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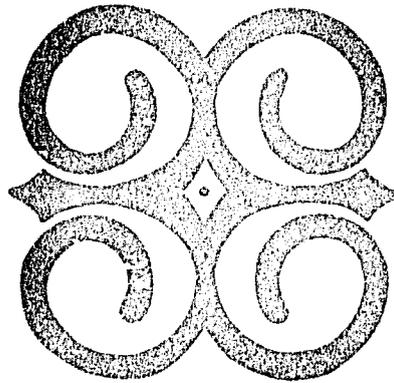
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Project, Ghana**



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PROCEEDINGS OF THE  
SIXTH ANNUAL  
REVIEW MEETING

MARCH 17 - 18, 1975

ACCRA, GHANA

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.

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11th March, 1975

DANFA COMPREHENSIVE RURAL HEALTH AND FAMILY PLANNING PROJECT:  
GHANA

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17 and 18 March, 1975

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OPENING STATEMENT

by

Prof. H.H. Phillips, Vice-Dean  
University of Ghana Medical School

I welcome all of you to the Sixth Review Meeting of the Danfa Comprehensive Rural Health and Family Planning Project. Prof. Dodu, the Dean, has had to be away on other business and has asked me to express his disappointment at not being here.

The name Danfa has, as you may all know by now, become an important one on the international scene. This project has stimulated the interest of many countries and all those interested are watching the project keenly. For it is an important project and, inter alia, has afforded an opportunity to establish and maintain good relations with other institutions, particularly UCLA and USAID, and it is our hope that these good relations will grow from strength to strength.

This 6th review meeting is a particularly important one, as it takes place at a time when it has become clear that an evaluation of the project at this stage should provide much useful information, as well as pointers to directions of activity. At this meeting we hope to review our objectives and assess what we have achieved with a view to planning for the future. In all these activities, it is clear that the good relations which have been established ought to be maintained among the Medical School, the Ministry of Health, UCLA, and USAID.

I shall not presume to anticipate our deliberations but I hope that we shall look seriously at those aspects of the project which need to be projected into the future with a view to benefiting not only those who may take a lesson or two from this significant project. May I now take this opportunity to introduce the Vice-Chancellor of the University of Ghana, Legon, Prof. A.A. Kwabong, to deliver his welcome address.

WELCOMING ADDRESS

by

Prof. A.A. Kwapong  
Vice Chancellor, U. of G.

Mr. Chairman, Ladies and Gentlemen:

A little over a year ago, I had the pleasure of coming here to open the Fifth Review meeting of the Danfa Rural Health and Family Planning Project, and it is with much pleasure that I am here this morning, once more, to open the Sixth Annual Review meeting of the Danfa Project.

One of the problems of a project of this kind is that a remarkable achievement accomplished within a period of almost eight years tends to be taken for granted and there is a temptation to regard these annual review meetings as merely routine and procedural exercises.

This year's review meeting, however, is different. It is a crucial one for two important reasons: first, it marks the mid-stage of a research project that is due to end in 1979; and second, it precedes a full-scale evaluation of the project. A team of foreign experts and one Ghanaian expert, Dr. G. Nukunya of our Institute of Statistical, Social and Economic Research will soon undertake this evaluation. In view of the monetary crisis throughout the world today, all Governments, as we know, are faced with serious financial constraints, and it is obvious that a thorough and comprehensive evaluation of the kind envisaged at this time will not only be a matter of academic and professional interest, but one motivated by the desire to have a close look at how effectively money is being spent on this project and how it might be used with even greater economy.

We, in this University and in our Medical School, very much welcome the evaluation and consider this the appropriate time to examine ourselves and to analyze clearly not only for ourselves but also for the people of Ghana the various ways in which we think the project has been of benefit to Ghana.

The history of this project has been recounted too often to require anything but a cursory reference from me to its salient features. As you all know, the Danfa Project was started in 1967 by the University of Ghana Medical School's Department of Preventive and Social Medicine (now re-christened the Department of Community Health) in collaboration with the Ministry of Health, and since 1970 this project has been implemented under a contractual agreement with the School of Public Health of the University of California at Los Angeles whose Co-Director, Dr. Alfred Neumann, I am very happy to welcome once more to Ghana.

This partnership with UCLA has been a fruitful one which has helped to accomplish many tasks, and added especially to our research insights, methodologies and effectiveness.

But as you all know, also, there was a great emphasis from the very outset to make the project a truly inter-disciplinary and inter-departmental undertaking, both within the Government and within the University, and this inter-disciplinary collaborative character has been one of the most remarkable features involving appropriate Government departments that are in a position to implement throughout the country the results or lessons learned from the project and, for this reason, regular briefing and review sessions have taken place between the Project Coordinators and Ministry officials to whom I would like, once more, to express the gratitude of the University.

One of the important objects of this review meeting can be seen as one more step in the process of analyzing the successes and shortcomings of this important project and making its useful findings available to those who can apply them to the benefit of the whole community.

Again, if I may recall points which have been made again and again at these review meetings: Until 1970 when our collaboration with UCLA began, major activities of the project consisted of the development of an effective rural health demonstration center with an active program of teaching medical students as well as other health workers, and the provision of service to the community. Our collaboration with UCLA has added the very important component of a complex research ingredient to the project, and I shall soon mention some of the important achievements which we, from the Ghanaian side, consider we have accomplished in the project.

Perhaps, I may also recall again the goals of the project which clearly indicate the central concern to relate the various activities of the project to the practical solution of some of the major health problems of the country, and I quote:

1. To investigate the state of the rural Ghanaian community; its physical, social, cultural and health characteristics and related factors that determine participation in health programs
2. To find out the most useful and efficient way of utilizing available manpower for basic health and family planning service in rural areas
3. To undertake cost analyses to provide data useful to economic and health planners to help maximize the return on investments made in health-related programs, and
4. To provide information derived from the project to the Ghana Government on an ongoing basis so that the national policy of extending health services and family planning to the rural sector can be best implemented.

As I said last year, these goals are identical with those of the World Health Organization for all the less developed countries. At its Twenty-Fourth Assembly Session, WHO recommended that its organizational study

should be on the theme: "Methods of promoting the development of basic health services", and there is no doubt that the findings of our Danfa Project that bear on this very important problem of the methods of promoting basic health services can contribute in a significant way to the solution of specific health problems, both in Ghana and elsewhere. So, I would like to emphasize what I said last year once more, that the Danfa Project is yet one more example of the University of Ghana's concern in working together with the Government to find practical solutions to problems of the development of our rural communities.

We need no reminder that one of the major tenets of public health work continues to be that diseases which are caused by defects in the social and cultural environment can only be controlled or eradicated through improvements in the living conditions of the people affected, and that is why we all believe that good water, good disposal of refuse, good food and good housing, in short, good public health measures ultimately contribute more toward the sound health of the community than the simple provision of medicine and what has been aptly called the "repetitive treadmill of diseases" which recur because channels for their transmission are left open to defects in the social and cultural environments of man. These principles have continued to guide our efforts in the Danfa Project and strengthen our resolve to work closely together with Government to find solutions to problems of the development of our rural communities.

I promised at the beginning of these remarks that I would highlight briefly some of the significant achievements which, at this point, we think worthwhile to underline to enable us to proceed to the successful conclusion of our stated objects. Although we intend to carry out some aspects of the Danfa Project indefinitely, there are some aspects of the project, however, especially the contractual agreement with UCLA which are due to come to an end in 1979.

In looking at these achievements, I would like to list them under four main heads: (i) Health Care Organization, (ii) Family Planning, (iii) Training and (iv) Evaluation.

(i) Health Care Organization:

- (a) Through the work being carried out at the Danfa Health Center and its satellite clinics, a body of information concerning illness patterns, health service utilization patterns, attitudes of consumers of health services and relative costs of combinations of services are being made available to the Ministry of Health.
- (b) Information on a new role for nutrition assistants, community health nurses and rural health inspectors is being provided with the objective of using these already available cadres for increasing health education in the rural areas.
- (c) The augmentation of the effort of conventional health workers with various community resource persons has been studied over the past four years. Promising results have been achieved

and some programs, e.g. the traditional birth attendant program is already being tried in other areas of the country under the auspices of the Planned Parenthood Association of Ghana.

- (d) The method of achieving a high - up to 85% - coverage of a defined community using satellite clinics and one static clinic approach has been demonstrated and recommended.
- (e) A living task description of the health center staff has been developed and presented to the Ministry of Health for their consideration and possible adoption for use in other health centers in the country.
- (f) The lessons we have learned in trying to organize an interdisciplinary community development project with the active participation of the community are being made available on an ongoing basis to other agencies.

(ii) Family Planning:

- (a) Information on the attitudes, knowledge and practice of rural communities with regard to family planning has been made available.
- (b) Preliminary information on the determinants of fertility in the study population has been collected, analyzed and made available to the relevant agencies.
- (c) Data on acceptor characteristics has been provided on an ongoing basis.
- (d) New initiatives in the delivery of family planning services are being worked out. A notable example is the extended family planning service scheme which is now being practiced by other family planning organizations in the country.
- (e) Data on continuation rate of family planning practice which was recently gathered is being analyzed.

(iii) Training:

- (a) A field for the orientation of the physician as well as other members of the health team in the delivery of integrated health care has been established.
- (b) For certain special courses advantage has been taken of overseas training in order to increase the competence of the Ghanaian staff in areas such as records management, computer programming, advanced data processing, health education, epidemiology and maternal and child health.
- (c) In the process of emphasizing the participation of the individual within the community in the delivery of health care, valuable curricula have been developed for three separate volunteer groups in the study community. Such curricula can be used in programs elsewhere in the country.
- (d) Suitable field survey procedures in epidemiology and social sciences have been developed for use in the teaching and research programs of the Medical School.

(iv) Evaluation:

The major contribution of the research component has been the generation, processing, and analysis of data and the entire data

management process using equipment and personnel available in Ghana. Important areas of such data collection have been:

1. Vital events registration;
2. Morbidity surveys;
3. Child Health Knowledge Attitude Practice survey;
4. Maternal Practices Survey;
5. Fertility Survey;
6. Knowledge Attitude Practice studies in males and females;
7. Determination of the health status of a sample of the study population;
8. Health related behavior survey.

These, then are some of the achievements so far accomplished under this seminal important project. We believe its significance and value for Ghana and the rest of Africa and the developing countries are very great. We are, however, not complacent. There is no doubt that there are shortcomings, as one would expect in any human organization and in a project as complex as this one. But I believe it would be reasonable to conclude that the progress we have made and are making so far have been quite satisfactory. And, what is more, we are very and justly optimistic about the continued success of the project, and we believe rightly that the findings from this project will provide significant, practical solutions to specific health problems in Ghana and other countries.

The University of Ghana supports the Danfa Project because through this project the University's aim of training a truly interdisciplinary health team is being accomplished, and from this project we hope that the principal aim of the Medical School is being realized, i.e. to train doctors who, on the one hand, have received an education that is directly related to the special health needs and the socio-economic situation of our country. It continues also to be our aim to train the students of the Medical School for their role as medical integrators of medical and social services within our rural communities, integrators who can effectively coordinate such teams of paramedical personnel as public health nurses, sanitarians, community health nurses, midwives, etc., in the rural areas, especially at the level of the health center. The importance of this project for rural development is, therefore, one of the significant things about this Danfa Project.

Secondly, as I emphasized again in the previous review meetings, another important aspect of this project is the fact that the time is over in all countries, developed or developing, when university institutions and their medical schools can afford to live in isolation, content to be respected as repositories of knowledge, and unmindful of the needs of the community in which they find themselves, and from which they derive support. The responsibilities of university institutions in the tasks of national development are now so firmly established and recognized as not to need any elaborate debate, and the establishment and the continued growth of the Danfa project continues to provide an indisputable proof of our conviction in this regard and of our determination to play our true role in various aspects of national development. Through this project, too, the Medical School seeks to participate actively in the public health

services of the country, to promote the general improvement of the social environment in the village of Danfa and its neighborhood and generally throughout the country.

Finally, as I said again, last year, I would like, once more, to emphasize the international nature and importance of this project. The Danfa Project continues, in my opinion, to be one of the most brilliant illustrations of international co-operation in which our Medical School, various other Departments of the University and appropriate Government Departments in Ghana collaborate with the School of Public Health of the Univ. of California in Los Angeles; a collaboration to which the Ghana Government and the United States Agency for International Development both provide generous financial support. So, contributions of this project, have significance and value not only for Ghana but for other West African countries and many other developing countries, but also for developed countries as well. All of these countries can derive benefit from this international cooperation in the study of and research into the problems of rural health and community development.

Mr. Chairman, Ladies and Gentlemen, I have great pleasure in declaring the Sixth Annual Review meeting of the Danfa Rural Health and Family Planning Project open, and I wish you very happy and successful deliberations.

17 March 1975.

REMARKS

Dr. F.C. Grant  
Deputy Director of Medical Services

Mr. Chairman, Ladies and Gentlemen;

It is a privilege and a source of great pleasure for me to be here this morning to participate in the sixth review meeting of the Danfa Comprehensive Rural Health and Family Planning Project.

I must first of all convey to you the apologies of Dr. M.A. Badoo, Director of Medical Services for his inability to be here with you on this important occasion. The interest of Dr. Badoo in this project lies in his eagerness to ensure that the Ministry of Health contributes its full quota to the project and at the same time maintains a sharp awareness of the ideas emanating from the project. Without such awareness there is likely to be an unnecessary delay in the application of the ideas and results of the project to the solution of relevant problems of the health services. Dr. Badoo's interest is evidenced by the fact that since he became the Director of Medical Services he has not allowed the many pressing duties of his office to prevent him from being present at the project review meetings. On this occasion he has had to travel to attend an equally important meeting in Liberia. He has great hope that the meeting will be a success and looks forward to receiving a copy of the proceedings of this meeting.

The Danfa Rural Health and Family Planning Project is indeed an ambitious undertaking. It needs to be because the obstacles to the efficient delivery of effective health care in Ghana are herculean. The University of Ghana Medical School must therefore be congratulated for the boldness and foresight shown by the initiation of this project during the very early years of this young institution.

It is in the nature of such ambitious projects that results are slow in appearance. Nevertheless this project has already recorded a number of impressive achievements which are probably best appreciated by the population in the project area.

Marked improvement in sanitation is seen in the general appearance of the surroundings of houses in the area. But more important still, this result is reflected in the improved health of the people as evidenced by a reduction of worm infestation of the population.

The results of efforts to improve the sources of water supplies in the project area must also be a cause of much satisfaction to the people.

The Ministry of Health is also a recipient of some of the benefits of the project. Already, four of our senior physicians have acquired specialist training in public health through the sponsorship of the project.

The major concern of the Ministry of Health is to make it possible for all the people in Ghana to realize their birth-right of good health. Indeed this should be our *raison d'etre*. Towards this end the Ministry of Health is developing a network of health centers and health posts from which to meet the basic health needs of the rural population which is at present the most deprived group.

Limitation of funds, primarily, and to a lesser extent the inadequacy of trained personnel dictate a sparse distribution of the health centers and health posts in spite of the certain knowledge that patients will not travel more than a few miles for help unless in dire circumstances. There is therefore a need to find inexpensive ways of bringing medical aid nearer to the people in the rural areas.

Problems such as this have directed attention to the interesting innovations being developed in the Danfa area. A ready example is the effort to train the traditional birth attendants in the area to make them more useful and their work safer.

It is heartening to learn that the Danfa Project is a shining example of interdisciplinary as well as inter-departmental cooperation. It is the hope of the Ministry of Health that the aspect of economic development of the area will be given due emphasis, because it is more likely that more health institutions can be established in the rural areas if local financial support can be generated and the people encouraged to contribute to the solution of their health problems.

Furthermore health care may to some extent be considered as an economic input. Such input becomes more meaningful when it contributes to gainful employment. But where there is no such activity wastage results. Nobody will consider adding fertilizers to a plot that is not under tillage. To some extent, then, the health input should be regarded as a means of directly influencing economic growth.

Indeed, in this way we shall be contributing to the physical, mental, economic and social wellbeing of the community.

These are some of the many considerations which compel all of us to attach so much importance to the exciting work being undertaken at Danfa. The Ministry of Health will therefore continue to give all assistance necessary for the success of the project.

On my own behalf, and on behalf of Dr. M.A. Baddoo, I wish you fruitful deliberations.

REMARKS

by

Mr. W. Haven North  
Director, USAID Mission to Ghana

I appreciate the opportunity to participate in the opening session of the 6th Annual Review Meeting. I can now look back on five years of association with this project in Ghana and earlier involvement in its review in A.I.D. in Washington in its formative years before 1970.

The historical perspective is often a useful one. There is thus merit in looking at the Danfa project as an important event in the evolving understanding of the problems of community health and family planning and in the design of ways to address them. Dr. Prince, who heads USAID's Health, Population and Nutrition Office, brought to my attention the other day the ideas put forth by a Dr. John B. Grant in 1941 when he was associated with the All-India Institute of Hygiene and Public Health in Calcutta. Dr. John Grant, I understand was one of the early leaders in the development of regional and community health services in the U.S., India, China and Puerto Rico. In a lecture on community health which today should certainly include family planning he made the following observation, and I quote:

It is universally acknowledged today that the immediate social problem is to overtake the lag between modern knowledge and its use in the setting of a community... The single outstanding and basic cause of this lag in the health field is the lack of scientific investigation of methods to apply the results of the growing body of scientific knowledge to society. All other factors become subsidiary to this and would automatically be removed by the successful undertaking of this essential step. The four secondary causes of the lag are absence of a public opinion educated in the maintenance of their own health and the prevention of disease; inadequate economic considerations in planning of administration; lack of sound administrative procedures based upon the results of scientific investigation; and, finally the lack of personnel trained in community application of the methodology resulting from investigation. These defects will have to be removed before the lag can be overcome... This can only be done when, as in all branches of science, suitable organization is established specifically to determine the most effective and economical methods of applying the results of basic research to the maintenance of health and the prevention and cure of disease through organized community effort. This implies that the investigative organization must control its own experimental community

in the same manner that teaching hospitals are available for research in clinical medicine, or a physical laboratory is controlled by the physicist. No scientific administrative progress can be expected until this necessary step has been taken through the universities and other organizations responsible for research.

Since 1941 this view has been echoed by public health administration in many lands. It is in a nutshell what the Danfa project is all about and the underlying reason for A.I.D.'s interest and support. The decision of Dr. Fred Sai and his colleagues and subsequently UCLA in initiating a research and training program in integrated health and family planning in Ghana in the mid-sixties is an important milestone in the fulfillment of the John B. Grant concern. It is providing the opportunity to explore with more accuracy and in greater depth than previously possible the relationships between health, family planning, socio-economic change and other factors in a developing society.

A central feature of this concept is the importance of linkage. At last year's annual review meeting, I noted that the development process is a linking process. Only by joining institutional capabilities in common endeavors can the complex challenges of modern economic and social growth be faced with any hope of success. The linking of practical research with operational programs is central to this task. This point is well observed in the Medical School's research activities at Danfa. Thus one notes with interest and encouragement the increasing interaction over the past year of the Danfa research work with the activities of the Ministry of Health and the National Family Planning program, as well as with other health and family planning organizations. Certainly each institution has its distinctive role and its special capabilities; the evidence that these are being joined to address the problems of family health gives assurance that solid achievements will be forthcoming - achievements measured in better family health for the Ghanaian people.

A fundamental underpinning of the development process, of economic and social growth in any society is the identification, testing and application of appropriate technologies to more efficiently and effectively extend services to people. The growth and expansion of family health services in the Ghanaian community is vitally dependent on a dynamic and continuing research effort concerned with practical problems facing the people in need. There should be much more emphasis on projects such as Danfa in the developing countries not only in health and family planning but in other social and economic sectors as well. For through projects of this kind a developing country is able to create both the capability to assimilate the technologies available from other parts of the world but, most important, develop on its own the technologies appropriate to its needs. It can in this way become a contributing as well as receiving participant in

the international development process. Finally it seems most appropriate that the Ghana Government has established guidelines for the next five-year development plan at the same time that this project has begun to produce usable information for overtaking "the lag between modern knowledge and its use in the setting of a community". The new Guidelines made it clear that the setting for constructive utilization of the Danfa project results for health and family planning programs is itself about to be firmly established in the coming Five-Year Development Plan. Thus I can only look forward with enthusiasm and anticipation to the coming Review and wish to express my pleasure and gratitude for your kind invitation to attend. I extend to the Medical School my most sincere wishes for continued progress of this most important endeavor towards improving the health and quality of life of the people of Ghana.

REMARKS

by

Dr. A.K. Neumann  
Co-Director, Danfa Project

I bring you the greetings of the Chancellor of the University of California at Los Angeles, the Chancellor's Committee for Comparative and International Studies, the Office of the Coordinator of Overseas Programs, the African Studies center, the Danfa project, the staff based at UCLA, and all those many individuals in the various departments of the University of California who are involved in this project.

This marks the 5th year of what has become a significant international collaboration in a teaching, research and demonstration project. We are extremely proud of this strong, constructive, and harmonious link between the University of Ghana and UCLA, and we are happy to see that some of the project findings already seem to have applicability here in Ghana and other African countries as evinced by the growing interest shown in the project, the growing number of visitors and the requests for information. And, I think that all of us concerned, especially the group working here in Ghana, can also be very proud of the interest and relevancy of project work to other countries, including parts of the United States.

Because we have all come to hear the reports of those actually engaged in work in the field and in the data analysis, I'm going to quickly conclude my remarks with a note of appreciation to those who worked hard to prepare the papers we are about to hear and to thank you for your interest.

Thank you.

BRIEF OVERVIEW OF THE DANFA PROJECT ACTIVITIES FOR  
1974

by

Dr. I.M. Lourie  
Chief of Party, Danfa Project

Mr. Chairman, Official Participants to this Review Meeting and Honored Guests.

It is not my intention to provide a detailed report of the Danfa Project's activities for 1974. Rather, in presenting this brief overview I simply wish to highlight some of the more important activities and accomplishments; and furthermore, to briefly allude to one or two specific difficulties which faced us in 1974 and which tended to slow down some of our activities for limited periods of time. Some, but definitely not all, of the activities I will refer to will be dealt with in greater detail with supporting data and analyses by those of my colleagues directly responsible for the activities in question.

The year 1974 was one of intense field activity as we approached the half-way point in the research operations phase of the project's activities. Historically, one should note that the few months in late 1970, when the Project officially began its operations, were devoted to pilot work - testing our various field techniques and approaches. In 1971 and for about the first half of 1972 the entire Ghanaian/UCLA project team - with the help of a large Ghanaian field mapping and interviewing staff - worked intensively to collect the extensive baseline data required for adequately conducting this research project. Controlled research operations therefore began in July 1972 - following the collection of the baseline information and the training of the Family Planning and Health Education Teams. Thus, the end of 1974 saw the completion of the first half of the five year research operations program which began in July 1972.

A. In the Family Planning/MCH areas of activities the following constitute some of the more important or prominent developments in 1974.

1. The development of new initiatives to overcome the accessibility problem of villagers in providing a Family Planning program in rural areas. These new initiatives were particularly concerned with: the use of village volunteers to motivate other women and to distribute contraceptives, the use of health post nurses and midwives for the same purpose instead of limiting these activities to highly trained and qualified nurse midwives, and the use of the pill in lactating mothers who are breast feeding

children over three months of age. These initiatives were pretested in late 1974 - for potential full operation by early 1975.

2. The implementation of the IUD follow-up and Family Planning defaulter follow-up programs.
3. The observed and significant change in the attitudes of villagers towards Family Planning - largely as a result of the good rapport established by the Family Planning team and the work of the health education assistants in Areas I and II. As a result we now see villagers accepting family planning to a greater degree as a useful or healthful way of life.
4. The long and detailed preparations were completed for the first family planning follow-up of acceptors. The questionnaire survey technique was pretested in late 1974 for implementation in January 1975. In the opinion of the project's senior staff this survey is considered to be one of the most important surveys to be conducted. An important feature of it was the pretesting also of questions related to some socio-economic characteristics of acceptors as well as a sampling of male acceptors.
5. The completion of the mass immunization program in Area I as an aspect of comprehensive health services.
6. The conduct for a second consecutive year of the malaria chemoprophylaxis program.
7. The conduct of a most significant study as to the paralytic effects of poliomyelitis by means of a widespread investigation of lameness in school children.
8. The work which was done to simplify child health records through the introduction of the Morley "Road to Health" chart and its use by the Danfa Health Center staff.

B. In the area of Epidemiology, some of the more important activities in 1974 were:

1. The intensive work carried out to obtain cross tabulations in many areas of interest on the data from the first Village Health Survey conducted in the previous year, 1973, and the preparation of analyses of same.
2. The research which was conducted into the survey methodology employed for the Village Health Survey to attempt to ascertain why some villagers did not attend a health clinic even when it was brought directly to their village.
3. The study carried out to ascertain the comparability and usefulness of the morbidity interview with the health examination survey - both approaches having been used in the Village Health Survey.
4. The intensive preparations which were instituted for conducting the second round of the Village Health Survey - which was to begin in early 1975, two years after round I.

C. The Health Education activities for 1974 were extensive - and among the more valuable and important there were:

1. The improvement of the quality of field activities carried out by the health education assistants, and further development of the clinic and school health education programs.
2. The introduction and development of a standardized format for reporting progress made in some of the specific health education activities conducted by the health education teams; viz. in family planning, nutrition, M.C.H., and school and clinic health education.
3. The preparation of task descriptions, based upon practical field experience, for the various positions in the health education teams. As the use of such teams constitutes an innovation, the need to properly describe each member's tasks is essential - through the provision of guidelines as to what is expected in each position - if the use of these teams is to be perpetuated.
4. The completion of the second round of the Health Practices Survey (formerly termed Household Health-Related Behavior Survey) among villagers. Also, preliminary discussions were undertaken to determine whether middle school students in the relevant project areas, under the supervision of their teachers, could carry on with this type of survey in the future.
5. The earlier work of the health education assistants in bringing to the attention of the project's senior staff the existence of guinea worm in some of the villages, lead quite naturally to the need for developing health educational materials on prevention and treatment of this disease. Hence, in cooperation with the Social Advance Institute a flip chart and discussion series on guinea worm prevention and treatment were completed in late 1974 for early pretesting by the health education assistants.
6. The production of audio-visual materials and organizing them for the in-service training of the Danfa Health Center staff in health education. This has been implemented through the use of project provided equipment - such as a slide projector, a small electronic generator and a cassette tape recorder synchronized to the projector - all of which have been installed at the Danfa Center.

D. In the areas of Field Operations, Data Processing, Cost and Systems Analysis, the most notable and important activities and observations for 1974 were:

1. The conduct of the annual recensus - round IV - of the population in the project areas.
2. The analysis of the 1973 (round III) recensus - which showed a population increase from the 1971 baseline. Parenthetically, one should add that the recent analysis of the 1974 recensus data (round IV referred to earlier) has shown still further increases of population in all areas - the total for the four areas being approximately 65,000 as against 50,000 in 1971; and in particular one area, Area III, shows a 30% increase from 1971. These increases, apparently due principally to immigration, are not properly understood and will require further intensive investigation.

3. The change-over from 57 so called "volunteer" vital events registration assistants to 18 full-time workers, each assigned to a cluster of villages; and with apparently much improved results. It is still unknown whether these results can be maintained.
4. The start up late in 1974 of round II of the Longitudinal Questionnaire Survey - 2½ years after the beginning of round I. One pleasing thing discovered during the first few months of round II was that the attrition rate from round I was found to be less than originally anticipated - approximately 23% of the households having been lost from the longitudinal study. Furthermore, another plus, all editing, coding and data processing are being done in Ghana as contrasted with round I which had to be done at UCLA.
5. The considerable increase in project vehicle costs due on the one hand to a 71% increase in price per gallon of fuel, and on the other hand due to the greater efficiency in carrying out repairs through the employment of a mechanic which has led to less "down-time" and consequent greater use of the vehicles.
6. The great increase in costs for all operations in 1974 due to inflationary increases in costs for drugs, supplies, petrol and salaries - the later having gone up an average of more than 55% since July 1, 1974. The result has been an almost doubling of costs per capita and per patient encounter at the Danfa Health Center and its satellites even though the overall number of patient visits increased by about 25% from 1973 to 1974. The same approximate doubling in costs has likewise affected the family planning program.
7. The introduction of the socio-economic studies by tying them into a variety of the field research operations.
8. The serious backlog of computer programming activity, due to the sudden departure from the University of Ghana of the full-time programmer seconded to the Project by the Institute of Statistical, Social and Economic Research, was corrected after some months by the procurements of the services of a U.S. Peace Corps volunteer (requested by the Ghana Medical School for the Project) and a National Service "volunteer" assigned by the Ghana National Service Secretariat.
9. The approval by USAID of funds for, and the actual purchase of, a tape drive for the IBM-1130 at the University of Ghana was accomplished. The equipment has since arrived and it now being "debugged". Its addition will considerably enhance our data processing capabilities.
10. The development by a UCLA consultant of a usable computer package for the 1130 - incorporating editing, cross-tabulation and correlation sub-routines. It should be noted that

this package, still further perfected by the project computer programmers, has been made available for use by the entire University.

11. The take-over by the Ghanaian project staff of all routine data processing.

I trust that this brief but fairly comprehensive overview has provided you with a good picture of the Project's principal activities in 1974. In the presentations which follow today and tomorrow you will be given more extensive information about some of the 1974 events I have mentioned. I believe you will agree that they cover a broad aspect of the project's activities.

I thank you for your attention.

CURRENT DEMOGRAPHIC SITUATION IN THE PROJECT AREA

Presented by: Dr. S.N. Blumenfeld  
 Collaborators: Mr. K. Kwabia, Mr. E. K. Andoh

The purpose of this report is to establish the background population numbers from which current denominators are drawn for the evaluation of major components of the research program. As will be seen these data are intrinsically quite interesting from a purely demographic viewpoint and deserve full analysis on that score alone. The Danfa Project, though not primarily a demographic project, is interested in such analysis because of the implications of the changes we see taking place in the Project population relevant to the delivery and utilization of health care as it is provided in the various areas of the Danfa Project. This analysis, however, will form a special study in the year to come; thus, this report will raise questions and will provide figures, but it will not offer analytically-based responses to the questions elicited by the data.

Table 1. Changing Population in the Project Areas

	1971			1972			1973			1974		
	M	F	T	M	F	T	M	F	T	M	F	T
Area 1	6324	6123	12,447	7177	7071	14,248	7711	7599	15,310	8107	7824	15,932
Area 2	5226	5055	10,281	5353	5401	10,754	5777	5674	11,451	6583	6713	13,296
Area 3	6634	6927	13,561	7104	7325	14,429	8368	8775	17,143	9342	9705	19,047
Area 4	6762	6912	13,674	6817	6980	13,797	8092	8325	16,417	8345	8598	16,943

Table 1 shows the changes in the Project area population in the 3-year interval between the baseline census in 1971 and the census of 1974. Although these data lead to calculated compound annual growth rates of 8.6%, 9.0%, 12.0%, and 7.4% in each of the 4 areas respectively, it may be seen that the annual growth rates are far from smooth. Area II, for example, grew at the rates of 4.6% and 6.5% in each of the first 2 years, and then jumped 16.1% the next. Area III grew 6.4% in each of the first year, and then 11.1% in the next 2 years. Area IV exhibits perhaps the most peculiar behavior of all, changing only 0.9% between 1971 and 1972 and 3.2%

between 1973 and 1974, but 19.0% in the year in between. Area I increased in population 14.5% the first year and 7.5% and 4.1% the second and third.

Although an explanation for this unexpected pattern of growth must await further analysis of the data for Areas II, III, and IV, we may have at least a partial explanation in Area I. When the data for the second year in Area I are broken down into the various categories by which admissions to the Project rolls are recorded, the results lead one to conclude that a large number of persons may have been missed at the baseline. The same does not appear true in the other areas. One explanation for this might be that a certain amount of "practice" was required for the census exercise to reach a reasonable level of efficiency.

Of last year's gain in population in each area, the excess of births over deaths accounted for 6.7% (402/622) in Area I, 19% (344/1845) in Area II, 36% (686/1904) in Area III, and 129% (676/526) in Area IV (where more people moved out than moved in).

One of the most striking aspects of the demography of the Project area is the magnitude of churning in this population, by which we mean movement into, out of, and within the Area. This churning is not revealed by figures on annual growth in each area. Once again, however, examination of the data on the basis of categories of changed events enables us to study this phenomenon. In doing so, we discover that in the year between September 1973 and August 1974, 20% of the population of Area I moved out of the area, only to be replaced by an almost exactly equal number of people. In Area II, 10% of the average population for the year moved out, while 18% of the population were new (i.e., either newly registered or readmitted after having earlier moved away). In Area III, 11% moved out and 16% were new, while in Area IV, 16% moved out and 14% were new. The year in question is not atypical and the data do not even reflect "round trip" movements (in-and-out or out-and-in) which might have occurred between censuses, so rates of movement are even higher than these figures indicate.

The Project attempts to record information on births and deaths by means of two independent methods, one by a survey approach using the annual census and an intercensal survey, the other by means of an ongoing registration of vital events. Each of these provides a separate estimate of the number of births and deaths. The data can then be combined to determine the degree of overlap, and from this result an estimate can be made of the number of events which both systems may have missed (the Chandrasekhar-Deming estimate). Table 2 shows the results obtained so far. The matching process for the latter half of the reporting year 1974/75 has not yet been completed as the intercensal survey is still being conducted in the field. It may be seen that a definite improvement has been shown in our ability to detect births after our first year of experience. Unfortunately, as has been the experience of others collecting vital events data in developing countries, our record on the collection of deaths is not nearly so good as it is with births. We believe this reflects a cultural (more probably, human) trait of reluctance in reporting on the death of infants.

Table 2. Reported Births and Deaths by Survey and Registration with Chandrasekhar-Deming Estimates of Missed Events

	<u>BIRTHS</u>	<u>SURVEY</u>	<u>REG'N</u>	<u>BOTH</u>	<u>MISSING</u>	<u>EST. TOTAL</u>	<u>SE</u>	<u>%</u>
AI	3/71-2/72	132	170	193	116	611	19	3.1
	3/72-2/73	169	89	324	46	628	10	1.6
	3/73-2/74	130	149	283	68	630	12	1.9
AII	3/71-2/72	227	117	148	179	671	28	4.2
	3/72-2/73	202	95	250	77	624	14	2.2
	3/73-2/74	140	151	252	84	627	14	2.2
AIII	3/71-2/72	315	225	225	315	1080	39	3.6
	3/72-2/73	508	187	324	293	1312	35	2.7
	3/73-2/74	339	245	382	217	1183	26	2.2
AIV	3/72-2/73	278	124	235	147	784	22	2.8
	3/73-2/74	365	179	358	183	1085	23	2.1
<u>DEATHS</u>								
AI	3/71-2/72	26	63	58	28	175	9	5.1
	3/72-2/73	50	41	61	34	186	10	5.4
	3/73-2/74	72	31	56	40	199	12	6.0
AII	3/71-2/72	71	48	23	148	290	44	15.2
	3/72-2/73	72	35	24	105	236	32	13.6
	3/73-2/74	117	35	47	87	286	23	8.0
AIII	3/71-2/72	112	85	38	251	486	57	11.7
	3/72-2/73	156	48	44	170	418	40	9.6
	3/73-2/74	182	40	59	123	404	29	7.2
AIV	3/72-2/73	79	39	51	60	229	16	7.0
	3/73-2/74	138	42	46	126	352	31	8.8

Table 3. Crude Birth Rates Excluding and Including Chandrasekhar-Deming Estimates for Missed Events

<u>Excluding Estimate</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>
Area I	4.0%	4.1%	3.9%
Area II	4.5%	4.8%	4.5%
Area III	5.6%	7.1%	5.6%
Area IV		4.6%	5.5%
<u>Including Estimate</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>
Area I	4.9%	4.4%	4.1%
Area II	6.5%	5.8%	5.5%
Area III	8.0%	9.1%	6.9%
Area IV		5.7%	6.6%

Table 3 shows estimated crude birth rates for each area and annual reporting period, both with and without correction for estimated missed events.

Table 4. Crude Death Rates Excluding and Including Chandrasekhar-Deming Estimates for Missed Events

<u>Excluding Estimate</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>
Area I	1.2%	1.1%	1.0%
Area II	1.4%	1.2%	1.7%
Area III	1.7%	1.7%	1.6%
Area IV		1.2%	1.4%
<u>Including Estimate</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>
Area I	1.4%	1.3%	1.3%
Area II	2.8%	2.2%	2.5%
Area III	3.6%	2.9%	2.4%
Area IV		1.7%	2.1%

Table 4 is its analogue for deaths. Given our concern for the precision of these data, we are reluctant to draw any inferences from these tables. In the coming year, it is our intention to reassess completely the value and effectiveness of the demographic component of the Project and to make such changes as may be consistent with the goals of the Project. One change which has been made, effective June 1974, is a switch from a system of 57 part-time vital events registration assistants covering the 4 areas virtually as volunteers (receiving only a small stipend intended to cover occasional travel expenses) to a system of 18 full-time registration assistant receiving full salary. The immediate jump of about 30-50% in the number of events being reported by the full-time registration system leads us to believe that this has been a salutary change, and will be a factor in our deliberations on the future of the demographic component of the Project.

STATISTICAL REPORT OF RESULTS AFTER THE FIRST 2½ YEARS OF FAMILY PLANNING ACTIVITIES

Presented by: Professor D. Ampofo  
Collaborator: Dr. D. Nicholas

Table 1. New Acceptors - 7/72 to 12/74

	AREA					TOTALS
	1	2	3	All 3 areas	OPA*	
<u>Females</u>						
I.U.D.	101	12	8	121	27	148
Pill	196	122	68	386	125	511
Foam	89	57	30	176	53	229
Condom	19	4	7	30	13	43
TOTAL	405	195	113	713	218	931
<u>Males</u>						
Foam	78	140	116	334	249	583
Condom	74	132	118	324	170	494
TOTAL	152	272	234	658	419	1077
Total Males & Females	557	467	347	1371	637	2008

\*OPA = Outside Project Area.

Table 2. Percentage Distribution of Methods Accepted for Females by Area

	<u>Area 1</u>	<u>Area 2</u>	<u>Area 3</u>	<u>All 3 Areas</u>
I.U.D.	25%	6%	7%	17%
Pill	48	63	60	54
Foam	22	29	27	25
Condom	5	2	6	4

Note the much higher I.U.D. acceptance rate in Area 1 that has existed since the onset of the program.

Table 3. Acceptor Rates by Area

	<u>Area 1</u>	<u>Area 2</u>	<u>Area 3</u>	<u>All 3 Areas</u>
Number of female acceptors (15-44)	394	192	113	699
Number of couple acceptors	546	474	363	1383
Population WRA <sup>2</sup>	2808	2285	3387	8470
Acceptor rates-women	14.0%	8.4%	3.3%	8.3%
Acceptor rates-couples	19.4%	20.7%	10.7%	16.3%

1. Rates are for women acceptors ages 15-44. Rates for couples are based on women acceptors 15-44 plus all male acceptors.
2. WRA = Women of Reproductive Age (ages 15-44).

Rates are adjusted for time in Areas 2 and 3 because the program started 1 month later in Area 2, and 2 months later in Area 3 than in Area 1.

Table 4. Age Specific Acceptance Rates

<u>Area 1</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>40-44</u>
1	5%	20%	20%	18%	15%	9%
2	3	12	12	9	6	4
3	1	5	4	3	4	2

Note that in Area 1 roughly 20% of women between ages 20 and 35 have accepted family planning sometime in the 2½ year period since start of program.

Table 5. Percentage of Acceptors Recruited through Extended Program  
(Since May 1973)

<u>Area</u>	<u>Females</u>	<u>Males</u>	<u>Totals</u>
1	52%	71%	58%
2	63	57	59
3	81	74	76
3 Areas	60	66	63
OPA	22	28	26
Totals	55	52	54

Note that the extended program has accounted for about half the acceptors since May 1973, which is about the amount of F.P. team staff time spent on that activity. Note also that the extended program has been most important in Area 3 in recruiting female acceptors. It will be remembered that the extended program was begun partly to improve accessibility in Area 3 and in fact there are twice as many extended visits in Area 3 as in any of the other 2 areas.

Table 6. Characteristics of Female Acceptors  
All Areas as of June, 1974

Average Age	28.25
Average Parity	4.14
Average Number of Children Died	0.59
Average Number of Living Children	3.55
Average Interval Last Delivery to Acceptance	17.5 mos
Average Interval Between Last 2 Deliveries	30.07 mos

Differences between areas were not striking although in Area 3 women had a slightly lower parity than in the other two areas. As in most other countries I.U.D. acceptors tended to be older and of higher parity than acceptors of other methods. The average male acceptor was 1 to 2 years older than female acceptors.

Table 7. Parity Distribution of Acceptors - All Areas

<u>0</u>	<u>1-2</u>	<u>3-4</u>	<u>5-6</u>	<u>7+</u>
7.1%	29.8%	24.8%	16.1%	22.2%

Table 8. Time Trends in Methods Accepted  
(By 6 months periods since 7/72)

	1st 6 months	2nd 6 months	3rd 6 months	4th 6 months	5th 6 months
<u>AREA 1</u>					
I.U.D.	24%	35%	17%	34%	13%
Pill	31	46	47	59	73
I.U.D. + Pill	55	81	64	93	86
<u>TOTALS</u>					
(All Areas) I.U.D.	22%	16%	9%	23%	10%
(All Areas) Pill	34	52	54	62	75
I.U.D. + Pill	56	68	63	85	85

Note the gradually higher percentage of women using the pill and thus a lower percentage using foam and condom over the 2½ year period.

Figure 1. Cumulative Curves of Acceptance

Note there has not yet been an leveling off of acceptance rates. This could be explained by a number of contributing factors:

- (1) Women are still being educated and motivated to accept family planning.
- (2) New program initiatives reach previously inaccessible women who are ready to practice family planning.
- (3) Turnover of population in the areas.

Table 9. Interval Between First Pregnancy After Acceptance And Last Pregnancy Before Acceptance

<u>All Areas by Method</u>	
<u>Method</u>	<u>Average Interval</u>
I.U.D.	40.6 mos.
Pill	37.8
Foam/Condom	33.9
<hr/>	
Any Method	36.8

Table 10. Average Intervals Between Pregnancies Comparison Before and After Acceptance

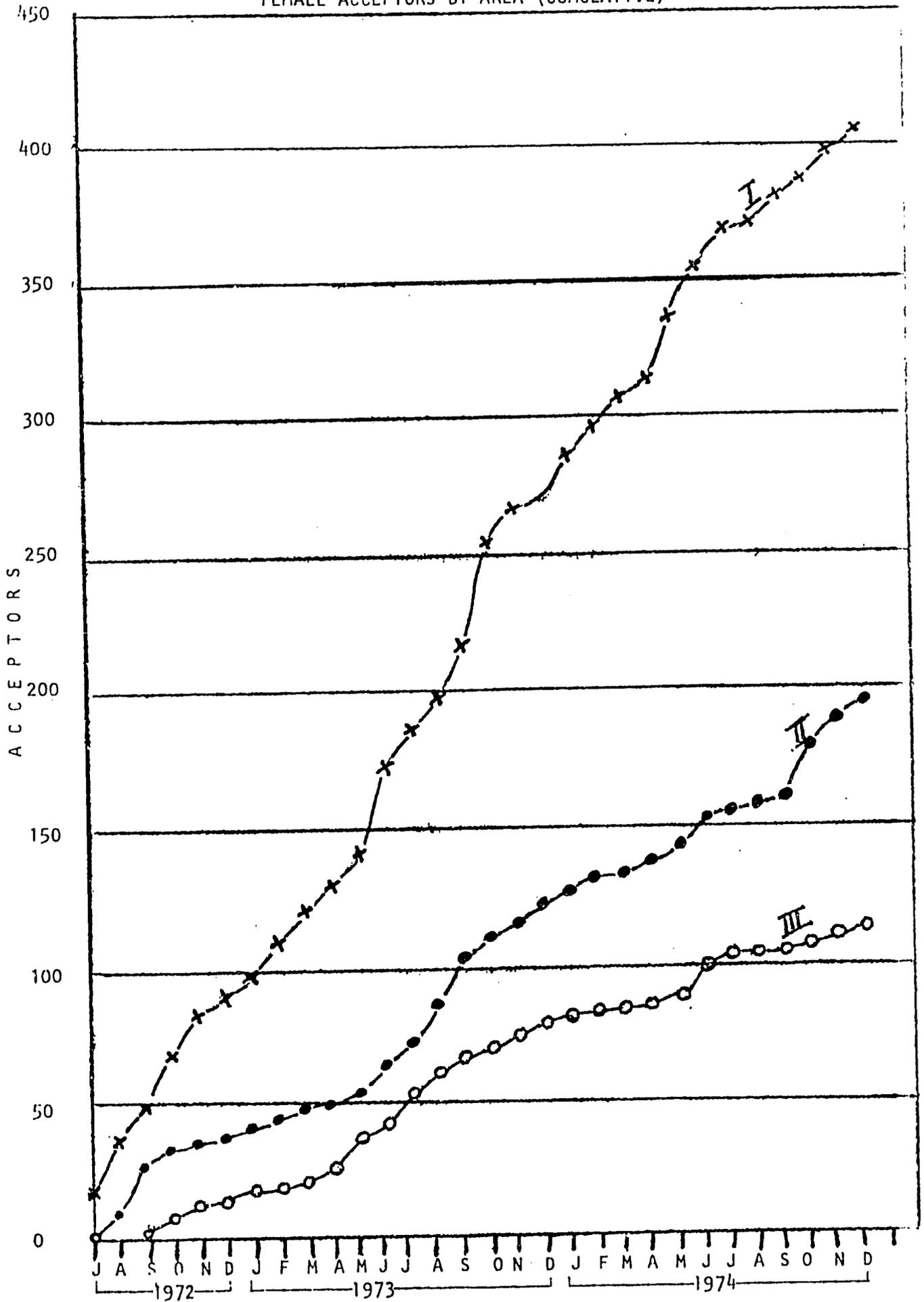
<u>Area</u>	<u>Before Acceptance</u>	<u>After Acceptance</u>
1	31.7 mos.	36.8 mos.
2	26.4	37.8
3	29.3	35.1
<hr/>		
All Areas	30.1	36.8

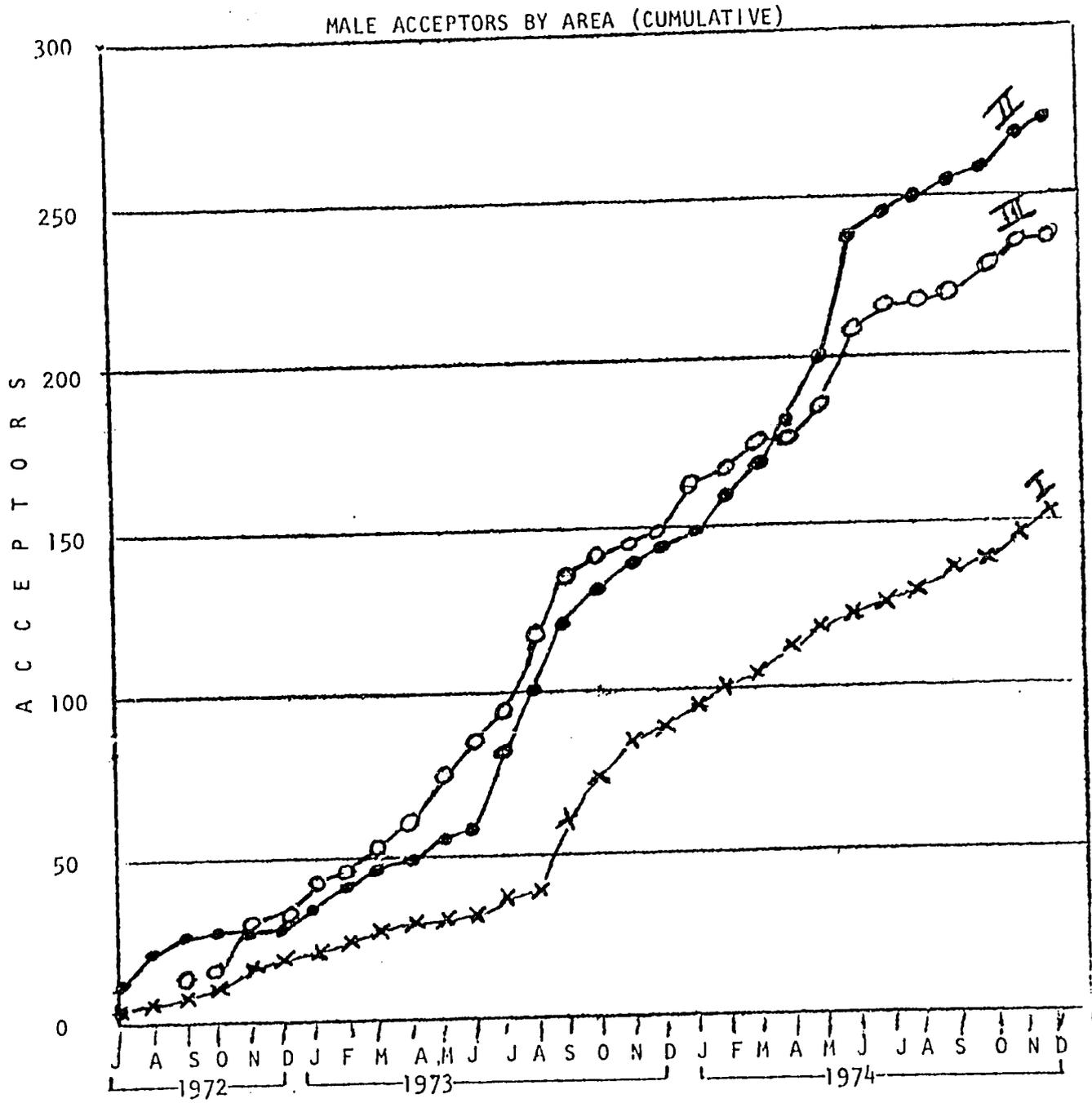
Table 10 shows that the average spacing interval has increased in acceptors from about 2½ years to 3 years. Area 1 shows the smallest increase in this interval, which was longer to start with. However, a smaller percentage of women acceptors have become pregnant since acceptance in Area 1 as compared to Area 2 or 3.

#### NEW INITIATIVES TO IMPROVE ACCEPTANCE

- A. Initiatives to increase first acceptance rate
1. Recruitment and use of family planning volunteers in each village.
  2. Encouraging interaction among acceptors and non-acceptors.
  3. Involvement of nurses at health post and nurses who work in all other health facilities in the project area.
  4. Increased motivation of males.
  5. Increased use of HEA's at MCH Clinics.
  6. Co-ordination with the Immunization and Malaria Prophylaxis Programs.
  7. Earlier use of oral contraceptives during the postpartum period.
  8. Rallies for problem villages.
- B. Initiatives to improve continuation rates
1. A defaulter follow-up program.
  2. Availability of resupply through Family Planning volunteers.
- C. Employment of an outreach family planning field worker for Area 3.
- D. Shift of Provision of family planning services in Area 1 to Health Center Staff.

FEMALE ACCEPTORS BY AREA (CUMULATIVE)





COSTS OF FAMILY PLANNING SERVICES

Presented by Dr. S. N. Blumenfeld

Table 1 shows 1974 costs allocated to major categories, as well as comparable costs for 1973.

Table 1. Operating Costs of the Family Planning Program

	<u>1974</u>	<u>1973</u>
Staff	6,923	4,571
Transportation	6,677	4,517
From Health Education	3,216	2,749
Miscellaneous	500	-
	<hr/>	<hr/>
	£ 17,316	£ 12,107
Contraceptives	7,363	1,961
	<hr/>	<hr/>
	£ 24,679	£ 14,068

The increase in personnel cost stems from a major salary increase granted to many people in various governmental agencies. The increase in transportation costs derives largely from a 70% increase in the cost of gasoline (and would have been larger had we not been able to effect considerable reductions in vehicle repair costs). The outstanding change is in the cost of contraceptives in the two years. There are several reasons for this tripling of cost. The first is fairly obvious: as a result of the cumulative nature of the program, there were again half as many participants being serviced this year as last. Moreover, in addition to supplying contraceptives to many more people, a new and much more liberal policy was adopted with regard to the supply of contraceptives given out at each resupply visit. Next, a new method of accounting for supplies was adopted which results in significantly higher counts for most contraceptive supplies. The old method accounted for supplies right at the point of contact between patient and clinic, whereas the new method examines a point somewhat further back in the logistical stream. And finally, although the price of pills is down this year, the price of condoms and foam is up considerably. The multiplicative effect of all of these sent the cost attributed to contraceptive supplies soaring.

The amount attributable from health education constitutes 16.3% of the cost of the health education program. This is the proportion of the entire health education effort which, according to the health education assistants' records, was spent in family planning education and consultation.

Table 2 shows the current cost of various contraceptives landed in Ghana, the quantities of each dispensed by the Project in 1974 and attendant costs, and a breakdown of contraceptive costs allocated by area, the latter being estimated from the proportion of users of each type of contraceptive in each area.

Table 2. Contraceptive Cost Data

Landed Cost of Contraceptives

Condoms:	£ 0.48/dozen
Loops:	0.50 each
Pills:	0.19/cycle
Foam:	1.52/90 g. can

<u>Contraceptives Dispensed in 1974</u>	<u>Cost</u>
---	-------------

Condoms:	4,727 dozen	2,269
Loops:	57	28
Pills:	1,543 cycles	293
Foam:	3,140 cans	4,773
		<hr/>
		£ 7,363

Contraceptive Cost By Area

	<u>Area 1</u>	<u>Area 2</u>	<u>Area 3</u>	<u>Non-Project</u>
Condom	393	575	528	773
Loops	19	2	2	5
Pills	112	70	39	72
Foam	982	1,158	858	1,775
	<hr/>	<hr/>	<hr/>	<hr/>
	£ 1,506	£ 1,805	£ 1,427	£ 2,625

Table 3 summarizes costs against various denominators of interest. The cost of the program without contraceptives, £ 17,316, may be viewed as the basic cost of making the service available. While it is not entirely a fixed cost, it is also not variable in proportion to the number of clients it services. The present 3-person family planning team, for example, could handle more patients were they to come for service. It is also possible that more patients could be serviced for only very slight increases in the cost of transportation. On the other hand, moderate drops in the number of people being serviced would not afford proportionate reductions in the cost of providing service. We are, of course, most interested in the first situation and will be continuing our experimenting with procedures intended to maximize the return from the basic annual cost of the program.

Table 3. Various Units of Cost for 1974

Cost Per New Acceptor, Including Non-project Patients

Excluding contraceptives	£ 17,316/761 = £ 22.75
Including contraceptives	£ 24,679/761 = £ 32.43

Cost Per Capita (Areas 1,2,3)

Excluding contraceptives	£ 17,316/48,274 = £ 0.36
Including contraceptives	£ 22,096/48,274 = £ 0.46

Cost Per Fertile Female (Areas 1,2,3)

Excluding contraceptives	£ 17,316/9,192 = £ 1.88
Including contraceptives	£ 22,096/9,192 = £ 2.40

Cost Per Accessible Fertile Female (Areas 1,2,3)

Excluding contraceptives	£ 17,316/6,434 = £ 2.69
Including contraceptives	£ 22,096/6,434 = £ 3.43

Cost Per Family Planning Clinic Visit      £ 24,679/2,238 = £11.03

The figure of £ 22,096 employed to calculate costs related to Areas I, II, and III is the basic cost plus the cost of contraceptives used by patients in those areas (that is to say, total contraceptive cost less the cost ascribed to non-project patients using our service).

It should be recalled that the present family planning program has been designed to reach about 70% of the population in each area. This factor is taken into account when cost per accessible fertile female is calculated in Table 3.

Table 4 shows costs by area rather than in the aggregate. The £ 14,100 constitutes the basic cost of the family planning program minus health education (in family planning) costs. The family planning team spends equal time in each of Areas 1, II, and III, so 1/3 of the cost is allocated to each area. The health education assistants operate only in Areas I and II, so this cost is divided only between those areas. The last set of costs shown in Table 4 are presented only because other family planning programs are often reported this way and these data provide something of a basis for comparison. Logically, though, this figure is not very useful, inasmuch as the denominator (the number of fertile females in the area) is fixed, while the numerator (cost) varies proportionately with the number of participants in the program. One is thus faced with the paradoxical situation of showing increasing cost as the people in the area adopt family planning, i.e., as they behave exactly as we wish them to.

Table 4. Costs by Area

Cost Per New Acceptor (With Contraceptives)

Area 1:	$(14,100/3) + (3,216/2)/196 = \text{£ } 6,308/196 = \text{£ } 32.18$
Area 2:	$(14,100/3) + (3,216/2)/201 = \text{£ } 6,308/201 = \text{£ } 31.38$
Area 3:	$(14,100/3)/134 = \text{£ } 4,700/134 = \text{£ } 35.07$

Cost Per Fertile Female:

Without Contraceptives

Area 1:	$\text{£ } 6,308/2,933 = \text{£ } 2.15$
Area 2:	$\text{£ } 6,308/2,531 = \text{£ } 2.49$
Area 3:	$\text{£ } 4,700/3,728 = \text{£ } 1.26$

With Contraceptives

Area 1:	$\text{£ } 7,814/2,933 = \text{£ } 2.66$
Area 2:	$\text{£ } 7,814/2,531 = \text{£ } 3.21$
Area 3:	$\text{£ } 6,127/3,728 = \text{£ } 1.64$

Table 5 shows cost per participant-month by area. A participant-month is defined as one person remaining an active practitioner of family planning for one month as evidenced by clinic records and the recently completed (January/February 1975) family planning follow-up study. Thus, a person who started on family planning in, say, March and was still practicing at the end of the year will have generated 9 participant-months in the year.

As may be seen in Table 5, a cost range is posed rather than a precise point. This arises from two extreme assumptions which much be considered. In the follow-up study we attempted to interview all of the females who ever had accepted family planning under Project auspices; predictably, we could not locate and interview them all. We attempted to interview a sample of

the men and, of course, could not locate all of our intended male interviewees either. The most conservative assumption would be that only those women who were successfully interviewed should be counted as contributing participant-months in 1974 (i.e., considering all the other dropouts); for males, only those interviewed would be extended proportionately to the whole male population of acceptors to produce the male contribution to the calculation of participant-months. This conservative value produces a high-end cost terminus and has been labeled "pessimistic".

Table 5. Cost Per Participant-Month in 1974

Pessimistic Assumption

Area 1: (11/12) (£7,814)/1,935 = £ 3.70  
Area 2: (11/12) (£7,113)/1,538 = £ 4.84  
Area 3: (11/12) (£6,127)/1,018 = £ 5.52

Optimistic Assumption

Area 1: (11/12) (£7,814)/2,821 = £ 2.54  
Area 2: (11/12) (£7,113)/2,205 = £ 3.37  
Area 3: (11/12) (£6,127)/1,597 = £ 3.52

At the other extreme is the assumption that those persons successfully interviewed are completely representative of all the men and women who ever began in the Project family planning program, and whose results may be extended to the entire population of "ever-acceptors". The result of this assumption has been labeled "optimistic" and produces the low-end terminus of the range. Needless to say, the true cost of a participant-month must be somewhere between these 2 points. (The fraction 11/12 of the cost is used because our data are closed out at the end of November).

It is emphasized that all costs shown are operating costs only, with the exception, in a sense, of the depreciation of vehicles, the life of which is quite short in this environment and whose replacement is necessitated approximately biennially. No staff training costs have been included to be amortized over some specific period of time, our feeling being that these are more usefully shown as a separate item which can be evaluated under various conditions of training.

Finally, we wish to point out that although it may be hypothesized that the results being obtained in family planning may be due in part to an interaction with other health care components (particularly in Area 1), no indirect costs from these components have been included. Some may view this as a case of underestimating. However, it should be born in mind that if there were no family planning program in existence the cost of providing health services would not be decreased in the slightest. Thus, if the family planning program is actually receiving any benefit from the other health service components, it is as a result of some sort of potentiating or multiplier effect, the cost of which is already accounted for elsewhere

in the health care system. Since one could not in any event eliminate this cost from the balance of the system, accounting for it in the family planning component would result either in over-costing the system as a whole or undercosting the non-family planning portion of the system. This "free" potentiating effect is precisely one of the reasons one expects an integrated system to be more cost-effective than parallel non-integrated systems. If the potentiating effect does exist, then integration of family planning and other health services, where this is practicable, is one way to maximize return for investment in family planning.

PRELIMINARY REPORT OF 1975 FAMILY PLANNING  
FOLLOW-UP QUESTIONNAIRE SURVEY

Presented by: Dr. D. Nicholas  
Collaborator: Dr. S. Ofosu-Amaah

During January 1975, a follow-up questionnaire survey was carried out in Areas I, II, and III. The sample selected was all female acceptors and 100 male acceptors in each area who accepted before 1 July 1974. The cut-off date for determining terminal status was 30 November 1974. Seventy one percent (71% of the females and 76% of the males were successfully interviewed. A higher percentage of males were interviewed because alternatives were used. Only 1 person refused the interview. The most common reason for non-interview was that the person had moved from the area (52% of reasons).

The survey attempted to gain information about the following areas:

1. Socio-economic characteristics of acceptors
2. Continuation rates
3. Extended use of effectiveness
4. Method of effectiveness
5. Reasons for discontinuation
6. Problems with methods
7. Reasons for acceptance

The following are some preliminary results of only a small portion of the total analysis that is currently underway.

CONTINUATION RATES

Females

Continuation rates among women in the Danfa Program were generally similar to those of other countries. The highest rate was found for I.U.D. acceptors 76% of whom were still using some method at the end of the 12th month after acceptance. (All months are expressed in ordinal months and continuation rates were determined by the Life Table methods suggested by Tietze).

In general continuation rates for each method were higher in Area I than the other two areas, and higher in Area II than in Area III.

Table 1 illustrates this for the pill. Note also the international comparison.

Table 1: COMPARISON OF CONTINUATION RATES

Pill - First Method (per 100 acceptors)					
<u>Area</u>	<u>3 mos.</u>	<u>6 mos.</u>	<u>12 mos.</u>	<u>18 mos.</u>	<u>24 mos.</u>
1	83	64	44	27	-
2	77	61	40	26	-
3	67	46	29	16	-
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
All 3	78	60	39	25	-
International*	-	61	51	-	36

\*Average of 13 studies in developing countries

Note also that these rates are much higher than reported at last year's review meeting using computerized clinic records as the data source and it demonstrates the necessity of field follow-up surveys to determine accurate continuation rates.

Twelve month rates for termination of the pill as first method in Area 1 are shown in Table 2 by reason for termination.

Table 2: RATES OF TERMINATION IN FIRST YEAR

<u>Reason</u>	<u>Rates per 100 acceptors</u>
Accidental pregnancy	1.9
Planning child	9.3
Spouse objected	3.9
Supply problem	5.2
Pregnant before accepted	3.5
Other (mostly medical)	31.5
<hr/>	<hr/>
Still using Pill at 12 mos.	44.3

The same table for all are I.U.D. acceptors for first method is shown in Table 3.

Table 3.: RATES OF TERMINATION IN FIRST YEAR

<u>First Method - I.U.D.</u>	
<u>Reason</u>	<u>Rates per 100 acceptors</u>
Accidental pregnancy	0
Planning child	3.5
Spouse objected	1.4
Medical reasons	21.7
Expulsion	4.3
Personal reasons	1.6
<hr/>	
Still I.U.D. user at 12 mos.	67.5

There were no accidental pregnancies among I.U.D. first method acceptors. There was at least one, however, among women who accepted the I.U.D. as a second method.

Males

Surprisingly, men reported much higher continuation rates than women (see Table 4). Whether men report use as accurately as women we cannot say at this point.

Table 4: CONTINUATION RATES

	<u>Any Method (per 100 acceptors)</u>			
	<u>3 mos.</u>	<u>6 mos.</u>	<u>12 mos.</u>	<u>18 mos.</u>
Males	87	79	69	50
Females	79	65	46	33

USE EFFECTIVENESS

Method Effectiveness

Table 5 shows the Gross Cumulative Attrition rates due to accidental pregnancy for all areas. These hypothetical rates are the rates of accidental pregnancy that would have occurred if there were no other reasons for termination.

Table 5: METHOD USE EFFECTIVENESS

Accidental Pregnancies

per

100 Women-years use (FIRST METHOD)

I.U.D.	0
Pill	9.1
Foam/Condom	20.0

Males reported a method effectiveness of 7.1, even higher than for females. Again, accuracy of males being aware of or reporting pregnancy in partners is to be questioned.

Extended use effectiveness is the period that an acceptor goes without becoming pregnant after she accepts regardless as to whether she is using the method or not at the time she becomes pregnant. Thus, a rate of 69 at 12 months would mean that of every 100 acceptors 69 had not become pregnant by the end of the 12th month after acceptance. Table 6 gives the figures by area:

Table 6: EXTENDED USE EFFECTIVENESS AT 12 MOS.

Any Method - Females

<u>Area</u>	<u>Rate Not Pregnant</u>
1	69
2	66
3	55

Again males report that fewer of their partners have become pregnant in the first 12 months after acceptance than women (See Table 7).

Table 7: EXTENDED USE EFFECTIVENESS

<u>At 12 Mos.</u>	
Males	80%
Females	66%

PREVALENCE OF CONTRACEPTION

Based on the numbers of acceptors who reported they were still using a method as of 30 November 1974 and adjusting this figure to account for those not interviewed, the following tables were constructed:

Table 8: ESTIMATED PREVELANCE OF CONTRACEPTION  
OF ALL PROJECT AREA ACCEPTORS REGARDLESS OF  
CURRENT RESIDENCE

(Rate per 100 WRA)

<u>Area</u>	<u>Women</u>	<u>Couples</u>
1	6.4	10.1
2	2.6	9.8
3	0.9	4.8
<hr/>	<hr/>	<hr/>
All 3 areas	3.1	8.2

Table 9: ESTIMATED PREVELANCE OF ACCEPTORS NOW  
RESIDING IN PROJECT AREAS

<u>Area</u>	<u>Women</u>	<u>Couples</u>
1	5.4	8.5
2	2.1	8.4
3	0.8	4.1
<hr/>	<hr/>	<hr/>
All 3 areas	2.6	6.7

Table 8 shows the current prevalence of contraceptors which would obtain if those who are estimated to have moved out of the area were still practicing and has implications for a national program. Note that it is roughly half the acceptance rate since the start of the program.

Table 9 shows the estimated current prevalence of practice in the project area as of 30 November 1974.

WOMAN AND COUPLE MONTHS USE

Based on reported duration of use of any method and adjusted for those not interviewed the following tables were constructed of woman and couple months of use by area since start of the program.

Table 10: WOMAN-MONTHS USE (WMU)

7/72 - 11/72

<u>Area</u>	<u>WMU</u>
1	3654
2	2500
3	644

Table 11: WOMAN-MONTHS USE PER WRA

<u>Area</u>	<u>WMU/WRA</u>
1	1.30
2	1.10
3	0.19

Table 12: COUPLE MONTHS USE (CMU)

7/72 - 11/74

<u>Area</u>	<u>CMU</u>
1	5220
2	4967
3	2672

Table 13: COUPLE MONTHS USE PER WRA

<u>Area</u>	<u>CMU/WRA</u>
1	1.85
2	2.17
3	0.79

Again, as in acceptance Area 1 leads in number of woman months use and Area 11 leads in couple months use.

PATTERNS OF MATERNAL AND CHILD HEALTH AND MATERNAL AND  
CHILD HEALTH CARE IN AREA 1 OF THE DANFA PROJECT HEALTH AREA

Presented by Dr. R. O. Asante  
Collaborators: Dr. D. Nicholas and Dr. S. Ofosu-Amaah

Planning to deal effectively with the major and the most commonly occurring health problems of any given community should proceed from finding out what the problems are, and deciding on the most rational approach to solving the identified problems within the relevant constraints. Finding out implies collecting information or data.

Data on the health status and utilization of health services available to a given community can be collected from service recipients and/or providers. Recipients can supply data of limited quality through various types of sample surveys which, if supplemented by the much more specific and higher quality data obtained from the health records system, should form a useful basis for a more accurate community diagnosis.

Over the years the Danfa Comprehensive Rural Health and Family Planning Project has been collecting, by various techniques, maternal and child health data in order to identify the problems of mothers and children in the project area and provide the appropriate services. As programs proceed, it seems important to examine the patterns of ill-health and service utilization which have emerged to date.

This report outlines patterns of maternal and child health problems and use of health care services in Area 1. Frequent references are, however, made to the other three areas.

#### Source of Data and Limitations

Data for this presentation were obtained from general and special studies such as the Project Census and Vital Events Semi-Annual Re-checks, Maternal and Child Health Practices Surveys, Family Planning KAP Surveys, Morbidity Surveys, Fertility Surveys, Village Health Surveys, and from the Traditional Birth Attendant Study, as well as from the Danfa Rural Health Center statistics and student clerkship reports. Therefore the pattern that emerges is a composite picture that takes into account the views of both providers, recipients and observers. Such an approach is not without its limitations, qualifications and even minor inconsistencies. In spite of these difficulties, this approach offers the best possibility of painting as near accurate a picture as possible of patterns of ill-health and service utilization of mothers and children that exist in the communities we serve.

#### Patterns of Maternal Health Problems

##### 1. Morbidity

Mothers in Area 1 formed a sizable proportion of women 15-44 years who

in 1973 made over 5,000 visits to our clinics. They, therefore, contributed their fare share of morbid conditions reported by the records system for that year, the most frequent being Malaria, Diarrheal Diseases and Abdominal Disorders and Respiratory Tract Infections. Ill-health related to motherhood will be considered under a letter sub-heading. The 1974 figures are similar.

Anemia of pregnancy has been a very publicized entity.

Thus it was decided to study the problem at the Danfa Health Center. A study of the relationship of mean hemoglobin levels to current pregnancy and parity in the 1973 Village Health Survey had revealed that there was no significant difference between pregnant and non-pregnant women of equal parity or between low (1-4) parity women and high (5+) parity women. In all, the mean hemoglobin level was 11.4Gm% (range 10.3 to 11.5 Gm%). The hemoglobin levels of 300 pregnant women determined at Danfa by Grey wedge method gave a mean of 10.5Gm% (Median 10.4Gm%) and the distribution was as shown on the histogram in Figure 1.

A good 13.0% of pregnant women attending Danfa Antenatal clinic, therefore, had anemia problems needing attention even if acceptable low cut-off point of 9 Gm%.

Loosely linked with the problem of low Hb levels is the problem of Intestinal Parasitosis which perhaps helps to explain the anemia prevalence. The curve of distribution of helminths in the project area below (V.H.S. Data) underscores this point. (Figure 2)

## 2. Fertility

Fertility is what sets mothers apart from other women in the service population. What health problems does it give rise to in the Project Area 1? The estimated birth rate of Area 1 is 42.5%. Table shows the age specific fertility rate. As you see, it closely approximates the rate of Ghana (Gaisie 1969).

More of a problem socially and psychologically than medically in this country is infertility. Table 2 shows the extent of this problem. Infertility for practical purposes becomes a problem as a woman attains the age of 30. Therefore, in our studies we have used 29 as a cut-off point, for in this area a woman of 29 would have been trying to be pregnant for about 10 years. The average age of marriage is 18.5 years. Infertility rate after 29 in Area 1 works out  $7/394 = 1.77\%$

Fetal Wastage is shown in the next table. (Table 3)

## 3. Maternal Mortality.

Following the outcome of 1406 pregnancies for mothers we found results as shown in Table 4. These were deliveries we heard about and followed up. However, we certainly must have missed a number. In Area i, the expected

number of births would be about 350 in a 7 month period but only 282 were accounted for. The nearly 80 unaccounted for cases could be higher risk ones with worse outcomes.

### Child Health Problems

The following indicators of child health problems are pertinent:

- (a) Outcome of Danfa Rural Health Center deliveries, 1970-73. See Table 5. The low Birth Weight (i.e., 2500 Grams or less) rate 12.8%.
- (b) A special questionnaire study of perinatal problems revealed what is shown in Table 6.

### Morbidity

A review of diagnoses made on some 8021 visits by children (0-4 years) to all Danfa clinics in 1974 showed that the ten most common diagnoses were in order of frequency:

1. Malaria
2. Respiratory tract infection (including colds)
3. Diarrheal diseases
4. Fevers of unknown origin
5. Conjunctivitis
6. Intestinal parasites
7. Skin infections
8. Otitis
9. Measles
10. Pertussis

These clinic data are strengthened by findings that 30 to 65% parasitemia rates among children (0-4 years old) were infested with hookworm and ascaris respectively. There is obviously a high rate of morbidity among pre-school children in the area (Figure 2).

### Nutrition

Nutritional status during the first six months life appears to be satisfactory with only 6% of infants below 80% of standard weight for age; but there is a rapid rise of weight lag after 6 months and by 19-24 months, 51% have fallen below 80% of standard. They begin to pick up once more and by age 4 years only 14% are still below 90%. Unfortunately, however, the developmental lag suffered at this early age is rarely, if ever, completely made up for. The borderline malnutrition that exists in the area is a serious problem.

### Polio Study

A survey study of polio residual lameness conducted in the 4 areas revealed a lameness rate of 7%; most of the handicapped having suffered from polio at a median age of 1.8 years.

How well do children survive in Area 1? This is always an interesting question. Table 7 supplied estimates derived from a 1972 baseline fertility survey.

With patterns of health problems such as these among mothers and children in our service population, what do they do about the problems? How do they utilize service now available to them?

### Patterns of Maternal Health Care

#### Antenatal Care

A seven month (June-December 1974) special survey on all births in the Danfa area showed that 94% of all pregnant women had some antenatal care, 89% of these by trained personnel (doctors, midwives). But they often attended a much fewer number of times than the prescribed 6 to 8 visits. Tables (8, 9, and 10) show where mothers in the study group went for antenatal care, persons conducting their deliveries and where they went for post-natal care. Noteworthy are the facts that in Area 1, 63% of pregnant women were delivered by health professionals (midwives, doctors) and by trained traditional birth attendants. Professionals handled 52% of deliveries. This is about twice the national average; the other 25% are private maternity homes and nearby hospitals. But after delivery 38% of women sought no further care.

Referrals and reasons for them can be very revealing in terms of level of functioning, pattern of morbidity and use of health facilities. A review of 143 referred maternity cases in a 3½ year period was undertaken; 110 were antenatal, 27 during labor and 6 post-natal. The reasons for referral are as listed in Table 11.

#### Patterns of Child Health Care

As I stated earlier, 63% of the babies in Area 1 were born with trained help in 1974. Attendances at young child clinics by 0-4 year old children were as follows:

79% of 0-4 attended at least once in 1974. The average number of visits per child was 3.6. However, the highest participation rate was among babies 0-6 months when observations in the area, the country and elsewhere show that infants are least high risk. Children at weaning period at greater risk of becoming malnourished are the ones least often seen at young child clinics.

Various ways of remedying this situation are being tried out especially in the communities with women's groups. The difficulty of getting mothers to bring their children to health programs requiring several visits is further demonstrated by the 81% average achieved by the mass immunization program as compared with only 38% in the malaria prophylaxis program which required monthly visits. Both of these programs will be presented in detail in the next presentations.

### Conclusion

This brief outline of certain characteristics of mothers and children in the Danfa Project area does provide support for programs already under way. But it does also point to certain areas of service where attention may be profitably focused in order to improve the utilization of services now provided close to where they live.

For example the 13% prevalence rate of Hb levels below 9 Gm% among pregnant women is unacceptable as it leads to high prevalence of reproductive casualties and programs aimed at reducing that figure should be mounted. Deworming and malaria prophylaxis programs now in progress for children could be extended to pregnant women with salutary effect on Hb levels, for the blood destroying effects of 30-65% malaria parasitemia rates are obvious.

The 79% at-least-once-attendance of young child clinics by 0-4 year olds is encouraging but motivational and educational efforts are needed to reach those who really need services rather than those whose socio-cultural circumstances permit clinic usage. The problem of weaning, malnutrition and death are too costly in lives and resources to ignore.

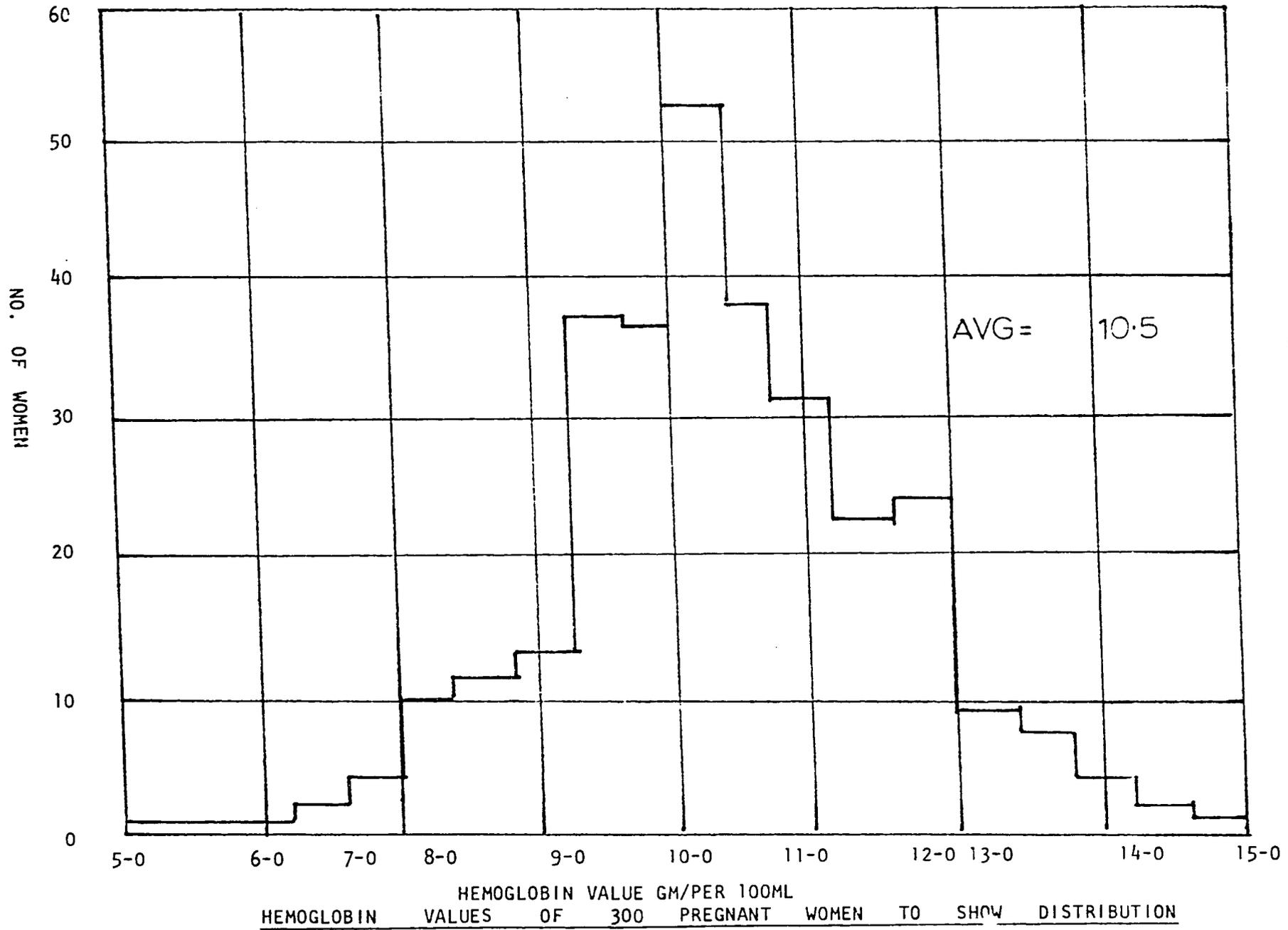


Figure 1

Figure 2

PERCENT DISTRIBUTION OF HELMITHS  
BY AGE AND PARASITE  
1973 VILLAGE HEALTH SURVEY

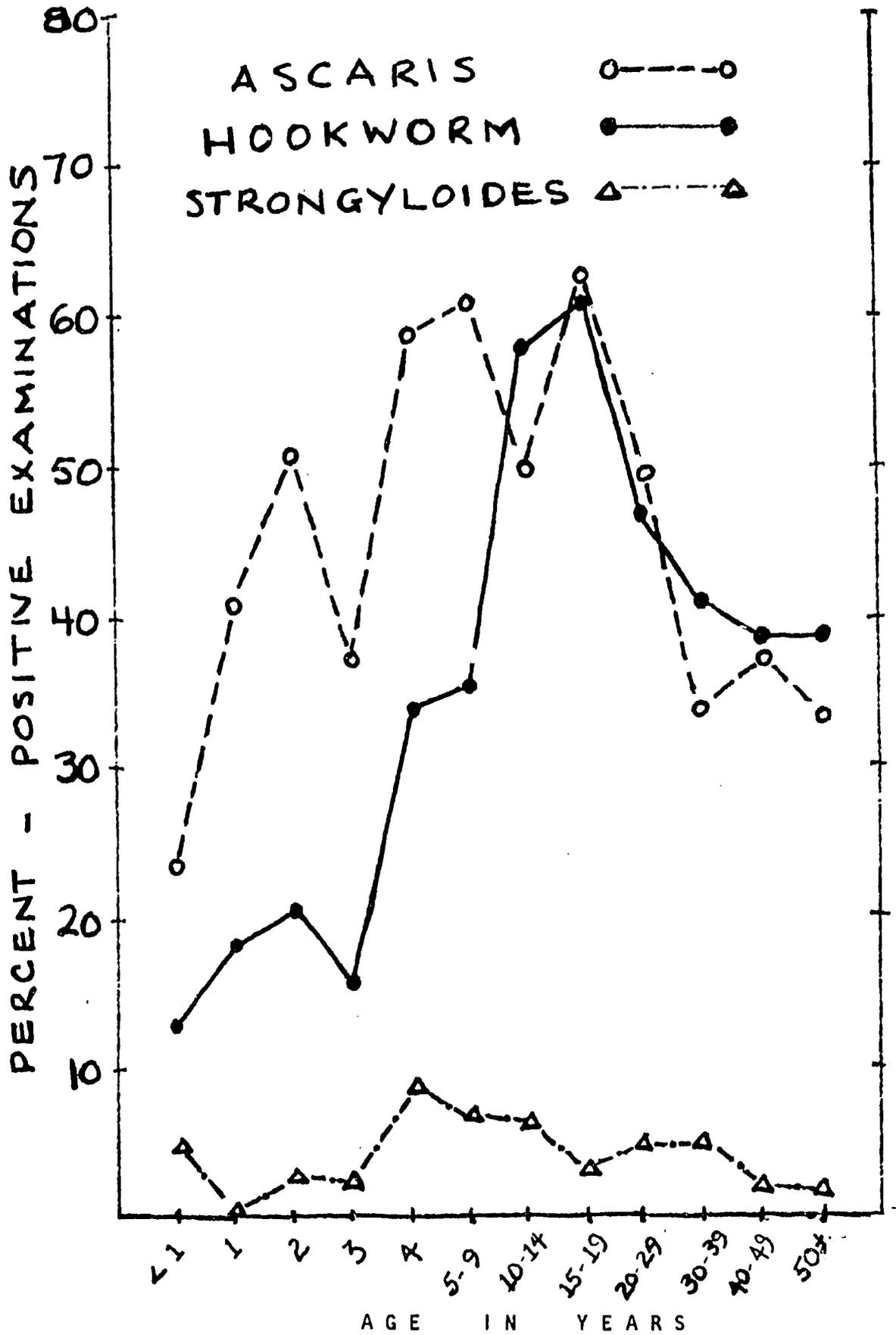


Table 1

AGE SPECIFIC FERTILITY RATES

(per 1000 women)

<u>Age</u>	<u>Area 1</u>	<u>Ghana 1960</u>
15-19	139	162
20-24	378	312
25-29	276	324
30-34	318	294
35-39	276	224
40-44	75	126

Table 2

PERCENTAGE OF WOMEN REPORTING NO PREGNANCIES

Area 1

<u>Age</u>	<u>%</u>
15-19	75
20-24	16
25-29	0.8
30-34	1.9
35-39	1.1
40-44	3.8

Overall % for 4 areas after age 29 = 1.85%

Table 3

FETAL WASTAGE

Area I

Induced Abortion	5.5%
Miscarriage	77.8%
Stillbirth	16.7%

Table 4

STATUS OF MOTHER AFTER DELIVERY

(Special Birth Questionnaire)

June 1974 to Dec. 1974

	<u>Area I</u>	<u>Area II</u>	<u>Area III</u>	<u>Area IV</u>	<u>Totals</u>
Alive and well	274	303	416	353	1346
Alive but ill	8	14	24	9	55
Died	-	-	5	-	5
					<hr/> 1406

Table 5

OUTCOME OF DELIVERIES PERFORMED

at

DANFA H.C. 1970-1973

No. of Births	187
Live Births	184
Still Births	3
Neonatal Death (1 day)	1
Maternal Deaths	0

Table 6

REPORTED NEONATAL PROBLEMS

Special Birth Questionnaire - Area I  
5/74-12/74

No Problem	254
Fever	4
Eye Problems	3
Bleeding	1
Jaundice	1
Other	13
<hr/>	
Stillbirth	2
<hr/>	

Table 7

ESTIMATES OF CHILD SURVIVAL

1972 Fertility Survey

Area I

Neonatal mortality rate	39 per 1000 births
Post neonatal mortality rate	33 per 1000 births
Infant mortality rate	72 per 1000 births
Preschool (1-4) M.R.	18 per 1000 births
5-9 mortality rate	3.5 per 1000 births
0-4 child wastage	139 per 1000 births
0-9 child wastage	154 per 1000 births

Table 8

LOCATION PRENATAL CARE

Area I

Danfa Health Center	61%
General Hospital Clinic	20
Maternity Home	8
T.B.A.	5
None	6

Table 9

PERSON PERFORMING DELIVERY

(Special Birth Questionnaire)

Area I

June 1974 to Dec. 1974

	<u>No.</u>	<u>%</u>
Danfa H.C. Midwife	55	19
Trained TBA	32	11
Untrained TBA	59	21
Mother herself	38	13
Relative	9	3
Physician	20	7
Other	71	25

Table 10

LOCATION POST PARTUM CARE

Area I

Danfa Health Center	44%
T.B.A.	12
General Hospital Clinic	4
Maternity Home	1
Other	1
None	38

Table 11

REASONS FOR REFERRALS

Maternity Patients - Danfa Health Center  
1970 - 1973

Bleeding or Hemorrhage	35%
Pre-Eclampsia	14
Dystocia	11
Grand multipara	10
Twins or Breech	4
Puerperal sepsis	2
Other	16
Transfer to another Area	8

## SYNOPSIS OF THE 1974 MASS IMMUNIZATION PROGRAM IN AREA I

Presented by: Dr. E. Osei-Tutu

### Introduction

The program was carried out during the week of 28 October to the 1st of November as one of the special MCH programs.

### Objectives

The program was a joint cooperative effort involving the Department of Community Health and the Epidemiology unit of the Ministry of Health, and had two main objectives:

- a) To reduce deaths and morbidity due to a number of communicable diseases that can be prevented by vaccination.
- b) To evolve an immunization program that could be used as a model for a nationwide program.

### Coverage Objectives

A target of 80% coverage was set and it was estimated that this would reduce the death rate in the under-fives by 25%.

From experiences in Ghana and elsewhere in developing countries, it was considered that the 80% target objective could only be attained by a mass approach as opposed to a clinic centered approach.

### Special Studies

The program would also examine the following features of an immunization program:

1. Effectiveness of different vaccines used in combination.
2. Methods of motivating the community to participate.
3. Cost of the vaccination program and cost-benefits.
4. Adverse reactions and complication rates from the various vaccines.
5. Reasons for non-participation.

### Diseases to be Immunized Against

The following are eight communicable diseases to which the population were to be protected in approximate order of priority:

1. Measles
2. Pertussis

3. Poliomyelitis
4. Tetanus
5. Tuberculosis
6. Typhoid
7. Yellow Fever
8. Smallpox

### Methodology

In the first year program, all children under 1 year were given series 1. All children aged 1-4 years were given series 2; children aged 5 years and above were given series 3. Adults (i.e. 15+ years) were given series 3 without BCG. Children were carefully screened for evidence of BCG scars and excluded from BCG vaccination.

<u>Series 1 (under 1 year)</u>	<u>Series 2 (1-4 years)</u>	<u>Series 3 (5-14+ Adults)</u>
BCG (Marker)	Smallpox (Marker)	BCG (Marker)
DPT	DPT	Tetanus
Polio	Polio	Typhoid
Typhoid	Measles	
	Typhoid	
	Yellow Fever	
<u>Series 1A</u>		
DPT		
Polio		

### Pre-test:

Three weeks prior to the exercise a trial run was carried out in two villages (Bawaleshie, and Appolonia) just outside the project area, to study the following:

1. Side effects and complications of the vaccines to be used in the program
2. Optimal patient flow procedures
3. Time required for vaccination
4. Feasibility of intradermal injection by the Jet gun

The results of the pre-test were very encouraging. Approximately 500 persons were vaccinated in each village during the course of one morning. Vaccinations seemed well accepted, and the only untoward reactions were a large number of accelerated Koch's reactions to the BCG in school children who had had a previous BCG vaccination or were natural tuberculin converters. These were successfully treated with a week's course of INH 200 mg per day.

### Area I Program

Collection Points - 14 villages were designated as collection points in Area I. These villages were selected on the basis of their size and

accessibility to other villages. No village would have to walk further than 1½ miles to a collection point.

Workshops: Two workshops were held to train:

1. Health Education staff,
2. Health Center staff and
3. Volunteers in the nature of the program,

### Daily Schedule

We left at 6:00 a.m., arrived at a village at 7:00 a.m. and were able to finish two village collection points in the morning. We then broke for lunch and resumed work in the afternoon and were able to finish two other villages from 3:00 - 5:00 p.m.

A major handicap in the exercise was the frequent breakdown of the Jet-guns. These were old and parts were faulty; part of the problem was also due to the thick DPT and Tetanus, or DPT and Typhoid vaccine combinations, and the freeze-dried BCG (in dextran) being given with an intradermal nozzle - frequently coagulating and clogging the nozzles.

### Evaluation

The following aspects of the program have either been evaluated or are going to be evaluated.

1. Percent of target group reached (See Tables 1 and 2)
  - a) by tallies
  - b) follow-up questionnaire survey.
2. Effectiveness of Vaccines
  - a) surveillance for measles, pertussis, tetanus, polio and tuberculosis
  - b) appearance of scars
  - c) sero-conversion rates
3. Changes in mortality rates
4. Reasons for non-participation (by special follow-up questionnaire)
5. Side-effects and Complications
  - a) by special survey in Danfa village
  - b) through informers (HEA's, Health Center Staff)
  - c) by questionnaire survey

The figures for this program came to:

1. Per child vaccinated (Age 1-4)	=	Ø0.67 (\$0.59)
2. Per person vaccinated	=	Ø0.31 (\$0.27)
3. Per capita	=	Ø0.21 (\$0.18)

Table 1: Percent of Population Vaccinated  
(Based on Census and Tally)

<u>Age Group</u>	<u>Percent</u>
Under 1	42
1 - 4	60
5 - 14	76
15 +	39
<hr/>	
TOTAL	58

Table 2: Percent of Population Vaccinated  
(Based on Survey)

<u>Age</u>	<u>Percent</u>
Under 1	73
1	77
2	85
3	85
4	83
<hr/>	
0 - 4	81

## REPORT ON MALARIA PROPHYLAXIS PROGRAM

Presented by: Dr. L. Osei

### Review of the Philosophy of Prophylactic Program

Infant and preschool mortality and morbidity are quite high in the Danfa rural area. Malaria is known to contribute greatly to this, and, in fact, is the third most important cause of deaths in children from birth to 5 years of age. Spleen rates also indicate that malaria is a problem in school children. Fortunately, the disease is sensitive to treatment, and it is felt that to have any real impact in MCH programs, malaria should be attacked.

### Brief review of 1973 Program

The primary objective of the 1973 program was mass drug prophylaxis including:

1. An initial parasite "clearing" dose of chloroquine
2. Pyrimethamine monthly
3. Thereafter, chloroquine to be taken home and be given when child developed fever.

The prophylaxis program covered 0-10 year olds. Tablets were distributed (a) by health center staff at Danfa and the Satellite clinics and (b) by volunteers - headmasters for the school children; other volunteers in the villages for the under fives.

The volunteers were supervised by the health center sanitarian, Mr. Azu. Malaria prophylaxis was undertaken in Area I only. Comparable groups which received no drug treatments were chosen in Area II to serve as controls.

As a secondary objective, mothers living close to the health center or its satellites were encouraged to bring their children to the clinics for regular health supervision.

Table 1. Changes in Parasitemia 1973-1974

	<u>Area I (treatment)</u>	<u>Area II (control)</u>
June 1973	40%	30%
Aug. 1973	51	61
Nov. 1973	32	37
Jan. 1974	36	63
May 1974	24	36

Table 1 shows that baseline readings for treatment and control areas were close. Initially, the rates of the treatment area were slightly

higher than that of the control group, but as expected subsequent to treatment, this group showed a downward trend in the parasite rates.

From the enormous amount of drugs issued, there is good reason to believe that the downward trend in the treated group is at least partially the result of the prophylaxis program.

### 1974 Program

From the experience obtained in 1973, certain changes were felt necessary for 1974:

- (1) The dose of pyrimethamine was increased from 25 mg. to 50 mg. monthly for the school children, because 25 mg. was thought too small a dose for the school child.
- (2) It was decided to institute a volunteer program in all the villages, since in the 1973 program higher coverage was obtained by the volunteer program than the clinic centered program.
- (3) A different pattern was set for the prophylaxis program. For the under fives in Area I, two groups were formed:
  - a) one group received pyrimethamine alone;
  - b) the second group received pyrimethamine plus chloroquine.

This was to determine whether the addition of chloroquine taken at home in case of breakthrough adds significantly to the impact of the program.

### Evaluation of Program

#### 1. Coverage of target population 1973 vs. 1974

Table 2

<u>Age Group</u>	<u>1973</u>	<u>1974</u>
0-5	50%	38%
6-10 school	80%	80%
Total (children 0-10)	59%	50%

The lower rate of 38% obtained for the 0-5 group in 1974 is due partly to the fact that Mr. Azu, the health center sanitarian who supervises the volunteers was absent for a good part of the reporting period. This problem should be alleviated since Mr. Azu has now returned.

2. Surveys - Surveys have been done and are planned for 1975. Results are not yet ready.

Pyrimethamine resistance - surveys have been planned for 1975.

#### Future Plans

We hope to integrate malaria prophylaxis and child health volunteers in Area I. These child health volunteers now helping the HEA's in child weighing and other MCH activities in the villages would distribute tablets at their monthly weighing.

## LAMENESS DUE TO POLIOMYELITIS (PRELIMINARY REPORT)

Presented by: Dr. D. Nicholas, Dr. S. Ofosu-Amaah  
and Dr. James Kratzer

### Introduction

Our interest in knowing what was the prevalence of lameness due to poliomyelitis in the Danfa area stemmed from our concern as to whether or not it was crucial to give polio vaccination in the area. In designing a mass immunization program, logistics would be simplified if we did not have to give some vaccines 2 or 3 times in the first year of life.

There were several instances in the literature where the opinion was expressed that paralytic polio was not a major problem in Africa but that it became more of a problem when sanitation improved, infant mortality rate decreased and epidemics arose.<sup>1,2,3</sup>

However, a number of workers in the field had raised questions about such opinions. Huckstep in Uganda<sup>4</sup> and Collis et al in Nigeria<sup>5</sup> indicated that the incidence of paralytic disease in their countries may have been high.

Yet we could find no account of a systematic study to determine the actual incidence of paralytic polio or the prevalence of residual lameness due to polio in West Africa. Thus, we felt such a study would be worthwhile.

### Part I of the Study - Prevalence of Lameness due to polio in the Danfa Area

#### Methods

Teachers in all 88 primary and middle schools in the four Danfa Project areas were given a letter asking them to list on a form the children in their school who were lame. We then visited each of these schools and screened the entire enrollment for lameness by having the children parade before us. We thus determined how many cases of lameness the teacher had failed to include on his list. We then determined by history from the parents and neurologic examination the most likely cause of the lameness.

#### Results (Tables revised slightly since presentation at Review Meeting)

We discovered 128 cases of lameness among 11249 school children. The causes are shown in Table 1.

Table 1. Causes of Lameness

Poliomyelitis	63%
Upper Motor Neuron Lesions	12%
Chronic Osteomyelitis	5%
Cong. clubfoot/other	3%
Chronic Septic Arthritis	1.5%
Multiple Exostoses	1.5%
Guinea Worm	1.5%
Other	12.5%

The median age of onset of polio was 17.1 months and 90% of cases had an age of onset before 5 years.

The prevalence of lameness due to polio in the schools is shown in Table 2.

Table 2. Lameness due to Polio per 1000 enrollment

Danfa Area - School Survey

Primary Schools	6.5
Middle Schools	9.2
<hr/>	
Both	7.2

Part II of the Study - Prevalence of Lameness due to Polio  
in Schools Throughout Ghana

We drew a 5% random sample of schools in Ghana stratified by region and rural versus urban location. We sent similar letters and forms to 510 schools representing 6% of the school enrollment in Ghana. By sending one reminder letter we eventually obtained responses from 477 (an 88% response rate) representing an enrollment of 73577.

We then calculated a correction factor based on the Danfa area experience as follows:

Calculation of Correction Factors Based on  
Danfa Survey

Danfa Schools Contacted	-	88
Danfa Schools Filling out Form	-	60
Number cases lameness listed	-	74
Of those listed - cases due to Polio	-	54
Other cases of Polio found	-	11
<hr/>		
Total cases of Polio found in schools filling out form	-	65
<hr/>		
Correction Factor (CF)	-	$\frac{65}{64} = 0.878$

Making the assumption that teachers throughout Ghana would fail to discover the same percentage of cases due to polio as in the Danfa area, and that the percent of cases of lameness due to polio would hold throughout Ghana, we applied this correction factor to the prevalence of lameness reported by teachers in schools throughout Ghana. The results are shown in Table 3.

Table 3. Prevalence of Lameness due to Polio Sample of Ghana Schools (1974) per 1000 enrollment

Urban	4.7
Rural	8.5
<hr/>	
Total	7.2

The urban-rural difference is statistically significant.

### Discussion

We had expected to find a prevalence in the order of 1 per 2000 and thus were surprised to find a level about 14 times higher. This prevalence is even greater than the prevalence of lameness due to polio in the U.S.A. after many years of epidemic disease which was found by Collins to be 3 per 1000.<sup>6</sup> Yet our data do not show any evidence of an epidemic trend in Ghana or in the local Danfa area. It would appear that the cumulative crippling effect of endemic disease over a number of years can be as great, if not greater, than epidemic disease. It may not be as dramatic because the cases occur sporadically rather than all at once, and because often those affected are infants who have just begun to stand or walk rather than active older children; nevertheless the effect is the same.

The estimations for Ghana as a whole are based on 2 unproven assumptions. Yet the findings are so striking that they must be taken seriously. Similar studies should be done elsewhere to determine whether such a prevalence may be common throughout Africa. It would appear that the low estimation of incidence of paralytic polio in Africa has been due to gross under reporting of cases.

### Conclusions

1. Poliomyelitis is a major health problem of children in Ghana with a prevalence of residual lameness of 7 per 1000.
2. Vaccination with Oral Polio Vaccine is warranted and necessary.

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HEALTH EDUCATION

Due to the length of the Health Education Handout and the fact that all participants of the review meeting were given this handout, only a minimal number of the graphs and tables from it have been duplicated here.

The Health Education Service Inputs  
Between July 1973 - July 1974

Presented by: Mrs. Doris Richardson:  
Public Health Nurse

The Health Education Program of the Danfa Project aims at achieving six basic objectives. These objectives are as follows:

- 1) Provisions of comprehensive health education coverage for all villages in areas I and II.
- 2) Creation and maintenance of effective lines of communication between health facility staff and villages.
- 3) Concentration on motivating villages to use preventative measures in improving their health.
- 4) Employment of a multi-disciplinary approach (maternal and child health, nutrition, sanitation, family planning) in attacking rural health problems.
- 5) Provision of continuous health care through a system of referrals to health facilities.
- 6) Provision of continuous health care through a system of follow-up requests from health facilities.

All four Health Education presentations today will focus on the extent of which these objectives have been met.

As the Health Education Supervisor of the program, I am concerned with the extent to which the Health Education Assistants are effectively planning their activities and the extent to which these activities are being carried out.

A Health Education Assistant is a multi-purpose health worker with primary training in one of four speciality areas, namely Family Planning, Maternal and Child Health, Nutrition and Sanitation and additional training in each of the other three areas. In the field she is concerned with each of the above mentioned Health Education subject areas since she may be the only Health worker seen by the community on a regular basis.

For those of you who will like a more complete picture of what the H.E.A. does in the field I strongly urge you during the day to go to the conference room of the Department of Community Health to meet some of the H.E.As, discuss with them their work and to see a slide show of these people at work in the field.

Health Education Field Activities.

The Health Education Assistant maintains 2 types of field records.

1. A chronological accounting of times spent on various Health Education activities.

2. A village folder in which are recorded the contacts which the H.E.A. has with the villagers in each community. Much of the data to be presented this morning is taken from these records.

One of the stipulations of the project's research design is that health efforts in Areas I and II be kept roughly equivalent.

Graph #1 shows times spent in Health Education in Areas I and II by the H.E.A.'s. There are wide fluctuations between Areas I and II as you can see. This is a result of the different nature of health problems and services in these two areas, however, for the period July 1973 to June 1974 the H.E.A.'s in Project Area I spent 3,637 hours on Health Education and those in Area II spent 3,950 hours. Area II exceeded Area I by slightly over 8 percent, a small difference when considering the difference when considering the different nature of problems, village size and transport between one community and the next.

I would like us to look at results of Health Education service records during the period of July 1973 to June 1974 to see to what extent program objectives were attained. The first objective is to provide comprehensive coverage of all villages. By comprehensive coverage the H.E.A. is supposed to visit a village once every month. However in the period July 1973 to June 1974, we were still not nearing our goal. During the first year, that is, from July 1972 to June 1973, the H.E.A.'s in Area I and II combined, were assigned responsibility for 22 villages, but from July 1975 to the present time they are now responsible for 108 villages.

During the period of January to March 1974, an average of 45 villages were reached monthly. The average for April to June 1974 was 42 villages and for July to September 1974, 40 villages excluding the month of August when almost all the villages were contacted during the Health Practices Survey. Thus in 1973 we were reaching 20 percent of villages assigned to the H.E.A.'s. During 1974 we were reaching approximately 40 % of these villages.

In January 1975 after a trial period, we decided to move certain aspects of the Child Welfare Sessions which include Health Education Presentation from the clinic to the community. The first step was to begin weighing all children under 5 years in the villages where they reside. We took this step first because the majority of children coming to the Child Welfare Session at Danfa Health Center or at the Satellites Clinics were sick.

Secondly, a majority of those attending Child Welfare Sessions came from villages very near the clinics so that children living some miles away were not reached. Combined with this there is the effort to provide every child under 5 years with a Morley Card during Home Visits and at the weighing session. For weighing, we use an easily portable spring balance scales with weighing pants.

We still have a long way to go before comprehensive coverage will be a reality but by planning a weighing program in each of the villages covered by the H.E.A. every month we feel the goal of comprehensive coverage will eventually be reached.

The analysis of 1974-1975 will show us the extent to which we have accomplished our goal. Referring to the second objective when we look

at graph #2, we note a drop in the months of August and December in hours spent on Maternal Health Education and a gradual rise between these months. Each time the H.E.A. goes on transfer, on leave or takes part in a survey, when she returns to her base it takes some months to reach maximum activity again. It is hoped that through regular monthly activities such as the weighing program she will recapture her high level of activity quickly. Also, recently trained weighing volunteers residing in the villages will provide a continuous community link between the program and the villages.

An integral part of Health Education approach is the involvement of villagers in the solution of many of their health problems. This is the basis for objective three. The Health Education Assistants work closely with village leaders including heads of men's and women's groups in improving water sources, construction of facilities for disposal of night soil and general village clean up campaign.

Where village leaders are highly motivated self-help projects such as these are usually highly successful. From an analysis of field records we found that the H.E.A.'s were reaching a much higher percentage of village leaders in Area I throughout the period of 1972-73 than in Area II. We have not yet ascertained the reason why. Efforts will have to be made to remedy this situation in Area II in future.

When we look at the amount of time spent by Area I and II teams on refuse disposal activities, we note just the opposite of that for most activities. The Area I team spent a much greater time than did the Area II team although the differences for the last six month's period were not as great as the first six.

The fourth objective is to provide multi-purpose health education to the rural population. Graph #3 indicates that maternal and child health and environmental sanitation are definitely receiving their full share of attention. Maternal and Child Health and Environmental Sanitation are definitely receiving their full share of attention.

The time spent on family planning education seem to fluctuate as a direct result of whether or not other programs are being stressed at any given time.

An obvious reason for fluctuation in time given to family planning education in the past year has been the surge in the new Maternal and Child Health Programs especially in Area I. The success of family planning education is very closely tied to timing activities to a period just prior to the family planning team visits and therefore permits less flexibilities in scheduling.

What is also very evident on the graph is the negligible attention nutrition education has received. Recently more audio-visual aids dealing with nutrition have been obtained for the program and a series of in-service training sessions have been held with the Health Education Assistants to stress Nutrition Education. In conjunction with the weighing program, training sessions have been held for village volunteers

focusing on the relationship between nutrition, growth and health.

With regard to family planning, in the future as planned volunteers in the communities will distribute contraceptives. The Health Education Assistants should then be able to better organize family planning education efforts without having to tie them so closely to family planning team visits.

Referring to Table 1 we note that while some H.E.A.'s are approximating a true multipurpose worker, as evident by their coverage of the topic areas of family planning, maternal and child health, nutrition and sanitation, some H.E.A.'s are failing to provide adequate multipurpose coverage.

Objective five aims at improving the continuity of care by developing an effective referral system. The Health Education Supervisor provides a direct link between the H.E.A.'s on the field and the various health facilities and agencies in the surrounding areas. When the H.E.A. comes into contact with an individual needing specific health service he or she writes a referral slip, gives the original to the patient and a copy to the supervisor. The supervisor collects the referral slip received by the health facilities either by visiting them or through the mail by self-addressed envelopes. She compares the originals with the copies she has received and thus knows which patients have failed to seek care. She returns the originals to the H.E.A. who is then able to see what medical action was taken by that individual patient.

Table 2 shows an apparent lack of relationship between time spent on referrals and referrals written but does demonstrate an increase in referrals utilized over time.

With regard to the last objective, at present there are family planning follow up visits being carried out and this will increase as soon as family planning volunteers have been trained in the villages, since the H.E.A. will follow up all patients of volunteers.

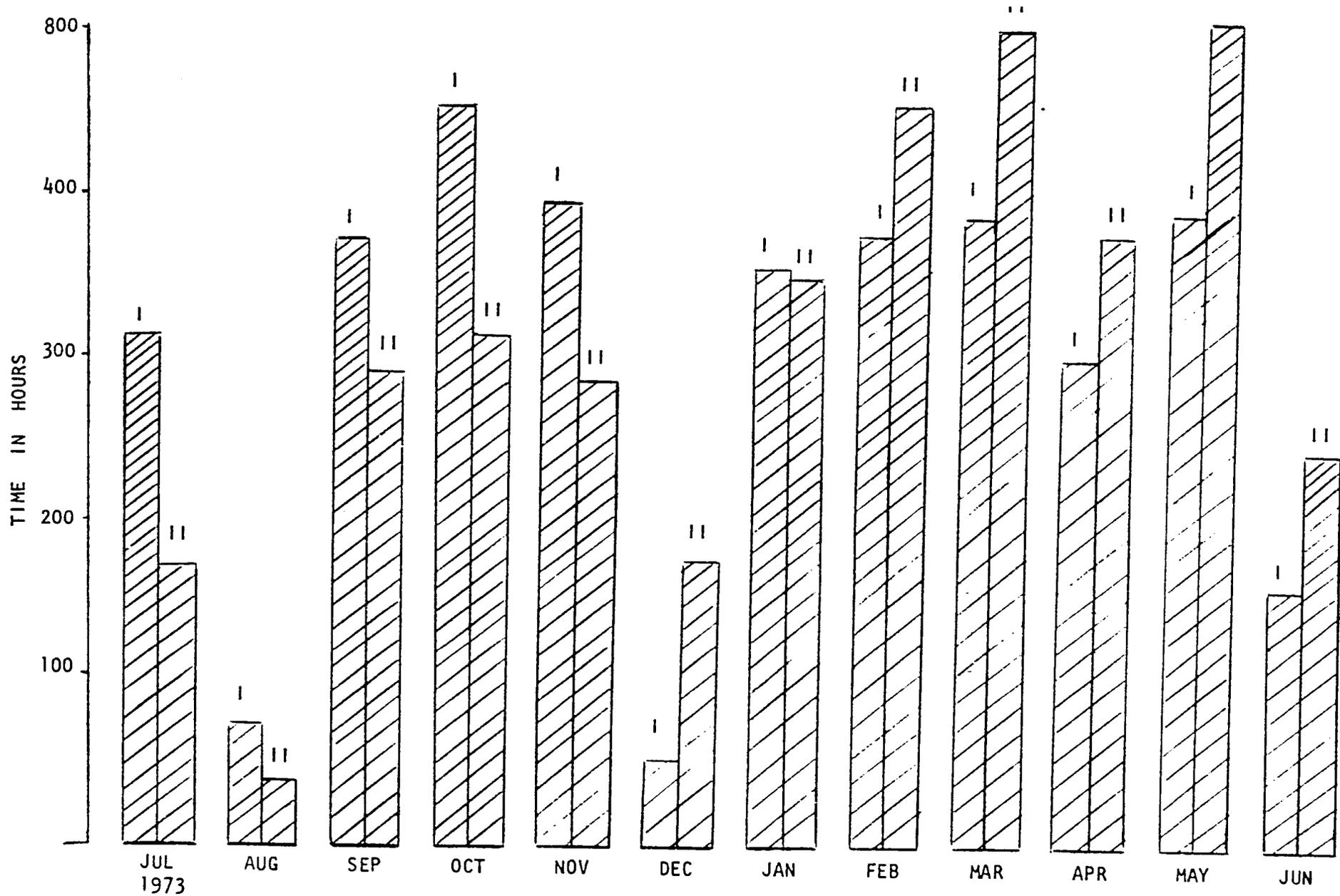
The follow up of maternal and child health cases on request from the Health Center Staff have not been effectively organized to date, but discussions are under way to implement such a system.

In conclusion, we note that in the areas of comprehensive coverage and multipurposeness of services we have made notable progress in the past year but we are far from achieving our objectives to date. Data have indicated to us our need to increase our efforts in the area of community organization and development.

We need to develop more systematic approaches to reaching special target groups such as village leaders, pregnant women and mothers of infants.

GRAPH 1: COMPARISON OF TIME SPENT IN HEALTH EDUCATION IN AREAS I & II BY HEALTH EDUCATION ASSISTANTS

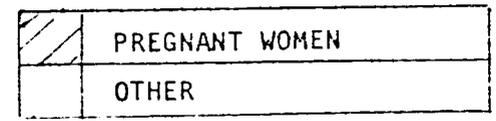
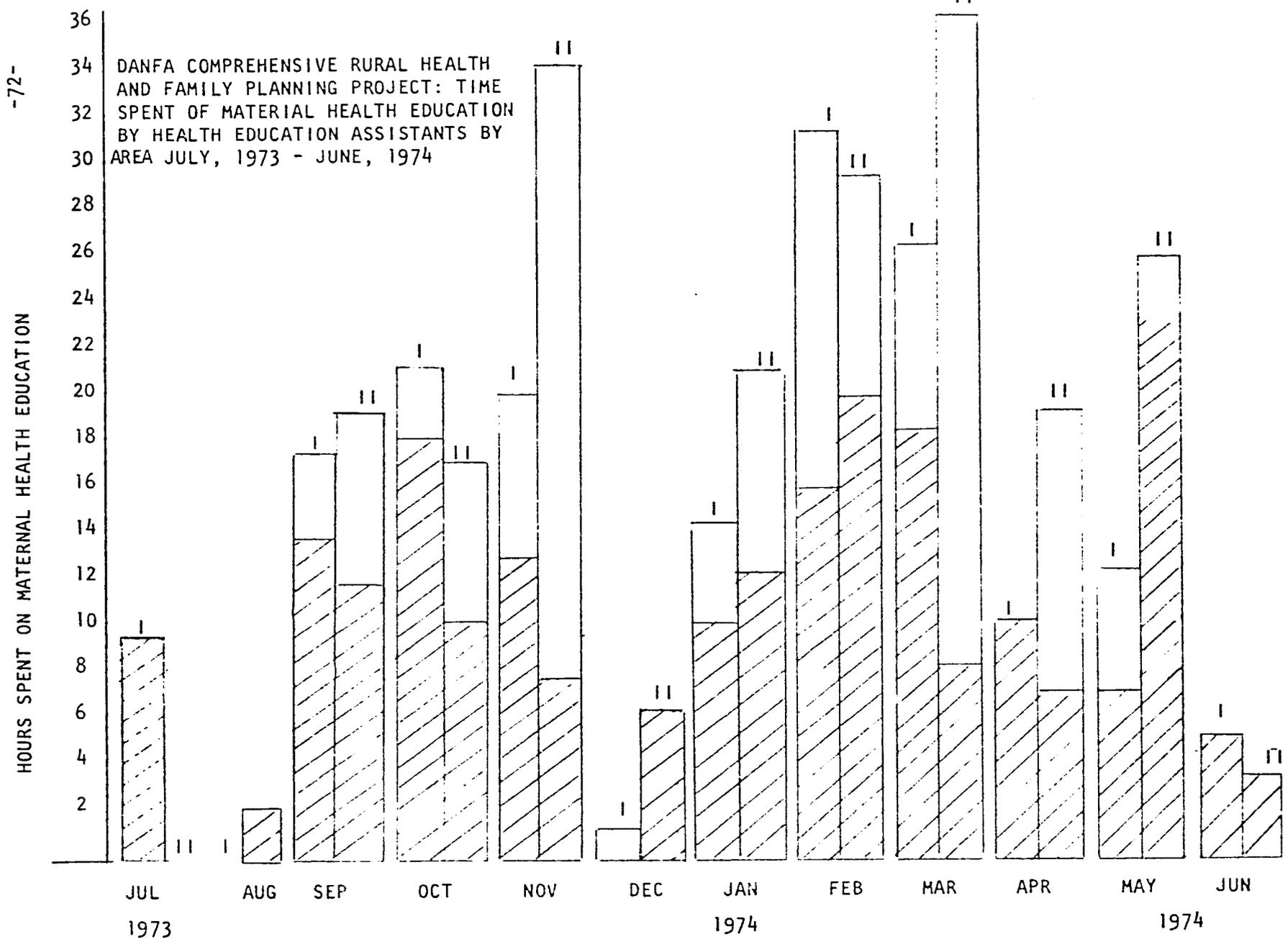
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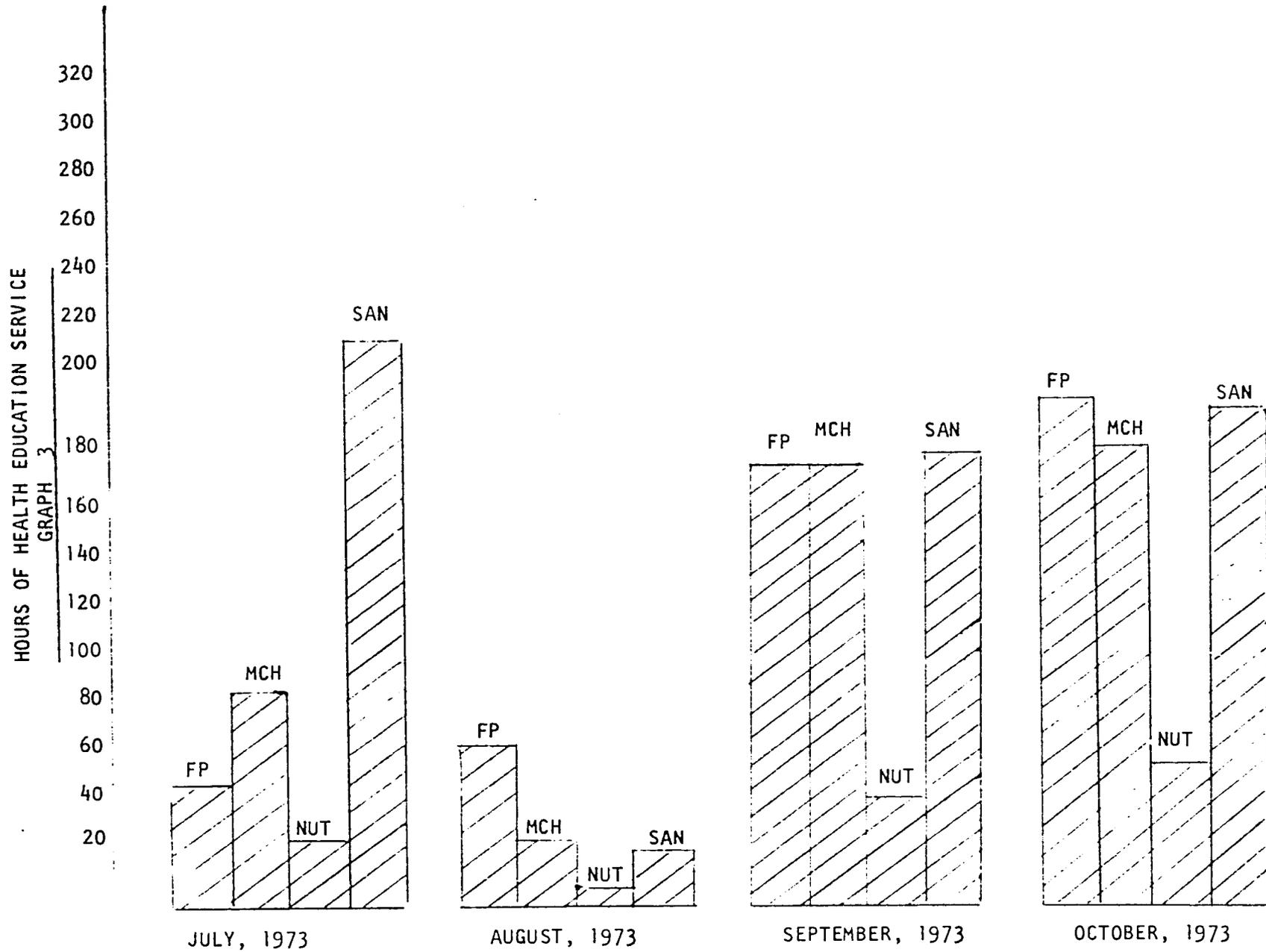
\*Source: Danfa Project Health Education Administrative Report Data

GRAPH 2

DANFA COMPREHENSIVE RURAL HEALTH AND FAMILY PLANNING PROJECT: TIME SPENT OF MATERIAL HEALTH EDUCATION BY HEALTH EDUCATION ASSISTANTS BY AREA JULY, 1973 - JUNE, 1974

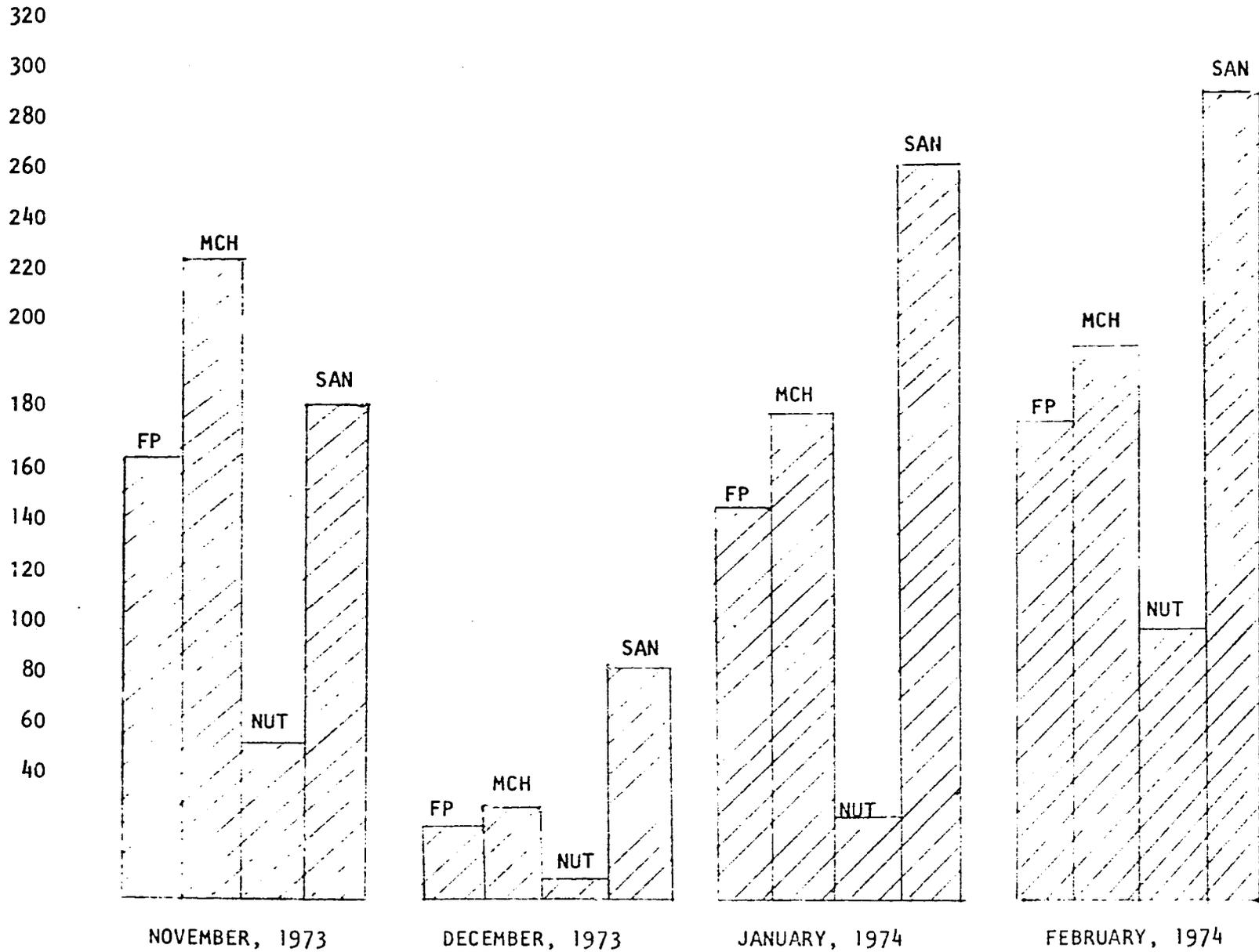


DANFA COMPREHENSIVE RURAL HEALTH AND FAMILY PLANNING PROJECT  
HEALTH EDUCATION ASSISTANT SERVICE INPUTS IN HOURS BY SUBJECT AREA FOR THE  
PERIOD JULY, 1973 - JUNE, 1974



DANFA COMPREHENSIVE RURAL HEALTH AND FAMILY PLANNING PROJECT  
HEALTH EDUCATION ASSISTANT SERVICE INPUTS IN HOURS BY SUBJECT AREA FOR THE  
PERIOD JULY, 1973 - JUNE, 1974

Graph 3 (continued)



## Danfa Comprehensive Rural Health and Family Planning Project: Ghana

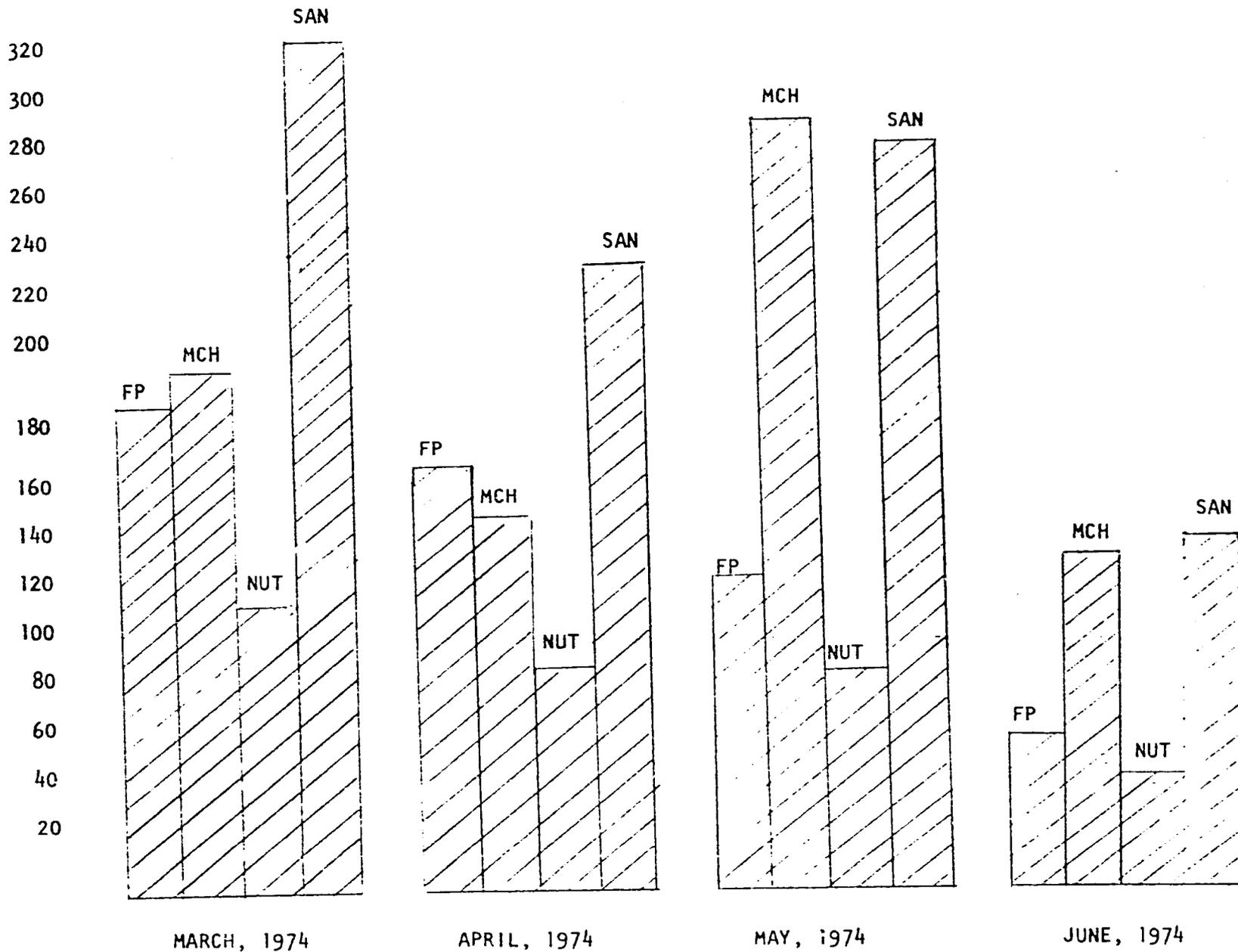
PERCENTAGE OF VILLAGES OF SUB-AREA VISITED BY HEALTH EDUCATION ASSISTANTS FOR EACH OF MAJOR HEALTH EDUCATION SUBJECTS FOR THE QUARTER JANUARY - MARCH, 1974

TABLE I	NUMBER OF VILLAGES		PERCENTAGE VILLAGES VISITED			
	IN HEA'S SUB-AREA		F. P. EDUCATION	M.C.H. EDUCATION	NUTRITION EDUCATION	SANITATION EDUCATION
COMMUNITY HEALTH NURSE 200	8		50%	63%	63%	63%
COMMUNITY HEALTH NURSE 201	17		12	18	6	24
FAMILY PLANNING WORKER 300	5		60	80	40	80
FAMILY PLANNING WORKER 301	17		35	35	35	35
NUTRITION TECHNICAL OFFICER 400	16		6	19	13	19
NUTRITION TECHNICAL OFFICER 401	11		45	36	36	36
SANITATION ASSISTANT 500	17		77	59	50	70
SANITATION ASSISTANT 501	17		50	0	24	59

By Edith Fordjor

DANFA COMPREHENSIVE RURAL HEALTH AND FAMILY PLANNING PROJECT  
HEALTH EDUCATION ASSISTANT SERVICE INPUTS IN HOURS BY SUBJECT AREA FOR THE  
PERIOD JULY, 1973 - JUNE, 1974

Graph 3 (continued)



## Danfa Comprehensive Rural Health and Family Planning Project: Ghana

PERCENTAGE OF VILLAGES OF SUB-AREA VISITED BY HEALTH EDUCATION  
ASSISTANTS FOR EACH OF MAJOR HEALTH EDUCATION SUBJECTS  
FOR THE QUARTER APRIL-JUNE 1974

TABLE I  
(continued)

	NUMBER OF VILLAGES	PERCENTAGE OF VILLAGES VISITED			
		IN HEA'S SUB-AREA	F. P. EDUCATION	M.C.H. EDUCATION	NUTRITION EDUCATION
COMMUNITY HEALTH NURSE 200	8	38%	75%	63%	88%
COMMUNITY HEALTH NURSE 201	17	6	35	24	35
FAMILY PLANNING WORKER 300	5	20	60	40	60
FAMILY PLANNING WORKER 301	17	24	35	35	35
NUTRITION TECHNICAL OFFICER 400	16	6	20	6	20
NUTRITION TECHNICAL OFFICER 401	11	36	36	27	36
SANITATION ASSISTANT 500	17	60	82	35	60
SANITATION ASSISTANT 501	17	60	30	30	65

By Edith Fordjor

## Danfa Comprehensive Rural Health and Family Planning Project: Ghana

TABLE 2: COMPARISON BETWEEN THE NUMBER OF REFERRALS WRITTEN AND UTILIZED AND THE TIME SPENT ON REFERRAL MOTIVATION FOR THE PERIOD 7/73 - 6/74

	NUMBER OF REFERRALS		HOURS SPENT
	WRITTEN	UTILIZED	
July - September 1973	73	32	4
October-December 1973	136	79	14
January-March 1974	159	73	316
April-June 1974	80	75	198

Changes in Health Practices  
as documented by the  
Household Health - Related Behavior Surveys  
of 1973 & 1974

Presented by: Ms. Edith Fordjor

The research framework of the Danfa Project is such that it provides the Health Education Component with fairly large experimental and control populations. It is therefore a unique study of four large research areas - the first two serving as Health Education experimental areas and the last two serving as a control. They each have a population of between 12,000 and 19,000. For the purpose of this report, outside factors are assumed to be equal; socio-economically however, there are considerable differences between the areas. In area I, Health Education is provided in conjunction with Comprehensive Health Care while in area II, Health Education is being evaluated on its own. Area III serves as a control for Health Education. Owing to a detailed baseline and updated surveys, we know who the inhabitants of our research area are. Similarly we have three ways of evaluating our programme: First, actual changes in health studies documented by the Village Health Survey, the second round of which is still in progress. Secondly is the longitudinal survey which is also being updated at the moment. Mr. G.B. Fosu's report on selected responses to the 1972 longitudinal studies on health and family planning knowledge, attitudes and practices for research areas I & II by Health Education sub-areas indicated specific problem areas to tackle. From such a study, the sub-area with the best average is chosen as our goal. (Copies can be made available upon request) Thirdly, demographic data on births and deaths also provide information on the success of the Health Education Assistants in reducing mortality and fertility. However, I am going to focus on the Health Practices Survey. In 1973, the initial survey was carried out and there was a follow up in 1974.

The methodology of the initial survey was published in the proceedings of last year's review meeting. Our main concern today is specifically with a comparison of changes from one survey to the next. We are mostly interested in examining the model for evaluation that we have developed to see whether it is operational, not so much to know actual changes that have occurred in a short year's time. In the words of Prof. F.T. Sai: "Human behaviour is a very complex thing, thus it is unreasonable to expect major changes in less than 4 or 5 years." It must therefore be pointed out that we are presenting data collected barely 12 months after the 1st survey, hence major changes should not be expected. Specific changes however did occur - some positive, others negative.

The Health Practice Questionnaire, a quick survey tool of 10 to 15 minutes, was administered covering items in the fields of environmental sanitation, maternal and child health and nutrition. Changes in family planning acceptance and continuation are documented elsewhere. The Health Practices Survey deals with responses of individuals and not of observed behavior. In

this regard, it has the inaccuracies that surveys of this nature have. A benefit from a change to record systems should greatly improve data accuracy. It is planned in the future to transfer family health records from the clinic to the home. These records such as infant weighing cards, prenatal cards, student weighing card and household environmental sanitation cards will be completed by health workers at the clinic and at home visits. Data will continue to be collected from respondents until such a system is widespread in the project area. At that time the greater reliability of such records will be taken into consideration in assessing program change and survey information will be, in the main, drawn directly from such records.

The basic assumption under which the health practices survey was carried out is that inaccuracies in responses of those interviewed from area to area and from year to year are roughly the same. There are also two hypotheses: first, a greater rate of positive change will occur in Area II as opposed to Area III and IV because of the presence of health education efforts. Secondly, there will be a greater change in health behavior in Area I than Area II because of the integration of health education into a Comprehensive Health Care System. Data to be presented now, however, exclude the 13 villages near the Danfa Health Center which are under the care of the Health Care Staff. Focus is on the area assigned to the health education assistants. In my presentation I shall discuss some of the changes in health practices with you, relating these to the major health education objectives as specified by Mrs. Richardson.

The first objective of the project is to provide comprehensive health education coverage of all the villages in Areas I and II, hence we ideally would expect to see changes in all the villages covered. If we look at each of sub-areas in Area I (looking at every village would be too time consuming) we note a slight overall decrease in the number of individuals disposing of refuse in the bush - a practice classified as undesirable by the HEA team. In actuality in sub-areas D and E there was significant improvement; while in B and C, use of the bush increased. In the true meaning of comprehensive behavior change, instead of being pleased with the overall improvement, we need, in the future, to focus our attention on sub-areas B and C. Table 1 brings out clearly the extent to which there has been consistency of change within sub-areas of a given area.

Let us look at Table 1 where comparison of rates of inoculations between the last two surveys are given. Normally in many parts of Ghana, there are two ways of receiving inoculations: i.e. either one has to travel to a health facility or be a recipient of inoculation in a mass campaign. In the first graph showing the percentage of preschoolers receiving measles and smallpox inoculation, there is a definite drop off between 1973 and 1974 in all but one instance. During the period just before the 1973 survey medical field unit teams visited those areas and gave inoculation to most of the inhabitants - but to our knowledge there was no such campaign during the period of the two surveys 1973-1974. In a situation where immunization relies on such campaigns the health education input should be directed at motivating local leaders to seek such services for their

communities. In the case of BCG and DPT inoculation as seen in Table 1, the only decrease that occurred was in Area II. We do not fully understand why there has been such a sharp increase in Areas III and IV, but we intend to investigate where respondents reported getting such inoculation. In Area I where BCG and DPT inoculations are offered on a regular basis at the Health Center it is the responsibility of the health education assistants to motivate villagers to use the services which are available. Concerning place of last delivery, data demonstrated that there was a great decrease in the number of people who were delivered by unskilled persons in Areas I and IV and slight decreases in Areas II and III; but what we note in Areas I and II is that with the decrease in the use of unskilled persons was an increase in the use of hospitals and clinics with no change in the use of the traditional birth attendants (T.B.A.'s). In Area III while there was little change in the use of unskilled person, there was tremendous decrease in the use of the T.B.A. In Area IV the decrease that occurred is combined with increases in reliance on clinics, hospitals and T.B.A.'s. With the completion of training of the T.B.A.'s in Area I we anticipate a pattern evolving like the one in Area IV since there are not at present enough clinics in Ghana to take care of all deliveries.

One of the major aspects of the project is motivating villagers to use preventive measures in improving health. This is one of the cornerstones upon which the health education component is built. Let us examine three areas in which village participation is the key element. First, villages in the project area in the past could be characterized in part by the lack of an agreed upon site for the disposal of household refuse and a mechanism for periodically burning or burying the refuse. However communal labor, as a tradition, is widespread in Ghana and this is a resource upon which the health education assistants can draw in motivating villagers to improve their communities. When we review the data on disposal of household refuse in maintained dumps (Table 2) we note that the absolute increase in Area I is similar to that of III and IV. We cannot, therefore, attribute Area I change solely to our program since the control areas changed as well. Indeed, the dropoff in Area II is a major cause of concern. As pointed out by Mrs. Richardson, the H.E.A.'s in Area II spent little time on refuse disposal activities. There may be a direct relationship. We must also ask ourselves why such a great improvement occurred in Areas III and IV, the controls.

With regard to patterns of defecation, the H.E.A.'s have made major efforts to encourage villagers to construct pit latrines out of local materials. By discussing the dangers of worm infestation and diarrhoeal diseases, they have attempted to arouse the awareness of the community as to the connection between these diseases and improper defecation patterns. As Table 3 shows, were we to look at results of Areas I and II alone we'll tend to congratulate ourselves on the progress being made especially with regard to the adult population; but then the pattern in Area III is so similar to that of Areas I and II that we must assume the changes might have appeared even without the efforts of the H.E.A.'s. Implicit in the high level of community activities is a

high level of organized participation. Looking at Table 4, we see that in Areas I and III the percentage of households having a member who is active in the men's and women's group appears to be on the increase. In Area IV, women group participation has increased while men's group participation has decreased. Area II is again our main concern for there was no change in the level of women's group participation and there was a severe dropoff in the number of households with a member participating in the men's group. We must gear our attention to these areas in the future.

Since an attempt is being made to do what other health education programs have not done, i.e. tackle a wide range of health education and family planning problems at the same time and evaluate them on a wide range, we anticipate progress in some areas and lack of progress in others - but at the same time when we find the latter, we're able to shift our resources to that area without waiting until the end of the project to find out where we have failed. It's not enough to provide health services on a comprehensive basis in a given area but the indigenes of the said areas must know that such services exist - one of the points raised in Mrs. Richardson's presentation. Similarly if villagers know that such services exist but fail to use them, the program is a failure.

Table 1

Change in respondent replies as to inoculation prevalence in 2-5 year olds for Areas I and II between July 1973 and June 1974 from results of the 1973 and 1974 Health Practices Surveys: (from pages 18B and 18D of the handout)

	<u>Percentage of children 2-5 years old</u>			
	Area I		Area II	
	1973	1974	1973	1974
BCG	12	29	10	7
Smallpox	57	37	45	34
DPT	9	20	5	3
Measles	57	39	45	23

Table 2

Comparison by area of disposal of refuse in regularly maintained dumps for July 1973 and July 1974 (from pages 18A and C of the handout).

	<u>Percentage of Households Reporting Practices</u>	
	July 1973	July 1974
Area I	34	49
Area II	29	27
Area III	1	18
Area IV	27	44

Table 3

Percentage of Adults defecating in the bush - comparison by area for the period July 1973 - June 1974 (from page 14 of handout).

	Males		Females	
	1973	1974	1973	1974
Area I	18	5	17	2
Area II	13	3	17	1
Area III	13	5	16	2
Area IV	1	3	1	1

Table 4

Percentage of households participating in men's/women's groups by area in August 1973 and August 1974 (from page 15 of handout).

	Men's group		Women's group	
	1973	1974	1973	1974
Area I	8	9	8	14
Area II	9	3	4	4
Area III	1	8	1	4
Area IV	3	2	0	3

## The Relationship Between Health Education Services and Behavior Change 1973-1974

Presented by: Mr. William Ward

The first two presentations this morning were organized around the objectives upon which the Danfa Health Education Program is based. Obviously, the program has not had the time within the space of one short year, the period between two annual surveys, to permit us to conclude much about the relationship between Health Education Services and resultant behavior change.

The Health Education Program has gone through specific stages. Each new stage has answered some questions and raised others. Even though data to date demonstrate no clear-cut pattern of Health Education effort emerging, I would like to review what we have learned at the various stages we perceived as having occurred to date.

Prior to initial training of the HEA's, the question was: "Could a program be devised to adequately prepare specialists such as Community Health Nurses, Family Planning Workers Nutrition Technical Officers, and Sanitation Assistants for a multipurpose role in community health". The results in Table 1 in Miss Fordjor's presentation show that even though HEA's tend to favor their previous specialty, there is a definite multipurpose nature to their work.

Stage two began at the time HEA's were assigned to the field at the completion of their training program. Universally, inducing health workers to reside for a significant period of time in a rural setting has been most difficult. Would the HEA's accept assignment to a group of rural communities while residing in available housing in one of them?

After two and one half years in the field, four of the eight original HEA's are still at work. Others have left to deliver, or for normal advancement. The attrition rate must be compared with other programs to have meaning, but it is safe to say that the change in staff at the Danfa Health Center has been higher. Further, two of the original HEA's asked to rejoin the team after leaving, proof of their interest in the work. An important question is the physical and mental hardship imposed on the staff.

We do have records of sick leave. The record for July 1973 - June 1974 is as follows: a total of 88 sick leave days, or one day per worker, per month. Often, I have seen an HEA carrying on with activities while sick. The respectable rate of sickness absenteeism is another good measure of their desire to perform.

We were unable to come up with an effective system of evaluation of the Health Education Program until we knew what the pattern of work of this new cadre would be. We tried out three different systems of collecting field records before setting on the present dual system of:

1. A chronological record of time inputs of all efforts using the communication model for characterizing activities, subject, method and target group.
2. A village-by-village record of specific activities with comments on problems encountered and progress made.

It took about three months to work out defects in the record system and almost that long, in addition, before the HEA's had reached a high level of accuracy in completion. Now the system is routine and monthly reports are fed back to the HEA's so that they may compare their efforts with their plans.

This lesson in perseverance has demonstrated that the HEA is able to handle quite sophisticated tasks as long as there is sufficient time given to acquire the new skill.

After developing a system for evaluating inputs (stage 3) we could begin to finalize the research framework (stage 4). In the original research design, the Health Education section was given the mandate to provide equal health education inputs in Research Areas I and II. Given the widely varying training background and abilities of the Individual HEA's, it was decided to rotate them systematically through 8 sub-areas during a four year period, 1973-1977. This was done in such a way that each sub-area would experience one of each type of worker - Community Health Nurse, etc.

We were then forced to ask the question: "Is it possible to shift HEA's once yearly?" As Mrs. Richardson has shown, the level of effort of HEA's takes a while to build up after:

- a) leave time
- b) rotating of bases
- c) the disruptions of surveying

Because of this, there are two peaks of activity a year: May through June and November. The conclusion is that moving the HEA's around has definitely been disruptive to their work effectiveness. Participation in the annual Health Practice Surveys has also been disruptive. However, when compared with certain areas of the country where staff are rotated every three months, the situation here might be considered ideal. Programs where a given worker can stabilize in one area are likely to be strongest.

This raises yet another question: "How long should a person be an HEA?" We do not have answers to this yet but do feel that there must be a specified limit. The HEA position should be a step in upward mobility for workers similar to those in our project. They would advance in their own ministries and agencies after the experience, perhaps at a more rapid

rate to encourage program participation.

The Health Education Team is obviously not fully satisfied with the techniques it has adopted to measure health behavior change.

Literature has shown that the use of surveys of responses about behavior are fraught with woes. Surveys which focus on knowledge and attitudes are even more suspect. This same literature, however, fails to suggest more successful approaches to evaluating health education approaches except for counting files, etc., or in a rare case demonstrating actual reduction in disease.

Fortunately, the Danfa Project is richly blessed with a number of different evaluation approaches. The village health and longitudinal surveys will provide an eventual picture of reductions in morbidity, fertility, and mortality.

In addition to the above surveys, as Miss Fordjor discussed at length, the Health Education Team has carried out an additional Health Practices Survey more immediately geared to its needs.

This survey provides a profile of reported and observed behavior on a community-by-community basis permitting the worker to plan with a given village in mind and comparing that village with its neighbors. Miss Fordjor's report on this survey has shown some of the strengths.

Its weaknesses are also evident. It relies heavily on what people say they do. It assumes that incorrect responses will be similar for different areas thereby cancelling one another. It is very superficial, only skimming the surface of the problems. The Health Practices Survey is evolving, however, items are dropped and others are maintained for comparability.

The problems encountered have pointed the way to a more effective evaluation system. A major possibility in the future in obtaining accurate records during village surveys is to have take-home record system of cards such as the Morley card which would cover every major target group including the fertile female (a pregnancy and family planning record), the school child, other adults, as well as a card for household and compound in which specific health events are recorded on both home visits and visits to a clinic.

Once this has been achieved, it would be a simple matter to carry out a quick survey of a sample of households in a community by merely looking at household records. The evaluation of such a system would have two directions:

1. Out to the community to give them a profile of their health behavior.
2. To the health centers and regions for planning.

By using HEA's to carry out the interviewing along with trained interviewers, we were able to demonstrate that the HEA's were not inferior to them. This suggests that community surveying might routinely be done by the workers themselves.

In addition to measuring health behavior change, the existing techniques for evaluating family planning were amplified. Acceptor rates were worked out on an annual basis for each sub-area and village, the idea being that major efforts would be focused on villages with low rates.

It was found that lack of comprehensive coverage of villages by HEA's has hindered acceptance and that the highest acceptance rates are usually in the villages nearest the HEA's village of residence. Monthly summaries of referrals written and utilized were fed back to the HEA's with the result that there was a significant increase in the number of referrals, particularly to the family planning clinics.

Unfortunately, just as this program was yielding results, the HEA's were called upon to assist in an anti-malarial campaign and other MCH programs and the emphasis on referrals dropped rather markedly as did the number of referrals. This shifting and swinging from one health service program to the next has been the nemesis of health programs everywhere. Our program is no exception.

Let us spend time on a detailed example of how family planning education can be evaluated and costed in the project. The cost of the Health Education Program for the first half of 1974 was virtually the same as for the equivalent period of 1973 due to decrease in supervising staff and vehicle usage to offset increase in wages and transport.

Using these figures, Health Education expenses averaged £694 per month for each of Areas I and II.

In order to arrive at family planning education costs on a monthly basis we multiply the above figure by percentage time spent on family planning education.

The lowest month was August 1973 when £54 and £44 were spent on family planning education for Areas I and II respectively. The highest month was October when the figures were £126 and £230. For the period July 1973-June 1974, £1200 were spent in Area I and £1734 in Area II on family planning education. (Area I, 14.4% of Health Education Costs; Area II, 20.8%).

In order to determine the cost-effectiveness of family planning education we must subtract the number of acceptors in Area III from those in each of Areas I and II in order to arrive at a figure representing acceptors over and above those motivated by the family planning team (note: not taken into consideration in these calculations are differences in population size, S.E.S. characteristics and that the majority of acceptors in Area I was females while in Area II it was males).

For the twelve months, July 1973- June 1974, there were 102 more acceptors in Area I and 90 more in Area II than in Area III.

Since the HEA's are responsible for covering only 60% of the population in Area I, only 61 of the 102 acceptors may be attributed to their effort. Dividing these additional acceptors by family planning education costs by area we obtain the following figures:

Area I	£19.67/F.P.	educational	motivated	acceptors
Area II	£19.27/F.P.	"	"	"

Further, in Area II with roughly 50% more time being spent on family planning education than in Area I yielding approximately 50% more educationally-motivated acceptors, we must assume that increased educational inputs in time will result in only a linear increase in acceptors and will not reduce per acceptor educational costs.

What is needed, it would seem, therefore, is a wholly new approach to family planning education where availability of services and education work in tandem, perhaps through community family planning volunteers.

There also must be a better allocation of family planning education to those villages of significant population having low acceptor rates. This is a stage which the program is only now beginning to enter. An example from a village which had been in this category provides a good example.

Let us look at Aikaidobro, Area II, Sub-area B. During the period 1972-73, an HEA from Planned Parenthood Association of Ghana worked intensively in the village while being resident there. During that year only five males out of well over 100 accepted. Shortly after the worker transferred to another area, family planning acceptance among males increased rapidly even without a worker being resident in the community. The fact that 33% of the male population of this village are now acceptors must in part be attributed to the efforts of that HEA. The implications are obvious. From this example one realizes that the impact of educational effort often comes very slowly or very late. Some communities seemingly need a continuous educational input to break through the barrier to significant change. Since it is impossible to place a health worker in each village, an approach which utilizes volunteers must be seriously considered. Further, attributing change to efforts which occur in the same time period must be done cautiously.

Once the research framework had been finalized, the HEA's were assigned full responsibility for covering all of Areas I and II except for a cluster of villages around the Danfa Health Center. As Mrs. Richardson pointed out we have increased our coverage from 20% to about 40% of Area I and II villages which falls far short of our goal of comprehensive coverage. The question arises: "What maximum number of communities can one HEA handle effectively?"

This question has major implications: since we were able to double the area of coverage, we could reduce by 50% the number of such field workers needed to cover the country.

Finally, two important points have become evident over the past two years:

1. The HEA functions best when he/she is compelled to organize her activities around a regular schedule.
2. The HEA becomes a more effective worker the more he/she is associated directly with health services programs.

Mrs. Pappoe will describe how:

1. We plan to have the HEA work more closely with existing health services.
2. How we see the HEA as evolving into a community level health worker and coordinator of volunteers.

Danfa Project 6th Annual Review Meeting:  
The Health Education Program: Future Directions

Presented by: Mrs. Matilda Pappoe

The emphasis of our presentations this year has been placed on the data from the Health Practices Survey and what the data mean to the program in terms of the past, the present and the future. Mr. Ward, in his presentation mentioned why the Health Education Program found it necessary to design and carry out another type of survey, when we had data available from all the other types of surveys already mentioned. Data from the longitudinal K.A.P. Surveys on Family Planning, Child Care and Maternal Health definitely provide useful information for not only planning but evaluating educational activities. Equally useful in these areas are the findings from the Village Health Surveys, and the Morbidity and Fertility Surveys. The Health Education team, nevertheless, found it necessary to design and carry out this Health Practices Survey, which we hoped could sharpen more the focus of our health education programs, both in terms of problem areas as well as geographic areas.

Initially, we nicknamed our survey instrument, A Key-Item Questionnaire and this was because we felt the need to cover, rather superficially, key items from the four (4) content areas of our concern, i.e. Maternal and Child Health, Nutrition, Family Planning and Environmental Sanitation with Community Organization underlying all the activities. We felt that once the major problem areas have been identified, any particular problem of particular interest could be investigated more in depth. With the second round of this survey completed, and the data analyzed, some of the questions that we now ask ourselves are:

1. To what extent are our activities having any impact on the health attitudes and practices of the populations we are serving? (We try to answer this question, with the full realization that the ultimate success or failure of a health education program is determined by change or lack of change in specific health behaviors that affect health status).
2. To what extent are the time units spent on the various problem areas justified, in view of our survey results.
3. To what extent are the survey data helping us to tailor our activities to the identified needs of our populations?

In short, we would all want to know the extent to which survey data are directing our plans and activities for the future.

Now, let us take a look at some of the results of the 1973, 1974 surveys and see what they implicate for the future.

Refusal Disposal Practices

Figures indicate that between the first and second rounds of the survey, there was an improvement of practices relating to refuse disposal, in Area I, while there was a negative change in Area II. (Refer to Table 2 of Miss Fordjor's presentation.) What does this really mean to the Program? Then from HEA records of efforts we find that the Area II team, for the period July 1973 - June 1974, spent about 50% less time on refuse disposal education. It would be interesting to find out why our HEAs were spending so little time on an area which has been identified as having problems. We are, thus, able to go through the results of reported efforts and relate either change or lack of change with proportion of HEA time spent on the particular content area. Such an approach will help delineate the strengths and weaknesses of our programs in the field, and where changes in approach or emphasis are needed, to suit the village health behavior profiles.

Owing to time limitation, I am going to mention a few other results which one would expect as a result of the Project's efforts. As has been mentioned, vital events registration assistants attempt to record all births and deaths occurring in the Project areas. As of late, changes in procedures have improved their results. However, there are still a high proportion of children whose births are not registered. In fact, according to health practices survey results, the percentage of the number of children birth certificates in Area I and II actually dropped between the 1973 and 1974 surveys as seen in Table 1.

	% > 5's with Birth Certificates	
	<u>1973</u>	<u>1974</u>
Area I	48	45
Area II	42	37

This may well be accounted for by the tremendous in and out movement of the population in the areas, as was pointed out by Dr. Blumenfeld, yesterday. The Health Education Program feels, however, that there is a need for closer cooperation, at least in Areas I and II, between the Vital Events Registration Assistant and the Health Education Assistants. Such cooperation has not existed in the past, simply because the vital events reported by the HEAs were used to cross-checking the accuracy of the work of the VERAs. We suggest the institution of some form of a referral form on which HEAs can enter vital events that come to their notice, so that these forms can be submitted to the VERA.

Responses On Innoculations: The figures for 1974, in both Areas I and II show significant drop, in children having Smallpox and Measles immunization. (Refer to Table 1 of Miss Fordjor's presentation.) This drop may, again, be accounted for by the change in the population base, and the termination of the Mass Measles and Smallpox Immunization Campaign. The case of Area II, where there seem to be decrease in numbers of children having had all

four (4) inoculations, B.C.G., Smallpox, D.P.T. and Measles, presents some questions to us. It is apparently not enough for HEAs to educate mothers on the need to have their children immunized, if the facilities are not available within reasonable distances. The best Health Education can do under such circumstances will be to intensify its motivation work with the Village Leaders as well as the Local Authority in the area. We hope that when these people have become sufficiently motivated, they will demand such services from the Ministry of Health.

Foodstuffs Eaten and/or Used: Figures show increases in numbers of people who reported having eaten or used in cooking, all the food items we questioned them on. At the last, one can say that the women have acquired some knowledge on nutrition from the HEAs. Their responses can be used as basis for a more detailed study into the dietary patterns in the areas. Meanwhile, we plan to develop a better and more organized collaboration between the HEAs in the field and the extension services section of the Ministry of Agriculture. Such an arrangement would make it possible to motivate villagers to not only grow but also use crops with better nutritive value in the family's diet.

Antenatal Care and Delivery: Although the 1974 figures do not show any appreciable changes in the number of children being delivered by trained attendants, we feel this area needs some attention of the HEAs. The field worker who discovers an expectant mother, during her normal duties, refers this mother to a health facility, if the mother has not already sought any such care. The question arises, at least in Area I as to whether the traditional birth attendants have been sufficiently motivated to warrant the HEAs referring cases to them for initial care. Should our goal be to increase the number of pregnant women who are being cared for antenatally and being delivered by western trained staff, or by our trained traditional birth attendants? With a shortage of trained health workers, the latter choice appears the logical one.

Defecation Patterns: This is another area of concern for the Health Education Program, considering the implications that indiscriminate defecation has for health and disease. Changes indicated by the 1974 data are positive in all respects, but could be much better considering the amount of time and energy and the HEAs put into pit latrine construction and education on its proper use and maintenance. Responses on defecation patterns of children of school-going age, showed the least improvement. While we are aware of the possibility that mothers, who in most part respond to this questionnaire, may not know their children's defecation patterns when at school, we still feel this area needs attention. Consequently, we plan to intensify work in the schools, with particular emphasis on environmental sanitation and personal hygiene.

Participation in Group Activities: This is another area for concern. Compared to the efforts, in terms of time and energy, that the HEAs put into community organization, there seems to be little return from that area. It is possible that the questions that are being asked, to elicit people's

level of participation in group processes, are too limiting and therefore do not give the correct picture. This portion of our survey instrument may need revision for future surveys. Nevertheless, the data indicate better community awareness and involvement in Area I than in Area II. This tends to confirm the theory that the availability of the many health care services in Area I tend to increase people's participation in other health-related activities.

Future directions based on Survey Results: Based on the 1974 Health Practices Survey results, the Health Education Program plans to double its efforts in the following areas:

1. Training and effective use of volunteers by Health Education Assistants, to allow for better and more efficient coverage, both geographically and in problem areas.
2. Collaboration and better cooperation with service agencies operating in the area. Such cooperation should be on the policy-making level as well as on the grassroots, operational level. Some of such agencies are the health services, agricultural extension services, rural development, local councils and the teaching services.
3. Focus on problem villages and high-risk members of the community through relevant monthly health education campaigns.

General Program Directions: The Health Education Program has been experimenting with this new cadre of community health worker we have called the HEA. During the past two years we have been trying to find out how much this worker can achieve within reasonable costs. We have emphasized certain programs when the situation demanded, and we have added and subtracted activities whenever necessary. Such fluctuations in the interests and emphasis of the team leaders have always been reflected in the field workers' time allocation to the various problem areas. In short, we have learned how much this worker can achieve and under what circumstances. We have reached a point where we need to stabilize our program coverage, some of our approaches and record systems. The next two years should tell us, in concise terms, the cost effectiveness of our field workers, as well as our field techniques.

The Health Education Component of the Danfa Project is not, however, unaware of the feeling in some medical circles in the African Region that all health workers should be considered as health education workers. In line with this feeling, and to find out how much community as well as clinic based health education Health Center personnel can do, a proportionate number of villages in Area I have been assigned to the Health Center Staff. We are in the process of finalizing and stabilizing the mechanisms through which the expected educational activities can be carried out. It is our hope that by the end of the Project, we would be in a position to at least, compare the relative achievements of the two types of health education workers and say which type has been more cost-effective - all factors considered.

## HEALTH CARE SERVICES IN THE DANFA DISTRICT

Presented by: Dr. F. K. Wurapa and Dr. D. W. Belcher  
Collaborators: Mr. E. K. Andoh, Dr. L. Osei, Dr. S. N. Blumenfeld

### Description of the Danfa District

The Danfa Rural Health Center opened its doors for services in January, 1970. During its first five years of operation, a shift from a static curative program to more comprehensive health care has been accomplished. These services have been designed to meet the needs of the district which is characterized by a young population scattered over a large area with poor transportation facilities.

Table 1. Characteristics of the Danfa Health District

District population, 1974	15,931
Population density	245/square mile
Number of villages	61
Catchment area population	40,000+
Age distribution	18.0% below 5; 48.7% below 15; median age: 17 years
Occupation	Two-thirds are subsistence farmers
Education	Two-thirds of adults have no education
Annual rainfall	40 inches; peak rains occur in June
Transportation	2 major roads; lorries are available only in early A.M. and late afternoon
Health facilities -	
District	Health Center and 3 weekly satellite clinics
Referral	Tetteh Quarshie Hospital, Mampong Korle-Bu Hospital, Accra

In late 1970 mapping and house numbering were done in the district. Beginning in 1971, the Danfa Project has conducted an annual household census. 34% of the district population live within 4 miles of the health center.

### The Danfa Rural Health Center

The health workers comprising the health center staff are similar in type and number to those staffing rural health centers throughout Ghana.

Table 2. Danfa Health Center Personnel

1. Resident	Health center superintendent	1
	Midwife	2
	Community health nurse	2
	Enrolled nurse	1
	Midwifery aide	2
	Sanitarian assistant	1
	Records clerk	1
	Laboratory assistant	1
	Dispensary assistant	1
	Driver	2
Maintenance	6	
2. Part-Time	Medical officer	1

The background qualifications, training courses and task assignments for these personnel are described in the report on Health Center Job Description (1971) of the Department of Community Health.

In the first 18 months of health center operation, almost all staff activities were located at the health center site.

Table 3. Danfa Health Center Program, 1970-71

CLINIC PROGRAMS	<u>Frequency/Week</u>	<u>Staff</u>
1. General medical	Daily	H.C. Superintendent
2. Maternal	2 mornings	Midwives & aides
3. Child welfare	1 morning	Community health nurses
COMMUNITY PROGRAMS		
1. Home visits	As indicated	Community health nurse
2. Postnatal visits	After delivery	Midwives & aides
3. Environmental health	Continuous	Sanitarian

All sick patients were examined by the health center superintendent. The maternal-child health services were fragmented into separate clinics held on different days, so that several trips to the clinic were required to obtain comprehensive care.

Initially, health services research focused on the operations at the health center to improve its functioning and to exploit the available resources. Functional analysis studies done in 1971 (Ghana Med. J. 7:266-73, 1972) showed that:

1. 34% of all patients were below 5; 61% were under 15 years
2. The disease pattern was comprised of a small number of disorders; diagnoses were readily made; over 80% were due to communicable diseases;
3. 70% of all persons attending the health center lived within 3 miles.

After reviewing the patient/disease profile, timed patient-flow studies were conducted to identify unnecessary service delays. In addition, work sampling and task analysis was done to clarify staff activities and work patterns. These revealed extended waiting periods with excessive delays at the history-taking and examination stations, where all patients were funnelled through a single worker.

Table 4. Danfa Patient Time Spent at Various Clinic Stations - 1971

STATION	TIME (in minutes)		
	<u>Waiting</u>	<u>Service</u>	<u>Total</u>
1. Registration	44	2	46
2. History	62	4	66
3. Examination	94	4	98
4. Laboratory	36	4	40
5. Treatment room	38	5	43
6. Dispensary	25	18	43

In addition to the cost in time for the patient (an average patient spent 4 hours at the health center and another 2 hours in travelling) these studies revealed that there was a marked inequality in patient workload among the clinical staff. Several staff members were working about one-third of the day, while others had heavy patient loads.

The outcome of these studies was a reorganization of the clinic, with expanded patient management roles for midwives and community health nurses, initiation of a daily MCH program, prepackaging of drugs, and a program of in-service training specifically related to detailed job descriptions.

Recent health center service data show a similarly young patient population with its predominantly communicable disease problem. In 1974, 35.8% (13,272/37,0578) of all attendances were made by children below 5 years, although they comprise only 18% of the population. Preventable communicable diseases continue to drain the time and efforts expended for curative services at the health center.

Table 5. Pattern of Diseases Encountered at Danfa Clinics

CONDITIONS	1973 - 1974	
	Percent Distribution of All Visits	
	<u>Health Center, 1973</u>	<u>All Clinics, 1974</u>
	(N=15,927)	(N=37,058)
Malaria	32.4	31.2
P.U.O.	3.9	10.0
Respiratory Infections	14.8	9.0
Diarrhea	7.0	6.6
Intestinal parasites	5.0	3.6
Skin infections	4.9	5.2
Other conditions	32.0	34.4
Total	100.0	100.0

Extension of Health Care into the District

After reorganization of the health center, efforts were made to distribute health services more equitably throughout the district. A greater emphasis has been directed towards preventive services.

The baseline health center functional analysis showed that the clinic was serving only a small area adjacent to the facility - the barrier to use of services was distance and the lack of adequate transportation. Preventive activities were affected even more than curative services: only 10% of pre-school children had been immunized by the health center, and regular attenders at the child welfare clinic lived within a 1 mile radius. To improve the geographic coverage of the district, two weekly satellite clinics were begun in June, 1972, and a third in April, 1973.

The satellite clinic program has had a remarkable impact on patient visits and access to health services. The total patient volume has doubled: in 1974, 53.2% (19,732/37,058) of all patient visits were made to satellite clinics. The percentage of population living within 4 miles distance of a clinic rose from 34% to 85% after starting the satellite clinic program.

Concern about non-users of health services was the motive behind the development of outreach clinic programs, but these appear to have had little effect so far on the factors underlying the disease pattern. Medical care has only a modest role in health status - clearly, healthful behavior and improved living conditions will be far more critical if the burden of preventable diseases are to be reduced.

Increased efforts have been made during the past two years to gain community participation in their health program. Some of this has been accomplished through innovative use of village manpower resources.

Table 6. Extension of District Health Services, Danfa District - 1970-1974

<u>MAJOR HEALTH PROBLEM</u>	<u>APPROACHES USED</u>	<u>NON-H.C. MANPOWER</u>
1. Preventable communicable diseases		
a. Malaria	Epidemiologic studies to identify groups at greatest risk and transmission period	Prophylactic tablet distribution by village volunteers and teachers
b. Immunization (measles, polio, pertussis, etc.)	Establish baseline prevalence and age of onset; determine seasonality to time vaccinations and health education	Village volunteers to inform and mobilize their communities for mass vaccination campaign; participation of Accra M.F.U. in conducting mass campaign
c. Tuberculosis	Survey to determine age-specific conversion rates	Mass campaign involving village volunteers and M.F.U.
2. Malnutrition	Screening preschool children for low weight/age and low arm circumference	Village volunteers; students
3. Inadequate prenatal care	Identify and contact traditional birth attendants; set up training programs	Traditional birth attendants
4. Environmental hazards to health		
a. Sanitation	Community mobilization	Village Health Committees; village volunteers
b. Water sources	Epidemiology and agricultural impact of guinea worm disease in adult farmers; KAP on guinea worm	Villagers; Institute of Aquatic Biology, Achimota
5. Close birth intervals, high parity	Family planning advice and services	Traditional birth attendants
6. Poor access to health services	Satellite clinics; contraceptive depots in village	Volunteer worker at clinic; volunteer community distributor

Several of these programs have gotten off to an excellent start. Continued success will be based upon our efforts to work more closely with the health center staff - in training, encouragement, motivation and supervision - and in gaining increased community participation in resolving their own health problems.

## COSTS IN THE DELIVERY OF COMPREHENSIVE HEALTH CARE

Presented by: Dr. S. N. Blumenfeld

Collaborators: Mr. E. K. Andoh  
Dr. F. K. Wurapa  
Dr. L. Osei  
Dr. D. W. Belcher

The past year has been one of sharply rising prices for all things the world over. This trend is amply demonstrated in the cost of health care in Area I of the Danfa Project. The government granted large increases in pay to all its employees and the result was a 72% rise in personnel costs at the Danfa Rural Health Center (for the same staffing level) over 1973. The cost of drugs and medical supplies shot up 2.7 - fold over the previous years, part of the rise being attributable to a 28% increase in the number of patients seen this year versus last, part to spectacular jumps in prices of goods paid by the Ministry of Health (which in turn is due in part to higher material costs and in part to very heavy increases in freight charges), and part to unusually large increases in the quantities dispensed of certain drugs. In particular, the use of antimalarials was very high, accounting in fact for 27% of the cost of all drugs and medical supplies dispensed last year. Non-medical supplies and maintenance costs (exclusive of wages for maintenance staff at the health center) were about the same as last year, while the cost of operating the health center's two vehicles rose 76%. The latter increase is due partly to a 70% rise in the cost of gasoline which occurred in December 1973 and partly to higher repair charges. (Note: In the report on 1973 costs, the cost of transport was shown as ₦658; this was an error; the figure should have been ₦2,658.) The total cost for operating the Danfa Rural Health Center and its satellites in 1974 came to ₦74,440, or 93% more than the previous year.

The operating cost per patient visit to health center and satellites was ₦2.01, 62% more than in 1973. The cost per person residing in Area I was ₦4.67, 93% more than last year. It should be recalled from previous discussions (particularly last year, when data were presented in detail) that the health center and satellites are actually accessible only to about 85% of the population of Area I, and on this basis the cost of operations per accessible person is ₦5.50, some 98% more than last year. It will also be recalled from data presented last year that the health center and satellites, particularly Oyibi, are regularly used by certain villages which are outside the boundaries of Area I. Adding 5500 people of these villages to our estimated accessible population, we obtain a per capita cost for health center operations of ₦3.97, 100% more than in 1973.

Table 1: Operating Costs of Health Center and Satellites, 1974

Staff	32,503
Drugs/Medical Supplies	32,676
Non-Medical Supplies and Maintenance	4,592
Transport	4,669
	Ø74,440
<u>Cost Per Patient Visit:</u>	74,440/36,955 = Ø2.01
<u>Cost Per Person in Area I:</u>	74,440/15,931 = Ø4.67
<u>Cost Per Accessible Person in Area I (85%):</u>	Ø5.50
<u>Cost Per Accessible Person in Area I (Augmented):</u>	Ø3.97

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Table 1 summarizes all the above-noted costs. It is to be emphasized that these costs apply explicitly to annual operating expense only. None of the development costs of the health center or its staff are included, that is, no amortization of the health center structural complex and no cost of the primary training of staff. A certain amount of in-service training of staff is implied in the 10% of the medical officer's time which is included in staff costs. The health center transport cost does include depreciation of the vehicles because it is felt that, in contrast to the life expectancy of the health center buildings, the vehicles are relatively short-lived (in this case, a straight line depreciation over 8 years has been taken). One cost which could be taken into account when annual operating costs are calculated is the value of volunteer time. At each of the satellite clinics, 2 to 3 local volunteers help out, keeping order, locating patients, carrying records and messages, etc. Usually, these are schoolchildren or young adults who have little else to do. The real value of their time is thus somewhat questionable, but it is assumed that the clinic would not function quite as efficiently without them. At the present rate for a laborer of Ø2 per day, the value of 3 volunteers per clinic would come to Ø468 per annum, or an increase in staff costs of 1.4%, an overall increase of 0.6%.

Table 2 shows the 1974 per capita operating cost for the various health services being provided in Area I. Figures are shown for two separate assumptions concerning the population, i.e., for two different denominators. The lower set uses the entire population of Area I as a denominator, while the higher set use only that proportion of the population

Table 2: Per Capita Cost of Comprehensive Service in Area I

	<u>Total Population</u>	<u>Accessible Population</u>
Health Center/Satellites	¢ 4.67	¢ 5.50
Family Planning	0.46	0.66
Health Education	0.62	0.94
Antimalaria Campaign	0.10	0.11
Immunization Campaign	0.21	0.23
Miscellaneous (Est.)	0.10	0.12
	<hr/>	<hr/>
	¢6.16	¢7.56

which is estimated to actually find the various services reasonably accessible. In the case of the health center and satellites, this is estimated to be 85%; in the case of the family planning program, it is 70%, and in the case of the health education program, it is 66%. The antimalaria and immunization campaigns are presumed to have reached 87% and 90% of their target populations. One cost which is not shown is that incurred by hospitals on behalf of referred Danfa patients; at this time, these costs are unknown. Also unknown is the number of area patients -- and attendant costs -- who present themselves directly to a hospital or clinic outside the Project area without being referred from Project facilities. As before, Table 2 takes into consideration operating costs only.

Since one of the constraints under which the Danfa Project operates is that it must provide services which are replicable in, among other criteria, cost in the near future in Ghana, it would be useful to be able to compare the costs shown in Table 2 with similar data for the nation generally. Unfortunately, comparable data do not yet exist. The best we can do is generate an estimate based on the current (fiscal '75) budget of the Ministry of Health. Relevant budget items are: Medical Care (¢14,200,000), MCH Services (1,500,000), Nutrition Services (500,000), and Drugs and Supplies (20,000,000); a total of ¢36,200,000.

Omitted from consideration are all general services of the Ministry, dental services, environmental health services, the epidemiologic unit, and mental health services, plus all expenses for the Korle Bu complex. In other words, only 53% of the ¢68,943,000 operating budget is included. The next question is that of denominator. The simplest approach would be

to take the whole population; we would consider this a gross oversimplification since from our own experience with the outreach of the Danfa Rural Health Center, we are well aware that the totality of the rural population is not served. A more reasonable estimate might be produced by assuming that 100% of the urban population of the country has access to government services and then estimating the rural population which might be considered to have genuine access to government health services.

The 1970 National Census found the population to be some 8.5 million. At an average annual growth rate of 2.4% (the rate from 1960 to 1970), the 1974 population should be about 9.4 million. In 1960, 24% of the population lived in urban areas (defined as towns of 5,000 or more). Although urban/rural data are not yet published from the 1970 census, given the known trend toward urbanization, it may well be that 35% of the Ghanaian population lives in urban areas now. (This would make some 3.3 million people.) More difficult to answer is the number of people who might feasibly be considered as being served by the rural health care system. One way to estimate this would be to estimate the population which could be served by the approximately 90 rural health centers and posts now or soon to be in operation.

How many people could these serve? The Danfa Rural Health Center is considered to serve about 20,000 people (85% of Area I plus about 6,000 more outside the area). These 20,000 people generated 37,000 patient visits, or about two visits per person. In a 1972 study of five health centers and posts in the Central and Eastern Regions, we found an average annual load of 51,000 visits. From this admittedly small sample (at that time there were 51 health centers and posts in operation in the country), we would estimate that each center or post might be serving on the average about 30,000 people, perhaps even 35,000. This would yield about 3.2 million people in the rural area, making, together with the urban populace, about 6.5 million people being served for the ₵36,200,000 proposed in the current operating budget. Our admittedly rough estimate of nationwide per capita costs thus comes to ₵5.57 as an absolute minimum. In comparing this to the figures shown in Table 2, one should subtract from the latter the costs of the health education and family planning programs to make them comparable. And in fact, when comparing the ₵5.57 to the "accessible population" figure in Table 2, one really should change the health center/satellite cost from ₵5.50 to ₵3.97, since that reflects the actual number of people the system services.

What all of the preceding comes down to is that we believe that the health care system in Area I is operating at a cost well within the range of present national costs, most probably on the low side of the range. Comparisons in the quality of care being purchased in Area I versus that on a nationwide average are not within the domain of this discussion.

## THE VOLUNTEER SERVICE IN THE DANFA RURAL HEALTH PROGRAM

Presented by: Mrs. E.M. Asante  
Collaborators: Dr. D. Nicholas, Mrs. M. B. Amoonoo-Acquah,  
Miss M. Hosu-Porbley, Mrs. M. Pappoe, Mr. W. B. Ward

Since the Project was started, it has been possible to identify and recruit individuals from the villages to help with various aspects of the work. These individuals have always worked without a remuneration.

Even before the project got under way, there were volunteers already doing various jobs in the villages. These volunteers worked through the Area Representative Committees. It was therefore not very difficult to get them to help in the actual construction of the center, e.g.

- a) Clearing of the land
- b) Pegging
- c) Digging of foundation trenches etc.

At the conclusion of the building, a new type of volunteer was recruited to work in fields other than those mentioned above. It might be asked why volunteers are needed at all in the project. The answer to this question is the following:

In Ghana and indeed in most black African countries, trained personnel is expensive and a rather scarce commodity by which to come. The idea is to run the project efficiently and yet as cheaply as possible. It was, therefore, thought that if the village folk could be trained to help in even a limited area, half the battle could be won. Secondly, it is the intention of the organizers of the project to get as much participation as possible from the villagers - the beneficiaries of the project. This, of course, is well in line with the idea of self-reliance. Thirdly, in areas like health education, nutrition and others, an enthusiastic and trusted village volunteer could be sometimes more effective than a trained health worker.

### Types of Volunteers

At present, volunteers have been used in the following sectors:

1. The Traditional Birth Attendant's Program
2. The Malaria Program
3. The Family Planning Program
4. The Mass Immunization Program
5. The School Health Program
6. The Health Education Program
7. The M.C.H. Program and
8. The Women's Group

Some of these groups are recruited for specific and temporary programs only.

### The Traditional Birth Attendants' Program

This is a permanent program. The traditional birth attendants after identification and registration, are trained. So far this has been limited to Area I. The training program takes three months of fortnightly lectures. It must be remembered that the traditional birth attendants are already practicing midwifery in the villages and the effort being made is to improve their skill especially in the fields of hygiene and asepsis. The idea is not to interfere too much in their methods unless it is absolutely necessary to do so. They are truly volunteers as they have been working in the villages for years without any remuneration. If a client, on the other hand, feels like "thanking" them for services rendered, naturally they accept. Some of them also do family planning motivation free of charge.

### The Malaria Program

This is a periodic program. Volunteers are recruited and trained. They are then used when the malaria immunization program is in progress. The volunteers also distribute malaria prophylaxis tablets to mothers for use by their children. In 1973, there were 10 volunteers for the under fives and 24 for children 6-10 years.

In 1974, there were 23 volunteers for the under 5 and 24 for the 6-10 years. Most of these volunteers are school teachers.

### The Immunization Program

This is also a short-term program. Volunteers are identified, selected and trained for the job in hand. They then help during the campaign. Since the immunization program usually takes place in the schools, teachers willingly volunteer to help with the program. A volunteer is needed:

(1) To inform the community of the program. (2) To get the community together at the chosen center at the right time. (3) to arrange the clients in the right age groups. (4) to prepare them for the immunization, and to (5) help fill in the cards. Usually the teachers partly fill in the cards of the school children before they get to the center for the immunization.

### The School Health Program

This is a program that goes on the whole year. It takes the form of hygiene inspection and health education. The volunteers in this field are the school teachers. They get the children ready for the inspection and help in the health education. They are supervised by community and Public Health Nurses.

### The Health Education Program

At the beginning of the project, volunteers were recruited by the H.E.A.'s with the help of the village chiefs to help in assessing the resources and basic amenities of the villages. As time went on, the H.E.A.'s

recruited their own volunteers to replace those nominated by the chiefs. Care was taken, however, to see that these volunteers were acceptable to the community. Some of the fields in which they have helped are (1) motivation of the community for various health activities, (2) assisting the H.E.A.'s to make easy entry into the houses and (3) carrying on simple activities in the absence of the H.E.A.'s.

To help the efficient running of the H.E. Program, the H.E.A.'s also work with the Women's Group and the Village Health Committees.

More recently, the Health Education Program has been making use of another group of volunteers. These volunteers are recruited and given a two-day training in weighing and child management. Their duties are to help the H.E.A.'s in their monthly weighing sessions of children under 5.

#### The Women's Group

This is not a voluntary organization as such. On the other hand, out of the ranks of the Women's Group, some people could be identified to do voluntary work. As it stands, the only person who could be called a volunteer in the Group is the Leader. She works tirelessly to organize the women in various ways, e.g., (1) getting them together for meetings (the meet once a month or, in some cases, once a fortnight), (2) seeing to it that materials are ready for demonstration and teaching (3) organizing the women to get the meeting place prepared, etc.

#### Future Programs

In the past, volunteers have been identified and used as the need arose. Volunteers were also used for specific programs. In the future, it is envisaged that volunteers will be identified, selected and trained to be multipurpose. A volunteer will be used not for the one program but where possible for two or three programs. For example a child health volunteer or a traditional birth attendant could also help in the malaria program, the immunization program and or the family planning program.

In order to make this more efficient, a committee has been formed to look into the whole volunteer set-up. The committee has met and has come up with recommendations as to how the system could be streamlined.

#### Recruitment

It was decided that volunteers could be identified by H.E.A.'s and Village Development Committees where there are no H.E.A.'s, the identification will be done by the Village Development Committees. In the field of family planning, a volunteer will be recruited by H.E.A.'s in Area I and II and by a Special Field Worker in Area III.

### Training

All volunteers will be trained where necessary to do the work expected of them as efficiently as possible.

### Incentives

The question of what incentives should be given has not yet been resolved. The subject is, however, receiving very serious consideration. It is sometimes difficult to find somebody willing to do something for nothing over a long period. Some of the volunteers sometimes expect payment and this leads to their services being dispensed with as they then fail to be volunteers. It is, however, obvious that some sort of "encouragement" be given to those who offer their services.

### Supervision

The supervision of the volunteers will be coordinated. The H.E.A.'s will supervise the volunteers in their cluster of villages and the Health Center Staff will supervise those in the villages in which they work. In Family Planning, where there is no H.E.A., the Special Field Worker will do the supervision. Overall supervision will be done by a Public Health Nurse. There will, however, be no change in the supervision of the T.B.A.'s.

It is also envisaged that in the future, first aid work will be added to the activities of the volunteers. It is hoped that from the volunteers already identified, some will be selected and trained to do first aid in the various villages. They will be given simple equipment for the work they have to do. The supervision here will be the same as in the case of other volunteers.

Finally, the picture that it is hoped will emerge is something like this. A village with an active Women's Group where the women manage their homes well and feed their children properly. A village where the Health and Development Committees are functioning well. A village with a T.B.A. and a Child Health Volunteer who are also useful in other fields. A village where first aid could be given efficiently and without difficulty. In short an active, enthusiastic, efficient and healthy village!!

## PROGRESS REPORT ON SOCIO-ECONOMIC STUDIES

Presented by: Dr. Roger Selley  
Collaborators: Mr. J. Felder, Mr. K. Asote Yeboah,  
Mr. H. Joelson, Mr. K. Morson, Mr. A. Arthur

Danfa Project records suggest that there are significant differences in the rates of acceptance of family planning methods between the four treatment areas. Project staff have also noted differences, however, in the characteristics of the people and their environs both within and between treatment areas. The question naturally arises therefore: What differences in family planning and health related behavior can be properly attributed to variation in project inputs and to what extent are these differences due to non-project related variables? The answer to this question will clearly affect the interpretation of the results realized in each of the treatment areas.

Danfa project staff had considered carrying out socio-economic studies in connection with the first longitudinal survey in anticipation of socio-economic differences between the treatment areas. I am told it was decided to delay such studies for some time in a desire to establish rapport with the population before seeking what was felt to be more sensitive information and this concern was apparently reinforced by the current discussions of tax collection efforts by the government. I provide this historical note only to emphasize that the problems discussed here have long been recognized by the project staff.

The Institute of Statistical, Social and Economic Research, ISSER, at the University of Ghana was approached nearly two years ago to prepare a research proposal to study the effects of social-economic variables and Danfa project inputs upon health and family planning behavior in the Danfa project area. A final draft of this proposal was completed in collaboration with Danfa project staff in July 1974. Preparation had already begun by that time on the second longitudinal survey and ISSER staff designed survey instruments on socio-economic characteristics and collaborated with Danfa project staff in the preparation of a family planning follow-up survey and in the re-design of a morbidity experience questionnaire. At the time of this review meeting, the family planning follow-up survey has been completed (Dr. Nicholas has already reported on a partial analysis of that data) and the collection of the longitudinal survey data is near completion.

It is anticipated that all of the data to be analyzed will be available in July 1975 and it is hoped that ISSER can complete the analysis as has proposed by January 1976.

ISSER has four graduate research assistants who are pursuing their MSC thesis in economics under my supervision on topics that have been identified in the research proposal submitted to the Ghana Medical School. Efforts are being made to involve university staff members outside ISSER in the analysis of the socio-economic data as well.

The main hypotheses which are to be explored in the socio-economic studies involve the role of socio-economic characteristics of the project area population and project inputs in determining:

- (1) family planning knowledge,
- (2) birth control practice,
- (3) birth control use effectiveness,
- (4) health knowledge,
- (5) health practices and
- (6) morbidity.

As already indicated the primary motivation for this research is to isolate the effect of project inputs upon family planning and health related behavior. The approach that will be taken is to first investigate whether significant socio-economic differences exist between the four project treatment areas. The question will then be explored as to whether those differences that do exist in fact have any influence upon family planning and health related behavior.

I will not attempt to go into detail on the methodology here. I should note that as economists (we so far have been unsuccessful in drawing any sociologists into our work) we have somewhat naturally been led to develop models which assume that individuals are rational and they seek to maximize the welfare of their family subject to the social and economic factors which

- (1) help determine the social acceptability of various actions,
- (2) limit the range of choices and
- (3) contribute to a lack of knowledge of casual relationships and of options available.

These models will be used to test the relationship between the choices made by individuals, and their socio-economic characteristics and their environment. We include in environment the effects of project efforts upon the availability of information, of services, and of equipment, e.g. birth control devices. An attempt has been made to include the major hypotheses that are found in the literature, for example, the practice of family planning is hypothesized to be a function of

- (1) the knowledge of birth control methods,
- (2) access to family planning advice and devices,
- (3) expected use effectiveness of various methods,
- (4) expected child mortality,
- (5) family size and composition including the educational level of the children,
- (6) the socio-economic status of the family and
- (7) social norms.

It is further hypothesized that the project inputs will have an effect upon the knowledge of birth control methods, access to those methods, expected child mortality and attitudes towards family planning. It is expected that sorting out the role of project inputs and socio-economic characteristics of the population will not only help clarify the benefit of project inputs but this work should also be of assistance in studying the cost effectiveness of the project inputs. It is hoped by the time of the next review meeting we will have a clear picture of the impact of the project inputs upon the project area population's behavior.

## REPORT ON TRADITIONAL BIRTH ATTENDANT'S PROGRAM

Presented by: Prof. D. Ampofo

### Stages of Development

- 1972 - Statement of concepts, goals and objectives on the utilization of TBA's in MCH and Family Planning Services.
- 1973 - Presentation of results of registration, survey, development of curriculum and course content for the training of TBA's.
- 1974 - Presentation of report on the experience gained from the training course given to the first group of TBA's.

### Progress Since 5th Review Meeting

For the purpose of training the TBA's, the villages in Area I were grouped into four clusters. Only one cluster has had its training at the time of the last review meeting. Since then the remaining three clusters have been trained, the last two of which passed out last month.

Out of the total number of 68 TBA's enumerated in Area I, 57 participated and completed the training; 24 of which were males and 33 females. Eleven TBA's did not take part in the training program.

### Monitoring the Activities of Trained TBA's

The TBA's of the first two clusters were visited by either the MCH Nursing Staff or the HEA's fortnightly. At each visit, problems of delivery, number of deliveries performed and supply position of contents of midwifery kits were ascertained. Mothers and babies were visited in their houses and advice given on MCH clinic attendance, etc. For easy compilation of records, a special form has been devised for the HEA's and the MCH nurses to be completed on each visit. The MCH nurses are expected to give a report at staff meetings every 2 or 3 months on the performance of the trained TBA's.

### Evaluation of Performance

The following is the evaluation of the 30 TBA's trained by June 1974 (May 1974 - January 1975 (9 months))

No. of Pre-natal visits rendered	-	107
No. of routine prenatals referred	-	85
No. of Pre-natal problems referred	-	5
No. of delivered	-	68
No. of delivery problems referred	-	2

No. of postpartum visits rendered	-	61
No. of postpartum referred	-	1
No. of cord pack replacement	-	63
No. of FP Acceptors recruited	-	19

### Study of 'Arts and Science' of TBA's

During each training course at least one training session is devoted to discussion and demonstration of the practice of traditional midwifery.

### Objectives of Study

1. To find out how the TBA establishes rapport with his patient.
2. To ascertain how a pregnant woman seeking prenatal care is examined.
3. To study the purpose of the examination procedure and how findings are interpreted.
4. To ascertain how women in labor are prepared for delivery; the position for delivery and the conduct of delivery.
5. To find out how complications of pregnancy, delivery and the third stage of labor are dealt with.
6. To show the TBA the important points relied on during antenatal care in the hospital setting.

At that session the TBA's were told that the Danfa Staff wished to learn of the methods they used to care for their patients in the antenatal period and during labor. Each TBA was asked to say how he or she handles antenatal care and deliveries. In return, the important signs looked for in hospital antenatal care were explained to them.

### Findings of Study

#### I. Reception and History Taking

In the course of the study it was found that the majority of TBA's prayed to God before they started consultation. The patient was asked to tell the duration of the pregnancy, then specific enquiries about abdominal pains, dizziness, malaise and headache were made. Only one TBA enquired about previous obstetric history. None enquired about edema of legs.

#### II. Examination Procedures

A prayer was again said before the hands were placed on the patient's abdomen. This practice was common to the male TBA's. The majority examined their patients in the standing position. Most TBA's from Berekuso area faced their patients during examination while those in the Oyibi cluster examined the patient from the patient's back. Both hands were placed on the flanks of the abdomen, then the uterus was lifted and shaken. There was then a pause of a few seconds for the fetal movement

to be felt. The hands were then shifted to the lower abdomen and the procedure repeated. The same was done at the fundus of the uterus. Another maneuver which some carried out was to press the uterus against the great vessels of the posterior abdominal wall about the level of the umbilicus and then transmitted pulsation was registered. By these maneuvers and examination techniques, the TBA's claimed that they were able to establish the following:

- (a) Whether the baby was strong or not.
- (b) Whether the baby had turned or not.
- (c) Whether the baby was lying in a good position or not.
- (d) Whether the patient was in labor or not.
- (e) From maternal complaints they were able to tell whether the pregnant woman was well or ill, if ill, the type of medicine to be given would be known.

#### Uncertainties of their Methods

The TBA's were not able to estimate the maturity of a pregnancy or to establish the number of babies present in the uterus. The impression given was that all that the patient was interested in knowing was whether labor was imminent or not. When asked to show where the head was, they invariably pointed to the fundus of the uterus. The TBA's had implicit faith in the herbs they administered for complications of pregnancy, labor and the puerperium.

#### Hospital Practice

At one of the training sessions, a pregnant woman was used for demonstration in hospital examination. After each TBA had demonstrated his or her examination technique, the obstetrician examined the patient's abdomen and while making each TBA palpate for the position of the head, he laid stress on establishing the maturity, near term, presentation and the fetal heart sound. The sonicaid machine was then placed on the abdomen to magnify the fetal heart beat for all to hear. This convinced them that it was possible to hear the fetal heart beat before the baby was born. They were advised to listen to the heart beat by applying the ear directly to the abdomen.

#### Conduct of Delivery

No definite attention was paid in the first stage, if progress was satisfactory; otherwise potions and medicines were given to stimulate contractions.

#### Position of Patient During Delivery

The majority of TBA's made their patients squat over a stool. The patient was then held from behind with both hands on the fundus of the uterus. In the second stage of labor, pressure was exerted on the fundus while the patient strained and the baby was born onto a piece of cloth on the floor or a helper caught the baby as it was being born.

The TBA's from the Berekuso area demonstrated how they performed deliveries with the patient facing them. The patient squatted while the TBA stretched his hands to receive the baby at the perineum as it was being born. One TBA sat on the floor, stretched his legs and asked the patient to squat over his legs. He then stretched his hands to receive the baby. When asked how he felt after the delivery all smeared with blood, liquor, etc. he replied that he considered delivery a serious obligation and after each delivery he lost appetite and drank a lot for three days. Only one TBA said he performed vaginal examination to ascertain the progress of labor.

#### Cutting of Cord

The umbilical cord was not cut until the placenta has been expelled. A few of them would in addition wait till the baby cried before the cord was cut.

#### Beliefs and Claims

The TBA's believe that the fetus assumes a sitting position in the uterus with the placenta as its cushion. Just before labor the fetus moves away from the placenta and somersaults into cephalic presentation. The majority claimed that they could turn the fetus into cephalic presentation during labor. Two of them claimed that they could massage the abdomen in the antenatal period, to turn the fetus into a favorable position.

#### Bag of Waters

It is a common belief among the TBA's that the bag of waters which form during pregnancy is an obstruction during labor and this calls for taking of special potions and rupturing of the membranes at all cost.

#### Detection of Polyhydramnios

It was found out during the study that to detect excess of amniotic fluid, the uterus was shaken in the four quadrants. When a gurgling sound was heard it was a sign that hydramnios was present. Herbs were available which when taken would cause vomiting, diarrhoea and frequency of the micturition. This the TBA's believed would drain the excess fluid.

#### Superstition

The findings of the study revealed that most TBA's, especially those who were herbalists as well, felt the community regarded them with mixed feelings; that they could render useful service to the community, but at the same time, some of them could harm the baby in the uterus or in the neonatal period by the use of evil charms which caused illness. Usually, the same TBA who could harm the baby also had the antidote to counteract the evil charms from elsewhere. On investigating the illness which the TBA was capable of inflicting, it was found that they referred to a disease entity called "asram". Apparently the name is given to

a syndrome complex in which the baby might die in utero or fail to thrive in the neonatal period; or any illness which causes neonatal death.

On account of this mixture of admiration and suspicion, the TBA's especially those who were herbalists as well- were not expected to motivate pregnant women to come to them for examination and advice. Such a move might be misinterpreted as undue interest in the the pregnant woman, with an evil ulterior motive in mind.

### Indigenous Medicine

Herbs, roots or barks of plants are boiled, given as enema and as inoculation to treat complication and illness associated with pregnancy.

At the end of the study session one TBA presented in private six kinds of herbs, roots and barks of plants which could be used to treat illness in the prenatal, labor and the puerperium. Of particular interest was a piece of bark which could be chewed with salt to stimulate labor. All these plants have been sent to the Center for Plant Medicine at Mampong-Akwpm for identification and analysis.

### CLOSING REMARKS

Presented by: Dr. S. Ofosu-Amaah

The past year has been eventful in many ways for the Project, and we have had many Important visitors. First, there was the visit of the Commissioner for Economic Planning, Lt. Col. B.A. Felli with the Minister for Economic Planning of the Republic of Sierra Leone, on February 21, 1975. Both of them were most interested in the Traditional Birth Attendant program, and hoped that it would be replicated rapidly in this country. They also expressed interest in the use of existing community buildings as health delivery stations.

The Commissioner for Health, Lt. Col. A.A. Selormey, also visited the Project the following week. It was significant that he paid two visits to the Project within 3 days, first visiting villages in Area II where the Village Health Survey was in progress, Abokobi in Area I to see the clinic in session and Danfa itself on February 25, 1975.

On his second visit on February 28, he congratulated the traditional birth attendants from the Berekuso and Oyibi Clusters at their passing out ceremony. Col. Selormey showed great interest in everything including our problems and promised to help the Health Center with an ambulance which will be one of the pool in the Greater Accra Region with radio contact to the Ambulance control center in Korle-Bu Teaching Hospital. Also in attendance was Mrs. M. Chinery-Hesse, Principal Secretary, Ministry of Economic Planning who gave out the kits to traditional birth attendants.

The visit of Dr. Halfdan Mahler, W.H.O. Director-General, December 6, 1974 was a memorable occasion. He visited the Oyibi Clinic and Danfa. Then there was a brisk and stimulating seminar, after presentation of aspects of the Project by senior staff. Dr. Mahler was so interested and discussed many aspects of the Project, that it was with great reluctance that he had to leave for another meeting.

This 6th Annual Review Meeting has maintained the great level of interest as previous review meetings. Unfortunately there is never enough time and one could only get a flavor of the many things that we are doing. Sometimes it is wondered whether this is one project or several disparate projects. The Danfa Project is most certainly one Project but with many facets which hang together. The goal has always been to help improve the health services in rural Ghana, partly by developing a learning situation for health workers and by the creation of expertise in Ghanaians in the methods of solving rural health problems.

The Department of Community Health is the main vehicle or instrument of the University of Ghana and Medical School working with the UCLA School of Public Health to achieve the objectives of researching into efficient and realistic ways of giving comprehensive health care in the rural areas of the country, under the Danfa Project.

One of the preconditions for carrying out the Project is the building up of the Department of Community Health. This is where there have been many problems. Firstly, there is the need for more Ghanaians at a high level of training to work in the Project. Otherwise, as the UCLA team phases out, the few Ghanaians in the Department will have to carry impossibly increasing loads if the quality of the research is to be maintained. As a seminal project, the more future leaders of the health services in this country get to know the project and its results intimately, the better will the diffusion of new ideas in rural health around the country take place.

Secondly, there is an acute shortage of space for staff in the Department. We are scattered in three different locations - in the Health Sciences Building, the Medical School Administration Building and in Legon. The U.C.L.A. staff, since 1970, have had their offices in their homes. This unfortunate scattering of senior staff have put a constraint on the interaction among us. Interaction among research workers, is indeed one of the major factors of rewarding and successful group research effort.

The future of the Danfa Project is under careful scrutiny at present. One of the immediate plans would be for an increasing but orderly Ghanaian phase-in in all aspects of the project as the U.C.L.A. team phases out. This will be possible only if the University and the Ministry of Health fulfill the hope of increasing Departmental size.

It is hoped to decrease field activities, while consolidating the crucial areas. A lot more time will be devoted to data analysis - a mounting problem in a situation in which the program of the execution of data collection has been both ambitious and successful. There will be many more publications.

Another area for development is in training. This will mean the training of Ministry of Health staff at all levels. Col. Selormey was most interested in this aspect of the project. I think we are now in a very good position to share experience. We also hope to attract more graduate medical students to Community Health, using the Project as one of the learning situations.

These coming phases of the Project will be as demanding as the previous five years but we hope that the toil of the previous years have given us a firm enough foundation for the realization of the dreams of the originators of the Project.

We hope all those assembled here have enjoyed the Review Meeting. I think all the visitors, Chairmen, participants, the Danfa Research Team, the Medical School Administration for their support and Professor H. Phillips, Vice Dean, most heartily for his interest throughout the Review Meeting.