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CONDUCTING A RURAL HEALTH SURVEY: EXPERIENCE FROM THE VILLAGE HEALTH SURVEY, DANFA PROJECT, GHANA.

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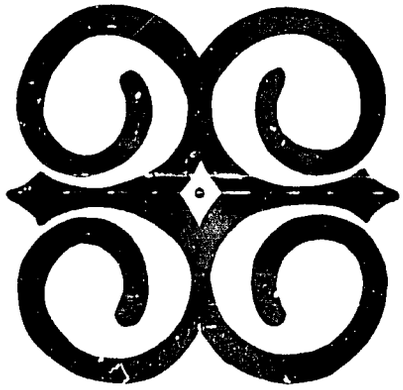

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CONDUCTING A RURAL HEALTH SURVEY: EXPERIENCE FROM THE VILLAGE HEALTH SURVEY, DANFA PROJECT, GHANA

Monograph Series, Number 9

DANFA COMPREHENSIVE
RURAL HEALTH AND FAMILY PLANNING
PROJECT, GHANA

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The data appearing in this paper are preliminary. The paper may not be quoted in whole or in part or otherwise used except with the written permission of the project co-directors.

March 1975

FOREWORD

The Danfa Comprehensive Rural Health and Family Planning Project is a teaching, research, demonstration and service program initially developed by the Department of Preventive and Social Medicine of the Ghana Medical School in 1965 and implemented under contractual agreement with the School of Public Health at the University of California, Los Angeles, and the Agency for International Development in 1970. The eight year project is closely associated with other Ghanaian agencies and institutions such as the Ministries of Health, Social Welfare, and Finance, the Ghana National Family Planning Programme, and other University of Ghana departments.

The Ghanaian institutions have primary authority and responsibility for project administration. Ghanaian staff are hired by the institutions at prevailing terms of employment. All service costs are borne by the Government of Ghana as well as some of the training and evaluative costs. UCLA and AID are responsible for most of the research costs.

The project includes a longitudinal study of approximately 50,000 rural inhabitants, 10-50 miles from Accra. The project area has been divided into four sub-areas to investigate alternative methods of delivering health and family planning services, summarized in the chart below.

	Service Provided			
Area	Comprehensive Health Care	Health Education	Family Planning	Standard Health Services
I	Yes	Yes	Yes	Yes (equivalent)
II	No	Yes	Yes	Yes
III	No	No	Yes	Yes
IV	No	No	No	Yes

One of the principal goals of the project is to provide information about project activities and findings to concerned agencies on an ongoing basis to assist in health planning. A project monograph series has been developed to aid in this information sharing process, and we hope that the data contained in these papers, although often preliminary in nature, will prove useful to those involved in the project and to others interested in obtaining current information on rural health projects in developing countries.

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Introduction

Up-to-date health information about illness, causes of death and birth rates is required by health planners in order to formulate adequate and relevant health programs. Africa has special and urgent needs for such information: present health data are scarce and health problems are acute. Statistics about illness and causes of death can be gathered either by analyzing existing records from hospitals and clinics and certified death records or by conducting special surveys.

Most African health programs are based on data derived from clinic and hospital records. There are a number of problems with these data. Such information is often out of date because of difficulty in rapidly tabulating and analyzing monthly and annual reports. In some cases official statistics are also incomplete because the agencies which submit regular health reports represent only a fraction of the total health services provided. Clinic or hospital patients are self-selecting and since health facilities in rural areas are scattered and scarce, available data is biased toward the urban population. Hence, the real disease patterns may not be evident in studies of clinic or hospital populations.

Despite these drawbacks, causes of death data derived from these sources are probably the best means of defining major life-threatening health problems that are of an acute or epidemic nature. Data derived from medical records are much less effective in providing needed information about other prevalent illnesses to local health authorities for planning and evaluation purposes.

A supplementary method for obtaining information about illness and health needs, the sample survey, overcomes many of the problems of health statistics derived from hospital or clinic populations. If the sampling technique of the survey is well designed, a small number of subjects will provide information representative of the whole group or area. Although such a survey

is not likely to disclose problems of an acute, sporadic or epidemic nature, current information can be gained about other problems now and planners do not have to depend on analysis of old statistics. In Africa sample surveys have been used to obtain population statistics and to study economic development.[1] Surveys of community health status have been less widely used, although short-term studies have been done to estimate the extent of a single disease, such as malaria or malnutrition.

An extensive literature search failed to find any large African rural health surveys using a random sampling method. No longitudinal studies based on probability sampling were reported which looked at a population over a period of years to show trends or changes. Additionally, there is only meager planning information about surveys, designing questionnaires, and training field staff in the literature.

This paper describes the steps used to plan and pre-test a longitudinal health survey in Africa and aims to be a guide to those involved in such surveys. While sampling surveys such as this one require more planning and are more expensive than analyses of hospital or clinic data, they give far better and more current information, and can be especially useful for analyzing local and immediate needs.

Description of the Village Health Survey

The Village Health Survey is a planning and evaluation component of the Danfa Comprehensive Rural Health and Family Planning Project in Ghana.[2] The baseline Village Health Survey was carried out from December, 1972, to March, 1973, in the Danfa Project area of 200 square miles with a rural population of 50,000 persons. A random cluster sample of villages was selected. 3,745 subjects living in these villages were interviewed, and 3,653 were given health examinations. Findings during the baseline Village

Health Survey will be compared with results of subsequent resurveys to be done in 1975 (Cycle II) and 1977 (Cycle III). Since the same 20 communities will be used in all three surveys, a long-term picture of rural health and disease will be obtained.

Objectives of the Village Health Survey

The major purposes of the Village Health Survey is to provide accurate up-to-date information about the health of the rural villagers in the Danfa Project areas. We wanted to assess the health status of mothers and children, our target group, and also to define some of their major health problems, realizing that a number of problems such as acute obstetrical complications, measles, pertussis, etc. would ordinarily not be discovered by such a sample survey. This information is being used to guide our MCH and family planning programs. We also wanted to ascertain the pattern of diseases, their prevalence and severity, for the whole population. This information is needed by the Ministry of Health and is of interest to the Medical School for planning curriculum and training programs. We also studied the community environment and each family's housing and living standards, education, religion, and clinic attendance in order to determine those factors which affect the health of rural Ghanaians. These findings are being used to direct the project's health education and community development activities at behavioral and environmental factors which affect disease occurrence.

The second major role of the Village Health Survey is to evaluate the effectiveness of the three medical care delivery systems being tested in the Danfa Project areas. In Area I, family planning is integrated with a comprehensive health service. In Area II, family planning is offered along with a vigorous health education program. In Area III, family planning alone is offered. Area IV is a control area, where standard Ministry of

Health Services are provided but without special health programs. The first Village Health Survey provided the baseline data of health conditions in all four areas, before the MCH, family planning, and health education programs were introduced. The repeated surveys (Cycle II and III) will be used to measure changes in health conditions due to these programs, or other unplanned variables, over a five year period. A description of the role of the Village Health Survey in the evaluation of overall project hypotheses is presented elsewhere.[2]

The third objective of the Village Health Survey is to develop a survey technique which could be replicated in Ghana and other places in Africa.

I. STEPS IN PLANNING THE VILLAGE HEALTH SURVEY

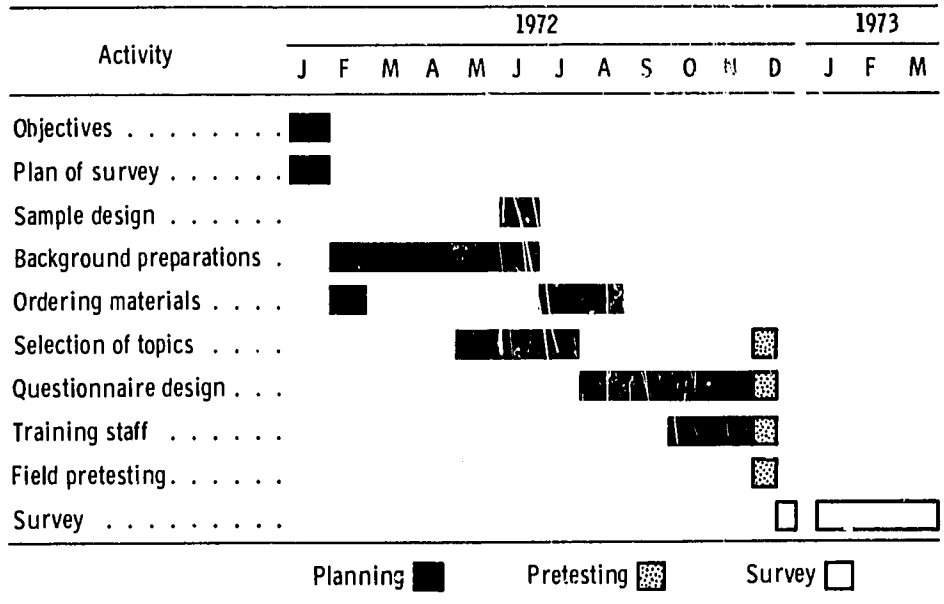
1. Setting Objectives

A survey as large as the Danfa Project Village Health Survey needed careful planning. The first task was to determine its major objectives and to make it serve the research goals of the Danfa Project itself. Because the survey will be repeated twice and used to evaluate the effectiveness of health services, reliable techniques for registration, interviewing and examination were essential. The coordination of several medical school and university departments and the Ministry of Health and the use of various consultants made planning the survey a lengthy process. The actual time sequence of planning activities for the Village Health Survey is shown in Figure 1. It can be seen that almost one year was used for the planning and pre-testing before the field team began the survey. However, the resurveys can be organized and launched with a two month planning and training period.

The time and effort required to coordinate multiple consultations, to select and refine topics for investigation, and to develop an optimal questionnaire format from both an operational and data processing viewpoint, appear justified to produce a survey instrument adequate for evaluating the health status of a study population over a five year period.

FIGURE 1

SEQUENCE OF PLANNING AND FIELD ACTIVITIES IN THE BASELINE VILLAGE HEALTH SURVEY, 1973



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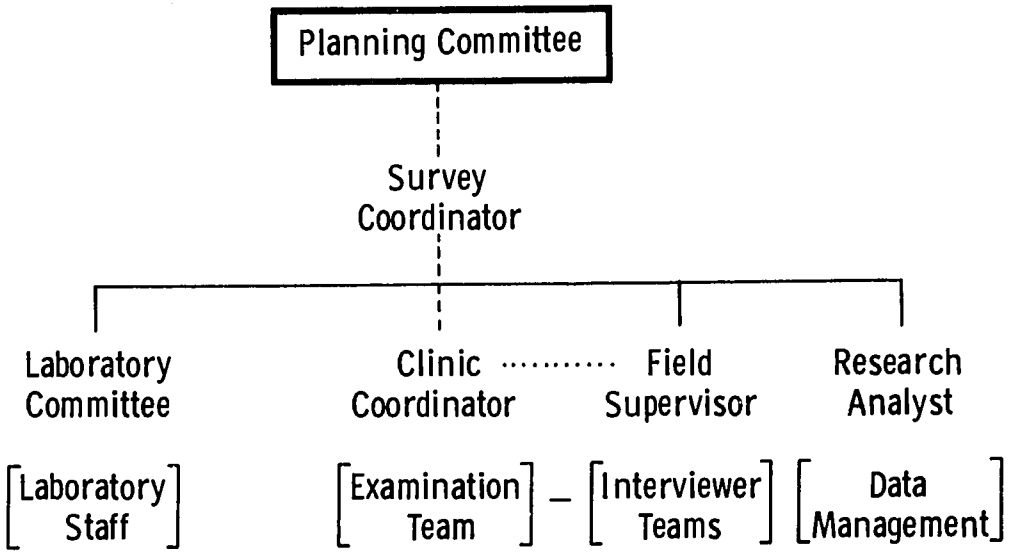
2. Organization of the Survey

The relationships between the survey coordinator and other workers or field activities in the survey operations are shown in Figure 2.

While the field supervisor (an experienced research assistant) and clinic coordinator managed the actual survey field operation, the survey coordinator (a medical doctor) was responsible for the implementation of the survey plan and overall supervision and co-ordination of the field operations during the Village Health Survey. He selected examiners, interviewers and laboratory technicians, using previous project survey experience to estimate the number and types of staff needed. He organized

Figure 2



formal training training programs and directed the pre-testing activities. In the baseline survey, he also functioned as clinic supervisor, overseeing work scheduling and clinic function.

The field supervisor was a key person in creating community interest in the survey and achieving a high response rate by contacting the study communities in advance and closely supervising the two interviewer teams. He made arrangements for interviewer accommodations, selected the clinic site, in each village, and was responsible for the quality of information recorded by interviewers. Since he handled personnel procedures, work assignments, leave schedules, approval of night allowance, field editing

and transfer of completed questionnaires to the base office, and all transportation scheduling, survey success depended heavily on him.

The clinic coordinator prepared the examiners' work schedules and arranged for their transportation to and from the clinic. He confirmed examiner availability for each clinic date and made necessary substitutions for unavailable staff.

A research analyst supervised the editing, coding and key-punching operations of the morbidity, household conditions, medical examination and laboratory forms. These activities were conducted during both pre-testing and actual survey operations, so that progress reports were available to investigators and cooperation agencies throughout the survey.

The planning committee and other consultants formulated the Village Health Survey plan. The Laboratory committee planned for the tests and ordered the supplies.

3. Background Preparation

A. Literature Review

A literature search was conducted with the aid of MEDLARS and with the invaluable assistance of the librarian of the Ghana Medical School. Several publications about health surveys were reviewed for information about survey organization, questionnaires, and field problems.[4-17] The three most helpful references were Jelliffe, "The Assessment of Nutritional Status of the Community"[4], Buck et al, "Health and Disease in Chad"[5], and Spruyt et al, "Ethiopia's Health Center Program - Its Impact on Community Health"[6]. An extensive bibliography about West African health problems was compiled and reviewed. Information gained was used to estimate the prevalence of diseases we would likely encounter, so that useful items would be included in the

questionnaire and physical examination.

B. Consultants

Preliminary discussions were then started with staff at the University of Ghana Medical School and Ministry of Health to gain current information about health problems in Ghana and to find out what kinds of rural health survey would be useful to them. These meetings provided invaluable recommendations based on the informants' years of practical experience and research. Advice was obtained about field survey methodology and previous Medical Field Unit studies, malariometric techniques, laboratory specimen collecting methods, eye diseases, cardiovascular disorders, skin diseases, and childhood growth and development measurements.

Important recommendations were gained from these interviews and an awareness of the proposed Village Health Survey was created in the Medical School and Ministry of Health.

C. Data Processing and Laboratory Support Capabilities

The resources for data processing, including key punching, programming and computer analysis, were also assessed at this time, so that the survey questionnaires could be designed for local processing. Arrangements were made with all the potential laboratories for handling specimens from the Village Health Survey. It was essential to assess the interest in and commitment to the survey early in order to determine the amount of support the survey would receive and to select appropriate tests to suit available facilities and staff.

D. Ordering Supplies

Basic field equipment such as stethoscopes, ophthalmoscopes, skin calipers, weight scales, stool specimen containers, syringes, glass slides

and other specimen collecting materials, was ordered in February, 1972, nine months before the planned pre-test. A committee of laboratory consultants was organized to assess available resources and recommend purchases to conduct parasitology, bacteriology, virology, hematology, biochemistry, and serology tests. The committee prepared lists of needed supplies and materials, determined what was already available, and submitted requisitions. Although these materials were ordered 5 months in advance, this did not prove to be sufficient time. Some test processing had to be postponed and some field testing had to be re-scheduled.

E. Sample Design

It was possible to select a representative sample because an exhaustive mapping and census operation had previously been done in the Danfa Project area. The project demography consultant developed the sample design in consultation with the epidemiologists, who specified the precision of information required, the expected percentage of common diseases and the logistic and manpower constraints.[18]

The sample recommended was a total of 4,000 individuals (8% of the total population). Although individuals or households selected at random would have provided the "ideal" sample, such a procedure would be impractical. The difficulties of defining an African household are well known. Demographic studies in the Danfa Project revealed great seasonal variation in household membership and considerable movement in and out of the study area. Visits to separate households scattered over a large area would also be impractical. A stratified cluster design was therefore adopted.

First the villages in the Danfa Project area were stratified into three groups: villages with less than 50 people, villages of 50-399 persons

(defined as small villages), and villages with over 400 people (defined as large villages). The large villages had more physical amenities such as such as schools, market places, better transportation and communication, greater access to health facilities, and a higher proportion of educated residents. It was surmised that residence in a larger community might be associated with better health status for the individual. The number of clusters selected from each stratum of small and large villages was proportional to its part of the total population. Villages of less than 50 people were excluded from the population to be sampled because of the time and effort required to contact and examine such small, remote villages, often accessible only by foot. Such villages constitute only 4.6% of the total project population so that excluding them did not constitute a serious bias to the sample design.[19]

Secondly, a cluster sampling method was applied to the two stratified lists of small and large villages for each area. A cluster is defined as a group of houses in which all residents are studied at the time of the survey. It was decided that a cluster of 200 persons would be the optimal size for each cluster.[20] Using maps prepared by the Danfa Project, 30 or 40 adjacent houses were grouped together to result in a total cluster of 150-250 subjects. A person was included in the Village Health Survey if he was resident in a house located in one of the selected clusters on the date of the survey.

Geographic representation of the project population was assured by assigning cluster numbers in an east to west direction across the project survey areas. Large villages were divided into two or more clusters, while in a few cases two or more small villages had to be combined to produce a cluster of 200 people. Then 20 clusters, five in each of the four study areas, were randomly selected from the total of 256 clusters in the total

project population.

The cluster sample offers several advantages. It will be easier to study a group at two year intervals if they are defined in terms of physical place rather than relationship to a household, which is often unstable and highly mobile.[21] Interviews can be completed more quickly when using a cluster of respondents than if visits had to be made to separate households scattered over a region.[18] Cluster sampling tends to improve the quality of recorded information as well because supervisors can check interviewer work closely and confirm the accuracy of information with sample checks. In addition, cluster sampling permits a central examination site where subjects in each cluster can be weighed, tested and examined by the team of physicians. These conceptual and practical considerations have justified the use of cluster sampling in other African countries.[19,21]

One month was available for pre-testing while the actual survey had to be accomplished in a three month period because of other project activities. Most physicians who volunteered to work as examiners in the survey could work only one day per week, since they had concurrent responsibilities for patient care, administration and teaching. The problem of scarce manpower was solved by successfully involving a large number of physicians, each for a limited time per week, over the four month period. It was not known whether 4,000 subjects could be examined during the definitive survey's three month time allocation until pre-testing had been done. These trial clinics showed that about 400 subjects could be seen per week (four field days). It was estimated that completion of the 20 clusters would take about ten weeks leaving a small two week "safety margin" for contingencies. This information proved to be accurate as the definitive survey was completed in a ten week field period.

F. Content of the Questionnaire Forms

The content of a well-designed health survey questionnaire should be limited to information items which are chosen to meet specific needs in health program planning and evaluation. Items must be related to general and specific program objectives rather than simply collecting information about health and disease. In the Village Health Survey, for example, information was needed about childhood disease patterns and participation in available preventive health programs. Therefore questions were included about the number of immunizations by type and by age of child, the number of visits per year to a clinic, and the presence of selected diseases, such as diarrhea, malaria, intestinal parasites and malnutrition. Survey planners must avoid the temptation to collect the proverbial "gold mine of information" to be harvested at some future millenium.

The survey coordinator prepared a preliminary list of study topics to be included in the survey. These proposals were referred to clinical, public health and laboratory consultants, as well as to staff in the departments of sociology, home sciences, demography, and statistics at the University of Ghana, Legon.

Proposals for items to be included in the survey were screened according to the following selection criteria:

A. Is the proposed item related to a major health problem in rural Ghana?

B. Will the proposed item be useful for evaluating the effectiveness of public health and health education programs?

C. Can reliable information about the item be obtained under field conditions?

D. Can the information about an item be processed and evaluated by available laboratory support and data processing facilities?

Practical field constraints were considered in selecting items, particularly the acceptability of the test for the participant. Other factors were: the time needed to test for the topic; special examiner skill or experience needed to detect a condition; the type and number of workers required to manage the tests. Items chosen for the examination form are shown in Table 1.

After screening of items was completed, the format of the questionnaire was developed with the assistance of consultants in health records, statistics and data processing. In the Village Health Survey these experts assisted with the sequence and wording of questions, instructions to the interviewer, precoding of responses, and position of items to facilitate retrieval of information. Detailed procedures about questionnaire design are not discussed in this article but are available elsewhere.[11,15,22]

Once a tentative questionnaire and examination and laboratory forms were developed, pre-testing was a necessary step to determine whether transportation, clinical teams, and laboratory facilities and staff could meet the demands of field survey activities. Such pre-testing resulted in revisions in clinic organization, laboratory procedures and questionniare content and design. Original estimates of manpower available for work in the base and field laboratories were found to be inaccurate, and specimen volume had to be reduced and additional laboratory personnel paid on an overtime basis.

G. Training

Fourteen experienced field interviewers were selected from a larger pool of project interviewers. They received a two week course in the administration of interview forms for the Village Health Survey, how to act as recording clerks for physicians, and how to motivate subjects to participate

Table 1: Contents of the Baseline Medical Examination Form*

Interview Section

Information about the subject

History of measles and immunization status in under-fives

Household environment

Clinic attendance during the past 12 months

Medical Examination Section

Height, weight, skinfold measurements

Eye examination, including visual acuity for six and above

Ear, nose, throat, and neck

Skin (including tuberculin test)

Abdomen (also fever, diarrhea)

Cardiovascular examination

Neurological check

Deformities and incapacitating conditions

Laboratory Section

Malaria film

Hemoglobin, hemoglobin type, WBC count

Stool ova and parasites

Stool culture for under-fives

Urine examination

Biochemistry (sub-sample for protein, other tests)

Serology (sub-sample for measles, polio, etc.)

* See Appendix 3 for revised form used in the second survey.

in the survey.* Practice field interviews and pre-tests were used for on-the-job training, where skills were improved under close supervision.

Interviewers were also taught one of the following skills: registration of attendees, testing visual acuity, administering tuberculin skin tests, and collecting stool and urine specimens. Two interviewers were taught to take anthropometric measurements, and two to take blood pressure readings through an intensive on-the-job training in medical clinics under the supervision of a physician. During pre-testing, duplicate forms and tests were done to standardize procedures and detect errors.

Two weeks before the pre-test, physicians and nurses working in the examination team met to review the general objectives of the survey, discuss the field schedule and examination procedures, and sign up for specific clinic days. A six-page examination procedures manual, with diagnostic definitions and instructions for completing the forms had previously been prepared (see Appendix 2). During the pre-test, the survey coordinator assisted examiners in using the procedures manual so methods were standardized.

II. FIELD OPERATIONS IN THE VILLAGE HEALTH SURVEY

A. Pre-testing Examination Procedures

Before beginning the definitive survey, pre-test studies were carried out on 712 subjects in two middle schools and four representative rural villages. Pre-testing enabled us to test survey methodology, learn more about the study population, and provide team training under realistic field conditions. We learned a great deal about the attitudes, expectations and cooperation of subjects, the logistics involved in conducting medical

* See Appendix 1 - Interviewer Instructions.

examinations in the field and coordinating laboratory analyses and transportation requirements to and from clinic sites.

1. Evaluation of Clinic Procedures and Operation

The pre-testing provided useful opportunities for developing collecting and labelling methods for urine, stool, and blood specimens. Picture symbols were devised to assist illiterate parents in distributing stool containers among household members. Closer supervision of the distribution and processing of lab specimens after return to the hospital laboratories was developed after distribution delays and loss of specimens was detected. More accurate information about actual laboratory processing time required became available during the pre-testing. Reduction in the volume of field specimens which were collected during the definitive survey was made after reviewing the volume processed during the pre-testing period.

It was also discovered during pre-testing that mothers were leaving after their children had been examined and given treatment even though they themselves had not been examined in the adult consultation room. Examination procedures were changed so that mothers were examined at the same station as their children.

Blood collections were not readily acceptable to villagers until a series of methods had been tried out. Important persons, including chiefs, were given the honor of being first to show that it was an acceptable examination procedure. The importance of detecting malaria and anemia was stressed, and physicians were asked to point out the need for blood tests when examining patients with fever and splenomegaly. Special training was given to the laboratory assistants so that blood collection was done with sympathetic skill. Hematology specimens were stored out of sight immediately after collection, to minimize the query "Is it being collected for the blood bank at the Korle Bu Hospital?" When a patient continued to show apprehension

in spite of these procedures, his blood test was waived. Even with these precautions, fear of laboratory blood tests was a major factor in non-participation in the survey clinic.[23] Once people entered the examination clinic, only a few refused tests.

2. Training

The pre-testing period was used to standardize interviewing, examination and recording procedures. Duplicate tests were made on a sample of the subjects who attended the clinic to check the reliability of initial measurements and examinations. This was most easy to do for anthropometric measurements (height, weight, skin fold, and head-chest circumferences), visual acuity tests, blood pressure findings, tuberculin skin tests, and several parts of the physical examination. For borderline or questionable physical findings, discussions and joint examinations were encouraged among physicians so that a concensus would be reached. In addition, several examiners had specialized medical knowledge which was useful when questions pertinent to their field arose. At the close of each clinic a screening of all completed forms was done by the survey coordinator, and any omissions or inconsistencies were brought to the attention of the examiner or interviewer.

3. Examinee Satisfaction

Pre-test subjects were interviewed by a special team as they left the clinic to obtain their reactions to the examination. Two major dissatisfactions were expressed. Many stated that the examiner had been too impersonal because he had "just check a list" and did not try to find out what complaints they had. Others complained that they had not been given any medicine after being examined. Subjects thought this was unfair because many had not felt sick, and had sacrificed a morning of farming or marketing to be present at the clinic. Such feedback was used to revise the examination procedure so that

specific interest was shown by the examiner in the subject's symptoms. Whenever conditions were diagnosed, appropriate treatment was prescribed. All participants received some medication at the dispensary, so that no one left the clinic empty-handed.

4. Motivation Based on Non-Response Factors

We made visits to the homes of subjects who had not come to each pre-test clinic to learn about factors affecting participation. Most non-participating young adults said they had worked on their farm or gone to market. Others expressed fear about the laboratory tests. A small number of school children were attending school on the clinic date. Middle-aged non-participants were more likely to be occupied with business and family responsibilities, such as caring for sick relatives or attending funeral ceremonies.

After identifying these barriers to participation, interviewers were given training to identify potential non-participants and to stress to each individual the personal benefit to be obtained from an examination by a special team of doctors and nurses coming out to the rural village. Healthy children who had no symptoms were to be given malaria prevention tablets. Interviewers appealed to community pride by explaining that the village leaders had agreed to the survey and promised cooperation. An increased effort was also made to gain cooperaton from school teachers to excuse students for the clinic. Elderly subjects were enthusiastic about the examination, and it was only when bed-ridden that older persons did not participate. These persons were later examined by a physician in their homes.

A study of non-participants is the subject of another report.[23] We believe that the serious effort made to solve problems causing non-participation in the pre-test was a major factor contributing to the outstanding participation

rate (98%) of subjects during the actual survey.

B. Approach to the Community

Other special efforts were made to obtain a high response rate in the Village Health Survey. A low rate of response would have resulted in a biased impression of current health conditions since unexamined subjects might represent a group with different individual characteristics or disease patterns than those cooperating. Moreover, a high response rate was essential in our Baseline Village Health Survey, because the same population will be re-surveyed at two future dates and results compared.

Obtaining a high response rate was difficult for three reasons: study villages were scattered over a 200 square mile area; the villages were registered under three separate local government councils; and clinic attendance was voluntary and without incentives other than receiving a careful examination and medical treatment. Since mass media were not available to reach rural communities, persuasion was required. The distribution of study communities is shown in Figure 3.

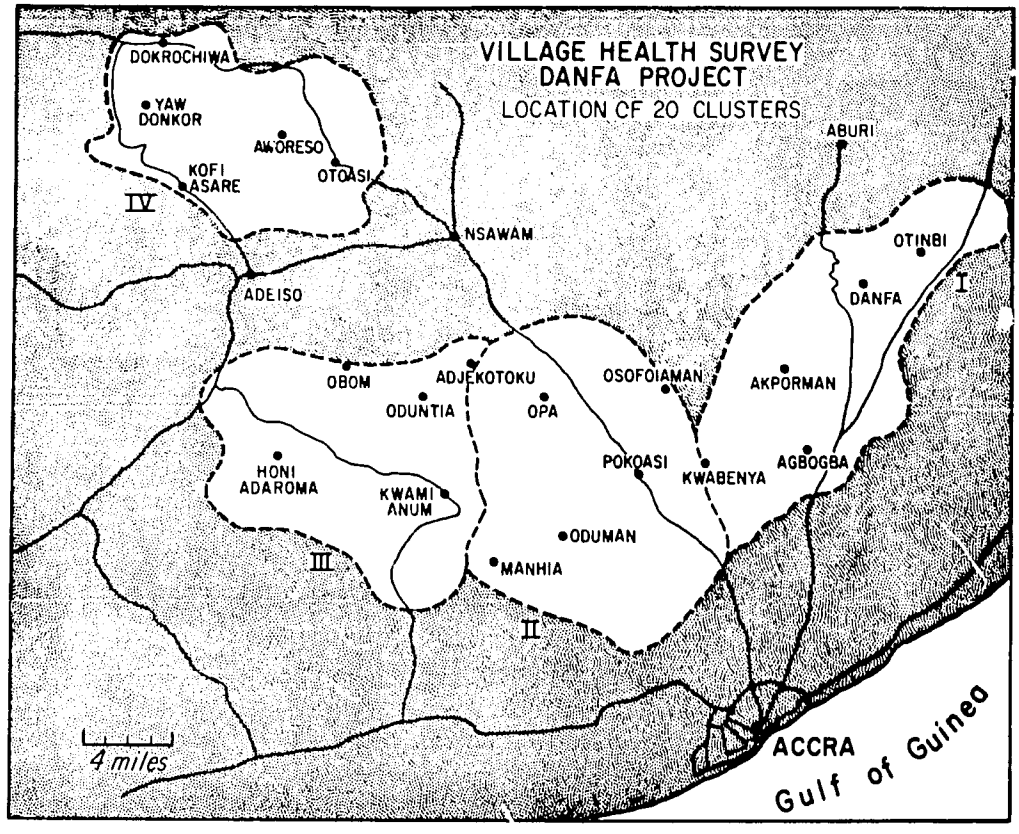
Therefore a staged series of communication was aimed at officials, community leaders, school teachers and survey households. This approach has been used effectively in Central America.[24]

1. Authorities

Communications were established with the regional and local health authorities in the proposed survey area months before the definitive survey, so that they were familiar with the Village Health Survey's objectives and the usefulness of the information. One month before starting the survey an information letter which reviewed the Danfa Project activities and the proposed health survey was circulated to the Ministries of Health, Social Welfare and Education.

Figure 3

Map Showing the Location of the 20 Village Clusters



These ministries were asked to send a letter authorizing the survey and asking for cooperation from their employees. While such letters were prepared and sent, many did not reach the study communities. Most communities first learned of the survey two weeks before the clinic date when contacted by the survey's field supervisor. This is not surprising because of the isolation of many communities and the difficulty in delivering official communiques, even with advance planning. Nevertheless, copies of the official letters were very useful in obtaining support from chiefs

and school teachers.

2. School Teachers

Obtaining support from the Ministry of Education was particularly important, because students had to be excused from school for examination, school buildings used as clinic sites, and teachers enlisted in local promotion and motivation for the survey.

3. Study Communities

The most important communication were those involving the survey communities. The field supervisor met with each village's chief and elders two weeks in advance of the survey to explain its purpose, how the community was selected, and interview and clinic dates. (Figure 4a) The traditional leaders were asked to recommend a site and time for the clinic examination, assist in setting up the clinic, provide tables and benches, and select several volunteers for assistance at the clinic. Communities were also asked to provide free accommodations for the interviewers to erect a shaded waiting area for the clinic. These preliminary discussions were valuable in revealing attitudes and feelings about the survey. Potential problems were usually resolved, although one village, in which the majority of residents belonged to a religious group which did not accept modern medical practices, was replaced by an alternate village for the survey. Potential apprehension about examination procedures and tests were openly discussed so that acceptable explanations could be offered. This was essential for gaining cooperation in collecting laboratory specimens and to motivate healthy persons to participate in the medical examination.

In the larger villages, where only a portion of the residents were to be sampled, frequent complaints were heard from those not included. Influential persons who were not part of the sample were often invited to be guest

Figure 4a

Project interviewer discussing the survey
with the chief of Agbodzikope,
near Osofoiaman, in Area II.

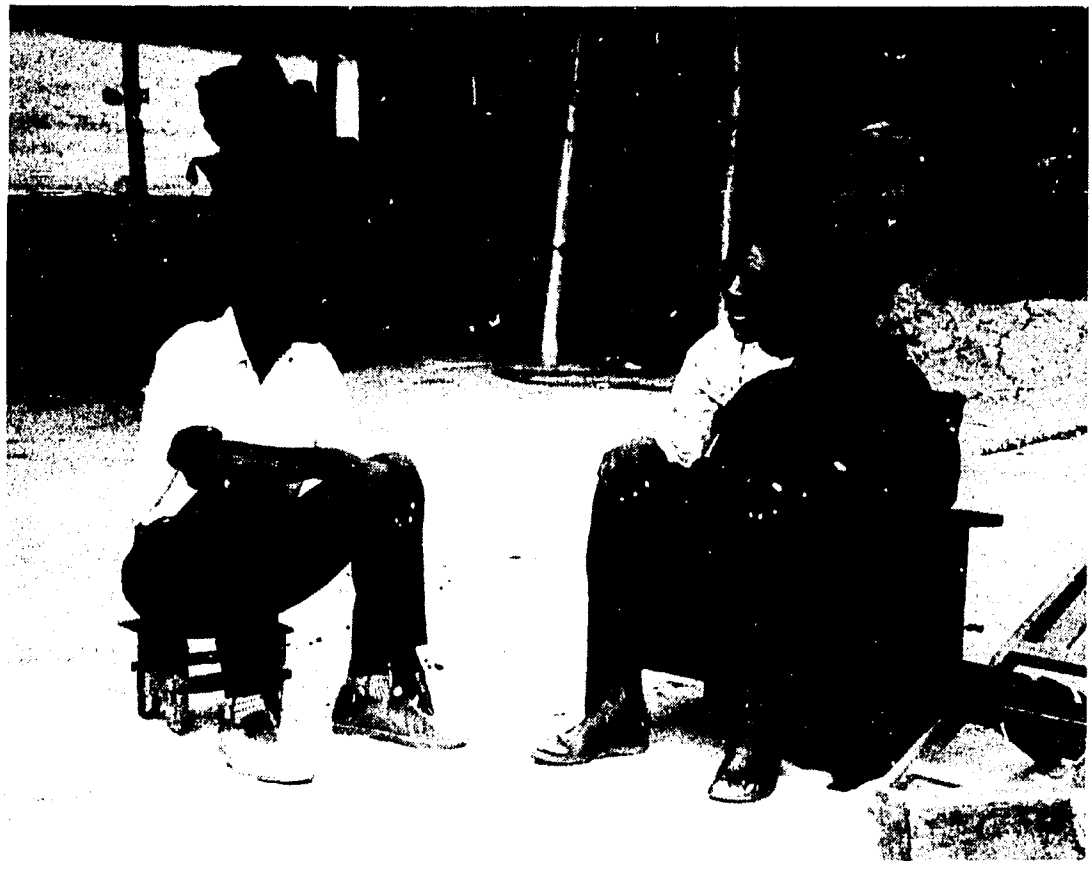


Figure 4b

Chief of Dokrochiwa Opening the V.H.S.

Examination Clinic in his Community

participants at the clinic, to obtain their support and assistance in motivating examinees to attend. (Figure 4b) Additional explanations were offered about the size of the area to be studied and the need for a representative sample to gain information about the whole population. The field supervisor illustrated this by pointing out that after seasoning a pot of soup with a bit of salt, a few spoonfuls suffice to judge the flavor; one does not swallow it all to learn about its taste! One or two days before the clinic the survey coordinator joined the field supervisor in a final discussion with community leaders to confirm the clinic date.

4. Household Contacts

Individual contact was then made during home interviews. The interviewers arrived in the community one week before the clinic. A household census was taken to register all residents at the time of the survey. Each interviewer was responsible for registering residents in six to ten assigned houses, conducting interviews about recent illness and medical care needs, and providing information about the clinic. Special training was given to the interviewers in handling possible objections to the study, in identifying potential non-participants and motivating these individuals, based on pre-testing experience. Since the interviewers also worked at the clinic recording findings and helping examinees, subjects were told that they would also be familiar with some of the workers at the clinic.

5. Home Visits To Motivate Non-Participants

At the end of each clinic, the interviewers reviewed the attendance list at the registration station to learn which of their assigned subjects had failed to attend. Re-visits were then made to each home for further motivation efforts. In addition, a competition was held between the two interviewer teams to achieve the highest response rate.

These efforts produced two significant results. First, almost all subjects had heard about the survey, one of the barriers to participation in another survey experience.[24] Only one out of over 3,700 candidates did not know about the survey. Secondly, a very high examination rate was achieved, with 97.5% of all subjects participating. The contribution of well-trained and highly-motivated interviewers to the success of rural surveys cannot be under-estimated. Careful advance promotion in the target community is also essential.

Figure 5

Registration of Villagers at Examination Clinic

Clinic Operation

Two villages were studied each week, one on Monday and Tuesday, the other on Thursday and Friday. Wednesday was used to replenish drugs and supplies and for making final arrangements at the second village. Most subjects were farmers, who preferred being seen early in the day. The clinic team left Accra at 6 a.m. in order to arrive at the village before 7, and clinics were opened before 8 o'clock. On the first clinic day, 80% to 90% of participants (about 150 persons) attended. Four physicians worked on the busier opening day while only two were needed on the last day to examine remaining subjects and make home visits to non-participants.

The actual operaton of the survey clinic can be categorized as logistics, arrangement of clinic stations, guiding patient flow, and clinic termination.

1. Logistics: Materials, Record Forms, and Transportation

Supplies, equipment and drugs were ordered well in advance of the survey - storage, transportation to the clinic, and replenishment and repair were managed by the clinic coordinator. These materials and record forms were packed into sturdy wooden chests made by local carpenters for transport into the field. (Figure 11)

A variety of forms were used during the clinic, medical examination and laboratory forms, visitor's cards, drug lists, dispensary slips, examination procedures manual, laboratory worksheets, drug requisition orders and referral letter forms. Clinic equipment included weight scales, stadiometer, skin calipers, measuring tapes, thermometers, vision chart, sphygmomanometer, stethoscopes, and laboratory collecting

Figure 6a

Anthropometric Tests by Trained Project Interviewers:

Measuring Height

Figure 6b

Anthropometric Tests by Trained Project Interviewers:

Weighing Children

Figure 6c

Anthropometric Tests by Trained Project Interviewers:

Measuring the Triceps Skinfold Thickness

Figure 6d

Anthropometric Tests by Trained Project Interviewers:

Checking a Preschooler's Head Circumference

and storage materials.

Two vehicles were used to transport examination, interviewing and supervisory personnel between clinics. A third vehicle was used by the clinic coordinator to carry clinic equipment, drugs, record forms and other supplies to each clinic. This vehicle was also used to return completed forms and laboratory specimens to the data processing and laboratory units.

2. Arrangement of Clinic Stations

The building for the clinic had already been selected during original discussions with the community leaders. The resident interviewer team made arrangements for borrowing tables and benches, and a thatched sunshade was set up to cover the waiting and registration stations. The clinic coordinator arrived one hour early to inspect the available rooms and space before making examination, laboratory, dispensary, and other station assignments. The choice of rooms for consultation was based on light and noise conditions and privacy. Activities which did not need privacy were frequently conducted out of doors or on porches. Tables, chairs and benches were arranged and examination equipment and forms were deposited at the various stations. The resident interviewer team eventually took over setting up clinics so that upon arrival, the examination team could proceed with the examinations.

3. Clinic Stations and Examination Procedures

The examination team was supervised by the clinic coordinator. Survey subjects were processed at seven different stations, while visitors (i.e. subjects not included in the sample) were sent only to consultation and dispensary stations. The extra effort and time involved to see local visitors seemed worthwhile to assuage the feelings of those excluded from the survey and to enhance future community cooperation during re-surveys.

There was considerable variation in the size and layout of clinic sites

Figure 7a

Testing Visual Acuity Using a Landolt Ring Chart

Figure 7b

Eye Examination by Nurse

available in the 20 study communities. In 13 villages, a primary or middle school building was used. In smaller communities existing structures were adapted to the clinic's requirements. In five villages a private compound was set up as clinic, while in one isolated village, the chief had a three-room thatched shed specially built for the survey. Only one village had conventional clinic buildings, a half-completed health post.

a) Registration: One interviewer, who had been trained as registration clerk, identified survey subjects and recorded attendance. Each subject had a pre-coded individual examination form on file, giving personal data which had been obtained during the household interview. The clerk gave each individual his form and directed him to the first examination station. (Figure 5)

b) Body Measurements: Height, weight, skin fold and other anthropometric tests were performed by two interviewers assisted by community volunteers when necessary (e.g., in examining small children). (Figures 6a thru 6d)

c) Distance Vision: All persons aged six and above were tested by the senior nurse, from the eye clinic at Korle Bu Hospital, assisted by our two survey drivers whom he trained. A Landolt vision chart was used. This had been found to most readily interpreted by illiterate subjects during pre-testing. (Figures 7a and 7b)

d) Medical Examination: The physician interviewed the subject for current symptoms, examined him, directed a recording clerk to fill out the pre-coded examination form and prescribed treatment. (Figures 8a thru 8e)

The screening examination included an inspection for skin conditions (Figure 8a), an eye, ear, nose, and throat examination (Figures 8b thru 8d), check for goiter, abdominal examination (particularly for hepatosplenomegaly and hernia), and assessment of the cardiovascular system (Figure 8f).

Figure 8a

Physician Conducting Skin Examination

Figure 8b

Examiner Checking for Periodontal Disease

Figure 8c

Physician Inspecting Child's Pharynx

Figure 8d

Physician Conducting Ear Examination

Figure 8e

Examiner Measuring Tuberculin Skin Test

Figure 8f

Examiner Checking Cardio-Vascular Systems

Incapacitating conditions or gross deformities were also recorded. Additional tests could be performed by the examiner when needed to delineate the nature and extent of abnormal findings. The examiner was responsible for complete, accurate and legible recording of his findings by the clerk.

e) Blood Pressure: Subjects aged 16 years and older were tested by a single interviewer. (Figure 8g)

Figure 8g

Interviewer Taking Blood Pressure

f) Laboratory: A 25% sub-sample of subjects had hematological, parasitological, bacteriological, virological, and biochemical tests performed. Stool cultures were obtained from children below five years. Because of apprehension about venipunctures, the laboratory was screened from other stations and special efforts were made by laboratory assistants to be gentle, persuasive and encouraging in their work. (Figures 9a thru 9c)

Figure 9a

Interviewer Testing Urine Specimens

Figure 9b

Physician Collecting Blood Specimen Using Venipuncture

Figure 9c

Laboratory Technician Collecting Blood Specimen
Using Filter Paper Disc Method

g) Dispensary: Clinic drugs were selected for availability, convenience in transportation and effectiveness in a rural clinic setting. Because medications were a major incentive for participating in the clinic, the dispensing nurse and drugs were displayed prominently at all clinics. (Figure 10) Frequently dispensed tablets were pre-packaged. The drugs used are listed in Table 2.

Table 2

Clinic Drugs	
1. Chloroquine	7. Gentian Violet
2. Aspirin	8. Sulfa Eye Ointment
3. Piperazine	9. Triple Sulfa
4. Ferrous Sulfate	10. Pencillin
5. Multiple Vitamins	11. Benzyl Benzoate
6. Cough Syrup	12. Kaolin Mixture

Figure 10

Community Health Nurses Dispensing Patient Medications

Figure 11

Drivers Loading Vehicle With Drugs and Laboratory Materials

4. Patient Flow

The organization of patient flow through the clinic was based on the type of building available and the examinee's age and study status. There were three categories of examinees at each clinic: survey subjects, important persons, and non-sample visitors. Chiefs, elders, traditional healer, school teachers, and all elderly people were given priority at the clinic. This courtesy of allowing respected members of the community to go first was appreciated by the villagers and served to encourage hesitant villagers to participate. (See Figure 4b)

Survey subjects were allocated to various clinic stations depending

on their age groups. All children under five were examined with their mothers in one consultation room; all other subjects were seen at other examination stations. Persons aged six and above had vision and urine tests performed and all subjects over fifteen years had blood pressures measured. The criteria and flow pathways for different tests for subjects is shown in Figure 12. Visitors by-passed most clinic stations and attended only the examination and dispensary services.

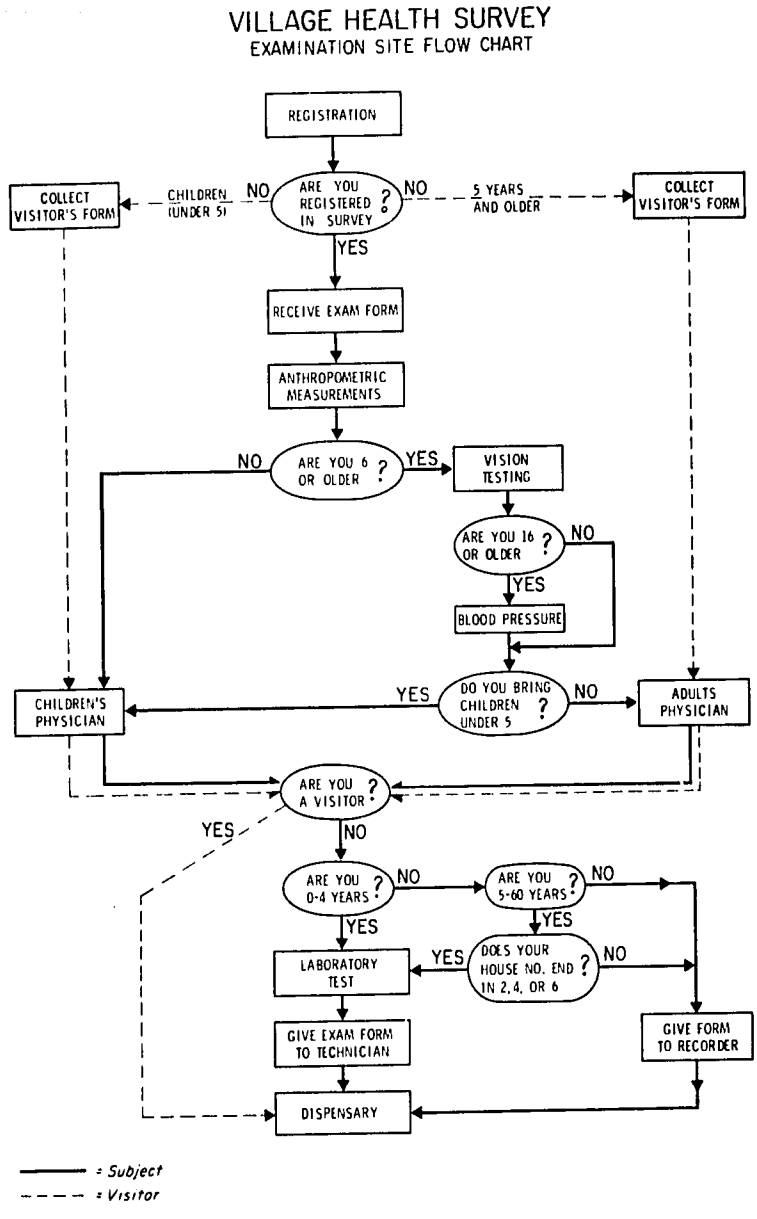
5. Clinic Termination

After the last subject was examined, the completed examination forms were collected and screened by the field supervisor for completeness and legibility. All forms requiring additional entries or corrections were returned to the clinic coordinator, who reviewed the case findings with the appropriate examiner. This editing procedure was important in avoiding loss of data.

The subject attendance registry prepared by the registration clerk was then reviewed to learn which subjects had failed to attend the clinic. The name and house number of non-participants were given to the responsible interviewer for revisits and additional motivational efforts after the opening day's clinic. Subjects who had still failed to attend by the second day were visited at home by the clinic coordinator and the interviewer. Reasons for non-participation were clarified during home visits in order to increase the response rate and to provide information for a study of factors in non-response.

Inventory of the clinic equipment, drugs, laboratory supplies and record forms was made after each clinic session to plan for the next clinic's needs. On two occasions, larger quantities of drugs were required to meet treatment demands for outbreaks of epidemic conjunctivitis and yaws.

Figure 12


VILLAGE HEALTH SURVEY
EXAMINATION SITE FLOW CHART
REGISTRATION
ARE YOU REGISTERED IN SURVEY ?
NO
CHILDREN (UNDER 5)
COLLECT VISITOR'S FORM
NO
5 YEARS AND OLDER
COLLECT VISITOR'S FORM
YES
RECEIVE EXAM FORM
ANTHROPOMETRIC MEASUREMENTS
ARE YOU 6 OR OLDER ?
NO
YES
VISION TESTING
ARE YOU 16 OR OLDER ?
NO
YES
BLOOD PRESSURE
DO YOU BRING CHILDREN UNDER 5 ?
YES
NO
CHILDREN'S PHYSICIAN
ADULTS PHYSICIAN
ARE YOU A VISITOR ?
YES
NO
ARE YOU 0-4 YEARS ?
NO
ARE YOU 5-60 YEARS ?
NO
YES
YES
LABORATORY TEST
YES
DOES YOUR HOUSE NO. END IN 2, 4, OR 6 ?
NO
GIVE EXAM FORM TO TECHNICIAN
GIVE FORM TO RECORDER
DISPENSARY
= Subject
= Visitor

Laboratory specimen and completed examination forms were registered, packed and transportation arranged for delivery to supporting laboratory and data processing units. Heavy equipment and supplies such as weighing scales, height apparatus, and locked drug chests were left in care of the interviewer team after the opening day. Finally, organizational problems were discussed so that necessary procedural changes could be made for the next clinic.

These clinic closing down activities were completed within one hour of completing subject examinations. Before departing on the second clinic day, a courtesy visit to the chief and other dignitaries was made to express gratitude for the cooperation and support received.

Expenditures for the Field Operation

The expenditures in Table 3 are for the definitive survey operation, and exclude costs for planning, pre-testing, laboratory tests, and data processing. The Ghanaian salary figures used are based on 1973 information.

Table 3: Expenditures for Baseline Health Examination Survey:

Personnel[a]	
Physicians - 3 @ $6090/year x 40 days	= $3248
Registered nurse - 1 @$1566/year x 20 days	= 139
Community health nurse - 1 @$1044/year x 40 days	= 185
Laboratory assistants - 2 @ $566/year x 40 days	= 205
Drivers - 3 @ $653/year x 50 days	= 435
Field supervisor - 1 @ $1392/year x 50 days	= 310
Interviewers - 14 @ $940/year x 40 days	= 2339
Personnel Costs	= $6861
Other Expenditures[b]	
Vehicle mileage: 9,000 miles @ $0.20/mile	= $1800
Medications	= 548
Laboratory specimen collection	= 500
Examination forms	= 448
Miscellaneous	= 163
Expenditures	= $3459
Total Costs	= $10,320
Average cost for 3,653 Examinees	= $2.83

a - Personnel costs are based upon 225 work days per year.

b - These reflect costs related to field operations only.

While these costs appear to be reasonable, it must be realized that the per capita government health expenditure in Ghana is about $2.60 annually. Unpublished studies in Ghana show that the $2.83 expenditure per examinee in the field operation would equal the current cost of three to four outpatient visits at a rural health center.

Cycle II of the Village Health Survey

From February to April, 1975, the second survey was conducted in the same 20 villages. Planning for the repeat survey was much easier because of baseline experience, and the field work was facilitated by having six experienced physicians available from the first survey.

The survey organization was not changed, although the clinic coordinator was given expanded responsibilities. A similar program was used for training survey interviewers and examiners and for making advance contact with the study communities. Twelve new interviewers were given a one-week course in survey procedures: registration of selected households; motivation of hesitant subjects to attend; and administration of the examination forms. One major topic for discussion was whether the venipuncture method would be used again to collect blood specimens. We assured the villagers that only finger prick samples would be taken; they were agreeable to this.

Three pre-test surveys were then done to give new field personnel experience in using the forms and working under survey conditions. We first surveyed a primary school, and then conducted two full-scale surveys, including laboratory procedures and data processing, in non-study villages.

The second cycle used a similiar examination form, with a smaller number of test items than were used in the baseline study. Some of the original information was to answer questions which would not be needed to evaluate the effectiveness of the project's health programs. The following baseline tests and measurements were deleted: visual acuity; tuberculin skin testing; venipuncture blood collection (used for hematology, serology and biochemistry tests); urinalysis; and stool cultures. Several new procedures were implemented in cycle II. Blood specimens were obtained by finger prick to make a malaria film, measure hemoglobin (using a batter-powered hemoglobinometer), and collect

serology specimens on filter paper discs. Teeth were examined to determine the prevalence of periodontal disease. Pulmonary function tests for vital capactiy and peak expiratory flow rate were done on a one-time only basis. In children below age 5, information was obtained about their birth order and the interval in time to their next younger sibling: this is being studied in relationship to nutritional status.

The instructions given to interviewers (Appendix 1) and examination procedures (Appendix 2) as well as the revised examination/laboratory form (Appendix 3) are shown at the end of this report.

The same sequence of communications with the study villages was followed. First, approval was gained from officials; then, discussions were held by the field supervisor with community leaders and school teachers; and finally, house-to-house contact and motivation of survey households was done by interviewers. Dispensary supplies and laboratory materials were stored in a central supply cupboard so that several weeks' supplies could be available. These materials were transported to the field in sturdy wooden chests specially constructed for the purpose (Figure 11).

During cycle II, several villages were surveyed after the rainy season began. In spite of the increased farming activities in these communities, mothers brought a very high percent of eligible children. Although non-response increased in adult farmers, seasonal farming activities did not appear to interfere with survey access to the preschool children target population.

One innovation tested in cycle II was to reduce the length of holding the examination clinic in a village to one day. Three of the 20 clusters were informed that the examination team would come for only one day, while the remaining 17 had the usual 2-day program. While this did not reduce the interviewer time in the field, it cut the time required by the more

expensive examination team by one-half, with more time being made available for data processing and laboratory coordination activities. There was no appreciable loss in villager attendance at the clinic: in the one-day villages, about 90 percent of the sample population attended. When examinations were held on two consecutive days, a smaller proportion came on the first day, but the total attendance rose to 95 percent. Since the preschool children attendance was very high on the first day for either approach, surveys designed to investigate the MCH target group could be done using the one-day approach.

Conclusion

Health examination surveys of a sample of the rural population are valuable sources of information about current health needs. We have found that existing health statistics derived from notifiable disease reporting or hospitalized patient reports are often out of date, incomplete, and selective. Well-planned surveys can fill the information gap.

A systematic approach to planning and implementing health surveys is essential if they are to be successful in producing useful information and practical in their use of scarce resources. We were particularly fortunate in having access to consultants in maternal/child health program planning, statistics, sample design, and data processing at every stage in the Village Health Survey. Almost a full year was used in planning, pre-testing, and obtaining necessary supplies and equipment. In view of the long-term nature of the Village Health Survey and the 97.5 percent examination rate achieved during the baseline survey, the careful preparations proved worthwhile.

Similar rural health surveys should be feasible in other developing countries, since we relied upon available health manpower in both field and laboratory activities. Volunteer physicians from the Ghana Medical School worked one day per week during the ten week survey period. Their field schedules were fitted in with concurrent practice, teaching and administration responsibilities. Although laboratory specimens were submitted for processing

during less busy afternoon work periods, we found that the testing had to be done on an overtime basis to keep up with the survey's schedule.

While participation of several different organizations and departments required greater organizational efforts and lengthened planning and pre-testing stages, it contributed in several ways to Village Health Survey (Figure 13). Skilled health workers were obtained from several agencies which reduced the manpower load for any one organization. Investigators had varied skills and interests and thus, made the selection of study topics more useful and relevant to broad needs for planning and evaluation. Finally, informal information flow about survey findings has been facilitated by interested collaborators located in several different organizations.

We have tried to stress the need to define objectives, select topics, and involve a representative group of health workers at the early planning and pre-testing stages in a rural health survey.

Figure 13

Physician Explaining Procedures to Two Visitors:
the Superintendant of Korle Bu Hospital
and the Commissioner of Health, Col. A. Y. Selormey

Recommendations

After completing two Village Health Surveys, we conclude that this approach to collecting up-to-date health information is feasible for use elsewhere in developing areas. Several adaptations could be made to fit the survey to meet specified regional or national health information needs while at the same time remaining within the available manpower resources required to conduct a periodic survey.

First of all, the number of items included in the survey can be reduced to include only those offering information essential to guiding and evaluating rural health programs. Examination items would include "tracer diseases", which are conditions that are commonplace and amenable to feasible health programs, and can be used for evaluation of health service effectiveness.[25] We have indicated items we consider of basic importance with an asterisk on the examination/laboratory form shown in Appendix 3. The proposed items include identification data, clinic utilization, immunization status, and selected examination items (anthropometric, infections of eye and skin, BCG scar, spleen size, malnutrition signs). Laboratory tests to provide basic information could include intestinal parasites, malaria blood film, and hemoglobin. As mentioned above, questions to women about their pregnancy history and the age at which children died can be valuable supplements to available information about crude birth and childhood mortality rates.

Secondly, the survey examination can be designed to be conducted by trained non-physicians, who will be more available for examinations in recurrent surveys. A physician would function as team leader and referral consultant. Five or six communities in each region could be designated as reference points and surveyed at two to three year intervals to review

health needs and measure health program effectiveness. Several categories of paramedical workers are already available but would need a period of short, intensive training. Interviewing and village census could be done by sanitarians, community health nurses or other field workers. In Ghana, the Medical Field Unit team could be used to organize and register the reference community for participation in each survey. Community development officers, agricultural extension workers, nutrition officers and teachers might also be involved. The medical examination could be done by nurses, based on their training and clinical experience in health centers. Health center laboratory assistants could handle the tests. The overall supervision would be on a regional basis, with necessary support coming from the epidemiology division of the Ministry of Health.

If a larger number of communities were to be done, the one-day examination clinic could be used. In order to obtain information about the seasonality and incidence of disease, it would be valuable to schedule the surveys to take place throughout the year. In countries involved with national nutrition surveys, the health survey could be incorporated into the program to provide a wider range of health planning information.

Finally, the use of a standardized survey form and a uniform data processing procedure would permit a rapid feedback of recent information to the local health planner. The standardized methodology would make it possible to compare differences in disease prevalence and use of health services in different parts of the country. While the effort involved to plan, organize and implement village health surveys cannot be minimized, the great need for up-to-date local health information would clearly justify the effort.

Summary

Rural health surveys of a sample of the population are valuable sources of information to determine health needs and to plan useful programs. The literature on methods used to plan such surveys, however, is scarce.

This report outlines the stages of planning, pre-testing, and field operation used in the Village Health Survey, Danfa Project, Ghana. This survey is a longitudinal study in 20 randomly selected villages to be conducted in three cycles at two year intervals.

Special efforts were made to motivate individual participation and to involve investigators from the Ghana Medical School, Ministry of Health, and departments of the University of Ghana, Legon. Careful preparations made it possible to examine 97.5% of all subjects. The cluster sample design, questionnaire design, pre-testing and field operation activities are described in detail.

The steps used to achieve well-trained interviewers and examiners, a very high examination rate, and coordination of several organizations in the long-term Village Health Survey should be of interest to all those involved in collecting rural health information.

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Appendix 1

1975 VILLAGE HEALTH SURVEY - INTERVIEWER INSTRUCTIONS

General

The success of the 1973 V.H.S. in examining over 97% of selected persons was largely due to the interest and hard work of the interviewer teams. Each team will spend one week in ten study villages. The major activities are:

a) Register selected house residents;

b) Conduct a Household Classification survey;

c) Fill out individual information on the Examination Form;

d) Answer questions about the Village Health Survey and motivate assigned households to attend. In addition to these pre-clinic activities, interviewers label and distribute specimen containers to their houses and assist in interviewing participants in the clinic.

A. Household Registration of Subjects:

This year the V.H.S. will be conducted from 3 February to 29 April, with five villages being surveyed in each of the four project areas. In ten villages, all residents are examined, while in ten larger villages, only specified houses are used. The interviewer team enters a village 4 or 5 days before the clinic in order to register selected houses.

A printout listing is prepared for each study village.* It shows all residents of sample houses based on the 1974 census. Your field supervisor will assign each interviewer a list of house numbers. All households living in the house of the time of the survey are to be enumerated. Printout infor-

* During the 1975 Survey, current population information was not immediately available for six villages: the interviewers' household registration was used instead.

mation about house residents currently living in the study houses is to be up-dated when you register present members. Record information about temporary and permanent residents (name, age, sex, and identity number, if available) in the space provided on the listing. If no identity number has been assigned, write "none" - we will obtain a project identity number at the Legon office.

Do not list visitors. If any members will not be present in the village at the time of the scheduled clinic, place brackets around their names on the printout listing with a brief explanation about their non-participation reason (e.g. temporarily absent = T/A).

During enumeration, special note is to be taken of persons who may not want to attend so that you can ask your supervisor to help with motivation. In some instances, people are unable to travel to the clinic (e.g. blindness, weakness) so that home visits will be made on the second day.

Each clinic is conducted for two days. The printout listing is used for daily registration (persons who attend are ticketed). At the end of the first day, each interviewer checks the listing to learn if any persons in his assigned houses did not attend. You will then re-visit the non-attenders and try to persuade them to attend on the second clinic day.

THE CORRECTED HOUSEHOLD LISTING SHOULD CONTAIN THE NAMES OF ALL CURRENT RESIDENTS IN THE SELECTED HOUSES.

B. Household Environment Survey

During household enumeration you will also conduct a survey of each household using a precoded Household Classification form. This is used to obtain information about construction materials (floor, walls, roof), size, facilities (kitchen type, seasonal water sources and storage, light, fuel) and furnishings (stools, chairs, beds, tables, books, clock, radio), and excreta/refuse disposal behavior.

C. Examination Forms

During the household enumeration you will record information about each household member on an individual examination form. In addition to standard identification information, we will ask about attendance at a clinic during the past twelve months, and for children 5 and younger, immunization status and history of measles. The team captain brings the examination forms to the clinic where they are issued to individuals as they register for examination.

Interviewers work with the examining physician at the clinic by asking questions and recording examination results on the form. Most examination information has been precoded so that appropriate responses are simply circled. During the examination questions are asked about diarrhea, pregnancy (15-44 year old females), hernias (20+ males) and illness/activity reduction for the proceeding two-week period. Interviewers are responsible for checking examination form completeness and legibility before the physician starts to examine the next person.

Instructions for Recording Information

Interview Procedures

1. Individual Number: Record on each page, using the printout listing. If subject has no number, write "None".

2. Age: Write in months for children from 0 through 35 months. For persons 36 months and above, record their age at last birthday in years.

3. Number in Household: Record total number of members at time of the interview; i.e. including those who may be T.A. on clinic day.*

4. Household Number: Record from printout listing or "None".

5. Number of trips to a hospital and/or clinic during the preceding 12-month period. Inquire about attendance at a government or private clinic; do not include drug sellers or traditional practitioners.

6. Number of deliveries: Ask all women 15 + years how many deliveries they have had.

* This number must appear on the form for each member in the household.

7. For children 5 and younger ask the informant about her/his relationship to the child, the marital status of its mother, and how many deliveries the mother had before the subject was born.

8. If a younger sibling has been born, calculate the birth interval between the subject's birthday and his younger brother/sister.

9. Use the indicated explanations of different vaccinations.

10. For age child had measles, use age (in years) at last birthday (0-11 month olds are recorded 0; 12-23 as 1, etc.)

EDITOR will code village, occupation and Household score.

Recording Medical Examination (See Appendix 3)

1. Anthropometric measurements: These will be recorded by the examiners. In a small number of persons who have a second set of measurement done, the DUPLICATE measurements for weight, height, arm circumference and skin fold are recorded on Page 5 (Appendix 3).

2. Eye examination results are recorded as present (Yes, 1) or absent (No, 2). If no examination is done, leave blank.

   Trachoma: Check is recorded 0 (none) or 2, 3, or 4.
   Other: Please write clearly and ask examiner to confirm spelling.
   Severe vision loss: If subject cannot see the eye chart (= 20/400), also test to see if he can see fingers moving at 1 meter's distant (If he can't, record 20/500).

3. Ear, nose, throat and neck: Record as indicated.

   Periodontal disease: INCLUDES REDDENED and/or receding gums and pocket formation (between teeth and gums).

4. Skin conditions: Record as indicated.

   BCG scar is on right shoulder or forearm (Area 1)
   Ulcer is defined as a shallow ulcerated area over 2cm in diameter.

5. Abdomen examination: Please note that several QUESTIONS are asked at this time.
   a) Number of stools noted /past 24 hours (ALL).
   b) Pregnancy status of 15-49 year old females
   c) Hernia status of 20+ males
   d) Recent illness/injury (preceding two-week period) (ALL). If the subject has been ill, inquire if he was able to carry out his usual activities during all 14 days, or if the illness caused some reduction or a complete cessation of his normal activities.
   e) If neither spleen nor liver (hepatomegaly) can be felt, record 0.

6. Cardiac: If the patient is examined, information about the location of

of his apex beat and whether a murmur can be heard is recorded. If a significant murmur is heard, item c. or d. is completed.

Cardiovascular: The initial blood pressure findings are recorded by the examiner. If duplicate tests are requested, the second results are recorded on page 5 (Appendix 3) as indicated.

Please note that 9 is used for Not Examined in (48) apex beat, (49) murmur and (62) varicosities.

7. Neurological: As indicated. Weakness of a child's leg due to poliomyelitis is often missed unless he is observed walking or standing.

8. Incapacitating conditions or gross deformities: Dull mentation or mental retardation will be based on comparison of the person's capabilities with others in his age group.

9. Other Conditions: Recorded per examiner's instructions and checked by him for accuracy.

10. Each section of the medical examination (items 2-8 above) is ended with a space for "Other conditions (specify) _____(XX)____". Please record 2 if no other condition is present.

11. Functional status of the person: By "usual" activities is meant what the person normally has been doing around his home, in the community and at his work. His activity level during the past 14 days is compared with his usual activities during the past year.

12. Laboratory tests: The laboratory technician will circle items when specimens have been collected (stool, blood film, urine) and when a DUPLICATE specimen has been submitted.

Please record the results of DUPLICATE MEDICAL TESTS for anthropometric and blood pressure measurements.

D. Other Interviewer Tasks

Certain interviewers will be selected for special training to measure blood pressure, height and weight, and conduct other tests.

Stool specimen containers will be distributed to each household one day before the clinic examination begins. The container's cover is to be labelled with the individual's name, identity number (if any), age and sex. These labels can be prepared several days earlier using the up-dated household information.

Ask each family to provide fresh stool material and to bring their containers to the examination area for collection. Contributors will be

checked off while non-contributors are re-visited by their interviewers for a second try.

E. Pilot test from 27 to 31 January

We will spend three days conducting pilot tests in non-survey villages to provide field training in the registration and examination procedures. One day clinics will be conducted at a school and at Kpobi Kope and Mayera in Area II.

Appendix 2

PROCEDURE MANUAL

EXAMINATION PROCEDURES FOR THE EXAMINATION FORM

VILLAGE HEALTH SURVEY

Danfa Project

General

To make survey findings reproducible the group of examiners should be able to examine with reasonable consistency using a common standard. By defining criteria in clear and precise terms we will achieve uniform application of the criteria observed and information recorded. Measurement of the individual examiner's variability will be done during the main survey by conducting duplicate examinations of the sample. Significant differences in examination findings will be discussed and resolved.

The objectives of this guide sheet about examination procedures are:

1. To ensure uniform interpretation, understanding, and application of the criteria for the various diseases and conditions to be observed and recorded.
2. To ensure that each examiner can examine to a consistent standard and that variations between different examiners are minimized.

Role of the Examiner

The physician's examination includes an eye, ear, nose and throat examination, check for goiter, examination for skin conditions, abdominal examination (particularly for splenomegaly, hepatomegaly and hernia), cardiovascular examination, gross neurological evaluation, and an appraisal of any incapacitating conditions or gross deformities.

A lengthy, highly structured examination is not the method being used for the Village Health Survey because of the survey's screening method and the time available. Instead, after conducting the screening examination shown on pages 2-4(Ap.3) the physician may perform other examination tests which he feels are necessary to delineate clearly the nature and extent of any abnormality. Additional information of this type should be recorded in the COMMENTS portion on page 4 of the form. This will expand and interpret diagnoses made. For example, the examiner might use several simple procedures to clarify symptoms and signs about musculoskeletal problems, such as testing spinal mobility, checking the range of motion of suspect joints, or evaluating muscle weakness.

Role of the interviewer-recorder

Interviewers are used to obtain the subject's identification data, inquire about his use of clinic facilities during the past year, and elicit any history of immunization. In addition, the interviewer asks the subject

about any immediate health problems. At certain points during the examination, he asks probing questions. These are: Has he had diarrhea in the past day; males are asked if they have an inguinal hernia; and women are asked if they are pregnant.

An interviewer recording clerk has been trained for use at each examination station. The examiner should give him clear instructions about recording the data on the survey form; he should observe what is being recorded to make certain erroneous information is not being recorded. The clerk is responsible for prompting the examiner about any omissions at the conclusion of the examination, so that no items are left blank on the form.

Recording Findings on the Examination Form

Since the survey forms are designed for summary and analysis by computer, each item has a code number (enclosed in brackets) which represents a punch-card column; this can be ignored by examiners. Codes for recording information are shown near the appropriate space and are written in by the clerk. In most instances, "2" means no, or not present; "1" means present; "9" is used for items where no examination was performed. Where several gradations are possible, or several types can be determined, "1" through "8" may be used.

The prevalence of a conditon is determined by dividing the positive cases by the total number of subjects examined for that condition. When a careful examination cannot be performed because of lack of cooperation by the patient, a blank must be recorded. Otherwise, if "2" were used, we would get an erroneous result in prevalence, since the denominator would be larger than if we had used only the subjects on whom careful investigation was possible. A frequent example is the crying child or anxious adult, in whom it may be impossible to adequately palpate for an enlarged spleen. This problem also occurs when a good look at the oral pharynx cannot be achieved.

Procedures and Definitions

ANTHROPOMETRY: In addition to the weight and height, measurements are made of arm circumference, triceps skinfold, and for children under five of head and chest measurements.[1] The metric system is used.

1. Weight: Young children are weighed nude while others are weighed without shoes and wearing minimal clothing, to nearest 0.1 kg.
2. Height: The subject removes any shoes and stands erect. The head-piece is lowered gently, crushing the hair, until it makes contact with the top of the head. Measurements are made to the nearest 0.1 cm. For infants and preschool children the recumbent length (crown-heel length) is used. The infant is laid flat and held in position firmly while the head-and-foot-piece are approximated to measure his length. Assistance is generally required to obtain accurate readings.
3. Arm circumference: The site is carefully selected (halfway down the left arm, between the tip of the acromion process of the scapula and the olecranon process of the ulna with the arm hanging freely)

[1] "The Assessment of the Nutritional Status of the Community": D.B. Jelliffe, W.H.O. Monograph 53, 1966.

and marked with a pen, so that the same exact site is used to measure the skin-fold. A flexible steel tape is placed gently, but firmly, around the limb to avoid compression of the soft tissues (in infants a glass-fiber tape is used to measure the smaller circumference) and a reading is taken to the nearest 0.1 cm.

4. Triceps skin-fold: Use the left arm at the same site as the circumference measurement with the arm hanging relaxed at the side. A length-wise skin-fold is firmly grasped and slightly lifted up between finger and thumb of the left hand, avoiding underlying muscle. Apply the calipers about 1 cm. below the operator's fingers, at a depth about equal to the skin-fold. Read the measurement about 2 seconds after the caliper is applied (longer intervals allow the jaws to creep) and take three measurements. The average is recorded.
5. Head circumference: Steady the child's head and measure the greatest circumference, by placing the tape firmly round the frontal bones just superior to the supra-orbital ridges, passing it round the head at the same level on each side, and laying it over the maximum occipital prominence at the back. Make the measurements to nearest 0.1 cm.
6. Chest circumference: Make the measurement at the nipple line, preferably in mid-inspiration, to the nearest 0.1 cm. This procedure on a small child is best carried out with it on its mother's lap.

EYE EXAMINATION: A careful, general inspection is made for abnormal conditions of the lids, conjunctivae, sclerae, pupils and irides.[2] Tests for monocular visual acuity at distance are made using a Landolt ring chart.

a. Purulent conjunctivitis: This term is used for reddening of entire conjunctivae, sticky eyelids, and mucopurulent discharge.
b. Other conjunctivitis: All other forms except trachoma.
c. Trachoma: We will make the diagnosis only when both upper eyelid follicular hypertrophy and/or scarring and the characteristic upper portion pannus is seen. The grades used are:

   Grade 2 - Follicular hypertrophy
   Grade 3 - Cicatricial changes with lid deformity and opacification (superficial) of the superior corneal surface.
   Grade 4 - So-called healed trachoma: no follicles, only smooth scarred conjunctivae and a scarred cornea.
d. Pale conjunctivae: White color.
e. Corneal opacity: Scars of former injuries or ulcers are seen as gray or white areas: the surface over them is smooth and shiny.
f. Xerosis: The conjunctivae lacks luster and transparency; after a few seconds' exposure to air "wrinkling" may be evident. Bitot's spots: greyish-white superficial foamy plaques (composed of epithelial debris) usually located lateral to the cornea.
g. Cataract: Only the general term is used; no type is described.

2 "A Guide to External Examination of the Eye": D.M. Gordon - Hospital Medicine, pages 41-51, April, 1970.

h. Other: Conditions encountered during the 1973 V.H.S. included pterygium (wing-shaped fleshy growth encroaching upon the cornea), strabismus (squint - usually confirmed by the cover test), hordeolum (stye - a localized infection at the lid's margin due to infection), ptosis (either congenital or secondary to injury of the third nerve), icterus, injury foreign body.

i. Uncorrected visual acuity: Subject responds to the Landolt ring chart by pointing direction in which ring faces.

EAR, NOSE, THROAT AND NECK: The ENT examination is of special interest becasue of the relevance of these findings to the problem of conduction deafness.

a. Discharging ear: Watery or purulent fluid or exudate is visible in the external auditory canal or is seen issuing forth from a perforation in the drum.
b. Otitis media: Mark 1 (yes) if you see a bulging drum (partial or complete loss of landmarks, usually with some erythema of the drum; there may or may not be a loss of the light reflex), perforation with discharge, bullous myringitis (drum covered with injected bullae), or serous otitis media (the drum is retracted with fluid visible behind the drum in the middle ear cavity). A reddened drum which does not show bulging or some loss of the bony landmarks is not otitis media. Leave blank (not examined) if you do not visualize the drum due to wax in the canal, exudate which obstructs the view, or the patient won't cooperate.
c. Perforated drum: With or without fluid coming from the perforation.
d. Decreased hearing: Cannot hear two fingers rubbing together at a distance of three inches from the ear. A conduction defect can be demonstrated by placing the tuning fork in the center of the forehead: it will not be heard equally well on both sides as is normal, but will be heard better on the deaf side.
e. Nasal Discharge: A clear or purulent discharge is seen issuing forth from one or both nares; mark 2 (no) if it is a clear discharge in a crying child.
f. Inflamed tonsils/pharynx: Reddened tonsils or pharynx with or without exudate or a membrane. Enlarged tonsils are not an abnormality.
g. Periodontal disease
h. Goiter: Enlargment of the thyroid is classified by the Perez W.H.O. method:
   Grade 1 - visible only on swallowing with the neck extended
   Grade 2 - visible without swallowing at a distance of 2 feet
   Grade 3 - visible at 20 feet.
i. Other: Otitis externa (exudate in the external auditory canal with pain felt on tugging on the ear pinna), cervical adenitis, tumor, congenital or secondary palate defects, and deaf-mutism.

SKIN CONDITIONS:[3] In addition to common skin conditions we are looking for the distribution of reactivity to tuberculin skin tests (measure the diameter of infiltration at 48-72 hours. If no intradermal test is done, leave blank. Previous vaccination exposure to smallpox (scar on left shoulder) or to BCG

[3] "Manual of Skin Conditions": G.C. Sauer. Lippincott, 1966.

(scar on right shoulder) is recorded.

c. Pyoderma: For the survey's purposes, this term will embrace a variety of primary bacterial infections of the skin and subcutaneous tissue including impetigo (superficial, ecthyma (deeper than impetigo, often on buttocks, thighs), folliculitis, furuncle (boil), carbuncle (extensive infection of several hair follicles), and sweat gland infections. Cellulitis and superficial adenitis may also be secondary to skin infection and should be recorded in the Remarks section to describe more severe forms.

e. Dermatomycosis: Tinea versicolor is a common skin condition with tannish colored irregularly shaped, scaly patches, usually located on the upper chest and back. Tinea corporis is a localized lesion usually with healing in the center. Tinea capitis is the commonest cause of patchy hair loss in children and typically presents as scaly, round patches with broken-off hairs.

f. Ulcer: This term will be used to refer to lesions over 2 cm. in diameter of one month or longer duration. Marked undermining at the edges raises the possibility of Buruli ulcer (M. ulcerans).

j. Scabies: Suspected in any generalized excoriated eruption; usual distribution is on the lower abdomen and the back with extension to the pubic and axillary areas, the legs, the arms and the webs of the fingers (in mild cases the webs of the fingers are spared).

k. Yaws: Primary: A single granulomatous lesion, often with enlargement of the regional lymph nodes is accompanied by moderate systemic symptoms, aching of the limbs and joint pains, and often there is irregular fever.
Secondary: Crops of elevated lesions (may appear as erosions in malnourished children) which at first exude clear serum but then become covered with a yellowish crust.
Tertiary stage: The skin lesions have several forms including hyperkeratotic lesions of the soles and palms with fissuring and ulceration ("crab yaws"), extensive, spreading superficial ulceration, and cutaneous and subcutaneous nodules. Destructive bone and periosteal lesions may occur, particularly involving the long bones and the hands, and occasionally the hard palate

h. Leprosy: A detailed description is not possible here. Tuberculoid skin lesions are few in number (1-4), hypopigmented, large well-demarcated, and hypo-anesthetic. Lepromatous cases have many symmetrical, small shiny lesions with vague edges; these often are infiltrated and coalesce to form nodules. Dimorphous is midway between these two manifestations with one or a few large macular lesions followed by many small ones.

m-r. Clinical signs of malnutrition are best shown in the photographs and discussion on pages 16-40 of Reference 1.

s. Other: Among conditions noted during survey were dermatitis, eczema, leukoderma, molluscum contagiosum, verruccae, urticaria, pruritus, cutaneous larva migrans, and ainhum.

ABDOMEN

a. Diarrhea is defined as present when patient has passed 4 or more stools in the preceding 24 hours, which were watery, and not the consequence of an enema or a purgative. In children under 6 months, frequent stools are normal, and some probing about consistency as well as the clinical impression is needed to confirm diarrhea. This year we are simply recording number of stools/24 hours.

b. Fever: Measured temperature is to be marked as indicated.

c. Splenomegaly: The patient is examined in the recumbent position with the abdominal muscles fully relaxed; in small children being held by their mothers, this may not be possible. Hackett's system of classification, used by W.H.O. is defined below:

Class 1 - A spleen palpable on deep inspiration

Class 2 - Palpable on normal breathing but not projecting below a horizontal line half-way between the costal margin and the umbilicus.

Class 3 - Projects more than half-way to the umbilicus, but not below a line drawn horizontal through it.

Class 4 - The spleen's lowest palpable point is below the umbilical level, but does not project more than half-way towards a horizontal line through the symphysis pubis.

Class 5 - Below the lowest limit of class 4.

h. Other: Findings during the survey included uterine fibroma, intra-abdominal abscess, pelvic inflammatory disease, lipoma of the abdominal wall, cystitis, urethritis, unspecified tumor.

CARDIOVASCULAR[4]: This examination includes taking the blood pressure, palpating for the apex beat, and routine auscultation of the ear. The blood pressure is taken on the seated subject using the left arm, and slowly lowering the pressure (about 2mm per heartbeat).[5] Read the result to the nearest 2mm Hg. Both the fourth (muffling of the sounds) and fifth (disappearance of sounds) diastolic phases are measured. The pressure is taken 3 times and the average is recorded. Cardiac auscultatory findings are considered "tentative" or likely, but not definite.

b. Presence of a cardiac murmur

Systolic ejection murmurs ("diamond-shaped" mid-systolic peak) be physiological ("functional") and are commonly heard in children, pregnancy, and anemia. If a loud ejection murmur radiates towards the right carotic artery in association with peripheral findings of low cardiac output (narrow B.P. pulse pressure), the diagnosis of aortic stenosis would be justified.

Pansystolic murmurs occur in incompetence of the mitral or tricuspid valves. An early diastolic blowing murmur along the left sternal edge is consistent with aortic regurgitation, while a mid-diastolic murmur at the apex, often with presystolic accentuation, is heard in mitral stenosis.

c. Other cardiovascular findings - these have included congestive cardiac failure, premature ventricular contractions, and bradycardia (a pulse rate of 50 per minute or less).

NEUROLOGICAL: A careful neurological examination is not included in the screening tests. The examiner may perform neurological tests which he feels are necessary to delineate clearly the nature and extent of any abnormality,

[4] "Modern Bedside Methods in the Diagnosis of Heart Disease" J.P. Duffy, R.M. Gunnar, J.R. Tobin. Med. Clinics No. America 53: 97-113, 1969.

[5] "Human biology. A Guide to Field Methods" J.S. Weiner, J.A. Lourie. International Biological Programme Handbook No. 9. Blackwell, 1969.

such as a gait disorder, paralysis (hemiplegia, paraplegia, facial), paralysis agitans, infantile spastic paralysis, neuropathy, etc. Lower motor neurone symptoms (e.g. flaccid, hypotonic extremity with intact sensation) is almost always related to poliomyelitis. Polio is occasionally missed in small children with their mother unless walking ability is tested.

INCAPACITATING CONDITIONS OR GROSS DEFORMITIES

c. Other: Incapacitations have included blindness, inability to walk with no cause determined, contractures of joints, plantar ulcers, deformed fingers and toes in tuberculoid leprosy or tertiary yaws, deforming arthritides.

OTHER CONDITIONS: A number of diseases which do not fall into the major categories above are listed here. Examples are: rheumatism, protein-calorie malnutrition (marasmus, kwashiorkor), pneumonia, bronchitis, arthritides, hematuria, mastitis, psychosis, mental retardation.

COMMENTS: We would appreciate additional information which you feel contributes to the diagnosis or to background information about the subject. Information about a local epidemic on the community's environment as a factor will help in analyzing the survey.

Appendix 3

VILLAGE HEALTH SURVEY - EXAMINATION FORM

Danfa Comprehensive Rural Health and Family Planning Project: Ghana

January 1975

Individual Nr.	Age* Mo. Yr.	Sex* M F	Nr. if Household	Survey Nr.	Household Nr.
(1) ___ // ___ / ___ (7)	1 2 _ _	(10) 1 2	(11) _ _	(13) 9 0 2	(16) _/_ _/_ _

Name (last, first, middle)	House Nr.	Village*	Occupation	Household Score (Socioeconomic, environment)
_____	_ _ _	_____ (21) _ _ _	_____ (24) _ _	(26) _ _ _

Person to be queried: ALL	* Have you made trips or visits to a hospital/ clinic during the past 12 months for treatment or advice? 0=no 1-7=1 to 7 times 8=8+ 9=DK	(29)	____
15 years and over ALL	Can you read?	(30)	Y 1 N 2 DK 9
15 years and over Women only	Nr. of deliveries (live birth and stillbirth)	(31)	_ _
5 years and under All children (Ask questions of mother; if not available, ask of caretaker)	Relationship of informant (circle nr. appropriate) Mother.....1 Father....3 Other (Relative)....5 Grandmother....2 Sister.....4 Other (specify): _____....___	(33)	___
	What is the present marital status of this child's mother? Never married....1 Separated, Divorced....3 Died...5 Married.....2 Widowed.....4	(34)	___
	Has this child's mother had other children?	(35)	Y 1 N 2 DK 9
	If yes, how many deliveries before this child? (include stillbirths and children no longer living)	(36)	_____
	Was a (younger) child born after this child?	(37)	Y 1 N 2 DK 9
	If yes, what is the birth interval (in months) between this child's birthdate and his younger sibling's birthdate?	(38)	_ _ mo.

Card 1 (continued) Individual Nr.__ __/__ __/__ __

			Y	N	DK
5 years and under	* Has this child been vaccinated against any of the following diseases?	(39)	1	2	9
All children	1. Measles? (given with a jet gun)	(40)	1	2	9
(Ask questions of mother; if not available, ask of caretaker)	2. Tuberculosis? (into skin at shoulder; it leaves a scar)	(41)	1	2	9
	3. Whooping cough? (told to return for 2nd shot)	(42)	1	2	9
	Has this child had measles? At what age? (8=no; 9=DK)	(43)	____yrs.		

A. ANTHROPOMETRIC MEASUREMENTS *

5 years and under:

Circumference of head: __ __.__cm

Circumference of chest: __ __.__cm

Is chest circumference Greater (1), Same (2) or Less (3) than the head circumference? (44) ___

ALL Persons:

Weight (45) __ __.__kg.

Height (48) __ __ __.__cm

Arm Circumference (52) __ __.__cm

Skin fold (triceps) (55) __ __mm

B. Eye Examination

		Y	N
a. *Purulent conjunctivitis	(57)	1	2
b. Other conjunctivitis	(58)	1	2
c. Trachoma (grade 2-4)	(59)	____	
d. Pale conjunctivae	(60)	1	2
e. Corneal opacity	(61)	1	2
f. Xerosis/Bitot's spots	(62)	1	2
g. Cataract	(63)	1	2
h. Other (spec.)_____	(64)	____	
i. Uncorrected visual acuity:			
RIGHT (65) 20/__ __ __			
LEFT (68) 20/__ __ __			
(record 500 if cannot see fingers at 1 meter)			

C. Ear, Nose, Throat and Neck

		Y	N
a. Discharging ear	(71)	1	2
b. *Otitis media	(72)	1	2
c. Perforated drum	(73)	1	2
d. Decreased hearing	(74)	1	2
e. Nasal discharge	(75)	1	2
f. Inflamed tonsils and/or pharynx	(76)	1	2
g. Periodontal disease	(77)	1	2
h. Goiter (grade 0-3)	(78)	____	
i. Other (Spec.) _____	(79)	____	
	(80)	1	

Card 2 (1-15) Individual Nr. __ __/__ __/__ __

D. Skin Conditions

		Y	N
a. *Tuberculin test (done on__ __/__ __)	(16)	__ __mm	
b. *BCG scar	(18)	1	2
c. *Pyoderma	(19)	1	2
d. Pediculosis	(20)	1	2
e. Dermatomycosis	(21)	1	2
f. Ulcer	(22)	1	2
g. Trauma or injury (fresh)	(23)	1	2
h. Burns (fresh)	(24)	1	2
i. Guinea worm	(25)	1	2
j. Scabies	(26)	1	2

k. Yaws (27) ___

Primary	1
Secondary	3
Tertiary	4
None	2

l. Leprosy (28) ___

Indeterminate	1
Tuberculoid	3
Dimorphous	4
Lepromatous	5
None	2

m. *Pedal edema	(29)	1	2
n. *Dermatosis (flaky paint)	(30)	1	2
o. Cheilosis/stomatitis	(31)	1	2
p. *Hair depigmentation	(32)	1	2
q. Moonface	(33)	1	2
r. Parotid enlargement	(34)	1	2

s. Other (spec.)

_____ (35) _____

E. Abdomen Examinations

a. (Ask all persons)
Nr. time he/she has passed stools in past 24 hrs.
0-8=0-8+ 9=DK (36) ____

b. Temperature (37) __ __ __.__

c. *Splenomegaly (enter grade 1 to 5; if none, enter 0)
(41) _____

d. Hepatomegaly (42) __ __.cm

e. Other (spec.)
_____ (44) _____

f. (Ask of all females age 15+)
Are you pregnant? (45) Y 1 N 2

g. (Ask all males age 20+)
Do you have a hernia? (46) Y 1 N 2 DK 9

(Then examine all subjects)
Umbilical.....1
Indirect inguinal.....2
Ventral.....3
Umbilical & Ventral.....4
Umbilical & Inguinal.....5
(47) ____

F. Cardiac Examination

a. Location of apex beat (48) _____
Inside MCL.....1
At MCL.....3
Outside MCL.....4
Not palpated.....2
Not Evaluated.....9

b. Presence of murmur (49) _____
Functional.....1
Significant.....3
No Murmur.....2
Not examined.....9

	Stenosis	Regurg.	Both
c. Mitral (50)	1	2	3
Aortic (51)	1	2	3

d. Other murmur (spec.)
_____ (52) _____

G. Cardiovascular

a. Blood pressure
Systolic (53) __ __ __
4th Diastolic (56) __ __ __
5th Diastolic (59) __ __ __

b. Varicosities (62) _____
Varicose veins, right....1
Varicose veins, left.....3
Varicose veins, both.....4
No varicose veins.....2
Not examined.....9

c. Other cardiovascular (spec.)
_____ (63) _____

H. Neurological

		Y	N
a. Hemiplegia	(64)	1	2
b. *Poliomyelitis	(65)	1	2

c. Other (specify)
_____ (66) _____

Card 2 (continued) Individual Nr. __ __/__ __/__ __

I. Incapacitating Conditions or Gross Deformities

		Y	N
a. Loss or absence of an extremity:			
Finger-toe	(67)	1	2
Hand-foot	(68)	1	2
Arm-leg	(69)	1	2
b. Dull mentation	(70)	1	2
c. Other (spec.)			
_____	(71)	____	

J. Other Conditions (specify_

a. _____

_____ (72) __ __ __

b. _____

_____ (75) __ __ __

ASK PHYSICIAN TO CHECK THE SPELLING OF THESE CONDITIONS.

K. Comments by Examiner

1. Additional details about findings and history of patient:

_____ _____

_____

2. Functional Status of Persons Aged 15 years and older (by respondant)

a. During the past 14 days, has the person been aware of any symptoms or ilness? (If YES, ask b.)

	Y	N	DK
(78)	1	2	9

b. How much of his usual activities (job, housework, community activities, recreation, etc.) has he been able to do? (Usual = activities done during the past year)

1 = all 2 = some restriction
3 = cannot do usual activities 9 = DK (79) _____

(80) 2

Card 3 (1-15) Individual Nr. __ __/__ __/__ __

L. LABORATORY TESTS

*a. Stool parasites

		Y	N
1. Ascaris	(16)	1	2
2. Hookworm	(17)	1	2
3. Other (specify) _____	(18)	____	
_____	(19)	____	

b. Urine -

1. S. hematobium	(20)	1	2

c. Blood tests

*1. Malaria results (21) _____

Negative.....2
Falciparum.....3
Malariae.....4
Ovale.....5
Mixed.....6

*2. Hemoglobin (Gm%)	(22)	__ __.__
3. Hematocrit (PCV)	(25)	__ __
4. Blood glucose	(27)	__ __ __mg%

d. Pulmonary function tests

1. Vital capacity	(30)	__.__Liters
2. Expiratory flow rate	(32)	__ __ __L/min.

e. Miscellaneous (specify)

1. _____	(35)	____
2. _____	(36)	____
3. _____	(37)	____
4. _____	(38)	____
5. _____	(39)	____

f. Duplicate laboratory tests

		Y	N
1. Ascaris	(40)	1	2
2. Hookworm	(41)	1	2
3. Malaria film	(42)	____	

g. Duplicate medical tests

1. Weight	(43)	__ __.__kg
2. Height	(46)	__ __ __.__cm
3. Arm circum.	(50)	__ __.__cm
4. Skin fold	(53)	__ __mm
5. Systolic BP	(55)	__ __ __
6. Diastolic (D5)	(58)	__ __ __

(80) 3

Comment on the examination form:

Those items with asterisks (*) are considered to be the most useful for a simplified Village Health Survey. These items would provide information on the basic health problems.

An ABRIDGED SURVEY FORM designed for health program information should include:

Medical Examination

1. Age, sex, village
2. Clinic attendance/past year
3. Immunization status
4. Anthropometric measurements
5. Eye, skin infections.
6. Otitis media
7. BCG scar (validate reported vaccination)
8. Spleen size
9. Malnutrition signs
10. Gross deformities (e.g. polio)

Laboratory Tests

1. Intestinal parasites
2. Malaria blood film
3. Hemoglobin

Fertility History/Outcome of Pregnancy

1. Directed to women in reproductive age group to estimate crude birth rates and childhood mortality rates.