILY ABSENT BUT EXCLUDE MARRIED DAUGHTERS OF THE HH. SPECIFICALLY ASK ABOUT STILL BIRTHS, ABORTIONS AND SEX OF BABY. ASK FOR EACH a) WHO PROVIDED ANY TYPE OF CARE BEFORE DELIVERY, AT DELIVERY AND AFTER DELIVERY, b) HOW MUCH MONEY OR PRESENTS WERE GIVEN, c) WERE THERE ANY PROBLEMS WITH THE PREGNANCY AT ANY TIME. IF MORE THAN ONE BIRTH INDICATE THE S.NO. OF MOTHER FOR EACH BIRTH.)

| S. NO. (SEE CENSUS) | NAME | LIVE BIRTH | STILL BIRTH | ABORTION | SEX | ANTENATAL CARE | | AT DELIVERY | | POSTNATAL CARE | MONEY OR PRESENT | PROBLEM | CODE |
|------------------------|-------|------------|-------------|----------|-------|----------------|-------------|-------------|-------|----------------|------------------|---------|-------|
| | | | | | | 1 WHO/WHERE | 2 WHO/WHERE | 3 WHO/WHERE | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

(concluded)

4. HAS ANY MEMBER OF THIS HOUSEHOLD SEEN ILL, MET WITH AN ACCIDENT, NOT FELT NORMAL, NOT SEEN ABLE TO CARRY OUT USUAL ACTIVITIES, TAKEN ANY KIND OF TREATMENT OR HOME REMEDY OR GONE TO A PRACTITIONER OR HEALER IN THE PAST TWO WEEKS? (LIST ALL SUCH INDIVIDUALS BELOW. BEFORE LISTING FIRST ASK FOR EACH MEMBER ON THE CENSUS FORM WHETHER IN THE PAST TWO WEEKS THEY HAVE HAD ANY FEVER, COUGH, BREATHING PROBLEM, LOOSE MOTIONS OR PROBLEMS WITH HEAD, EYES, EARS, NOSE, MOUTH, THROAT, NECK, CHEST, BACK, ABDOMEN, GENITALS, ARMS, LEGS, SKIN OR MIND OR INJURY ANYWHERE. ADD ANY ADDITIONAL PROBLEM ANYWHERE. ADD ANY ADDITIONAL PROBLEM IDENTIFIED TO THE LIST. DO NOT LIST ANY ONE ABSENT ALL 14 DAYS.)

5. HAVE ANY BABIES, CHILDREN, WOMEN DURING PREGNANCY OR DELIVERY OR ADULTS DIED IN YOUR HOUSEHOLD IN THE PAST ONE YEAR? (ASK SPECIALLY ABOUT INFANTS AND GIVE THEIR AGE IN MONTHS AT DEATH. ALL OTHERS SHOULD BE AGE IN YEARS. ASK ABOUT SYMPTOMS AND PROBLEMS LEADING TO DEATH.)

| NAME | SEX | AGE | CAUSE OF DEATH | CODE |
|------|-----|-----|----------------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

(ASK THE FOLLOWING QUESTIONS ONLY TO LEGIBLE COUPLES OF HH. - i.e., THE COUPLE WHOSE WIFE'S AGE IS BETWEEN 15-45 YEARS. ASK EITHER THE HUSBAND OR WIFE OF ALL COUPLES OF HH.)

6. DO YOU OR YOUR SPOUSE DO ANYTHING TO PREVENT PREGNANCY OR BIRTH, THESE DAYS?

| S. NO. | NAME | NO. OF PROBLEMS | CODE |
|--------|------|-----------------|------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| S. NO. | NAME OF RESPONDENT | IF YES, | | IF NO, | | CODE |
|--------|--------------------|-----------------|---------------|---|---|------|
| | | WHO DOES? | WHAT IS DONE? | DID YOU OR YOUR SPOUSE DO ANYTHING BEFORE? WRITE METHOD | DO YOU OR YOUR SPOUSE PLAN TO USE IN FUTURE? WRITE METHOD | |
| | | HUS/WIFE 1 2 | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

FOR EACH PERSON LISTED ABOVE FILL OUT A SEPARATE INDIVIDUAL PROBLEM FORM.

Appendix 2. Individual health problems form.

INDIVIDUAL HEALTH PROBLEM FORM No HEALTH MANPOWER DEVELOPMENT RESEARCH PROJECT IO NO

DISTRICT SAMPLE STRATA PANCHAYAT W/O VILLAGE H.NO.

NAME: RESPONDENT RELATION OF THE AFFECTED PERSON ETHNICITY RELIGION

NAME: ILL PERSON S.NO. SEX AGE

NAME: OBSERVER DATE

TO BE FILLED FOR EACH PERSON LISTED IN Q.4 OF HH FORM

1. Ask the Respondent (preferably the ill person) to describe his / her problem(s) chronologically, the onset and development of complaints. Ask for the total UNINTERRUPTED duration of present problem(s) and then the number of the days during the past 14 days the problem has been present. Record in respondent's own words.

| | |
|---|--|
| 2. UNDUPLICATED DAYS OF ILLNESS DURING TWO WEEKS: | |
| 3. TOTAL UNDUPLICATED DAYS OF ILLNESS: | |
| 4. UNDUPLICATED DAYS OF DISABILITY: | |

| | A. ENTER EACH GROUP OF PROBLEMS SEPARATELY, eg. ILLNESS, INJURY, BIRTH RELATED, DENTAL PROBLEM etc. | B. HOW MANY DAYS WERE YOU NOT COMPLETELY WELL DUE TO THE PROBLEM FOR THE LAST 2 WEEKS. (CIRCLE 1 IF IT IS NEW OR RECURRING DURING THE LAST 14 DAYS.) | C. TOTAL DURATION OF THE PROBLEM. WRITE DAYS/MONTH/ YEAR AS APPROPRIATE. CIRCLE 2 IF THE PROBLEM IS CONTINUATION OF MORE THAN 14 DAYS. | D. HOW MANY DAYS IN THE PAST TWO WEEKS YOU WERE IN BED OR DISABLED OR NOT ABLE TO WORK ? (FOR A CHILD ASK IF HE IS NOT PLAYING OR AS ACTIVE AS USUAL.) | E. DID YOU TAKE ANY SELF OR HOME TREATMENT FOR THE PROBLEM DURING THE LAST 14 DAYS ? IF YES CIRCLE 1, IF NO CIRCLE 0. WRITE WHAT WAS DONE AND MONEY SPENT. |
|-----------|---|--|--|---|--|
| PROBLEM 1 | | (1) | 2 | | 1 What done? 0 Re. |
| PROBLEM 2 | | 1 | 2 | | 1 What done? 0 Re. |
| PROBLEM 3 | | 1 | 2 | | 1 What done? 0 Re. |

(concluded)

5. DURING THE LAST TWO WEEKS DID YOU VISIT OR SEEK ANY HELP OR CONSULT A PRACTITIONER OR HOSPITAL, HEALTH POST, AYURVEDIC DISPENSARY OR FAITH HEALERS, DRUG SELLER OR ANY PERSON FOR THE RELIEF OF THE PROBLEM ? CIRCLE: YES / NO. IF NO GO TO Q NO. 6

| | FIRST CONSULTATION | SECOND CONSULTATION | THIRD CONSULTATION | |
|---|--------------------|---------------------|--------------------|-----------------------------|
| A. TYPE AND NAME OF SUCH PERSON OR HEALER. | | | | |
| B. FOR WHAT PROBLEM YOU CONSULTED ? | | | | |
| C. HOW MANY DAYS AFTER THE START OF PROBLEM DID YOU SEEK FIRST HELP ? (IF THE PROBLEM IS NEW OR RECURRING DURING TWO WEEKS) | | | | |
| D. HOW MANY TIMES YOU VISITED HIM OR THE PLACE DURING THE LAST 14 DAYS. | | | | TOTAL UNDUPLICATED EXP. |
| E. HOW MUCH FEES OR PRESENT YOU PAID HIM DURING THE LAST TWO WEEKS ? | | | | |
| F. TWO WAY TRAVEL EXPENSE (FOR TWO WEEKS ONLY & RELATED TO EACH CONSULTATION) | | | | |
| G. MEDICAL EXPENSE ON HIS PRESCRIPTION (FOR TWO WEEKS ONLY) | | | | |
| H. OTHER EXPENSE DURING TWO WEEKS LIKE DIET, SACRIFICE, WORSHIP ETC. | | | | |
| I. TOTAL EXPENSE DURING TWO WEEKS. | | | | |
| J. WHAT IS THE RESULT OF HIS TREATMENT ? WRITE 1. IF CURED, 2. IF IMPROVED BUT NOT CURED, 3. IF NO CHANGE, 4. IF WORSE, 5. IF OTHER AND SPECIFY "OTHER" | | | | OBSERVER'S COMMENT (IF ANY) |
| K. ARE YOU SATISFIED WITH HIS TREATMENT ? CIRCLE: | YES | NO | YES | NO |
| L. IF NOT SATISFIED, WHY ? | | | | |

6. IF THE AFFECTED PERSON RECEIVED NO TREATMENT FROM PRACTITIONER OR HEALTH SERVICE OR IF RECEIVED SELF OR HOME TREATMENT ONLY, ASK WHY NOT. RECORD IN RESPONDENT'S OWN WORD.

Appendix 3
Health personnel interview form.

HEALTH MANPOWER DEVELOPMENT RESEARCH PROJECT

HEALTH SERVICES STUDY

HEALTH PERSONNEL INTERVIEW FORM

Form No. _____ S. No. _____ District _____
 Facility _____ Interviewer _____ Date _____
Date Month Year

PART A

Respondent's name _____ Designation _____
 Age _____ Sex _____ Marital status _____
 Number of living children _____ : Boy _____ Girl _____
 Ethnicity _____ Home _____ / _____ : Rural/Town/City _____
 District _____ Basic Education Level _____
 Education in Health Field (Last certification) _____
 Place of Health Training _____ Year completed _____
 How long have you been in the present post? _____ Year _____ Month _____
 How long have you been in a similar post? _____ Year _____ Month _____
 How long have you been in a different post? _____ Year _____ Month _____

PART B

Questions:

1. List the main causes of death in the following groups of individuals in this district:
 - 1.1 Infants under 1 year of age _____

 - 1.2 Children from 1 to 5 years _____

 - 1.3 Women during pregnancy and delivery _____

 - 1.4 All others (adults & children above 5 excluding pregnant, natal, and postnatal mothers)

2. List the main diseases in the following groups of individuals in this district:
 - 2.1 Infants under 1 year _____

 - 2.2 Children from 1 to 5 years _____

 - 2.3 Women during pregnancy and delivery _____

 - 2.4 All others _____

3. What are the main causes of poor health that you are aware of in this area? _____

4. What percentage of the people are malnourished or underweight in this area? _____

5. What are the main causes of malnutrition in these individuals? _____

6. What other health facilities or practitioners are available to the people in this part of the district within 4 hours travel? (e.g. health posts, hospitals, doctor's house, ayurvedic dispensary, vaidya, sudeni, spiritual healers, and others) _____

7. What percent of people in this area (within 4 hours travel) with any health problems seek care from your facility? _____
 from any other source of care? _____
 treat themselves at home? _____
8. What are the reasons some people with problems do not seek care from any source?

- 9.1 If people go to your facility or the other source of care, where would they go first for most of their health problems? _____

- 9.2 Who conducts most of the deliveries in your area of this district? _____

10. What percentage of patients who come to your facility have to walk more than 3 hours
 a. outpatients _____ b. inpatients _____
11. When you go home visiting or working in the community, what is the farthest distance (in time) you have to travel away from your facility? Indicate by what means? _____

12. In what ways does your community help you or participate in health work in this area?
 13. Is your facility located in an area that is convenient to the greatest number of people possible?
 If not, what would be a better place? _____
- 14.4 Are the buildings and equipment adequate? _____
 If not, suggest how to improve them? (at reasonable cost): _____

- 15.5 Do you have adequate medicines and other supplies? _____
 If not, how many months would they last if used properly? _____
- 16.1 List the actual responsibilities (functions) of your facility at the present time: _____

- 16.2 List your own responsibilities (functions) at present if different from those above: _____

- 16.3 (First ask the Question 16.1 and 16.2 as they are, then list the following functions and have them indicate which are the facility's functions and which are their own functions.) For ranking, please see Question No. 18.
- | Function | Facility's | Your Own | Rank Q. 18 |
|------------------------------|------------|----------|------------|
| Illness care (curative) | _____ | _____ | _____ |
| Preventive | _____ | _____ | _____ |
| MCH | _____ | _____ | _____ |
| FP | _____ | _____ | _____ |
| Communicable disease control | _____ | _____ | _____ |
| Environmental sanitation | _____ | _____ | _____ |
| Health education | _____ | _____ | _____ |
| Administrative | _____ | _____ | _____ |
| Other (sp.) | _____ | _____ | _____ |
17. Are you confident that you are able to carry out all your responsibilities properly and to your satisfaction? _____

If not, which and why? _____

18. If you had a choice, what should be the functions of a worker like you to meet the main health needs of your area. Rank the three most important functions above (Q. 16.3), indicating the most important with "1," second most important with "2," and third most important with "3."
 19. Did you have adequate theoretical and practical training in the following areas? Indicate under theory and practice separately, if training was quite adequate with (1), just adequate with (2), only partly adequate with (3), if not adequate at all with (4)

| Function or Activity | Theory | Practice |
|---------------------------------|--------|----------|
| a. Health education | _____ | _____ |
| b. MCH | _____ | _____ |
| c. Family planning | _____ | _____ |
| d. Environmental sanitation | _____ | _____ |
| e. Medical care (curative) | _____ | _____ |
| f. Communicable disease control | _____ | _____ |
| g. Recording and reporting | _____ | _____ |
| h. Other administration | _____ | _____ |
| i. Supervision | _____ | _____ |
| j. Others (list) | _____ | _____ |

20. Do you feel that you need further training in any of the above areas? If yes, circle the number against that area and check either theory or practice or both.
 21. Are you able to use all your skills or knowledge you learned in your training?
 If not, which are the ones you are not using now? _____

 22. List additional skills or knowledge you wish you had received in your training: _____

23. Approximately how much time do you use in an average working day (in hours) for the following: Be sure that time listed is only during working hours. _____
- 23.1 Travel time (to and from the place of work) _____
 - 23.2 Writing or working with records and reports _____
 - 23.3 Waiting for patients _____
 - 23.4 Cleaning equipment, preparing drugs, etc. _____
 - 23.5 Maintaining good relations with community people, such as friendly talk, etc. _____
 - 23.6 Personal time, such as rest, tea breaks, etc. _____
 - 23.7 Taking care of administrative matters other than records or reports _____
 - 23.8 Supervising other personnel _____
 - 23.9 Assisting other personnel _____
 - 23.10 Time spent providing the actual services to people (e.g. treating patients, dispensing medicines, home visits etc.): _____
 - a. In outpatient department _____
 - b. In indoors _____
 - c. In the fields or during home visits _____
 - 23.11 Total time spent per day _____
 (Make sure that total equals the sum of 23.1 to 23.10. If not, have the respondent reestimate.)

24. What percent of your time, on the average, do you spend on the following functions? (Estimate from a day's or week's activity.)

| | Percentage |
|---------------------------------------|------------|
| Illness care (curative) | _____ |
| Preventive care | _____ |
| MCH | _____ |
| FP | _____ |
| CDC (malaria, small pox, TB, leprosy) | _____ |
| Environmental sanitation | _____ |
| Health education | _____ |
| Other (sp) | _____ |

25. How many people do you serve on an average day for each of the following functions in the following places?

| Function | In facility | In person's home | In your home or private clinic |
|------------------------------|-------------|------------------|--------------------------------|
| Illness care | _____ | _____ | _____ |
| Preventive care | _____ | _____ | _____ |
| MCH | _____ | _____ | _____ |
| Family planning | _____ | _____ | _____ |
| Communicable disease control | _____ | _____ | _____ |
| Environmental sanitation | _____ | _____ | _____ |
| Health education | _____ | _____ | _____ |
| Other (specify) | _____ | _____ | _____ |

26. How many people do you have to refer to another facility or practitioner on an average day (specify to whom and why)? _____

27. Do you provide family planning advice to anyone? _____
 If yes, what type of advice? _____

28. To how many people in an average week? _____
 Do you provide any type of contraceptives to anyone? _____
 If yes, what type? _____
 To how many people in an average week? _____
29. If married with at least one child, ask: Have you or your spouse ever used any contraceptive method, and if so, what type? _____

 If yes, are you or your spouse currently using any contraceptive method, and if so, what type? _____

30. How often are you visited or supervised by a more senior worker? _____

 Who is this person? _____
 What does he/she do when supervising or visiting you? _____

31. How often do you visit a larger facility (indicate where)? _____
 For administrative purposes: _____

 For training or receiving technical supervision or instructions: _____

 For other purposes (list): _____

32. What are the main obstacles that you feel prevent you from meeting the health needs of your community properly?
 32.1 Related to your own ability: _____

 32.2 Related to the characteristics of your community: _____

 32.3 Related to the organization for which you work (include provision of facilities such as housing, pay, etc.) _____

Appendix 4.

Applied Research — A Tool for Health Services Development

In countries with limited resources, an important question that must be asked in any discussion about research should be, “how much, if any, can we afford?” Inherent in such a question is the feeling that much research is nonproductive, or at best a luxury that will provide answers useful only in the distant future. Countering this impression about research are the arguments that only through sound experimentation and applications of research methods can appropriate decisions be made regarding the use of a country’s scarce resources. As in most situations reality is somewhere in the middle of these two extremes. This background paper on applied health research is based on the assumption that well-conceived and properly planned research can make important contributions in situations where resources are limited. The key concepts that are conveyed in this position are careful selection of the research problem and careful planning and execution of the research study itself. A lack of these elements probably more than any other factor explains the all-too-frequent complaint that the practical returns from research are minimal. Improvement in research competence is therefore a major goal of the present workshop. The following sections of this paper are designed as an introduction to important topics related to understanding and developing the ability to plan and carry out good applied research projects.

Definition of Applied Research

Applied research is a general term encompassing a wide range of approaches concerned with the issues of applying current knowledge to the tasks of solving technical or organizational problems. In contrast, the goal of so-called basic research is the generation of new knowledge. Practical applications are secondary considerations in basic research. This difference explains the higher priority that is often placed on applied research in developing countries. Two examples of applied research providing solutions for practical problems follow.

The problem may be one of technology. For example, efficient hand pumps with a long life could be used to provide rural areas with a safe water supply, but no such hand pump currently exists. In this case, applied research could be directed toward developing a new hand pump to meet these criteria.

The problem may be organizational. For example, there may be little health care coverage in rural areas because services are concentrated in the urban centres. Applied research could be undertaken to determine whether using voluntary health workers to extend health care to rural areas has an effect on the health status of the people. Similarly, the research may be directed toward solving managerial, administrative, or pedagogical problems.

Regardless of the nature of the problem, the purpose of applied research is to suggest solutions that can be applied or implemented. This relationship between research and application is strengthened when the persons responsible for program implementation are involved in the research process. Their involvement is helpful in identifying problems needing research; and their cooperation is often necessary to carry out the research, for example, if the study is concerned with demonstrating alternative manpower patterns in delivering services. In addition, their assistance is essential for implementing any changes recommended by the research.

In carrying out applied research a number of methods or approaches can be used depending on the problem and the situation involved. Some of the most familiar methods

include controlled field experiments, epidemiologic studies or social surveys, pilot or demonstration projects, systems analysis, and operations research studies. Because these types of applied research are often confused or misunderstood, a brief description of each follows.

Controlled field experiments — In a classical sense these are closer to basic research in design and execution. They consist of experiments in which a new treatment or solution to a problem is applied to one population, while a second similar population not receiving the experimental inputs acts as a control. Controlled experiments are complex and expensive and it is difficult to assure absolute comparability between the two populations. However, answers obtained from well-designed studies often provide the most valid estimate of program effects.

Epidemiologic studies or social surveys — These types of studies generally involve collecting information that provides a description of a population. In many instances, by appropriate analysis, comparisons between different segments of the population or examination of time trends provide information useful in answering research questions.

Pilot or demonstration projects — These are often similar to experimental field studies in purpose but have no controls and may involve larger, more realistic applications to a population. Careful assessment of the results are required, but separation of program effects from the influence of other factors, such as socioeconomic change, is difficult.

Systems analysis and Operations research — These are probably the least understood types of applied research, yet their names are being used more and more frequently and often inappropriately. The confusion usually centres around their highly mathematical applications. In fact, the basic approach in either can be utilized in designing research studies that make use of simple quantitative descriptions and a minimum of statistical analyses. The main contribution of systems analysis or operations research in the health field is the use of systematic thinking to identify, analyze, and interrelate the components of the health problems and health service systems being studied. The basic steps of systems analysis and operations research can be summarized as follows:

Systems Analysis

- (a) Analyze the situation
- (b) Establish goals and constraints
- (c) List alternative approaches
- (d) Compare alternative approaches
- (e) Set objectives
- (f) Develop a plan of action
- (g) Implement
- (h) Evaluate and replan

Operations Research

- (a) Define the problem and its interrelated features in terms amenable to analysis
- (b) Identify possible solutions
- (c) Develop a model of the total system incorporating the identified interrelationships
- (d) Test alternative solutions by applying them to the model
- (e) Pinpoint feasible solutions that are likely to be implemented and yield maximum benefit from the resources utilized

Although these approaches are applied to a variety of problems, they are most commonly used for solving managerial problems within a service system. Improvements in efficiency and effectiveness of a service or program are usually their goal.

The Research Process

Recommendations contained in any research report are only as valid as the process and procedures used to reach those conclusions. For this reason a clear statement of the problem being studied, the purposes of the research, the design of the study, the variables being measured, the methods being utilized, the hypotheses or questions being tested or answered, the implications of the results, and the resources utilized are all important components in preparing for carrying out valid applied research. In the following discussion the steps involved in defining and selecting a research problem are presented, then the important components of a research project are outlined as they might appear in a research proposal.

Problem Definition and Feasibility of Research

Defining a problem that at the same time is amenable to research is a process consisting of two stages: (1) the concept stage, during which areas of concern or general problems are identified and priorities established between them; (2) the problem definition stage, during which an area of concern is narrowed down to a specific question or problem that needs to be solved.

The following questions can be helpful in this process as they outline the theoretical and practical factors that need to be considered when undertaking any research project:

Significance of the Problem

(a) Is the problem important for the area of concern (e.g., family planning, basic health services, communicable diseases, water supply and sanitation)? (b) Is it an area of concern to the country or region? (c) Would the results of research on the problem have a practical value in terms of application or implementation? (d) When would the results have any impact? Immediately or in the future?

Researchers

(a) Are there researchers available who are interested in studying the problem? (b) In terms of training, experience, and personal qualifications, are they suited to carrying out this type of research? (c) Do they have the time available to conduct the research?

Methodology

(a) To what group of people or service system are the results of the research meant to apply? (b) What is the population or system to be studied? Can a sample of this population or system be taken? (c) What variables need to be considered in order to answer the research question? Which are not essential? (d) How can valid and replicable data on these variables be collected at reasonable cost? (e) How can the data be analyzed and the findings presented in the most effective form for implementation?

Administrative Considerations

(a) Are there preexisting political, legal, administrative, or ethical considerations that can hamper carrying out the research or implementing the results? (b) What cooperation with other organizations is necessary? (c) Are research facilities available? (d) What steps are involved in conducting the research? (e) How much time is needed to complete the research? (f) What type of administrative mechanism is needed to coordinate activities during the research? (g) Is appropriate managerial and administrative capability available to support the research effort? (h) How much will it cost to undertake the research? What other resources will be required (e.g. field staff, clerical staff, space, equipment, supplies, etc.)?

Preparing a Research Proposal

A research proposal is basically a description of the problem on which research will be undertaken, the purpose of the research, and how it will be carried out. These basic components are broken down further in the following paragraphs:

Title of Study

This should be a short descriptive phrase reflecting the subject of the proposal.

Institution Proposing the Research

The name and address of the institution undertaking the research should be given. A brief description of the objectives of the institution, as well as any previous experience with research projects, is a useful inclusion.

Outside Cooperating Agencies

This should comprise the names and addresses of all other institutions that have been involved in planning the research or will be involved in carrying out the project. A short description of the nature of their involvement is also recommended.

Background of the Problem

(a) *Statement of problem* — This should be a clear, concise statement of the specific problem on which research is to be undertaken.

(b) *Definition of terms* — Definitions of the important terms used in the proposal should be provided. Because terms may have different meanings in different areas, this facilitates communication and understanding.

(c) *Background of situation* — A brief description of the national or regional setting that helps clarify the problem, as well as the circumstances surrounding the development of the research proposal, including the significance of the problem and the links between the proposed research and the socioeconomic plans of the government, should be given.

(d) *Regional implications* — Aspects of the research that could be useful for other countries in the region should be explained.

(e) *Review of literature* — This should provide a summary of the findings of other research. A review of the literature is helpful in pointing out problems that need research and in providing examples of different methodologies for collecting and analyzing data. If a review of the literature has not been done prior to the time of the proposal, it may be done as the first stage of the research project.

Objectives

(a) *Statement of purpose* — This is a clear statement of the overall aim of the project, i.e., for what purposes the project is being carried out.

(b) *Statement of objectives* — Specific objectives should be stated that must be clearly spelled out in quantifiable terms. Information that is to be collected can then be carefully selected to measure the achievement of these objectives.

(c) *Hypothesis (if any)* — This would be a statement of the relationship to be expected between the variables included in the study. A hypothesis may suggest an explanation or a solution to a particular problem; it can be formulated on the basis of past experience, a review of the literature, or theory. If the objective of the research is to test a hypothesis, data will be collected and analyzed in terms of the hypothesis. On the other hand, a research project may have as the first objective the formulation of hypotheses. The latter are usually exploratory or descriptive studies.

Research Procedures and Methodology

(a) *Research design* — Briefly outline the design. Research design, as it is used here, refers to the procedures and time frame for collecting data in such a manner that they answer the research questions. For example, data may need to be collected both before and after a new village health worker program is implemented to show the effect of the program on the health status of the people. The same data may be needed on a control group (a similar group where the new program is not implemented to show that the effect is due to the village health worker program and not to other factors. The choice of a design both influences and is influenced by the variables, sample, instruments, and methods of analysis.

(b) *Sample* — If a sample of a population is to be studied, a description of the procedures for selecting the sample should be included. In statistical terms, a sample is a subgroup of the individuals to be studied on whom data are collected. The characteristics of those included in the sample should be representative of the population or universe to which the findings of the study are to be generalized. The sample size will depend on the variability of the data to be collected and the precision required in predicting the measured characteristic for the entire population.

(c) *Variables* — The variables to be included in the study should be listed. A variable is a quantity that may assume any one of a set of values. Variables, such as age, weight, and height, may be measured directly. Other variables, e.g., attitudes and knowledge, cannot be so easily related to the concepts they represent and must be measured indirectly through indicators, from which inferences about the variables may then be made.

Variables can be classified as independent, dependent, and concomitant. It is normally the objective of the research to determine the effect on the dependent variable

of changes in the independent variable. For example, will an increase in the number of trained midwives (independent variable) have an effect on the infant mortality rate (dependent variable)?

(d) *Instruments* — Describe the instruments to be used to measure the different variables, e.g., questionnaire, experimenter observations, water quality analysis, etc. It is important to design or choose a cost-effective instrument and not attempt to obtain more information than is needed or can be handled in the analysis and interpretation of the data. Two important factors to be considered in selecting an instrument are: (1) Is it accurate? Does it measure what it intends to measure? (Validity) (2) Is it consistent? Does it give the same measurement if the measurement is repeated? (Reliability)

(e) *Pretest* — Outline the procedures for pretesting the instruments. A pretest or trial provides the opportunity to see how an instrument works and whether changes are necessary before the full-scale study begins. The pretest (and there may be several) provides the means for finding errors, such as in the phrasing and order of items in a questionnaire, and for determining the accuracy and consistency of the instrument. The number of respondents or the size of the sample involved in the pretest may be small, but they should have characteristics similar to those who will participate in the final experiment.

(f) *Data collection* — Outline the details of the actual data collection and introduction of experimental programs, if any. This should include staffing of field teams, logistics of travel and lodging, timing, data flow, supervision, procedures for resolution of technical as well as administrative problems, and quality control of the data. The latter should involve routine and regular checks, such as review of filled-in questionnaires, reinterviews and cross-checks with other sources of information.

(g) *Data analysis* — Describe the procedures for processing and analyzing the data. This consists of coding the data (categorizing and giving a representative value, usually numerical, to each item of data), tabulating the data (counting the number of items in each category), and performing statistical computations. The statistical computations are used to summarize the data and to establish the confidence that can be placed in the inferences made from the data. Statistical analyses are appropriate only to certain types of data and certain sampling procedures. To avoid collecting data that cannot be analyzed, the analysis plan must be determined before the data are collected. For this reason, it is important to involve the person who will be responsible for data analysis when the research design, sample, variables, and instruments are being considered. Consideration should also be given to whether the analysis will be done by hand or by computer. As in data collection, a well-designed quality control system is required to assure a minimum of errors in data processing.

(h) *Project review* — A description of the specific mechanism for reviewing project activities should be outlined. Project implementation is considerably facilitated and strengthened when review activities are built in from the outset of the project. The mechanism, to be conceived as an educational as well as a managerial tool, should allow the project team to review periodically the project activities, make necessary readjustments, and plan future activities.

Project Administration Plan

This is a description of how the administrative aspects of the project will be handled. From the outset, it is helpful to name one individual to assist the research team in the administrative aspects of the project and to define that person's responsibilities in the overall implementation as well as day-to-day operations of the project.

Duration and Phasing of the Project (Work Plan)

Define each phase of the project. Estimate the time needed to complete each phase of the research and the total time required to complete the project. Each project can be divided into natural and distinct phases. After discussion among all parties concerned, a realistic and manageable schedule should be developed that allows ample time for each phase, from problem definition to the submission of the final report. Careful scheduling of the multiple stages of a project are required to identify the dependence of one

component on the completion of another. (See Appendix Fig. 1 for an example of a work plan diagramed to show the sequence and interrelationship of project components. This diagram could be expanded to include time, manpower, and other resources required to progress from one stage to the next.)

Training Component

Identify those aspects of the project that would contribute to training staff so that in the future they might participate more fully in solving development problems within the country. It may be beneficial for certain staff to undergo specific training prior to or during the project to enable them to perform at the level required.

Plans for Dissemination or Implementation of Results

Outline the plan for disseminating or implementing the findings of the study. Before the results of a research project can be used they must first be reported and distributed to the appropriate individuals or organizations. A means for distributing the results should be built into the project with consideration given as to how results will be disseminated (e.g., final report, series of papers, seminar, film, etc.), and to whom. In instances where direct implementation of the findings can be carried out, a brief description of this process should be included along with the expected impact.

Relationship with Funding and Cooperating Agencies

Details of the relationships and conditions of participation with any funding or cooperating agencies (national or international) should be spelled out including project visits, progress review, reports, publication agreements, schedule of payments, etc.

Personnel

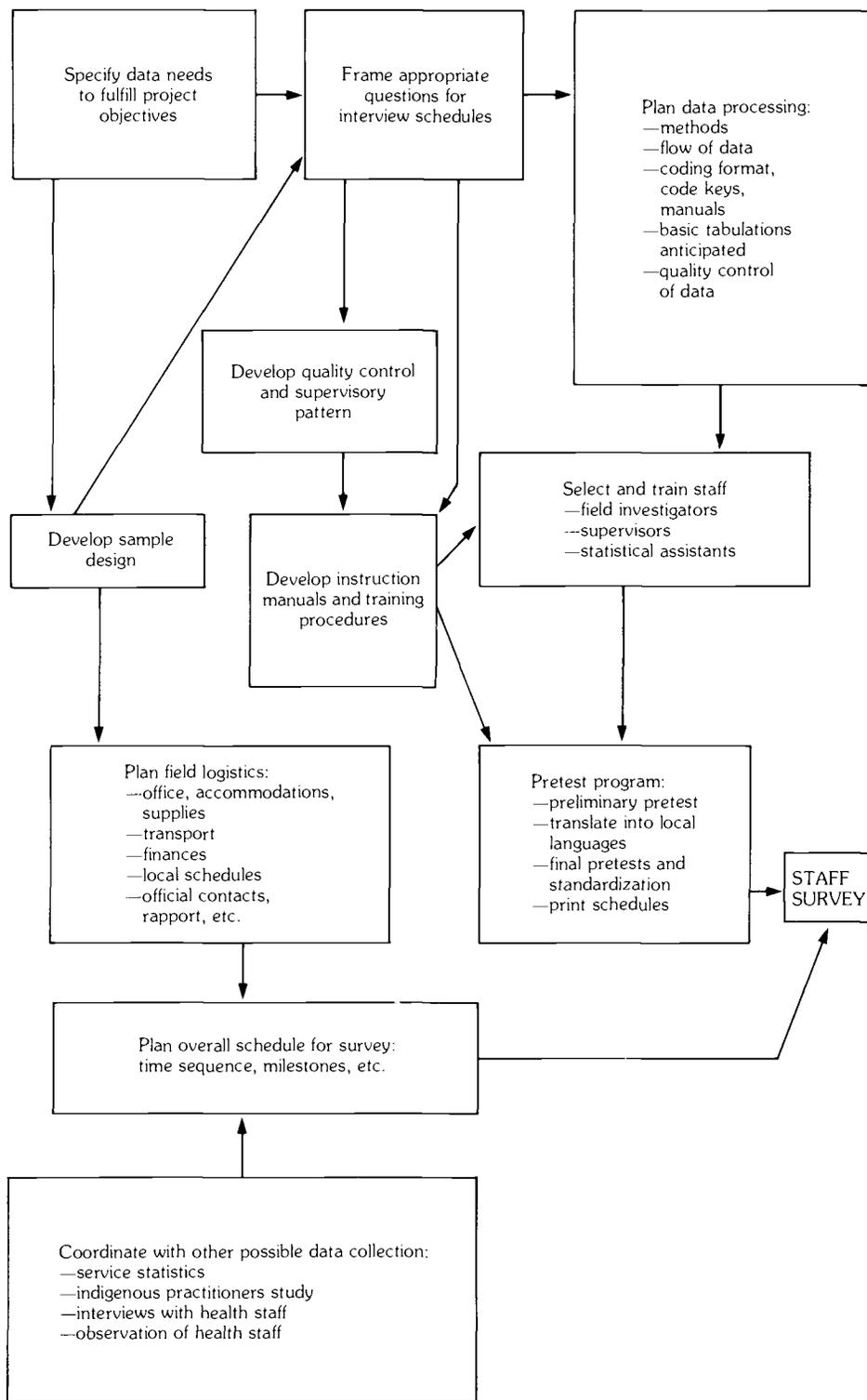
List the personnel to be involved in carrying out the research project and their time commitment. The curriculum vitae of the principal staff should be included.

Budget

Estimate the total costs of the research project, indicating the yearly contributions to be made by each institution or agency involved. A sample budget work sheet follows.

Budget

| | Year 1 | Year 2 | ... | Total |
|---|--------|--------|-----|-------|
| 1. Staff (in man-months) | | | | |
| 1.1 Research Staff | | | | |
| 1.2 Secretarial Staff | | | | |
| 1.3 Project Administrator | | | | |
| 1.4 Outside Consultants | | | | |
| 2. Training | | | | |
| Do any of the personnel need training prior to, or during, the project? | | | | |
| 3. Space | | | | |
| 3.1 Office Space | | | | |
| 3.2 Research Facilities | | | | |
| 4. Equipment and Supplies | | | | |
| 5. Surveys and Interviews | | | | |
| 5.1 Manuals and Interview Schedules, etc. | | | | |
| 5.2 Training of Interviewers | | | | |
| 5.3 Field Costs | | | | |
| 5.4 Transportation to and from Field | | | | |
| 6. Data Processing | | | | |
| 7. Dissemination of Results | | | | |
| 7.1 Publications, journal articles, seminars | | | | |



Appendix 4 Fig. 1. Flowchart of possible steps leading up to sample surveys.

Nepal

| | |
|----------------------------------|---------------------|
| Population | 13.2 million |
| Infant mortality rate | 169/1000 |
| Crude birthrate | 43/1000 |
| Crude death rate | 20/1000 |
| Rate of population growth | 2.3% |
| Per capita GNP | \$110 |

*All figures from 1977 World Population Data Sheet
of the Population Reference Bureau, Washington, D.C.*

Research in Rural Needs for Development in Nepal

Prachanda Pradhan

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In Nepal, although 96% of the population lives in rural areas and about 70% of GDP comes from agriculture produced by this rural population, little attention has yet been paid to the improvement in well-being of this group.

The population of Nepal is increasing yearly by 2.3%, which contributes to the rural poor and unemployment problems. The land distribution patterns also keep the poverty of most of the rural population intact: 72% of farmers have less than 2 acres of land and only 28% of farmers own more than 2 acres of land. Therefore, with such land distribution patterns, the benefit of agricultural development efforts generally go to the rich farmer and the majority of poor farmers will not reap the benefits of such efforts. This situation also increases rural unemployment. The 1971 census indicates that about 40% of the population of the age-group 10 years and over are economically nonproductive. In addition to this, because of lack of irrigation facilities year-round, agriculture employment is only seasonal, and the mass scale of migration from the hill regions to the south and to India indicates the intensity of the rural problem.

Although Nepal has been involved with planned development for the last 20 years, the situation of the rural population has in general not improved; rather, it has considerably deteriorated. The model of development has been through economic models as practiced in the developed countries. The solutions for economic development of developed countries were attempted and proved a failure in distributing the fruits of development to the millions of rural poor. The present system of appraising the rural needs from the top is not relevant to the reality of the rural poor.

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Prachanda Pradhan

Whatever efforts we make for the economic development of Nepal we will not be able to double our per capita income in the year 2000 with the present rate of investment and development. The services that we propose to provide to the villagers will never be realized, neither will the resources be available to provide those types of services. Thus, we have to revise our present strategy of development policies and work toward a new economic order in our society. The production-oriented economy has to be reoriented to the distribution aspect. The whole range of policy in regard to agriculture, education, health services, and education systems has to be minimized and provide programs that will directly benefit the rural population.

One of the areas that we have to consider immediately is the basic needs aspect. There has not been an identification of basic needs either at the national or rural levels. Basic needs might differ by regions; however, the identification of basic needs will help to formulate a policy that will be people-oriented. In the absence of an understanding of basic needs, we are imposing development efforts that do not fit into the requirements and demands of the rural people.

Is the rural population without resources? Certainly not; they have resources to manage their life and they have survived for generations with the technology they have developed, but their technologies were discarded without being replaced by equally appropriate technologies to maintain their lifestyle. The rural population has a technology that is capable of maintaining their health and agriculture by taking advantage of the land and climate. With the invasion of so-called "modernization" these resources are undermined. In the context of developing countries, modern technology cannot serve the poor millions; therefore, one of the areas that we might investigate is traditional rural technology to find ways of transferring the effective technology of one rural area to another rural population for the improvement of the latter.

The Banglung district of Nepal is a case in point. Here, people have contributed to the improvement of suspended bridges as transportation systems with their traditionally developed technology for the construction of such bridges. The local craftsmen cannot explain how a bridge is constructed, but they know how to do it. They do not draw blueprints, nor do they have formal training on the aspects of bridge construction. They had an iron mine that provided ore, and from this local blacksmiths using wood from adjacent forests as fuel produced the iron. They made chains that have proved to be very strong — some bridges built 50 years ago are still useable. However, with the depletion in forest resources, wood and charcoal are no longer available and the mines are no longer used. Instead, they now use either ropeway cable or import ship anchors from India, but still the tradition continues for the construction of the bridges.

There is a plan at present to provide the district with 65 suspension bridges over the next few years at a cost of Rs. 650 000 (U.S. \$53 000). If we compare the cost of bridges constructed by Western-educated engineers, we find fantastic differences: with the same amount of money, a Western-educated engineer might be able to construct a maximum of two bridges; thus the cost of development from the district's point of view will be very expensive. This case indicates that the needs of the people can be fulfilled if we make use of the locally available technology.

The creative contribution of people in rural development is a basic requirement for development and improves their well-being. As I have already pointed out, economic growth at the present rate might not be able to support

the growing needs of the people, so new ways should be devised at a lower cost to fulfill these needs.

In the area of health improvement, the technology and resources of the local people should also be considered. The technology and resources that they have been using are based on beliefs or on the prescription of someone who has had knowledge of these resources. It will be quite impossible for our economy to support a Western-style hospital with highly trained medical doctors for the entire population. Instead, the question of basic health services is to be solved at the grassroots. New models of health services have to be devised.

In this context the barefoot doctors of China come to mind but there are other examples from Bangladesh. A Western-trained medical doctor established a "People's Health Centre" with field clinics. The villagers cooperated and contributed to this health program. This centre attracted quite a few young men and women to work with the doctor. These paramedics were trained in environmental sanitation, primary health care, and family planning and operated in the field under the guidance of the doctors. They proved successful, and the health program, including the family planning program, became effective in the area. All these efforts resulted from the creativity of the young people of the village, without incurring heavy costs. Such potential exists and should be harnessed with the awareness that people have creativity to contribute for their own betterment.

The top-down approach to solving the problem of the rural poor has not been that effective and existing organizations have not reached the people, so there should be an entirely new way of delivering services to the people. We fail when we assume that we know better what the villagers need than they know. We think of the rural population as traditional, hard to convince, close-minded people who are not receptive. We are wrong here. We do not consider the life-style and science and philosophy of the rural villager and we impose on him alien ways that do not fit into his life-style and thus are rejected. For example, before teaching Mr A to use a latrine, we should know what Mr A thinks of the latrine itself. If we impose the use of latrines on him without knowing what he thinks about them, he will not use the latrine properly and will finally reject it. Creative new patterns are required at this stage that consider rural behaviour and need.

Research in rural needs for the development of Nepal should take into consideration the following:

- (a) rural creativity and capability of dealing with the problem;
- (b) environmental resources that otherwise might be unnoticed;
- (c) technological knowledge of the rural folk to meet their needs and the improvements needed to make their life a little happier;
- (d) proper structures for delivering resources to meet the needs of the rural population;
- (e) reconsideration of existing policies and their relevance in meeting needs and devising programs that do not require waiting until growth attains the economic development level of developed countries.

Finally, basic needs must be identified in terms of food, shelter, and clothing, but this has to be worked out in terms of requirements, keeping in mind that even these basic needs might differ between the northern and southern parts of Nepal.

Afghanistan

| | |
|----------------------------------|-------------------|
| Population | 20 million |
| Infant mortality rate | 182/1000 |
| Crude birthrate | 43/1000 |
| Crude death rate | 21/1000 |
| Rate of population growth | 2.2% |
| Per capita GNP | \$130 |

All figures from 1977 World Population Data Sheet of the Population Reference Bureau, Washington, D.C.

Health Manpower Development in Afghanistan

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To expand and develop the health services in Afghanistan, the Ministry of Public Health has given priority to using available resources to provide curative and preventive care to meet the health needs of the community. Therefore, the Ministry, within the framework of the first Seven Year Socioeconomic Development Plan, has formulated a national health program with emphasis on health manpower development. The main objectives of the plan are to further expand and improve the quality and the quantity of health services at various levels of delivery such as:



Aminullah Saboor

(1) expansion and improvement of a hospital network in the provinces and regions; (2) expansion and development of basic health services through the establishment of new health centres and subcentres at district levels and the provision of primary health care in villages; (3) implementation of vertical disease control programs for malaria and tuberculosis, and an expanded immunization program for the prevention of early childhood diseases; and (4) continued provision of a safe water supply for the rural population.

A systematic plan was formulated incorporating the following considerations:

(1) *Community Health Needs:* The conditions in Afghanistan that affect health and cause sickness and death are not much different from other countries at similar stages of development. However, what we realize more and more is that the most effective way to combat these health problems is not only through delivery of health services but in many cases by bringing about changes that affect the socioeconomic development of the community both in rural and urban areas.

(2) *Health Service Delivery:* Health services should be able to take care of the most common and serious health problems. For this purpose, health

manpower must be able to carry out certain tasks and functions, which include stimulation of the community to participate in a group effort for better health, disease campaign programs, and the organization of health programs on a large scale, so that the service responds to health needs and health problems in the community.

(3) *Training Needs*: The training of health workers should be determined by service requirements (local health problems), which, in turn, are determined by community basic health needs. Although this represents quite a departure from the idea that “teacher knows best,” it also means that teachers have a greater responsibility than before to use modern educational theory and practice to facilitate learning in the training programs, so that health personnel will be able to perform their duties competently and intelligently in response to individual disease and community health needs.

(4) *Health Manpower Development*: In this process we try to keep the health care system as dynamic as possible to meet changing circumstances, and to carry out a vigilant control and flexibility to be able to adjust according to performance and emergent problems. Until recently, the educational planning for health personnel has taken place independent of the health services organization and the disadvantages of this procedure are now recognized.

In the formulation of this project, we are striving for more economic use of training resources and trying to coordinate more closely the formal and in-service training of health personnel while bringing the basis for training closer to the service basis, understanding fully that this is both in our own interest and at the same time in line with international thinking. Also, in this project emphasis is put on the appropriate maintenance of, the demand for, and the utilization of health personnel in the health delivery system. The problems of the process are: the imbalance between the quantitative demand for and supply of health manpower; and the imbalance between the needs of the health care system for a particular category of health personnel with a defined kind of knowledge, skill, and attitude and the behaviour of the health manpower.

So the objective is to link community health needs and service requirements of all categories of health personnel with the formal and inservice training programs.

Also, our aim is to overcome the difficulties, remove the imbalance, and prevent fragmentation in training programs. Therefore, integration is the only answer, which has the advantage of bringing under one roof and one direction all aspects of health manpower development (manpower planning, educational planning, improved teaching facilities, production of teaching aids), gearing the training programs to the delivery of health services, and enabling us to carry out periodical evaluation of the content and process of the training program for each category of health personnel.

Philippines

| | |
|---------------------------|--------------|
| Population | 44.3 million |
| Infant mortality rate | 74/1000 |
| Crude birthrate | 35/1000 |
| Crude death rate | 8/1000 |
| Rate of population growth | 2.7% |
| Per capita GNP | \$370 |

*All figures from 1977 World Population Data Sheet
of the Population Reference Bureau, Washington, D.C.*

The Philippine Experience in Health Care Delivery to the Villages

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The Philippines has an estimated population of 44 million, three-quarters of whom live in rural areas — isolated villages in the plains and mountains and on widely scattered islands. The major health problems affecting the population are: communicable diseases, predominantly respiratory and gastroenteric; malnutrition, which affects most children (only about one-quarter of preschoolers are adequately nourished, while the rest suffer from different degrees of malnutrition: 6% from first degree, 24% from second degree, and 46% from third degree); poor environmental sanitation as shown by the fact that only 42% of the population have a potable water supply, 5% have sewerage facilities, and 62% have toilets, although only 39% have sanitary toilets; special endemic diseases, particularly malaria and schistosomiasis; and drug abuse.



Julita I. Yabes

Problems in relation to health resources include the following: maldistribution of manpower (e.g., 43% of all doctors are located in one of the 12 regions of the country, the Metro Manila area; 25% of all nurses are in the same area); a concentration of facilities in the urban area (e.g., 52% of hospital beds are in the same area cited above); and, a limited budget for health.

The magnitude of health problems affecting most of the population, particularly those in the villages, compounded by their inaccessibility to health care, has spurred both the government and private sectors to explore other strategies in delivering health services to this underserved population. Developments in health service delivery during the last 25 years reflect the increasing

concern for the provision of health care to more people. In the early 1950s rural health units (RHUs) were established in practically all municipalities in the country. These are manned by either a full complement or a combination of two or three of the following staff: doctor, nurse, midwife, and sanitary inspector, depending on the size of the population. To some extent, the system provided health care to more people in rural communities who previously had either minimal or no contact at all with health services except with those of traditional/indigenous health practitioners. However, there still persisted that nagging problem of lack of adequate care of people in peripheral villages, because the RHUs were based in the town proper and outlying villages were visited infrequently and irregularly, if at all, thus limiting health services to those within and around the town proper.

At about the same time that the RHUs were being put up, the potential contribution of “hilots” or traditional birth attendants (TBAs) in the delivery of health services to mothers and children was recognized, as most births in rural areas were attended by them. Subsequently, 9000 TBAs were trained and supervised by nurses and midwives in the RHUs.

In spite of the above, the system still could not respond adequately to the situation and the search for realistic and practical approaches in meeting the basic health needs of the rural population continued. The inadequacy of resources for health care delivery was recognized and, to enable the system to reach more people, the efficiency of existing resources had to be maximized. To this end, an operations research study was undertaken in 1972 to increase the efficiency of existing RHUs. The study generated very encouraging results that served as a basis for the restructuring of the health care delivery system, nationwide implementation of which started in 1975. The major changes in the system include: (a) establishment of barangay village health stations, each of which would serve one or more villages with an aggregate population of an average of 5000; (b) the staffing of the village health station with a resident registered midwife¹ who is responsible for providing primary health care to the people within the catchment area; (c) a redefinition of functions and relationships of the RHU staff such that activities and tasks are allocated to the appropriate level of worker; (d) the provision of three levels of health care within the RHU, the first level to be provided by the midwife, the second level by either the nurse or the sanitary inspector, depending on the type of problem; (e) establishment of a referral system so that cases could be referred to the appropriate level of care; and (f) greater involvement of the community in their health development. In this set-up the public health nurse supervises the midwife.

The implementation of the above requires a reorientation in attitudes of the RHU staff, other health care providers in the community, and the village people themselves who would now be partners in health development and not merely recipients and consumers of health services. A massive reorientation and training program for the RHU staff has been and still is being carried out to prepare them for their new roles and relationships in relation to the health team as well as to the community. Because the midwife is expected to carry out functions beyond her preparation, a radical revision of the midwifery curriculum was made (the duration of the program was increased from 18 months to 2 years, and the content was made more community-oriented), and the first

¹A high-school graduate with an 18-month training in the old curriculum and 2 years in the new curriculum.

group in the revised curriculum will graduate in March 1978. The nursing curriculum was likewise strengthened to incorporate the necessary changes to enable the nurse to work in the above system. Along this line, too, an innovative ladder-type/progressive curriculum is being implemented in one of the depressed regions in the country on a collaborative arrangement between the medical school of the University of the Philippines System and the Department of Health as a response to the inadequate health manpower in the area. Students enrolled in the program are chosen by the village people, given scholarships by the school, and go back to their villages after finishing the program. The first stage of the curriculum (3 months) would prepare the student to function as a Barangay-Village Health Worker; the second stage (1 year) as a midwife; the third stage (1 year) as a public health nurse; the fourth stage (6 months) has not been decided as yet but would probably be either a B.S. Rural Medicine or a nurse practitioner. In this program the student can either make an exit at the end of any one stage or continue to the next stage, depending upon his or her capabilities and interest and the decision of his or her village.

Another complementary development was the broadening of the health manpower base to further penetrate the peripheral villages. One of the major projects in this area is the strengthening of the participation of the "hilots" (Traditional Birth Attendants) in health care in which the initial step undertaken in 1975 was an enumeration of hilots throughout the country. It was no surprise to discover that 42 000 hilots are practicing, of which only 6000 have been trained in previous years (the other 3000 who have been trained have either died or retired). Considering their number, geographic distribution (an average of one hilot per village), accessibility to and acceptance by the villagers, the hilots are indeed a potent force in delivering services to their own people. Consequently, the training of the untrained members of the group has been resumed for their eventual integration into and broader participation in the health care system.

Other village outreach projects have been initiated by both government and private sectors. Extension workers have been trained for any or a combination of family planning, nutrition, health, and health and related community development work. A number of the above workers have been trained but considering the more than 40 000 villages in the country, we still have a long way to go in terms of making health care accessible to more people.

The prospects for achieving the above is encouraging considering the government's thrust in countryside development, local planning at the village level, and the increasing involvement of communities in their development. This augurs well for a more relevant health program at the village level. One of the strategies and a priority identified in the National Health Plan is the training of indigenous village-level health workers as a means of filling the dearth of manpower in certain areas; hence, an interagency team is currently in the process of formulating a multiphased national program.

Another project to strengthen health services in the villages and make use of existing resources includes a very recent development wherein primary school teachers have been designated as health guardians for the school population. This scheme would certainly go a long way as teachers are strategically located in peripheral areas, are accepted by the people, and exert a strong influence on the community and village.

Sri Lanka

| | |
|---------------------------|--------------|
| Population | 14.1 million |
| Infant mortality rate | 45/1000 |
| Crude birthrate | 28/1000 |
| Crude death rate | 8/1000 |
| Rate of population growth | 2.0% |
| Per capita GNP | \$150 |

All figures from 1977 World Population Data Sheet
of the Population Reference Bureau, Washington, D.C.

Rural Self-Development and Health Care: An Experience from Sri Lanka

A. T. Ariyaratne

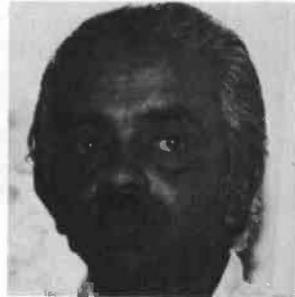
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Development is the most used but least understood word in present times. The term "self-development" is not understood at all. Therefore it is necessary to explain what I mean by development and self-development before I go on to describe briefly what we in the Sarvodaya Shramadana Movement are doing in this respect in Sri Lanka.

In our part of the world, development is closely linked with or synonymous with the process of "awakening" man in relation to his family, village, nation, or the world based on a value system. No development program is meaningful or complete without a value base consistent with the socioeconomic and spiritual-cultural aspirations of the people for whom the program is meant.

Total awakening of man's personality should be the final goal of all human endeavours including those that go in the name of development. Family welfare, village and national level planning and development efforts, and world development programs such as the establishment of a new world economic order should finally result in helping the human being to awaken himself or herself to the great spiritual and cultural potentialities within themselves.

"Sarvodaya" means "awakening of all." To awaken a human personality, we in the Sarvodaya Shramadana Movement believe that four factors are important. Firstly, a thought: thought of respect for life or compassion toward the living world. Secondly, an action: compassionate action to remove the causes that bring about suffering. Thirdly, the immediate reaction one gets when seeing others becoming happy as a result of one's actions: joy of living or altruistic joy. Fourthly, a long-term personality trait added to one's life: equanimity or a balanced state of mind with which one can face loss or gain,



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fame or blame, with equal detachment. These four personality attributes help a human being to evolve toward self-realization, self-fulfillment, or self-development.

Similarly, a group, be it a family, a rural or urban community, a nation, or the world, can be reorganized on four basic factors of group conduct. They are sharing, pleasant language, constructive activity, and equality. Based on these, a dynamic self-development force can be released from the grassroots up. This is exactly what the Sarvodaya Shramadana Movement is attempting to do in over 1000 villages in Sri Lanka.

Principles

The general principles governing our development programs are: (1) development is for all human beings irrespective of their caste, race, religion, or political affiliation; (2) the poorest and the most deprived in a village should be served first; (3) all development efforts should be aimed at the fullest development of human personality of every man, woman, and child; (4) minimum requirements for a decent human being should be ensured first for all people; (5) village planning, implementation, and evaluation of projects and programs should be carried out with total participation of village communities from their inception through to the completion; (6) development should start from the grassroots, with locally available human and material resources and using appropriate village technologies for the satisfaction of basic human needs of the village community; (7) development should be basically an effort on the part of the people, while government as well as other organizations should supplement these efforts of the people by such actions that lead to:

- (i) provision of appropriate knowledge and capital wherever necessary;
 - (ii) equitable distribution of national wealth to narrow the gap between the haves and have-nots;
 - (iii) assurance of social and economic justice conducive to self-development, e.g. land reforms;
 - (iv) abstention from superimposition on the people of centrally planned programs that would hamper the efforts of the people toward self-reliance, self-sufficiency, and self-development;
- (8) social and economic development should take place without creating contradictions of the cherished spiritual and cultural values of the people.

Basic Needs

The entire Sarvodaya program is implemented through village-level people's organizations, Gramodaya Centres (village awakening centres servicing 15-20 villages), and Development Education Institutes of the movement. Through these an attempt is made to help villagers create a psychological, social, economic, technological (appropriate), cultural, and spiritual environment where the following 10 basic needs can be satisfied for a contented and a simple way of life:

- (1) a clean and beautiful village environment both in the human and material sense with least amount of pollution of mind, air, water, and soil;
- (2) availability of a clean and adequate water supply for personal needs of the people;
- (3) an adequate food supply to meet the basic requirements of the people, especially a balanced diet for all preschool children including infants, children of school-going age, expectant and lactating mothers, and the aged;
- (4) provision of minimum requirements of clothing for all — at least two outfits for work, two for normal wear, one for night wear, and one for

ceremonial occasions;

(5) a simple dwelling for every family ensuring good ventilation, light, and privacy built with the maximum utilization of the locally available materials;

(6) primary health care services and satisfactory environmental sanitation facilities;

(7) an access road to the village, safe pathways to every home, and elementary communication facilities;

(8) availability of fuel for home needs such as cooking and lighting;

(9) a formal and a nonformal education program built into each other beginning with preschool children and extending up to out-of-school youth and adults taking place in relation to the needs of the people and within the cultural values of the community; and

(10) facilities for recreational and spiritual development.

Satisfaction of the above basic needs of the people has to take place within our democratic freedoms as ensured by the state.

A Total Approach

Because rural problems are interrelated and affect every sector of the community, young and old, an integrated and total approach has to be made to bring about effective solutions; this is the philosophy of the Sarvodaya Shramadana Movement.

“Health” is considered to be an important integral part of this total development process and as such every developmental activity spearheaded by Sarvodaya has components of health integrated into it.

The purpose of Sarvodaya is to develop community programs to solve urgent social problems rather than carry out more research-oriented projects. Some such social needs identified are: poor nutrition of children; ill health of children and mothers; poor environmental sanitation; poor housing conditions; lack of adequate and wholesome drinking water; poor food habits; ignorance of simple, inexpensive, and easy to practice methods that would improve the status of health.

The programs carried out by Sarvodaya to solve these problems are:

Community Kitchen (Nutrition) Program — The target groups that directly benefit from this program are children between 3 and 6 years, pregnant and lactating mothers, and any other needy members of the community. Activities include providing daily morning and noon meals that supplement the nutritional intake at home; training children in simple health habits and hygiene; organizing periodic medical examinations of children and maintaining simple health cards for the children; organizing immunization campaigns; educating mothers and young girls and youth and adolescents in nutrition, food handling, home economics, environmental sanitation, home gardening, the importance of attending maternity and well-baby clinics, and family health; training children in home gardening; bringing about close cooperation and coordination between the public health services and the community; helping the public health personnel to implement their programs successfully; developing a “seed bank” for the distribution of seeds and plants for growing in the village, and development of a “food bank” by collecting grains etc., from the villagers during harvesting, for the use of the community kitchen during lean periods or for sharing with a needy village; developing a “community dairy” to make the community kitchen self-sufficient in milk.

Preschool Program — All community kitchens transform into preschools within 3-6 months. At the preschool, educational programs are carried out in

addition to those of the community kitchen. Children are encouraged in group activities that promote the basic social principles of sharing, pleasant speech, helping each other, tolerance, and equality.

Day-Care Centres (Creche) Program — For better health, love, and care of infants and toddlers, steps have been taken to establish day-care centres annexed to the preschool from 1976. At present, this program has been implemented satisfactorily in the plantation sector and a few villages where Sarvodaya activities are in progress.

Community Health Program — A separate service for intensive community health activities in the villages was started as a pilot project in 1975. The community health worker coordinates the health-oriented programs carried out by four to five community kitchens. She organizes the community and carries out health education to implement the functions of the community kitchens more intensively. The community health worker maintains registers of various risk groups and also acts as a volunteer health visitor and social worker for all needy persons in the area. Health education including family health education is an important function of the community health worker. She also carries out simple first-aid and wound dressing using techniques and materials that can be easily practiced and obtained in any rural village.

Intensive Programs for the Severely Malnourished and Ill

Children and the Physically Handicapped — The Sarvodaya “Suwa-Setha” program was started in March 1977 to serve the severely malnourished and ill children and also the physically handicapped by providing nutritional, nursing, and medical care to severely malnourished and ill children under 14 years of age who have no parents or guardians, and accommodation, food, medical care, and occupational rehabilitation for physically handicapped children.

Training Sarvodaya Workers — Training personnel to undertake the above activities is an important function handled by Sarvodaya. There are three training courses conducted at several centres concurrently: (1) community kitchen workers (2 weeks); (2) preschool workers (3 months); (3) community health workers (6 months). All training courses are residential with the full expenses borne by Sarvodaya.

Fixed curricula for training are available and these are revised and updated by a committee (Preschool, Nutrition, and Community Health Committee) periodically. Candidates for training are selected by the mothers in the community and after the training the workers return to their own villages for service.

Regular seminars, workshops, and conferences are held both at headquarters, and in the regions for the workers to update their knowledge and exchange views on the problems encountered.

The work of the Sarvodaya workers is supervised and assisted by the mothers in the village and supported by the Sarvodaya Community leaders.

Technical supervision, assessment, and coordination of the work are done by the various committees at the headquarters in Moratuwa.

The main difficulties encountered by the programs at present are the shortage of full-time skilled technical staff to train personnel and to monitor the programs in the field.

The services of one full-time health educator, two health nurses, and one medical officer trained in community medicine would go a long way to solve these problems.

Thailand

| | |
|----------------------------------|---------------------|
| Population | 44.4 million |
| Infant mortality rate | 89/1000 |
| Crude birthrate | 35/1000 |
| Crude death rate | 11/1000 |
| Rate of population growth | 2.4% |
| Per capita GNP | \$350 |

*All figures from 1977 World Population Data Sheet
of the Population Reference Bureau, Washington, D.C.*

Development of Rural Health Care in the Ramathibodi Community Medicine Project, Mahidol University, Bangkok, Thailand

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Thailand has a population of 44 million, of whom 85% live in rural areas where the economic, social, and health conditions are poor. Only 45% of the 556 districts of the country have a medical and health centre and only 75% of these centres have M.D.s; of the 5115 subdistricts or "Tambols," only 57% have secondary health centres, which are operated by one midwife and one junior sanitarian per centre; and of the 50 000 villages only 4% have midwifery centres with one auxiliary midwife per centre. The physician:population ratio is 1:7000, but in the rural areas it is 1:100 000. The existing

health services and health manpower are very much underutilized: the average number of visits to the health centres was three to five persons daily, and the utilization rate of the hospital was also very low. Self-treatment in the urban areas was 44.4% and in the rural areas 58.4%.

The overall problem in the country is that the health system fails to provide the basic types of health services needed by the population as a whole. A few segments of the population may be relatively well served, but the majority are poorly served, if at all.

This situation is due to many factors, including the low priority given to health. The health system itself presents problems: the components of the many health systems function, to an excessive extent, in isolation from each other. The result is that the approach to resolving the above problems is grossly fragmented, a factor that leads to policies, plans, and activities that wastefully overlap, conflict with each other, and, in many instances, are redundant. The



Arnuwatra Limsuwan

health workers available are not efficiently used, bringing into focus the urgent need to define the functions and tasks to be performed and the types of preparation and quantities of manpower needed for the performance of such functions and tasks. This effort calls for the close coordination of the two major components of the health system, i.e., the health care or service component and the health manpower component.

Ramathibodi Community Medicine Project

Ramathibodi Medical School, which is one of the newer (7 years old) medical schools of Mahidol University, has a community medicine program that is involved in a complex rural development program, training all types of health workers for a pilot area of 50 000 inhabitants, including village health workers.

The Ramathibodi Community Medicine project has the long-range objectives of: (1) assisting the Government of Thailand in reaching its goals of improving health care delivery to the rural community through an improved educational program; and (2) fostering educational activities through field research, especially for operational research (how to deliver minimal care to the rural villagers).

The Ramathibodi Community Medicine project has a field training centre in Bang Pa in the district of Aythaya Province, which is about 60 km north of Bangkok. The area is about 500 km² with a population of 50 000. There are 18 subdistricts called "Tambols," with one primary and 10 secondary health centres in the district. The primary health centre is staffed by two M.D.s, two nurses, two midwives, one sanitarian, and two junior sanitarians. Each secondary health centre is staffed by one junior sanitarian and one midwife.

The following is a breakdown of the functions and services provided by the Ramathibodi Community Medicine project:

Health Services: peripheral health care; primary health care; social action.

Innovations: health posts; volunteers; communicator.

Functions of Communicator: collecting information from a "cluster" of homes; dissemination of information through these clusters; implementation of action programs through these clusters.

Education of Health Workers: M.D. 6-year course — 1st and 2nd year, ecology group; 3rd and 4th year, summer survey, baseline data; 5th year, clinical department; 6th year, clinical department and 6 weeks in rural field training.

The Objectives of Field Training: (1) establish a relationship with the community; (2) identify and formulate the community health problems; (3) analyze, solve, and evaluate the health problems; (4) set up and defend priorities before implementing the program; (5) plan and implement the program; (6) evaluate the effectiveness of the program; (7) use diagnostic tools and basic medical surgical skills in the management of patients; (8) know and understand the functions of health teams; (9) know and understand how to mobilize and utilize the resources of the community; (10) encourage willingness to ask for help; (11) promote a commitment to continue self-education.

Activities are provided to help the student to meet these objectives: (a) medical service — introduction to a team approach including the health personnel; (b) student projects — learning by doing; (c) the Journalism Club; (d) case presentation and seminars; (e) responsibility for assigned families; (f) area of special interest — nutrition project, infectious disease control.

Nurse and midwife curriculum refresher courses are also available and efforts are made to recruit traditional midwives to integrate them into the health

service system. The communicator network is used to identify, supervise, and evaluate the midwives.

Therefore, within the Ramathibodi Community Medicine project, the overall health problem in the country is discussed. This approach coordinates the health services and health manpower development, an interdepartmental approach. It involves a joint partnership with the Ministry of Health, and exposes students to a realistic setting. It encourages active participation by students using the problem-solving approach with flexibility and feedback. The program is dynamic and includes periodic evaluation.

Problems and Constraints Existing in the Program

There are those who are against the health service and manpower development concept, and who want to keep universities far from the community, stressing mainly academic excellence. Private sectors of the health services have been permitted to grow and, at the same time, the public sector continues to overemphasize expensive hospital care, which, although essential to part of the urban population, is to the detriment of the rural population and the urban poor.

However, because university people have not had any experience in providing health care to the overall population, a lot of errors occurred in the pilot project.

To be frank, this was the first time that university people (manpower development) had thought about overall health care problems and about producing graduates according to the health needs of the community (integration of health service and manpower development). There had been little communication between the policymakers and the implementors. Most of the older graduates, who are now provincial chief officers, have not had training like our medical students. Most of the time conflicts occur when introducing new ideas of total health care.

There is no residency training in community health, so the graduates do not have continuing education available.

Initially, our program emphasized the services given by government officers and overlooked the so-called self-help that villagers can provide to help themselves.

Because health is just one part of integrated rural development, the university cannot just improve health without improving education, occupations, agriculture, marketing, etc.; therefore, recently we became involved with an integrated approach to rural development.

The lack of willingness of M.D.s to work in rural areas after their 2-year compulsory period is due to many reasons: living conditions; desire for education of their children; desire for higher education or training for themselves; lack of prestige; and very little incentive.

As well, there is the loss of continuous support from outside agencies, e.g., international agencies.

Mahidol University recently took students from rural areas into their medical program without requiring an entrance examination. These students represented 10% of the class (recently increased to 15%) and were trained completely free of charge with the expectation that they will return to their hometown primary health centres. It is hoped that this will help overcome this problem of sending urban-raised M.D.s to rural areas, and will gradually alleviate the problem of lack of medical services in the rural areas.



The Doctor's Role in Relation to National Health Needs

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The problem of defining the functional role of the doctor in meeting health needs in developing countries still remains a vexed and controversial one. Although there is general agreement that such health needs could best be met by the development of an appropriately constituted and trained health team, the role and function of doctors remains an area of dispute. At one level of discussion the problem is one of finding the appropriate point of balance between the division of responsibility between the different members of the health care team. Yet, at another level the question resolves into a controversy between those who support the proposition that health is a fundamental human right and those who tend to favour a more elitist point of view. The former hold that every society is morally responsible and therefore obliged to provide all its citizens with a measure of health care that its resources can support, a commitment that clearly should extend to the least privileged and most needy of its people. Few today would be so bold as to contest this, yet the opposite view still finds strong sympathy among those who would argue that such an egalitarian distribution would necessitate a lowering of "acceptable standards" and that every citizen is entitled to what they conceive of as the "highest standards of medical care."

Though it would be easy to demonstrate that no society, not even the most affluent or developed, could in reality afford the resources that such objectives would demand, it is a point of view that continues to exert a decisive influence at all levels of policymaking. Thus it continues to justify the establishment of centres of excellence and the proverbial "disease palaces," which in effect cater mainly to the health needs of a privileged and affluent minority. It attempts to rationalize the maldistribution of resources between urban and rural areas and the continuing disproportion between curative and preventive health care needs.

At another conceptual level these arguments fail to take cognizance of the fact that the overwhelming burden of disease and disability that prevails in all the developing countries is the direct outcome of poverty and its attributes, poor housing, malnutrition, gross environmental pollution, the absence of safe water, ignorance, illiteracy, and high fertility rates, all of which potentiate one another to give yet another twist to the vicious spiral of ill health, low productivity, social apathy, and poverty. They fail to recognize that curative care serves merely to reduce the severity and duration of disease and disability, doing little if anything at all to reduce the incidence of such disease.

Of even greater consequence is the fact that this argument fails to accept the view that radical and fundamental improvements of health status are rather the consequence of major social, political, and economic advances. All the

available evidence suggests that the dramatic improvements in health status in Britain occurring in the mid-18th century and the early 19th century were changes fundamentally due to improvements in social conditions rather than reflecting the efforts of any medical measures. In more recent times China and Cuba, both essentially poor countries with agrarian economies, have achieved spectacular success primarily as a direct consequence of political commitment, while in a much more limited context, a large number of other poor and developing countries have achieved varying measures of success by adopting primary health care workers as the major instruments of change.

Of the poorer countries of the world with pluralistic democratic political institutions, Sri Lanka and the state of Kerala in South India provide unique examples of countries that have achieved rapid and commendable improvements of health status as a direct result of effective preventive health measures complemented by a large number of other primarily “nonmedical inputs.” Thus Sri Lanka in 1976 with an annual per capita GNP of approximately U.S. \$140 at current prices ranks among the 20 poorest countries in the world. Yet within the short period between 1950 and 1975 it has achieved considerable success. In this 25-year period it has increased its average expectancy of life at birth from 48.3 to 64.7 years, reduced its infant mortality from 101 to 48.5 per thousand live births, the maternal mortality from 9.3 to 1.2 per 1000 births, birthrate from 38.9 to 29.4, crude death rate from 14.3 to 8.5, and its rate of population growth from 24.6 to 17.9 per 1000 midyear population. Over this period the state has provided approximately 60-70% of all health care costs, increasing its annual budgetary allocation by approximately 10% per year. In 1976, of a total national budgetary allocation of U.S. \$85.3 per capita per annum, the State Health Services apportioned only U.S. \$4.0, \$2.6 of which maintained the patient care services while the preventive services were supported at a cost of U.S. \$1.4 per capita per annum.

The available evidence suggests that a very significant component of this improvement has been its achievements in maternal and child care programs. In 1976 approximately 70% of all deliveries took place in institutions where state-trained midwives were in attendance, a very high proportion of pregnant women had antenatal and postnatal care provided by these midwives — resulting in the dramatic decline of infant and maternal mortality rates, a very significant change in the pattern of leading causes of death and morbidity in these two groups, and a marked improvement in the expectancy of life at birth. Several nonmedical developmental inputs provided during this period have also undoubtedly contributed to this improvement.

The precise effects made by each of these on the total health situation, however, cannot be delineated with any certainty, but there can be little doubt that a detailed inquiry into this would be of the greatest significance. Educational changes occurring during this period have had a major impact. A compulsory and free state-sponsored system of education introduced in 1943, from primary schooling extending through to university level, a radical revision of school science curricula to include substantial increments of time devoted to general science, biology, nutrition, and hygiene, has raised the literacy rate to approximately 80% in the late 1970s and led to a greatly increased awareness of the simple measures that promote and protect health and control fertility. A state subsidy on transport, effectively implemented land reform legislation, and the issue of subsidized rice on a rationing basis to every citizen have been the other major social advances, while political independence in 1948 coupled with

increasing political awareness of the rural people who make up 80% of the total population have made political decision-makers increasingly sensitive and responsive to the felt needs and demands of their rural constituents.

These observations tend to confirm the view that good health at a national level is related to hygiene, adequate food, sanitation, and safe water rather than to the absolute number of doctors or their density within a population. It also makes the point that there is no one model of a perfect health care delivery system tried and found effective in one country that can be easily transposed to another situation with the assurance that it would work as effectively. It is not difficult to appreciate that a large number of factors, economic, social, political, religious, cultural, climatic, and geographic, interact with one another to define in each state or country the particular nature and extent of its health problems and the characteristics of the delivery system that could cope most effectively with them.

There is no simple or easy solution to the problem; rather, it makes it imperative that each country should make its own efforts to formulate a rational policy for a national health care delivery system. It demands that each nation must make realistic efforts to ascertain its own health needs and set itself objective goals of improvement within the constraints imposed on it by the availability of resources. Such a matching of health care needs against resources must include a health manpower development policy that identifies the different types of health care workers, relates the relative and absolute numbers of each category, and describes their functional roles and responsibilities and the manner in which they would combine to form effective health care teams.

It is necessary to set in motion and maintain the continuing process of planning, implementing, monitoring, controlling, and reevaluating, for the planning process must in essence be a dynamic one. Strategic planning is required to select priority items from among a host of competing alternatives and operational planning is required to implement the selected programs. To be effective, planning must necessarily transcend the limitations of medical technocracy and become meaningfully integrated within the mainstream of political decision-making activity. Clearly, innovative approaches are urgently needed to assure that adequate basic health care services are easily available to everyone and at a price that each nation can afford. For people all over the world, and in the developing countries in particular, are becoming increasingly conscious of and impatient of the fact that the spectacular achievements of medical science are not being delivered to them, conscious too that new approaches are needed to distribute the benefits of these achievements to all who are in need of it, for only in this way will the claim of health for all become a reality.

Enlightened self-interest should generate the political vision, commitment, and courage that each nation needs to reorient its own internal health priorities according to their social relevance for the total national population and to ensure that everybody everywhere would benefit from all the knowledge and experience of health care accumulated down the ages. Nothing in the whole of our long history would have a better claim to be called mankind's greatest achievement.

Nepal Medical Association: Views on Health Manpower Development

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and

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The Nepal Medical Association feels strongly that although more para-medical workers are needed, production of medical graduates of high standard who can be accepted in every country is very important. As well, health education is important to help the public realize and accept the need for and benefits of health care. The participation of the community is also essential for effective utilization of health care delivery.

Regarding the Nepal Health Manpower Development Research Project, two suggestions are offered by the Association: (1) including a clinical examination with the survey would have provided a better morbidity rate of the area and would have been more useful for planning; (2) including the mental health aspect would have been helpful in planning curriculum and health services delivery.

Nepali children





The Problems of Immunization in Developing Countries

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The opening paragraph of the recommendations of the conference on "Immunization in Africa" held in Kampala in December 1971 under the auspices of the Centre International de l'Enfance, Paris states "It is generally recognized that immunisation is one of the best and most effective instruments which any government can make towards the health of its citizens." However, the priority of immunization must clearly be assessed in the context of other problems that contribute toward ill health. In many developing countries poverty, malnutrition, inadequate education, water supply, poor housing and sanitation, etc., will have to be tackled as well.

Unfortunately, an immunization program is a technologically advanced process, and the principal components are: (1) the vaccines themselves, which are delicate biological substances; (2) the means to preserve their potency before use; (3) the provision of properly trained staff and the means to deliver the vaccines; and (4) measures to determine their efficacy.

To undertake an effective program, the first essential requirement is a public commitment by the government and the allocation of adequate funds for implementation.

The details and various stages of planning are beyond the scope of this short communication but at the apex of the planning process should be a permanent group comprised of experts in the diseases to be prevented, persons who understand the precise nature of the vaccines and their effects, individuals responsible for the provision of the staff and logistic support for the distribution and delivery of the vaccines. Because of the geography of Nepal, persons with an intimate knowledge of the rural areas must be included in the planning process. The provision of the correct advice may require considerable research but when it is available objectives can then be set and the strategies for the program designed.

One of the major constraints to the successful delivery of vaccines that is of special importance in tropical and semitropical countries is the storage and transport of vaccines at temperatures that will maintain their potency. In this regard the recently introduced Expanded Immunisation Programme by WHO (WHO Weekly Epidemiological Record, 1977, 52, pp. 74-75, 96-99, 117-119, 145-146, 169-171, 197-199, 269-271) includes a detailed study of problems of the cold chain as well as other aspects of immunization, such as design and management. The information already available and future information from this source

will be of great benefit to those planning to introduce new programs or to improve existing ones.

The answers to the questions of what, how, and when to immunize will be governed by local circumstances such as mortality, morbidity, and disability caused by infections for which there are effective vaccines available (these include diphtheria, tetanus, pertussis, poliomyelitis, measles, and tuberculosis), the availability of finances and trained staff, and the acceptability by the local population of these measures. Obviously, a major problem in Nepal is the collection of reliable epidemiological data from rural areas on the infections against which vaccines might be used. Research into the best method of collecting such information could perhaps be carried out by the Institute of Medicine. For example, should health workers be utilized or could several members of the community be trained to be part-time “epidemiological officers,” each specializing in a single disease?

Because of the advanced “technological” nature and expense of the vaccination process, it is not unnatural to consider means to simplify the process or to economize. One example is by the use of dilute vaccine to obtain more than the recommended number of doses. In the long term this is probably a false economy and any departure from the recommended procedure should be resisted.

Consideration must be given to the place of the program within the existing health services. Should it be an additional responsibility of those already providing health care, particularly at the primary level, or should it be operated by a cadre of specially trained persons whose sole task is to implement the program? The existing structure of the health services and the availability of manpower will be major factors in arriving at an answer to these questions. It may, for example, be advisable to consider the “immunization service” as an independent group, at least until the program is well established and shown to be efficiently functioning.

Conclusions

- Applied research on community health needs is essential if health services are to be need-oriented.
- A survey of the community's needs provides vital information for planning health care on a national or subnational basis.
- The requirement of the type of health manpower and the function of each category can then be worked out accordingly.
- Data about health needs provides the most important material to develop the general objectives of a curriculum for such manpower.
- Although the contents of the curriculum for such training is indicated by health needs surveys, additional useful information for curriculum content can be derived from a survey including physical examination.
- After health services programs are determined on the basis of community health needs, institutional surveys can indicate the effectiveness of the infrastructure for delivering services. For this, methods used in the Nepal Health Manpower Development Research Project may have to be supplemented with more intensive study of health personnel in the context of the specific programs carried out and the supervisory mechanisms for delivery of quality care.
- Of the various methods of applied research, the one developed by the Nepal project is particularly suitable for determining health needs as perceived by the community in developing countries.
- With the appropriate modifications, this design can be used in other countries for determining the health needs of the community.

Annotated Bibliography*

General Background

Campbell, D.T., and Stanley, J.C. 1963. *Experimental and quasi-experimental designs for research*. Chicago, Rand McNally College Publishing Co., 84p.

This monograph examines in detail a number of experimental designs and common threats to their validity. It is a handbook for those who desire to pursue experimental studies with some rigour. A knowledge of its contents would also be of considerable importance for avoiding unwarranted interpretations from applied research studies.

Donabedian, A. 1969. *A guide to medical care administration, volume II: Medical care appraisal — quality and utilization*. Washington, D.C., American Public Health Association, 221p.

An exhaustive discussion of the theoretical and operational aspects of assessment of medical care. Major attention is given to the appraisal of the process and outcomes of medical care. Contains a comprehensive annotated bibliography. Although this book has as its main concern the medical care systems in developed countries, the concepts and methods of study discussed are important background for those contemplating similar studies in less developed areas.

Flook, E.E., and Stanzaro, P.J. (ed.) 1973. *Health services research and R. & D. in perspective*. Ann Arbor, Health Administration Press, University of Michigan, 311p.

A good orientation to the field of health services research in developed countries. It includes an extensive chronological bibliography of illustrative studies in the major areas of health services. Examples are drawn primarily from the U.S. except for the final chapter, which is an overview of efforts in international health services research. Important background reading for individuals who will be involved full time in such research in Ministries of Health or academic institutions. Chapters I, III, IV, V and VII contain the most useful material from which lessons might be learned for applying health services research in less developed areas.

Grundy, F., and Reinke, W.A. 1973. *Health practice research and formalized managerial methods*. Geneva, WHO, Public Health Papers No. 51, 193p.

This monograph examines the principles, methods, and techniques that can be used in assessing health services or carrying out health practice research. It considers their application for administration and education within the health field. Included is an introduction to possible uses of operations research in health care programs and a useful annotated bibliography.

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A collection of principles, methods, and strategies useful in the planning, design, and evaluation of studies. Guidelines for collecting and analyzing information and writing research reports.

Newell, K.W. (ed.) 1975. *Health by the people*. Geneva, WHO.

Descriptions of innovative health care delivery systems developed in demonstration projects in Africa, Latin America, India, Indonesia, and Iran. Also included are descriptions of national programs in China, Cuba, and Tanzania.

Selltiz, C., Jahoda, M.J., Deutsch, M., and Cook, S.W. 1959. *Research methods in social relations* (revised edition). New York, Holt, Rinehart and Winston, 622p.

An extensive introductory text on social research including discussions on the research process, formulation of the problem, design of the research, data collection techniques, analysis, interpretation, and reporting of findings.

*Prepared by Tribhuvan University Institute of Medicine.

Wolf, H.K., and Pant, P.R. 1975. A handbook for social sciences research and thesis writing. Institute of Business Administration, Commerce and Public Administration, Tribhuvan University Research Division, Kirtipur, Nepal, 199p.

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Operations research

Andersen, S. 1964. Operations research in public health. *Public Health Reports*, 79: 297-305.

A useful and simple presentation of the basic principles and steps in operations research.

Baily, G.V.J., Savic, D., Gothi, G.D., Naidu, V.B., and Nair, S.S. 1967. Potential yield of pulmonary tuberculosis cases by direct microscopy in a district of South India. *Bulletin of the WHO (Geneva)*, 37: 875-892.

A good example of the use of applied research (or operations research) in actual decision-making.

Flagle, C.D., and Young, J.P. 1966. Application of operations research and industrial engineering to problems of health services, hospitals and public health. *Industrial Engineering*, 17: 609-614.

A brief review of applications of operations research in solving problems such as allocation of physical resources, allocation of nursing care, utilization of facilities, and creation of an effective communications system. Examples are drawn primarily from urban developed areas.

International Development Research Centre. 1977. Applied operational research — report of a seminar-workshop on applied research in public health, held at the University Center for Health Sciences, Yaoundé, Cameroon, 6-11 December 1976. Ottawa, IDRC, 27p.

This report discusses the different stages in the organization of research, particularly project selection, project design, research methods, project implementation, and project evaluation. It includes the preparation of two projects for the evaluation of physician utilization and of medical personnel training.

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In assessing the role of operations research in the organization and delivery of family planning services, this paper directs attention to the allocation problem, which includes concern for the methods of contraception provided, the manner in which they are offered, the kinds of personnel employed and the attitudes of the target population toward the services and providers.

Methods of Data Collection and Analysis

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A good background article about the application of work-sampling to the study of health personnel. It describes various observational techniques and illustrates the intermittent type in detail.

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Brief review of such topics as the suitability of the questionnaire, the methods used, the size and selection of survey and control groups, the verification of possible errors, and the influence of survey design on the results.

Department of International Health, The Johns Hopkins University. 1976. The functional analysis of health needs and services. New Delhi, Asian Publishing House, 292p.

An example of the application of multiple methods of data collection in two developing countries to assess community health needs and obtain detailed information about available health services. An important part of the monograph deals with the analysis of such information so that needs can be related to services in terms useful to health planners, administrators, and educators.

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Roghamann, K.J., and Haggerty, R.J. 1974. Measuring the use of health services by household interviews: a comparison of procedures used in three child health surveys. *International Journal of Epidemiology (England)*, 3: 71-81.

An interesting comparison of different interview techniques involving 2-week and 1-year recall of use of health services.

U.S. Public Health Service, National Center for Health Statistics. 1964. Health survey procedure: concepts, questionnaire development, and definitions in the health interview survey. Washington, D.C., Public Health Service Publication, No. 1000, Series 1, No. 2, 66p.

A background document about the survey methods used in one ongoing national health survey. This and other documents in the same series are important resources for countries contemplating similar surveys.

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