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**USE OF THE CHILD'S
GROWTH CHART
AS AN EDUCATIONAL TOOL**

USE OF THE CHILD'S GROWTH CHART
AS AN EDUCATIONAL TOOL

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Synectics Corporation takes full responsibility for the data analysis and conclusions and recommendations reported in the following pages. Due to time limitations, this final report was prepared by the Synectics project staff without the benefit of review by the in-country study teams. The interpretations are thus those of the Synectics project staff.

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SECTION I. INTRODUCTION

Background

Studies of the demography of malnutrition over the past twenty years make it abundantly clear that the most severe forms and the bulk of the fatalities are among preschool children. In the lesser developed countries, fatality rates as high as 50 percent within this age group have not been uncommon (King, 1971). It has become increasingly evident that education of mothers, through whom the child's nutritional needs are met or not met, would be a very practical and promising approach to correction of such underlying problems as abrupt or untimely cessation of breast-feeding, feeding of inappropriate weaning foods, maldistribution of foods within the family group, lack of sanitation, and many other problems directly affecting the nutritional well-being and health of the preschool child.

As early as 1955, Dr. Jose Maria Bengoa of the World Health Organization (WHO) suggested the idea of nutritional rehabilitation centers and concurrent education of mothers as a means of health care in lesser developed countries. The concept was well received and the number and types of centers has proliferated--rehabilitation centers, mothercraft centers, under-five clinics, mission health clinics, child welfare clinics, preschool health clinics, SERN centers, etc.

Evaluation of the effectiveness of these centers in the early days was largely limited to testing the mother's knowledge of the material being taught. The inadequacy of this type of evaluation was soon recognized. Knowing appropriate feeding behavior is not evidence of appropriate feeding behavior. Hence, the concept of operational evaluation emerged.

Operational evaluation focused primarily on two observations. The first concerned the adequacy of the day-to-day running of the center--usually accomplished through periodic but unannounced visits from the sponsoring agency to assess general operational aspects. The second concerned the growth response of the child--which, if the mother applied the knowledge gained, would be expected to change dramatically.

As an adjunct to the latter type observations a variety of records for charting growth change for nutrition center clients evolved. Among these charts are: the Mendez-Castellano chart, which incorporates the Gomez classification scheme for levels of malnutrition (Research Corporation, 1970); the Illesha Weight and Health Chart, designed by Dr. David Morley (Agency for International Development, 1968a); and the Agency for International Development's "Child's Health and Weight Record Over First Five Years," which is patterned after Dr. Morley's Illesha chart.

The growth charts were designed to serve three important functions. First, as a screening device for the detection of children at high risk of developing nutrition-related diseases such as protein-calorie malnutrition.

Second, as a means of monitoring the effects of treatment. And, third, it was assumed that aggregate information from multiple charts could be used as indicators of success or failure of applied nutrition programs designed to improve nutritional status of young children of a community (Agency for International Development, 1968b). The latter use implies effects of the charts as educational tools and as a means of influencing parental behavior in relation to child feeding.

Growth charts are currently in fairly wide use in parts of Latin America, Africa, and the Far East. Use evaluation indicates that even the simplest forms of the chart--those including monthly weight and only one or two reference curves--have demonstrated value as diagnostic aids. There is little question, if any, as to their value for tracking individual progress of the preschool child on a sequential basis. Nor is cost a critical concern. The cost directly associated with the chart is negligible, and is more than offset by savings in file space, recording time, search time, and records loss associated with more complex clinical records. Acceptability is not in question, since experience indicates that where the charts have been implemented acceptance by both staff and community is high (Agency for International Development, 1971).

Users have only the highest praise for the growth charts, as exemplified by such comments as: "We have the impression that [the Under Five Clinics in Africa] would not be able to operate a meaningful Child Nutrition Program without this instrument" (Capone, 1971). There have been, however, some questions with respect to the extent of educational utility of the growth charts. Dr. Morley himself has suggested that the symbolism of charting and the two dimensional aspects might present problems in the lesser developed country settings. He points out that his own experience suggests that the majority of the mothers, even with teaching, will have only limited understanding of the movement of the child's weight record along the chart and over time (Morley, 1971).

Dr. Morley's comments are particularly cogent. The primary target audience for the nutrition programs come from the impoverished populations. The mothers are, for the most part, illiterate or with extremely limited education. Their worlds are characterized by poor housing and sanitation. Their understandings of health are often bound up in culture-related myths and mysteries, rather than based on medical knowledge. If under these conditions the growth charts can be effective as educational aids and can lead to significant behavioral change of mothers in the feeding of preschool children, it has yet to be demonstrated.

Objectives

The study reported here assesses the effectiveness of the child's growth chart as an educational tool. It was carried out during the period from June 1976 to June 1978. The assessment had three main objectives:

- ✓ To determine whether use of the growth chart as an educational tool results in any reliably demonstrable benefits to the child.
- ✓ If reliable benefits can be demonstrated, to determine what factors are associated with qualitative and quantitative variation in benefits.
- ✓ To determine the nature of costs invested in educational use of the growth chart and the relationships of investment to the achievement of benefits.

Third World Countries Studied

The selection of sites for conduct of the growth chart study was based upon the expressed interest of key government agencies within the developing countries and results of preliminary site visits to verify the availability of in-country resources to assist in planning and implementation of field work. Two countries were selected by AID: Ghana and Lesotho. Together, these countries are in many ways representative of the continent of Africa. Ghana represents a cross-section of the peoples of West Africa from the Atlantic Coast to the semiarid regions of the Sahel. Lesotho represents the very distinct cultural and ecological zone of Southern Africa.

Illustrative of the differences between the two countries are the contrasting dietary patterns--a difference due partly to climate and partly to culture. Foods common to the respective countries are summarized in Table 1. Tropical foods such as yams, plantain, cassava are basic to the diet of most Ghanaians. In the less populated and arid northern region, rice, maize, and sorghum are used. The staples in the diets of the peoples of Lesotho, the Basotho, are maize, sorghum and wheat. The widespread use of fish products in Ghana is absent in diets for the landlocked people of Lesotho. Milk products commonly available to the people of Lesotho are rare in tropical Ghana. Types of fruits and vegetables available in the two countries are markedly different.

The food availability, educational backgrounds, nutritional status, and economic and cultural characteristic of a country impact on the manner in which a study such as the one reported here can be carried out. They also impact in important ways on interpretation of results. Because of the significant differences between Ghana and Lesotho we have reported the implementation phase of the growth chart study as though it were separate subactivities at the respective study sites. Section III presents the country characteristics, describes how the study was carried out and what results were observed in Ghana. Comparable information for Lesotho is presented in Section IV.

The presentation of separate sections on the two study sites does not imply differences in study objectives nor in the basic methodology employed. The description of the basic methodology is presented in the section which follows. Summary conclusions about the overall study in relation to stated objectives are presented in Section V.

Table 1
Foods Most Commonly Grown in the Study Countries

<u>GHANA LIST</u>	<u>LESOTHO LIST</u>
Bananas	Apples
Cassava	Apricots
Cocoa	Barley
Cocoyams	Beans
Coffee	Beetroot
Copra	Cabbage
Corn (maize)	Carrots
Garden egg	Cherries
Grain (cereal)	Figs
Groundnuts	Lentils
Guinea Corn	Maize
Kola Nuts	Oats
Millet	Onions
Oranges (or other citrus)	Oranges
Palm Nuts	Peaches
Pawpaw	Pears
Peas	Peas
Peppers	Plums
Plantain	Potatoes
Pineapples	Pumpkins
Rice	Quinces
Shallots	Sorghum
Sorghum	Spinach
Soya Beans	Tomatoes
Sugar Cane	Turnips
Sweet Potatoes	Vines (grapes, etc.)
Tomatoes	Watermelon
Yams	Wheat

SECTION II. DESCRIPTION OF THE METHODOLOGY

Successful completion of any project in a developing country is highly dependent upon acceptance and cooperation by the country nationals. The Agency's specifications for this particular pilot effort, the level of project funding--as well as the need for acceptance and cooperation of the country nationals--dictated maximum participation by on-site teams of country nationals. Thus, while the methodology was initially designed by Synectics, the methodology eventually implemented was the result of joint efforts by in-country teams and the Synectics project staff.

During initial visits to Ghana and Lesotho, in-country teams of personnel drawn from ministries and voluntary agencies concerned with nutrition and health were organized. The draft methodology was subjected to in-depth discussion and its feasibility scrubbed against information about country resources and constraints, problems of transportation, the availability of qualified field workers, and probable costs for obtaining reliable data. Data forms were subjected to pretest and adjusted to insure maximum possible ease of response. The methodology as described in this section is that applied in Ghana and Lesotho. Variations associated with country conditions are discussed in Sections III and IV.

Synectics study personnel provided orientation and training for the data collection activities and limited on-site technical assistance during and following the respective measurement periods. The actual implementation of the methodology in Ghana and Lesotho, however, was carried out by the in-country teams of nationals.

The Basic Study Design

The basic design used in the study represents a case-study-like approach, as opposed to experimentation or quasi-experimentation. No hypotheses were set forth. No control groups were used. No attempt was made to "engineer" ways in which the growth chart was used or how and what nutrition education was carried out. Rather, the main thrust of the study was to evaluate the impact of the growth chart usage as it occurred naturally. Examples of constraints which underly this choice of design include: any engineering of the manner in which the growth chart is used would be too costly and disruptive of program activities; monitoring to insure compliance with special instructions for use of the growth chart would not be feasible with resources available to the study; the very nature of the preschool clinic setting precludes random assignment of treatment among participants, etc. It was, of course, recognized from the outset that the choice of a case-study-like design implies that distinctions among different growth chart uses cannot be as clear and efficient for evaluation purposes as they might have been if engineering of usage and random assignment of cases were feasible.

Sample Size and Selection Processes

The basic design prescribed up to ten program elements (clinics, centers, etc.) in each of the two countries, for a total of twenty program elements; and, up to 200 mother/child combinations at each of the twenty sites, for a total of up to 4,000 mother/child combinations. Selection of the program elements to be included in the study was made jointly by the in-country teams and the Synectics project staff, from a comprehensive and annotated roster of available program elements. Principal criteria guiding the selection included:

- ✓ Provision of health services for preschool children, especially those under high nutritional risk.
- ✓ Potential for finding variability in growth chart usage.
- ✓ Reasonable prospects for nutrition/health education for the mothers.
- ✓ A participant population equal to or greater than 200 mother/child combinations.
- ✓ Inclusion of the full age range from birth to 60 months of age.
- ✓ Field conditions which would permit reasonable access for purposes of selection and training of workers and for periodic monitoring of field data collection activities.
- ✓ Availability of competent part-time personnel for recording of data.
- ✓ Judged stability of the program element in terms of staffing and participant population.
- ✓ Willingness and interest of sponsoring agencies to permit the program element to participate in the study.

In addition, the selection of program elements sought to provide reasonable representation of the variety of sponsor types and of the geographic and cultural differences within the countries.

An attempt was made to somewhat randomize the selection of the mothers to be included in the study. Tools and instructions were provided the field workers. For example, if there were 400 participants on the roster, the sample could include every other mother as they arrived at the clinic, and numbers could be assigned for follow-up identification. Implementation of this method of selection could not be monitored by the study team. Limited observation of the process and of conditions under which the interviewers worked lead us to conclude that the planned selection procedures were not followed in any consistent fashion. The crush of activities and the numbers of persons involved on clinic days are simply too great and the program personnel resources too few. We suspect that the selection process frequently amounted to taking the next person in line when an interviewer completed an interview and could begin another.

Data Classes and Measures

Table 2 summarizes the classes of data and types of measures, the methods by which the data were obtained, and the times at which the different types of data were collected. Descriptive data about the respective clinics and the communities they served, and about the family households and food resources of mothers/children included in the study sample were collected during the first measurement period only. These data provide a background against which results of the study can be interpreted.

Measures of Education and Growth Chart Use

All of the clinics included in the study made use of growth charts. Measures of the extent and types of uses of the charts were obtained in a number of ways:

- ✓ The center/clinic description section of Record Number 1 included a subsection to determine current and historic information about how the growth chart was used, when it was used, and whether it was retained by the mother, or kept at the clinic.
- ✓ The interview of clinic staff members, Record Number 6, included questions about use of the growth chart as well as about the workers' attitudes and knowledge about the chart.
- ✓ A "Clinic Record of Group Instruction," kept by the clinic workers throughout the study, included data on any use of the growth chart as a part of the nutrition education at the clinic.
- ✓ As a part of the interview to obtain the dietary recalls, Record Number 4, two items sought to assess the extent and methods of growth chart use: the first asked the mother if the nurse or staff member had discussed the growth chart with her in the individual sessions with mother and child; the second, an open-ended question, asked what was taught to her in individual sessions and how it was taught.

In addition to these data, in-country teams of nationals who conducted the study were asked to use their information about extent and use of growth charts as a factor in selecting and classifying the clinics to be used in the study.

Measures of the Mothers' Knowledge, Attitudes, Practices

The mother's knowledge about and understanding of the growth chart were elicited by showing her charts which illustrated differing conditions of

Table 2
Data Classes and Measures

TYPE OF DATA	CLASSES OF INFORMATION	METHOD OF COLLECTION	MEASUREMENT PERIOD		
			1st	2nd	3rd
Descriptive: Center or Clinic and Community	<ul style="list-style-type: none"> • Identifiers • Functions performed • Staffing of the Unit • Facilities and equipment • Funding • Target audience • Numbers of clients served • Educational activity *• Growth Chart usage • Community characteristics • Local taboos • Morbidity and mortality data 	<ul style="list-style-type: none"> • Interview of key clinic personnel and of program central management. • Examination of available documentation, e.g., clinic records, summary reports, etc. 	Yes	No	No
Descriptive: Family, household, and food resources	<ul style="list-style-type: none"> • Identifiers for mother/child • Home characteristics • Mother's characteristics • Family characteristics • Resources available 	<ul style="list-style-type: none"> • Interview of mother at the clinic. 	Yes	No	No
Measures of mother's knowledge about and attitudes regarding health and nutrition; understanding of Growth Chart	<ul style="list-style-type: none"> • Identifiers for mother/child • Knowledge of food and nutrition • Health and food attitudes • Knowledge and understanding of the Growth Chart • Decision processes related to child feeding and health care 	<ul style="list-style-type: none"> • Interview of mother at the clinic. • Nutritionists' review and assessment of quality of response. 	Yes	No	Yes

Table 2 (Continued)

TYPE OF DATA	CLASSES OF INFORMATION	METHOD OF COLLECTION	MEASUREMENT PERIOD		
			1st	2nd	3rd
Measures of Food Consumption Behavior; Mother and Child	<ul style="list-style-type: none"> • Identifiers for mother/child • Child's food consumption data • Mother's food consumption data • Normalcy of conditions on day of food consumption report 	<ul style="list-style-type: none"> • Twenty-four hour dietary recall, obtained through interview of mother or mother surrogate. 	Yes	Yes	Yes
Measure of individual instruction on Growth Chart provided at the clinic	<ul style="list-style-type: none"> *• Whether Growth Chart discussed *• Subject matter included 	<ul style="list-style-type: none"> • Interview of mother. 	Yes	Yes	Yes
Measure of nutrition education at clinic; group instruction	<ul style="list-style-type: none"> • Identifier • Subject matter taught *• Weight chart related instruction • Method of instruction 	<ul style="list-style-type: none"> • Recorded sequentially, each visit of mother, by clinic personnel, from Record of Group Instruction. 	Yes	Yes	Yes
Measures of morbidity; mother and child	<ul style="list-style-type: none"> • Child illnesses preceding six months; preceding two weeks • Mother's health status 	<ul style="list-style-type: none"> • Interview of mother. • Examination of child's Growth Chart. 	Yes	Yes	Yes
Measures of child health and growth	<ul style="list-style-type: none"> • Identifiers for mother/child • Sequential measures of age and weight • Innoculations/vaccinations • Illnesses • Type of Growth Chart used 	<ul style="list-style-type: none"> • Extracted from the child's Growth Chart. 	All data recorded on the child's Growth Chart, from initiation of the study		
Measure of knowledge and attitudes: clinic staff	<ul style="list-style-type: none"> • Identifiers for clinic/staff *• Growth Chart use • Infant feeding 	<ul style="list-style-type: none"> • Interview of the staff member. • Nutritionists review and assessment of quality of response. 	Yes	No	No

*Measures of Growth Chart use.

child growth and asking her to explain what each meant with respect to the child. Charts used were illustrative of normal growth and no illness and of severe malnutrition, weight loss, and diarrhea. In addition, the growth chart for the mother's own child was used as a referent for a series of questions to determine the extent to which the mother understood it and could relate the record to her own child-feeding and child-care practices.

Methods of measuring the mother's knowledge and attitudes about child feeding and the relationship between nutrition and child health and growth are exemplified by the following items from Record Number 3: How long do you think a baby should be breast-fed? When should the baby start drinking other liquids? When should the baby start taking solid foods? What solid foods should the baby take then? How can diarrhea be prevented? How can kwashiorkor be prevented? Responses to the series of questions about food and health were reviewed by a nutritionist to assess the quality of response. Additional information about the mother's knowledge and attitudes was obtained by showing her a drawing of an extremely malnourished infant and asking her: Why do you think this happened? Do you think this could happen to your child?

Measures of dietary practices were obtained separately for the child and the mother through use of a simple 24-hour dietary recall. Concurrent with the taking of the food recall, data on the child's age, weight, and any notations on health status were obtained from the clinic records made for the child that day. In addition, the mother was asked if the child had experienced any serious illness during the preceding two weeks and during the preceding six months. The staff nutritionists reviewed the data for each child and mother and classified the dietary behaviors on a scale of 1 to 5, ranging from an extremely poor diet to an excellent diet for the individual, considering age and state of health.

Measures of Nutritional Status of the Child

Measures of the child's age and weight were obtained from the growth chart for the full period of the study. These measures were converted to percent of normalcy, using the Harvard standards of weight for age. The adequacy of this measure is discussed in a paper by Cleemput Ellis (1975), which concludes that weight for age is an adequate indicator of nutritional status for preschool children providing accurate age data are available and more than one measure is taken. In this instance, age was judged to be reasonably accurate since most mothers were regular and long-term participants in clinic services and up to 12 measures were possible during the period of the study.

Measures of Cost

Concurrent with the conduct of the growth chart study, the Harvard Institute for International Development (HIID) was preparing a series of case studies concerning cost-effective approaches to nutrition intervention in the developing nations. Both Ghana and Lesotho were included in their data collection activity. As a cost-saving measure, an agreement was worked out whereby data collected by Synectics in the growth chart study were made

available to the HIID project staff. In exchange, the HIID project staff provided Synectics with cost data for the sample of clinics included in the growth chart study. The cost data provided by HIID included estimated costs in United States dollars, per clinic and per recipient visit total and for: commodities used; other operating costs such as supplies, fuel, travel, etc.; preventative costs such as for vaccines and medicines; labor costs; and capital equipment costs, as calculated by cost of replacement divided by expected life of the equipment.

Data Collection and Data Handling Methods

Schedule of Measurements

Three rounds of field interviews were scheduled, with approximately six-months time elapse between interviews. The initial round of interviews included: background data descriptive of the clinic and the community; and, for the participating mothers/children, the family and household descriptions, mothers' knowledge and attitudes, mothers' and children's food behavior, and the growth chart data. Time required to interview mothers during this initial measurement ranged from 30 to 60 minutes. In some remote areas in Ghana the task of interviewing mothers was frequently made more difficult and time consuming by tribal language barriers and the need for multiple local interpreters.

The second series of interviews was much less demanding for the field workers. It included only the measures of mother/child food behavior, and the growth chart data. The third and final measure included the same data as the second, but added a follow-up measure of the mother's nutritional knowledge and attitudes.

Data Collection Teams

The in-country study teams participated in the selection of interviewers and field supervisors for the field work. A primary selection criteria was the ability to read and write in English. Interviews to select the workers included a very simple but practical test of having each candidate apply a small sample section of the actual data collection in mock interview activity. Two days of group training and one day of on-site guided practice were provided for field workers prior to the first round of data collection. Retraining was provided prior to each subsequent round of measurement. Considerable attrition of part-time workers was experienced after each round of data collection. Workers were either able to find full-time work, or for other reasons elected not to participate in subsequent rounds of data collection. In these instances, special training sessions were arranged for replacement workers.

Interviewers were paid per completed interview and were reimbursed for expenses such as food away from home and transportation. For those field workers who were part of the clinic staffs or otherwise already employed by

the government or sponsoring voluntary agency--as was frequently the case for field supervisors and for backup interviewers--a small stipend was provided to compensate for the additional duties.

Despite the preliminary efforts to delimit the scope of the study to that which was feasible as judged by the in-country teams and despite the care in selection and training of interviewers, there is some evidence that the design was not sufficiently simplified. An example is the performance with respect to data coding. Data forms were designed with the intent that responses could be coded by the interviewers, either during the interview or at a later time. The coding task was simple, as is illustrated by the sample questions from the interview about the mother's knowledge and attitudes, shown in Figure 1. Procedures required that the field supervisor review all data forms for completion and accuracy of coding. The supervisors' review of data forms for the first round of interviews revealed an exceedingly high rate of coding error and an appreciable number of incomplete data forms. On the chance that these problems were associated with the newness of the task and the exceeding length of the first measurement interview, coding was re-emphasized in the training sessions for the next round of interviews. Monitoring of the early stages of this second round of interviews, however, revealed that coding errors persisted. On the assumption that the combined tasks of interviewing and coding exceeded interviewer abilities in these settings, all coding for subsequent interviews was left to the supervisors.

Use of In-Country Computer Services

It was possible to obtain key punching and verification services and to have tapes of the data prepared in both Ghana and Lesotho. While the use of nonstandard tapes and computer equipment (English rather than American computer equipment) in Lesotho led to delays and difficulties in conversions of data in the States, the in-country taping of data had the following advantages: cost of transport of taped data to the States from Africa was a mere fraction of that which would be required for hard copy data; duplicate copies of tapes could be prepared at minimum cost and sent separately to reduce probability of loss of data in transit; both taped and raw data could be made available to the in-country study teams and their sponsoring agencies for independent research purposes.

Criteria Associated with Study Objectives

It was recognized at the outset of the study that the single most difficult problem to unravel would be the identification of effects which could be confidently related to use of the growth chart. At the chosen study sites, multisectoral approaches to combating malnutrition had long been fostered by national and international agencies and were strongly evident. Nutrition education is only one of many forces operating to alter the mothers' child care and feeding behavior; the use of the growth chart is only one element in the educational process. In design of the methodology we sought to get a handle on how relationships might be identified by setting down the following criteria for respective objectives:

OBTAIN: The child's growth chart from the mother or from the nurse. Note how child is growing.
(Look at last three entries on chart. DO NOT request this information from the mother.)

41. Child is growing:

<input type="checkbox"/>	Well	<u>Code</u>	
<input checked="" type="checkbox"/>	Poorly	(1)	
<input type="checkbox"/>	Not enough information	(2)	Enter Code
<input type="checkbox"/>	Don't know	(3)	
		(9)	

2
66

42. ASK: "Can you show me where your child's weight is today?"

(Check one answer only)

<input type="checkbox"/>	No chart	<u>Code</u>	
<input checked="" type="checkbox"/>	Gives correct answer	(1)	
<input type="checkbox"/>	Gives incorrect answer	(2)	Enter Code
<input type="checkbox"/>	Doesn't know	(3)	
<input type="checkbox"/>	Unknown/no answer	(4)	
		(9)	

2
67

43. ASK: "Can you show me where your child's weight was the last time he (or she) came to the clinic?"

(Check one answer only)

<input type="checkbox"/>	No chart	<u>Code</u>	
<input type="checkbox"/>	Gives correct answer	(1)	
<input checked="" type="checkbox"/>	Gives incorrect answer	(2)	Enter Code
<input type="checkbox"/>	Doesn't know	(3)	
<input type="checkbox"/>	Unknown/no answer	(4)	
		(9)	

3
68

44. ASK: "Does your child's chart show that he (or she) is growing well, or not growing well?"

(Compare response to the chart and check one answer only)

<input type="checkbox"/>	No chart	<u>Code</u>	
<input checked="" type="checkbox"/>	Gives correct answer	(1)	
<input type="checkbox"/>	Gives incorrect answer	(2)	Enter Code
<input type="checkbox"/>	Doesn't know	(3)	
<input type="checkbox"/>	Unknown/no answer	(4)	
		(9)	

2
69

45. ASK: "Have you ever had a chart like this for any other child?"

Yes No (Yes = 1, No = 2, Unknown/no answer = 9)

If "No," SKIP TO QUESTION 48.

1
70

46. If "Yes," ASK: "How many of your children have had a chart like this?"

"Were these cha

MOTHER'S GROWTH CHART KNOWLEDGE (Continued)

Figure 1. Sample Data Collection Format Showing Code Structure

Objectives

Criteria

- | | |
|---|--|
| ✓ <u>Objective 1:</u> to determine if use of the growth chart as an educational tool results in any reliable demonstrable benefits to the child. | If better than average nutritional status of children is found at clinics with greater use of the growth chart as an educational tool, there is at least potential that better average nutritional status is associated with growth chart usage. |
| ✓ <u>Objective 2:</u> if reliable benefits of growth chart use as an educational tool are demonstrated, to determine what factors are associated with qualitative and quantitative variation in benefits. | If quantitative and qualitative differences are found in the nutritional status of the child and/or in the food-related knowledges, attitudes, and practices of the mother, there is at least potential that these differences are associated with growth chart usage parameters. |
| ✓ <u>Objective 3:</u> to determine the nature of costs invested in educational use of the growth chart and the relationship of investment to the achievement of benefits. | If quantitative and qualitative differences in the nutritional status of the child and/or the food-related knowledges, attitudes, and practices of the mother can be associated with differences in cost of use of the growth chart, such evidence might serve to identify relationships of investment to achievement of benefits in differing uses of the growth chart. |

Within this general framework of criteria, the predictor or independent variables are associated with "the use of the growth chart as an educational tool." The criterion or dependent variables include the nutritional status of the child, the quality of the child's diet pattern, the mother's knowledge and attitudes, and growth chart-related cost. The central thrust of the study was observation of natural events. There was no engineering of events to effect differential uses of the growth. The analytic strategy was, therefore wholly dependent upon the nature of the obtained data.

Analytic Strategies Employed

The data were examined to determine if differences in growth chart use could be established among the clinics. Data for such determination were drawn from:

- ✓ The Clinic Record of Group Instruction, which revealed the number of education sessions which included growth chart-related instruction.

- ✓ The mother's report of what was taught to her, which revealed:
 - Percent of mothers who responded affirmatively when asked if the child's weight and/or growth had been discussed with them.
 - Percent of mothers who mentioned the growth chart in response to the open-ended question about what was taught.
- ✓ The clinic staff's response to questions about current and historic modes of use of the growth chart.
- ✓ Interviewer's report as to whether the mother or the clinic retained the growth chart.

These data do not take account of the considerable knowledge gained by the project staff in visits to the sites, nor of the special knowledge of the in-country teams which guided selection of the sample of clinics in the first place. Recall that one of the criteria for selection was variation in use of the growth chart. These qualitative data were included through use of a simple 4-point rating scale, against which each clinic was rated on its judged level of effectiveness in conduct of nutrition education and use of the growth chart.

Table 3 shows the method by which the data about nutrition education and growth chart usage were quantified to provide a score for each clinic in the sample. The highest possible score is 11.0 points. The heaviest single weighting in the total score is the rating by the study teams, including inputs by the in-country team members who guided sample selection. The second heaviest weight is given to the clinic staff's report to questions about how the growth chart is used. Reported use for teaching about the relationship of child care and feeding to child growth and health, as well as for record keeping, obtains the maximum score of 3. If only explanation of the chart and record keeping uses were mentioned, a score of 2 was given. Where record keeping only was mentioned, it was scored as 1. All other factors had a maximum score of 1.0.

The decision to place the greatest weight on the study team rating derives from observed ambiguities among the data sets. For example, ten of the clinics scored "0" on the first factor, i.e., did not mention use of the growth chart in their "Clinic Records of Group Instruction." In contrast, the mothers at all of these clinics reported that the growth chart was used in instruction; at three of them, more than 90 percent reported use of the growth chart for instruction and at all but one of them more than 50 percent so reported. Similar ambiguity was in evidence where mothers' responses to open-ended questions about nutrition education mentioned growth chart-related instruction at clinics where staff records do not mention growth chart use. The discrepancies in the different data sets are in large part the result of poor record keeping for the "Clinic Record of Group Instruction." They are also a reflection of the "softness" of the data as discriminators of growth chart usage among the clinics.

Table 3
Quantification Data for Derivation of Clinic Rating for
Nutrition Education and Growth Chart Usage

FACTOR	METHOD OF QUANTIFICATION	HIGHEST POSSIBLE SCORE
Frequency of mention of Growth Chart-related sessions on "Clinic Record of Group Instruction."	✓ no sessions mentioned = 0 ✓ one or more sessions mentioned = 1	1.0
Percent--averaged across the three rounds of measurement--of Mothers responding "yes" to question of whether or not discussion of child's weight and/or growth was part of the instruction.	✓ 100% = 1.0 ✓ 90% = .9 ✓ etc.	1.0
Percent--averaged across the three rounds of measurement--of Mothers mentioning Growth Chart usage in response to open-ended question about what was taught to her at clinic.	✓ 100% = 1.0 ✓ 90% = .9 ✓ etc.	1.0
Clinic staff reports of how the Growth Chart is used.	✓ as a record only = 1.0 ✓ as a record and for instruction = 2.0 ✓ as record, for instruction, to teach relationship of growth and feeding = 3.0	3.0
Percent of Mothers who had the Growth Chart in their possession.	✓ 100% = 1.0 ✓ 90% = .9 ✓ etc.	1.0
Study team ratings of quality of Nutrition Education and Growth Chart usage.	✓ 4 = excellent ✓ 3 = very good ✓ 2 = average ✓ 1 = low or poor	4.0
	Total	11.0

Quantification of data on nutrition education and growth chart usage resulted in the clustering of clinics by score similarity as is shown below:

<u>Ghana*</u>		<u>Lesotho</u>
9.54		7.24
7.46	HIGH	7.12
6.36		6.49
<hr/>		
5.92		5.76
5.66	MEDIUM	5.22
5.42		5.20
5.42		5.15
<hr/>		
4.86		4.94
4.21	LOW	4.22
		3.89

These clusters were used as the basis for analyses of relationships between growth chart usage and changes in (a) mother's knowledge and attitude, (b) food consumption behavior, and (c) nutritional status of the child.

*One clinic in Ghana was dropped from the study because of difficulty in access for data collection.

GHANA REPORT

SECTION III. IMPLEMENTATION OF THE STUDY IN GHANA

Background

Ghana is located on the West Coast of Africa, near the Equator. The country occupies 92,100 square miles and is roughly the size of the State of Oregon. Geographically, it has four zones: the hot humid southwest corner, warm dry eastern coastal belt, the warm humid forest zone, and the hot dry northern zone. The Volta basin covers about half of the total area, with Lake Volta occupying some 3,275 square miles. There are two rainy seasons, separated by dry periods. The harmattan winds blow in January and February.

A 1975 census estimate placed the population of Ghana at 9.3 million. The average annual rate of natural increase in population is running about 2.6 percent. Infant mortality rate is estimated at 160 in 1,000 live births. Overall population density is low for the available arable land. While 70 percent of the population lives in rural areas, the rate of urbanization is rapidly increasing.

The most recently available figures show that 84 percent of the males and 64 percent of the female population over 15 years of age are classified as "economically active." More than half of the working population are employed in farming and fishing. Only 3 percent of the women work in public or private sectors; most women not in farming or fishing trades are engaged in petty trading and cottage industry.

In spite of relatively generous resources, financial problems have hampered development of Ghana. Many investments in recent years lacked revenue-generating capacity or were badly conceived and managed. Successive administrations of government have attempted to deal with the staggering economic problems, but to little avail. Refusal of the government to devalue the currency has led to hyperinflation, scarcity of consumer goods, hoarding, and black marketeering. Both per capita GNP and real income have declined over the last decade.

Data for 1970 indicate that 43 percent of the population had attended school at some time. Education at the primary level is free and compulsory. The number of schools has increased in recent years. The distribution of educational facilities is, however, poor and rates of illiteracy range from 50 percent in the major cities and towns, to 90 percent in the rural northern part of the country.

Tropical and communicable diseases present serious health problems in Ghana. These include malaria, gastroenteritis, respiratory diseases, measles, schistosomiasis, tuberculosis and venereal disease. Cholera is a periodic problem. Onchocerciasis is a regional problem in the north, near the Volta River; trypanosomiasis is endemic in parts of the country, and the resurgence of yaws is an increasing problem.

Health services are provided through a network of government and mission facilities. In 1977 there were 111 hospitals, 59 health centers, 78 health posts, and 68 clinics operating throughout the country. Health services, however, are maldistributed, with 47 percent of the doctors and a fourth of the hospital beds serving about 10 percent of the population--the population in and near greater Accra. Catholic Relief Services estimates that only about 6 percent of the eligible population of preschoolers benefit from the preschool clinic program, and only about 130,000 of the preschoolers benefit from the food distribution program. With the combined factors of high birth rate and growing inflation, the services are actually decreasing.

Very little information is available on nutritional status of the people of Ghana, or on food production and consumption. The Ministry of Health plans to undertake a nationwide study in the near future. Pending that study, the best available data are from the National Nutrition Survey of 1961/1962. The following general picture of nutrition in Ghana is drawn from Davey's summary and conclusions of the national surveys of 1961-1962:

- ✓ In the northern half of the country there is an overall shortage of all foods in the months before the harvest. Undernutrition affects the whole population at this time every year.
- ✓ In addition, in the north, there is a continual shortage of Vitamin A. This deficiency causes various eye diseases and increases the incidence of blindness.
- ✓ In the forest zone, there is a shortage of protein throughout the year. This deficiency causes the common disease of young children known as kwashiorkor.
- ✓ There is also a shortage of a constituent of the Vitamin B group, Riboflavin. Although this deficiency is not associated with any specific diseases, it undermines general health.
- ✓ In the coastal zone and fishing villages, nutrition is at its best. Even here, however, and certainly also in the forest zone, there is some shortage of staple foods, plantain, and maize, from April to July.
- ✓ Pregnant women are more poorly nourished than nonpregnant women; in fact, it appears that pregnant women lose weight during pregnancy.
- ✓ Poor weaning practices are common throughout the country. Insufficient weaning foods are given. A predominantly starchy diet is given when the child is taken from breast-feeding at about 19 months of age.
- ✓ The diet of preschool children is deficient in both protein and calories, and 40-50 percent of children in the 1-5 age group are underweight.

- ✓ School children are also deficient in protein and calories but to a lesser degree.
- ✓ Among adults, farmers are less well nourished than other occupational groups.
- ✓ Forty percent of petty traders (female) in Accra are overweight.

In the intervening period since that survey was taken, conditions can only be expected to have worsened. Factors which lead to this conclusion include the economic deterioration in Ghana, the reduced availability of locally produced food because of poor harvests in recent years, and the reduced availability of imported food due to lack of foreign exchange and increasingly strict import regulations.

Study Sites in Ghana

Selection of the sample of study sites was based on (a) sponsor type, and (b) geographic and administrative divisions of the country--one clinic within each of eight of the nine regions of the country, and two clinics in the densely populated ninth region of Accra. One of the clinics in the central part of the country was subsequently dropped because of difficulties in maintaining continuity of local involvement in the data collection activity. Choice of clinic within any region was guided by the judgment of the in-country study team as to the quality of education and use of the growth chart, and the probability that local support could be depended upon throughout the project. Each of the clinics in the sample is described briefly in the paragraphs which follow.

Kumasi

A government-sponsored clinic in a rural area, Kumasi clinic has no medical services. It serves about 3,200 clients per month. Services are provided by health workers and include examination of the child, immunization, and nutrition and health education--including environmental hygiene and housecraft. The mother is taught how to interpret the growth chart. Food is distributed to participants. Some recuperative services and follow-up are provided. The clinic is run by a highly motivated team of health workers and appeared to be well organized and operated, despite exceedingly difficult field conditions and a very high client to worker ratio. Community activities sponsored by the clinic included gardening and poultry raising.

Adidome

This clinic is operated in conjunction with a hospital run by the Evangelical Presbyterian Mission. It is subsidized by the government. The hospital staff includes a medical team of doctor and nurse from the United States, as well as native health staff. Outreach into the surrounding countryside is attained through use of a fleet of fourteen mobile clinics. The clinic serves, in all, about 1,000 clients per month.

Clinic activity is limited essentially to screening examinations, immunizations, and some nutrition and health education. Mothers are taught how to interpret the growth chart, as part of the nutrition education. Health services, including recuperative care for the malnourished child, are available at the adjacent hospital. Food distribution is very limited. The clinic is well organized, the staff highly motivated and stable.

Kotobabi

A government owned and operated clinic, Kotobabi is in suburban Accra and is used as the showcase for visitors to the area. It follows that it is well staffed and operated. Primary health care is available, and feeding is available for a selected group of preschoolers. Nutrition education and talks on personal and environmental hygiene are given, particularly to the mothers of children who are ill. The growth chart is used to demonstrate growth trends to the mothers. Recuperative services are available. Monthly attendance averages about 560 per month. Community development projects include health education, clean-up campaigns, and health programs.

Berekum

The clinic is operated by a Catholic Mission near the western border of the country, and is adjacent to a hospital. Medical services, including recuperative services, are available. Food is distributed to participants. Nutrition and related education is provided by the health workers. The growth chart is used to instruct mothers about "the road to health." The clinic serves approximately 1,600 clients per month. It operates a number of outstations, clients for which are not included in the estimate of 1,600 for the central clinic.

Fijai

The clinic is operated by a Catholic Mission, with some government subsidy. It provides only minor health services, primarily preventative. Food is distributed, and, for those in need of recuperation, vitamins and iron tonic are provided. Some nutrition and family planning education is provided. The growth chart is used only for clinic record purposes. It is not used for all clients. Observations indicate that the education component of the clinic is not a strong one. The Fijai clinic serves approximately 600 clients per month. A community development project, using communal labor and local as well as overseas aid, is currently building a new and larger clinic for this location.

Assin Foso

This is a government clinic, but is served by volunteers from the Catholic Relief Services. It has no medical services. It serves about 500 clients a month, providing examinations, vaccines, food distribution, and nutrition education. The growth chart is used only as a record. Observations suggest that the staff is neither stable nor well motivated. The nutrition education and counseling appeared relatively weak.

Akim Oda

A government operated clinic, Akim Oda has no medical or recuperative services. It serves about 900 clients a month. Food is distributed, and there are food demonstrations and health talks for the mothers. The growth chart is used only as a record, and not used with all clients. Much of the work at the clinic is carried out by students and the quality of service, including education, appears to vary considerably.

Navrongo

A government clinic, Navrongo has some medical services--primarily for minor ailments--and preventive services such as immunization and health education. It has no recuperative services. It serves slightly fewer than 3,000 clients a month. Food is distributed to clients. Nutrition education is provided. The growth chart is used only as a record, and is not used with all clients. The staff appeared to be poorly motivated, and were not strongly oriented toward nutrition education. On the other hand, the location of the clinic in the northern region and the exceedingly difficult conditions for living may have a bearing on motivations.

Damongo

Like Navrongo, this is a government clinic. It has limited medical services, primarily for referral purposes. Preventive care is provided. Food is distributed. Nutrition education includes personal hygiene and instruction on food consumption. The growth chart is used as a record, but not for all clients. The clinic serves about 650 clients per month. Observations indicate the staff is neither well organized nor oriented toward nutrition education.

Rating of Clinics in Ghana Sample

Rating of the clinics in the Ghana sample was done in accordance with the rating scheme shown in Table 3, to quantify the quality of nutrition education and growth chart usage. The result was as follows:

<u>Clinic</u>	<u>Rating</u>	<u>Judged Quality</u>
Kumasi	9.54	HIGH
Adidome	7.46	
Kotobabi	6.36	
Berekum	5.92	MEDIUM
Fijai	5.66	
Assin Foso	5.42	
Akim Oda	5.42	
Navrongo	4.86	LOW
Damongo	4.21	

Data Reduction and Analysis

The data were coded and initially reviewed in the field by the field supervisors. A second review was done by one or more members of the project team in Accra. Key punching and taping of the data were accomplished by local firms in Accra. Tapes were then shipped to Synectics where descriptive statistics were provided (frequency distributions, means, and standard deviations) by individual clinic, by groups of clinics rated high, medium, and low in terms of usage of the growth chart/nutrition education, and for the total sample. The data are presented at the end of this section on Implementation of the Study in Ghana. They include:

- ✓ Table 4. Family Characteristics
- ✓ Table 5. Mother's Characteristics
- ✓ Table 6. Mother's Report About Educational Activities
- ✓ Table 7. Child's Nutritional Status--Weight for Age
- ✓ Table 8. Mother's Report of Child's Illnesses
- ✓ Table 9. Child's Food Consumption Behavior
- ✓ Table 10. Mother's Food Consumption Behavior Report
- ✓ Table 11. Mother's Nutritional Knowledges and Attitudes
- ✓ Table 12. Clinic Operating Costs*

The data were examined on the basis of overall clinic measures rather than on the basis of individual participant measures. The data were first examined for comparability of study participants at the individual clinics and across clinic rating groups.

Characteristics of Families and Mothers

Data in Tables 4 and 5 provide the following picture of the families which participated in the study:

- ✓ With the exception of Damongo, the mean family size of six to seven members does not differ across the groups of clinics. Overall mean family size is 6.81 members.
- ✓ On the average, families at clinics rated high seem to bear fewer children than those at clinics rated medium or low.

*Selected data collected through this study were used by the Harvard Institute for International Health (HIID) for development of a chapter for their *Preschooler Nutrition Intervention Manual Project* (AID Contract TA-C-1311). In exchange, data presented here concerning operational costs at the clinics were collected by HIID.

- ✓ Most all families are supported by a male--an average of 92.2 percent and a range of from 88.2 percent at Adidome to 95.5 percent at Kotobabi.
- ✓ A third of the male heads of families are professional persons; the next most common type of employment, for about a fourth of the sample, is farming. At the clinics rated low, male employment was less likely to be professional and more likely to be farming than at clinics rated medium or high.
- ✓ About one-third of the families lived in villages; only about 5 percent claimed rural residence; the remainder claimed urban or suburban residence. At only two clinics were there distinguishable percents of farm families: 13.8 percent at Adidome and 18.5 percent at Navrongo.
- ✓ Home ownership, land ownership, home construction, and home resources and facilities varied considerably from clinic to clinic, but among clinic rating groups, these differences were less marked.
- ✓ The majority of the families (76.4 percent) lived within 2 kilometers of the clinic; this varied, however, from a low of 55.7 percent at Fijai to a high of 98.3 percent at Damongo. Most mothers walked to the clinic. For only 7.5 percent did it take longer than an hour to get to the clinic.
- ✓ Ethnic composition of families varied, as expected, from clinic to clinic. Overall, about half of the mothers belong to the Akan tribe; these mothers represented in particular Kumasi (99.5 percent) and the four clinics rated medium--Berekum, Fijai, Assin Foso, and Akim Oda (an average of 85.1 percent). Mothers of the Ewe tribe were found in larger numbers at Kotobabi (31.8 percent) and especially Adidome (96.8 percent). The only other ethnic concentrations were found at Damongo (80.8 percent Gonja) and Navrongo (91.2 percent Kassem/Grushie).
- ✓ Ages of the mothers ranged from 12 to 53 years, with a mean age of about 27 years. The vast majority of mothers is married (93.2 percent).
- ✓ Slightly more than a fifth of the mothers (21.1 percent) had completed more than eight years of schooling. This percentage was consistently much higher at the high rated clinics than at any of the others. At clinics rated low, about 82 percent of the mothers had no schooling in contrast to about 45 percent at the high and medium rated clinics.
- ✓ Most of the mothers were employed (79.7 percent), primarily in farming (33.7 percent), trading or food processing (29.7 percent) or as seamstresses (11.9 percent). But, only about one-half of the mothers (50.1 percent) at the low rated clinics were employed. Concentration of employment types varied from clinic to clinic.

- ✓ Average mother size did not vary much from clinic to clinic:
155.24 centimeters (slightly over 5 feet) in height; 52.45 kilograms (about 116 pounds).

In terms of comparability of the families' and the mothers' characteristics from clinic to clinic, and especially from clinic rating group to group, they appear adequately comparable except for some differences on the following indicators:

- ✓ Apparent lower birth rate at higher rated clinics.
- ✓ Male employment type, less likely to be professional at the low rated clinics.
- ✓ Ethnic composition at the clinics and among the clinic rating groups.
- ✓ Educational level of the mother.
- ✓ Employment of the mother.

Mother's Report About Educational Activities

This measure sought to obtain the mother's perception as to use of the growth chart, especially as an educational tool. This was approached in two ways--first by asking if the growth chart were discussed, and secondly through an open-ended question seeking out what was discussed during clinic sessions. These data are presented in Table 6.

As expected, recognition is greater than recall--mothers more frequently answered yes to the first question than they mentioned the growth chart for the second. There are, nonetheless, some interesting observations in these data:

- ✓ There is an overall increase in yes responses to the direct question about discussion of the growth chart (from 75.9 percent to 90.5 percent), from the first to the third measure. Clinic by clinic, with few exceptions, this is higher at the third measure than at the first. This shift might be an effect of the study itself.
- ✓ Response patterns to the open-ended question are less stable. There is no discernible pattern to the frequency of response concerning the growth chart or any other topic mentioned. It appears that clinic staff did provide discussion on a variety of topics but that these topics and their urgency shifted from time to time.
- ✓ The mothers' reports of educational activities which were used as one input to the clinic ratings as to use of the growth chart as an educational tool, bear very little relationship to that overall rating, as shown in the listing below:

<u>Clinic Ranking on Multiple Parameters</u>		<u>Mother's Report--Weighted Percent Responding "Yes" to "Growth Chart Discussed?" (Across 3 Measures)</u>	
Kumasi	9.54	Kumasi	96.4
Adidome	7.46	Damongo	95.7
Kotobabi	6.36	Assin Foso	93.0
Berekum	5.92	Akim Oda	81.0
Fijai	5.66	Berekum	79.5
Assin Foso	5.42	Fijai	77.6
Akim Oda	5.42	Novrongo	75.3
Novrongo	4.86	Kotobabi	44.6
Damongo	4.21	Adidome	32.6

As discussed with the presentation of the clinic rating scales shown in Table 3, the ratings are derived from six different measures of which the mother's responses to growth chart usage questions provide only two out of eleven points. Greater weight was given to observations by the study team and to reports by clinic workers. Yet, the mother's perception of education was felt to be a variable worth exploring against the criterion variables of the child's nutritional status (weight for age), the mother's report of the child's illnesses, the child's food behavior, the mother's food consumption, the mother's nutritional knowledge and attitudes.

Child's Nutritional Status, as Defined by Weight for Age

Weight and age data were extracted from the growth charts. Nutritional status of the child was determined from the child's weight for age as a percentage of the Harvard standard. Baseline age distributions for the 1,393 children in the Ghana sample, and the nutritional status data for the three sequential measurements examined are presented in Table 7. The following observations are derived from those data:

- ✓ The distribution of children's ages at the baseline measure varies considerably from clinic to clinic. For each of the three clinic rating groups about 46 percent of the children are twelve months of age or less at the baseline measure.
- ✓ Initially, the vast majority of the children (83.3 percent) were below 100 percent weight for age; the majority of the children (63.3 percent) were also below 90 percent weight for age. There is variation among the clinics, but, on the average, children at the high rated clinics are less frequently under 90 percent weight for age than at the other clinics. However, the differences among the high rated clinics are more marked than for the other clinic groups.
- ✓ Overall there is no difference from measurement to measurement in the percentage of children up to 90 percent weight for age (63.3 percent at the first measure, 66.2 percent at the second, and 65.8 percent at the third).

- ✓ Overall there is a slight increase in the percentage of children up to 80 percent weight for age across the three measures--from 62.8 percent at the first measure to 68.6 percent at the third measure.
- ✓ Only two clinics, Kumasi and Navrongo, made consistent improvement in the greater than 90 percent weight for age category. These were the two poorest performing clinics initially, with only about 17 percent of the children falling in the greater than 90 percent weight for age category at the baseline measure.
- ✓ There is no apparent relationship between average age in months at the baseline measure and rate of improvement in weight for age, either by clinic or by clinic rating group.

Percentage distributions demonstrating change over time for children who were 80 percent or less of standard weight for age at the three measures are shown below by clinic rating. Examination of the data sets reveals no clear pattern of improved nutritional status associated with clinic rating. All clinics appear to help those children which are extremely malnourished. From the first to the third measurement, the percent of children who were less than 60 percent of standard weight for age decreased from 5.4 to 1.6 percent. Examination of cumulative data for all cases of 70 percent

PERCENT OF STANDARD WEIGHT FOR AGE	CLINIC RATING			ALL CLINICS COMBINED
	HIGH	MEDIUM	LOW	
<u>First Measurement</u>				
Total N	536	412	281	1,229
60% or less	3.3	6.1	8.5	5.4
More than 60%, up to 70%	5.8	8.5	14.2	8.6
More than 70%, up to 80%	23.7	19.2	27.7	23.1
<u>Second Measurement</u>				
Total N	228	180	145	553
60% or less	1.3	4.4	3.4	2.9
More than 60%, up to 70%	9.6	11.1	11.1	10.7
More than 70%, up to 80%	30.3	17.8	29.6	26.2
<u>Third Measurement</u>				
Total N	74	122	52	248
60% or less	0.0	3.3	0.0	1.6
More than 60%, up to 70%	10.7	6.6	11.5	8.9
More than 70%, up to 80%	20.3	21.3	21.2	21.0

or less standard weight for age suggests that the greatest improvement in nutritional status occurred at clinics which were rated low, a shift from 22.7 percent to 11.5 percent. With 22.7 percent of the children at 70 percent weight for age at the baseline measure the low rated clinics had the greatest opportunity to show improvement. With substantial improvement, they end up about even with the high and medium rated clinics at the third measure.

When examined against the mother's reported frequency of a positive response to the question of whether the growth chart was discussed at the clinic or not, there is also no relationship to the rate of improvement. One is left with no clear pattern of relationship to clinic instruction on this very important criterion variable.

Reported Illness of Children

During each sequential interview the mother was asked if the child had been seriously ill during the preceding six months and if the child had been acutely or seriously ill during the preceding two weeks. The responses are summarized in Table 8. For the total sample there was a slight drop in the percent of children reported ill from the start of the study to the end of the study. Reports of illness during the preceding six months dropped from 36.6 percent to 32.6 percent, but reached 46.0 percent at the second measure. Reports of illness during the two weeks preceding the interview dropped from 33.1 percent to 28.3 percent. As with illnesses reported for the six month period, a greater percentage of children were reported as having been ill during the last six months at the second measure than at either the first or third measure (37.7 percent). As would be expected, there is relatively good correspondence between the weight for age distributions shown in Table 7 and the percentage of children reported ill in Table 8, especially with respect to illness during the last six months at the baseline reporting period.

There does not seem to be good relationship between the clinic rating and the rate of reported child's illness. For example, the low rated clinics have the lowest reported rate of illness initially on both the six month and the two week data (29.9 percent and 24.1 percent respectively). Clinics rated high have the steepest increase in reported illness over the last six months at the second measurement (from 37.6 percent to 59.7 percent) and they do not recover well by the end of the study (45.4 percent reported ill for the last six months).

The implications of these data are not clear. Are mothers at the high rated clinics more conscientious about bringing their sick children to the clinic? Do only those mothers who have sick children continue to bring them to the clinic? Do the clinic workers at certain clinics more readily diagnose illness than those at other clinics? Do the types of illnesses diagnosed differ?

Data about the child's illness are not consistently recorded on the growth chart and could not be counted on as a source of this information. Mothers were asked to identify what type of diagnosis had been made if the child had been reported ill. These data are also presented in Table 8. Overall, the most commonly reported illnesses were "fevers," causes of which are unknown, and "childhood diseases." Of particular interest to this study was the frequency of report about gastroenteritis and malnutrition/worms. The latter were reported very irregularly across all measurement times (usually about 1.0 percent). Gastroenteritis varied from 5.0 percent to 15.1 percent for the six month report and from 3.1 to 8.8 percent for the two week report. While the rate of report of gastroenteritis diminishes from the initial to the last study measure, the data do not reveal any insight into the weight for age data. Nor is there any information here which appears to differ on the basis of rating of clinics for use of the growth chart as an educational tool.

Child's Food Behavior

A measure of the child's food behavior was taken by 24-hour food recall reported by the mother. Food recall data were reviewed and rated by the nutritionists. Ratings took account of age and health status of the child, and ranged from extremely poor to excellent. The data are summarized in Table 9.

Between clinics rated high and those rated medium there is not a great difference in the quality of the children's diets. Nor do diets of these groups appear to improve appreciably over the year of the study. Fewer children in the highly rated clinics had poor diets at the end of the study than did at the beginning (5.5 percent versus 14.5 percent). A modest degradation of diet occurred in the clinics rated medium. The percent of poor diets shifted from 7.2 percent at the outset of the study to 10.5 percent at the end of the year, and the percent of good or excellent diets shifted from 57.8 percent to 54.7 percent over the same period.

For clinics rated low, this was a dramatic shift from the percent of diets rated good or excellent at the first and second measures (50.1 percent and 51.8 percent, respectively) to those rated good or excellent at the end of the study (7.7 percent rated good, none rated excellent). This regression cannot be attributed logically to unlearning on the part of the mothers, nor to poor performance on the part of the clinics. The two low rated clinics, Navrongo and Damongo are both in the northern region, bordering the Sahel. During the year of the study this region experienced a recurrence of extreme drought and general crop failure.

Mother's Food Behavior

Mothers also reported their own food consumption through the 24-hour food recall, which in turn was reviewed by the nutritionists on the in-country study team. Ratings ranged from extremely poor to excellent. The data are presented in Table 10. For all clinic rating groups there was some improvement from the first to the second measure. By the third measure, the effect of the drought was somewhat apparent in the diets of the three

clinic rating groups. However, the degradation from the second to the third food consumption report was only severe for the low rated group. The effect was to severely reduce the percent of mothers reporting a good diet (from 47.5 percent at the first measure to 3.8 percent at the third) and to shift a great proportion of the mothers into the adequate diet category (from 41.3 percent at the first measure to 84.8 percent at the third). This, of course, is the same effect as was demonstrated for the children at these two clinics. Without this food availability problem, there were some indications that the mothers were upgrading the quality of their own diets.

Mother's Nutritional Knowledges and Attitudes

In the first and third interviews with the mothers, they were queried on a series of questions reflecting information which was expected to have been transferred by the clinic education sessions. These questions had to do with feeding and weaning of children and with comprehension of the type of information reflected on the growth chart. Comparisons between responses at the first and third interviews are presented in Table 11. The findings are discussed below in relation to the clinic workers' stated expectations for changed knowledge, attitudes, and understanding as a result of their educational programs.

Number of Months Child Should Breast-Feed. The expected effect was a greater mean number of months of breast-feeding reported by the mothers from the first to the third interviews. Overall, there is no difference in the mean number of months reported. At some individual clinics there is an increase in the number of months reported--Kumasi, Kotobabi, Berekum, and Navrongo, but there is no consistent relationship to either clinic rating or the frequency of growth chart-related education reported by the mothers.

Age to Introduce Liquid Supplements. The expected effect was a decrease in the average number of months reported by the mothers. Overall, this has occurred (from 4.01 at the first interview to 3.60 at the third). The effect is most pronounced for one of the low rated clinics, Navrongo, but there is no consistent effect related to either the clinic rating or the mothers' report of frequency of growth chart-related education.

Age to Introduce Solid Foods. Again, the expected effect was a decrease in the average number of months reported by the mothers. Although both the low rated clinics show a marked effect on this variable (from an average of 12.03 months initially to 8.04 months finally), these mothers' responses are, on the average, higher at the third interview than the other mothers' at the first interview. Unexpectedly, on the average, the mothers at all three high rated clinics increased the average number of months time at which to introduce solid foods.

How Children Should be Weaned. The intended educational effects here were to increase the number of mothers responding "gradually, over more than one month," and to decrease the number of mothers responding "all at once." Across the study sample, these effects were not obtained. Initially, 26.3 percent of the mothers responded "all at once," compared to 34.9 percent at the third interview. At the time of the first interview, 7.8 percent of the

mothers responded "gradually, over more than one month," compared to 8.4 percent at the third interview. In general, the medium rated clinics tended to improve in this respect and the high rated clinics seemed to demonstrate the sharpest degradation of proper response.

Special Foods to Help Young Children Grow. The expected effect here was to have mothers demonstrate they had learned that they should feed proteins to their young children. This effect is demonstrated overall by a decrease in the percent of mothers not mentioning protein (from 13.7 to 1.04 percent) and an increase in the frequency of mention of protein, which also occurred. There is improvement for all clinics on this variable. One interesting effect is the rate at which "don't know" responses were virtually eliminated, reduced from 3.9 percent initially to 0.4 percent at the end of the study.

Awareness of Susceptibility to Malnutrition and of Corrective Actions. Clinic workers sought to create an awareness that malnutrition can occur with any child unless the mother provides proper nutrition, and that special nutrients can help the malnourished child. Mothers were shown a picture of a malnourished child and asked--what was wrong, could it happen to her child, and if her child became malnourished what action would she take.

Over time, there appears to have been an increase in awareness that malnutrition could happen to any child. Only at Fijai, Akim Oda, and Damongo did awareness appear to decrease. Since we do not know precisely what transpired in the interviews, this trend may be an indication of better understanding of nutrition and greater confidence that malnutrition would be prevented, rather than evidence of lack of awareness that it could occur.

Expected responses as to what to do for a malnourished child were "special feeding" and "take the child to the clinic." Across the total sample, there was no change in the percentage who would give special foods (22.2 versus 23.2 percent) and a decrease in the percentage who responded that they would take the child to the clinic (85.7 versus 74.4 percent). There is no particular discernible pattern to the responses.

Interpretation of the Growth Charts. In a series of questions, mothers were to demonstrate their ability to interpret (a) sample growth charts demonstrating good and poor growth of a child, and (b) plottings on their own child's chart at the time of interview and for the preceding weighing. Comparison of the responses for the baseline and third measures demonstrate that:

- ✓ For the total sample, there was almost universal improvement in the ability of the mothers to interpret correctly sample charts showing good growth; there was only negligible improvement in their ability to interpret sample charts showing poor growth.
- ✓ There was very strong improvement in the ability of mothers to correctly interpret their own child's chart. The most dramatic improvement in the ability of the mothers to interpret correctly their own child's chart was demonstrated at clinics which were rated low.

Clinic Costs

Data on clinic costs per recipient visit were provided by the project team from HIID, and were collected in Ghana at the time of the growth chart study. Included in the costs are: labor; capital equipment, based on replacement cost divided by expected life of the items such as buildings, vehicles, scales, utensils, etc.; food commodities; preventive medicines, such as vaccines; and other operating costs.

The cost data, converted to U. S. dollars at the then current official exchange rate, are summarized in Table 12. Across all clinics, the data demonstrate an average cost per recipient visit of \$2.70, with a range of costs from \$1.74 at Berekum to \$3.71 at Kotobabi. Highest average cost per recipient was experienced in the group of clinics rated low. But, the cost data show no consistent pattern with clinic rating or clinic performance.

Conclusions

There is good evidence of use of the growth chart in all of the selected clinics in Ghana and that imposition of the study on the clinics probably resulted in its increased use. Wide use of the growth chart as an educational tool was demonstrated; such use increased almost universally at the clinics as the study continued.

The most impressive demonstration of effects in the study was found in the mothers' improved ability to correctly interpret the growth chart information. This improvement was demonstrated almost universally across the set of clinics. Mothers demonstrated vastly greater improvement in interpreting their own child's chart than in interpreting sample good or bad growth charts. Other positive indications of the effectiveness of the clinic education are found in selected knowledges and attitudes on the part of the mothers. These positive effects are associated in particular with earlier introduction of liquid supplements and solid foods and the feeding of protein foods to young children.

All clinics appear to help those children who are extremely malnourished, but overall there is no great difference in the percent of children reaching 90 percent of weight for age across the three measurement periods. This percentage hovers at about 35 percent across the three measures. Because of the nature of this study, where the data were collected at the clinic, there is no information about characteristics of "deselected" children. If one could assume that healthy children do not return to the clinic on a regular basis, then the positive effect of the clinic on the child's weight for age might be much higher. The mother's reported frequency of the child's illness, however, remains fairly constant and it is not possible to conclude that only very ill children return to the clinic.

Other evidence of the effects of clinic teaching, such as the child's and the mother's improved food consumption, are unclear. At most clinics there was no improvement on these measures from the first to the second

measure, and drought conditions prior to the third data collection very likely prevented any potential for improvement.

It was not possible to identify a set of factors, or even one factor about the clinics' use of the growth chart associated with improved knowledge, attitudes, and practices on the part of the mothers. Use of the chart no doubt differed as much within clinics from time to time, as across the set of clinics. Other factors, such as the mother's intellectual and financial ability to effect a better diet and therefore better health for her child, certainly must play a considerable role in these data just as they do for all other nutrition education investigations. The nature of the analysis on a clinic by clinic basis, rather than on an individual by individual mother/child combination basis, does not permit investigation of the effect of these compounding variables on the criterion variables. Nor do costs of operating the clinics provide any insight into what makes one clinic more effective than another.

Table 4

Family Characteristics, by Clinic and Clinic Rating - Ghana

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	3erekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Total Family Size</u>	N	185	185	201	571	147	172	182	187	688	194	174	368	1,627
	Mean	8.52	6.23	6.06	6.91	5.56	5.87	6.35	6.63	6.14	5.94	10.16	7.94	6.81
	Std. Dev.	5.03	3.47	4.70		4.26	4.14	4.78	3.05		2.74	8.87		5.06
<u>Number of Children Born</u>	N	184	187	200	571	148	171	183	184	686	194	187	381	1,638
	Mean	3.38	3.20	3.29	3.29	3.36	3.37	4.10	3.52	3.60	3.43	4.05	3.73	3.53
	Std. Dev.	2.42	2.37	2.34			2.48	3.62	2.64		2.14	2.29		
	Range	1-10	1-12	1-18	1-18	1-13	1-12	1-12	1-11	1-13	1-11	1-11	1-11	1-18
<u>Number of Children Dead</u>	N	184	187	71	442	147	163	157	175	642	193	156	349	1,433
	Percentage:													
	0	68.5	79.7	52.1	70.6	85.0	68.7	70.1	72.6	73.8	72.0	46.2	60.5	69.6
	1	21.2	11.8	32.4	19.0	7.5	17.2	19.1	18.9	15.9	12.4	24.4	17.8	17.3
	2 or more	10.3	8.5	15.5	10.4	7.5	14.1	10.8	8.5	10.3	15.6	29.5	21.8	13.1
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.1	100.0
<u>Number of Children Living</u>	N	182	150	195	527	141	153	175	184	653	192	156	348	1,528
	Mean	2.95	2.83	3.03	2.95	2.97	2.84	3.47	3.12	3.12	2.73	3.10	2.90	2.84
	Std. Dev.	2.02	2.07	6.51		2.59	2.88	3.49	2.21		1.73	2.32		3.27
	Range	1-9	1-10	1-12	1-12	1-11	1-9	1-11	1-10	1-11	1-10	1-10	1-10	1-12
<u>Male Supports the Family</u>	N	185	186	200	571	147	171	183	187	688	194	191	385	1,644
	Percentage:													
	Yes	89.2	88.2	95.5	91.1	91.8	94.7	92.4	92.5	92.9	92.8	92.7	92.7	92.2
	No	10.8	11.8	4.5	8.9	8.2	5.3	7.7	7.5	7.2	7.2	7.3	7.2	7.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.0	100.1	100.0	100.0	99.9	100.0

Table 4 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidomo	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Male Employment Type</u>	N	177	185	199	561	143	172	184	185	684	194	193	387	1,632
Percentage:														
None		3.4	4.3	2.0	3.2	5.6	1.7	6.4	2.2	3.9	10.3	3.6	7.0	4.4
Farming		38.4	33.5	1.5	23.7	24.5	3.4	36.0	23.8	22.1	53.6	49.2	51.4	29.4
Trade		12.4	9.2	17.1	13.0	14.7	5.2	11.0	17.8	12.1	2.6	5.7	4.1	10.5
Manual Labor		2.8	2.7	13.6	6.6	4.9	7.0	3.5	3.2	4.6	4.1	11.9	8.0	6.1
Manufacturing		-	1.6	2.0	1.2	1.4	0.6	1.2	5.9	2.4	0.5	0.5	0.5	1.5
Artisan		15.8	26.5	23.6	18.5	12.6	18.6	6.4	16.8	13.6	4.1	6.7	5.4	14.5
Professional		35.0	33.0	37.7	35.3	41.3	45.3	44.2	29.8	40.0	23.7	20.7	22.2	33.8
Other		6.2	7.6	3.5	5.7	1.4	19.2	10.5	1.6	8.4	2.6	4.1	3.3	6.2
<u>Male Employment Location</u>	N	177	184	200	561	141	171	183	184	679	193	188	381	1,621
Percentage:														
None/no support		13.0	8.2	6.0	8.9	7.1	3.5	11.5	2.7	6.2	16.1	14.4	15.3	9.3
Local		27.7	38.6	81.0	50.3	48.9	59.7	61.2	53.8	56.3	61.7	57.5	59.6	55.0
Distant--usually home		36.2	25.5	6.0	21.3	23.4	31.0	16.9	35.3	26.8	19.2	18.6	18.9	23.3
Distant--usually away		23.2	27.7	7.0	18.9	20.6	5.9	10.4	8.2	10.8	3.1	9.6	6.3	12.5
Total		100.1	100.0	100.0	100.0	100.0	100.1	100.0	100.0	100.1	100.1	100.1	100.1	100.1
<u>Home Location</u>	N	185	188	201	574	149	172	184	188	693	194	193	387	1,654
Percentage:														
Rural farm		-	10.1	-	3.3	1.3	0.6	1.6	1.1	1.1	13.9	1.0	7.5	3.4
Rural nonfarm		2.2	3.7	-	1.9	0.7	-	-	0.5	0.3	4.6	-	2.3	1.3
Village		97.8	42.5	-	45.4	39.6	24.4	16.8	16.0	23.4	61.9	2.6	32.3	33.1
Urban/Suburban		-	43.6	100.0	49.3	58.4	75.0	81.5	82.4	75.2	19.6	96.4	57.9	62.1
Total		100.0	99.9	100.0	99.9	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	99.9

Table 4 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berehmun	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Home Ownership</u>	N	185	188	201	574	146	172	184	187	689	194	190	384	1,647
Percentage:														
Owned by husband, wife, or both		9.7	19.1	9.4	12.7	6.2	17.4	22.3	49.2	25.0	52.1	55.3	53.7	27.4
Owned by another family member		83.2	46.8	15.4	47.5	52.0	9.9	23.9	32.1	28.6	36.6	18.9	27.8	35.0
Tribal ownership		-	4.3	1.0	1.8	3.4	0.6	2.2	4.3	2.6	0.5	2.1	1.3	2.0
Rented		5.4	27.7	73.6	36.6	37.7	71.5	50.5	14.4	43.2	10.8	23.2	16.9	34.8
Tenant farmer status		1.1	-	0.5	0.5	0.7	0.6	0.5	-	0.4	-	0.5	0.2	0.4
Other		0.5	2.1	-	0.8	-	-	0.5	-	0.1	-	-	-	0.4
Total		99.9	100.0	99.9	99.9	100.0	100.0	99.9	100.0	99.9	100.0	100.0	99.9	100.0
<u>Home Construction</u>														
<u>Walls</u>	N	185	187	201	573	147	171	184	187	689	194	192	386	1,648
Percentage:														
Mud		48.1	29.9	19.9	32.3	42.9	25.7	51.6	68.4	47.9	83.5	77.6	80.6	50.1
Wood		0.5	3.2	1.5	1.7	1.4	1.7	1.6	2.7	1.9	1.0	1.6	1.3	1.7
Brick		1.1	23.0	13.4	12.6	12.2	22.8	19.0	15.5	17.5	13.9	15.1	14.5	15.1
Stone or cement		32.4	42.8	61.7	46.1	42.9	47.4	27.7	13.4	31.9	1.5	5.2	3.3	30.2
Metal		-	0.5	3.0	1.2	-	-	-	-	-	-	0.5	0.2	0.5
Other		-	0.5	0.5	0.3	-	-	-	-	-	-	-	-	0.1
Combination		17.8	-	-	5.7	0.7	2.3	-	-	0.7	-	-	-	2.3
Total		99.9	99.9	100.0	99.9	100.1	99.9	99.9	100.0	99.9	99.9	100.0	99.9	100.0
<u>Roof</u>	N	185	187	201	573	148	172	184	187	691	194	190	384	1,648
Percentage:														
Thatch-grass		1.6	13.4	2.0	5.6	4.7	0.6	6.5	6.4	4.6	51.0	50.0	50.5	15.7
Metal		95.7	86.6	77.6	86.4	88.5	77.9	85.9	92.5	86.2	35.6	48.4	41.9	76.0
Tile or shingle		-	-	6.0	2.1	1.3	5.2	1.1	1.1	2.2	-	1.0	0.5	1.8
Tar paper		-	-	3.0	1.0	1.3	3.5	-	-	1.1	-	0.5	0.2	0.9
Mud		0.5	-	0.5	0.3	-	0.6	0.5	-	0.3	9.8	-	4.9	1.4
Cement		1.6	-	10.4	4.2	3.4	12.2	1.6	-	4.2	-	-	-	3.2
Other		-	-	0.5	0.2	0.7	-	3.8	-	1.2	0.5	-	0.2	0.6
Combination		0.5	-	-	0.2	-	-	0.5	-	0.1	3.1	-	1.6	0.5
Total		99.9	100.0	100.0	100.0	99.9	100.0	99.9	100.0	99.9	100.0	99.9	99.8	100.1

Table 4 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Home Construction</u> (Contd.)													
<u>Floor</u> N	185	188	200	573	145	171	184	187	687	194	190	384	1,644
Percentage:													
Mud	14.6	19.7	2.5	12.0	11.0	0.6	17.9	21.4	13.1	32.0	28.9	30.5	16.8
Wood	-	3.7	2.0	1.9	1.4	2.3	0.5	3.7	2.0	1.0	1.6	1.3	1.8
Cement	84.9	76.1	91.0	84.1	87.6	97.1	81.5	74.3	84.7	64.9	69.5	67.2	80.4
Other	0.5	-	2.0	0.9	-	-	-	0.5	0.1	-	-	-	0.4
Combination	-	0.5	2.5	1.0	-	-	-	-	-	2.1	-	1.1	0.6
Total	100.0	100.0	100.0	99.9	100.0	100.0	99.9	99.9	99.9	100.0	100.0	100.1	100.0
<u>Water Source</u> N	185	185	200	570	146	171	184	182	683	193	187	380	1,633
Percentage:													
Rainfall	0.5	0.5	-	0.3	-	-	3.8	-	1.0	1.0	0.5	0.7	0.7
River	74.6	63.2	-	44.7	12.3	-	57.1	53.3	32.2	10.9	1.1	6.1	30.5
Well	20.0	10.3	1.5	10.4	16.4	1.8	38.1	14.8	18.2	36.3	3.2	20.0	15.9
Piped	3.2	20.5	80.0	35.8	27.4	28.7	1.1	30.8	21.5	19.2	35.3	27.1	27.8
Piped, filtered	1.6	5.4	18.5	8.8	43.8	69.6	-	1.1	27.1	32.6	59.9	46.0	25.1
Total	99.9	99.9	100.0	100.0	99.9	100.1	100.1	100.0	100.0	100.0	100.0	99.9	100.0
<u>Sewage Disposal</u> N	184	183	200	567	147	171	182	187	687	193	189	382	1,636
Percentage:													
Indiscriminate	8.7	7.1	3.0	6.2	5.4	2.3	0.6	-	1.9	49.7	1.1	25.6	8.9
Pit latrine	91.3	86.9	80.5	86.1	69.4	71.9	58.8	96.8	74.7	46.6	68.8	57.6	74.6
Water seal/indoor plumbing	-	4.4	16.0	7.1	24.5	25.7	6.1	3.2	14.1	3.6	2.1	2.8	9.0
Other	-	1.6	0.5	0.7	0.7	-	34.6	-	9.3	-	28.0	13.8	7.4
Total	100.0	100.0	100.0	100.1	100.0	100.0	100.1	100.0	100.0	99.9	100.0	99.8	99.9
<u>Facilities</u> N	184	183	200	567	145	169	194	187	685	194	188	382	1,634
Percentage with:													
None of the following	35.1	8.6	50.5	32.0	33.3	16.9	55.4	35.8	35.9	75.8	67.9	71.9	42.8
Electricity	0.5	8.0	40.5	17.0	32.0	52.3	6.0	11.8	24.5	7.7	2.6	5.2	17.4
Separate Kitchen	50.8	88.2	17.0	50.9	48.3	48.3	26.1	50.3	42.9	2.4	14.7	8.4	40.3
Refrigerator	1.6	3.2	17.0	7.5	8.2	5.2	3.2	3.2	4.7	1.5	0.5	1.0	4.9
Radio	30.8	28.9	28.0	29.2	36.7	48.8	34.2	21.9	35.0	5.7	22.6	14.0	28.1

Table 4 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Land Ownership</u>	N	185	181	195	561	146	167	182	184	679	189	186	375	1,615
Percentage:														
None		7.0	11.6	72.2	31.1	11.0	32.7	14.3	5.4	15.7	17.3	15.6	16.5	21.4
Small garden		23.2	26.5	24.2	24.6	11.6	27.5	24.2	5.4	17.2	20.0	5.9	13.0	18.8
Large garden		17.8	16.0	2.5	11.9	22.6	11.7	9.3	29.7	18.3	12.6	26.3	19.4	16.3
Small farm		24.9	24.3	1.0	16.4	25.3	16.4	26.9	19.5	22.0	36.6	17.2	27.0	21.2
Large farm		43.2	32.0	2.5	25.4	36.3	13.5	32.4	40.5	30.8	25.1	37.6	31.3	29.0
Grazing land		-	2.2	1.0	1.1	-	1.8	-	-	0.4	0.5	0.5	0.5	0.6
<u>Distance to the Clinic</u>	N	180	184	195	559	123	167	182	140	612	186	177	363	1,534
Mean		2.22	4.09	2.44	2.91	6.18	2.94	2.61	2.78	3.46	3.53	2.03	2.80	3.10
Percentage:														
2 Km or less		93.9	72.8	84.6	83.7	58.5	55.7	83.5	87.9	71.9	48.9	98.3	73.0	76.4
3-4 Km		4.4	14.1	10.3	9.6	6.5	22.8	8.8	1.4	10.5	35.5	0.6	18.5	10.1
5-6 Km		0.6	5.4	3.6	3.2	9.8	20.9	5.5	6.4	10.8	4.3	1.1	2.7	8.1
7 Km or more		1.1	7.6	1.5	3.4	25.2	0.6	2.2	4.2	6.8	11.3	-	5.8	5.4
Total		100.0	99.9	100.0	99.9	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0
<u>Transportation Mode to the Clinic</u>	N	184	184	201	569	146	172	184	186	688	193	192	385	1,642
Percentage:														
On foot		92.4	80.4	63.2	78.2	70.6	39.0	87.5	86.6	71.5	97.9	92.7	95.3	79.4
Public vehicle		7.6	12.0	29.4	16.7	26.0	54.7	8.7	10.8	24.4	1.6	3.7	2.6	16.6
Private vehicle		-	1.6	7.5	3.2	1.4	6.4	3.8	2.7	3.6	0.5	3.7	2.1	3.1
Other		-	6.0	-	1.9	2.0	-	-	-	0.4	-	-	-	0.9
Total		100.0	100.0	100.1	100.0	100.0	100.1	100.0	100.1	99.9	100.0	100.1	100.0	100.0

Table 4 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
Travel Time to the Clinic	N	181	183	200	564	145	165	184	139	633	193	177	370	1,567
	Mean	10.57	32.15	20.62	21.14	39.08	34.10	27.50	15.19	29.17	61.84	16.06	39.94	28.82
Percentage:														
Less than 10 minutes		65.2	10.4	13.0	28.9	4.1	9.1	16.3	34.5	15.6	0.5	25.4	12.4	19.6
10-20 minutes		19.9	36.6	52.5	36.9	32.4	23.6	40.2	46.8	35.5	4.7	46.9	24.9	33.5
20-30 minutes		11.1	24.0	24.0	19.9	29.7	24.9	26.1	7.9	22.6	22.3	24.9	23.5	21.8
30-60 minutes		3.9	20.8	9.5	11.4	27.6	37.0	11.4	10.1	21.5	37.3	2.8	20.8	17.6
60-120 minutes		-	7.7	1.0	2.8	2.8	5.5	4.4	0.7	3.5	32.1	-	16.7	6.4
More than 120 minutes		-	0.6	-	0.2	3.5	-	1.6	-	1.3	3.1	-	1.6	1.0
Total		100.1	100.1	100.0	100.1	100.1	100.1	100.0	100.0	100.0	100.0	100.0	99.9	99.9

Table 5

Mother's Characteristics, by Clinic and Clinic Rating - Ghana

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Ethnic Group</u>	N	183	188	198	569	149	172	184	188	693	194	193	387	1,649
Percentage:														
Akan		99.5	0.5	24.8	40.8	92.0	70.9	79.4	98.4	85.1	2.1	3.1	2.6	50.5
Ewe		-	96.8	31.8	43.0	0.7	5.8	7.1	0.5	3.6	-	2.6	1.3	16.7
Ga-Adangbe		-	1.1	12.1	4.6	-	0.6	0.5	-	0.3	-	-	-	1.7
Gonja		-	-	1.0	0.3	1.3	-	-	-	0.3	-	80.8	40.3	9.7
Kassem/Grushie		0.5	-	-	0.2	-	2.3	3.8	-	1.6	91.2	0.5	46.0	11.5
Other		-	1.6	30.3	11.1	6.0	20.3	9.2	1.1	9.1	5.7	13.0	9.8	9.9
Total		100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Mother's Age</u>	N	181	125	196	502	134	156	179	151	620	190	120	310	1,433
Mean		25.95	26.73	27.19	26.63	26.02	27.60	28.65	25.95	27.16	26.19	28.62	27.13	27.38
Std. Dev.		9.40	6.65	8.73		6.88	9.39	6.73	6.63		7.26	9.91		8.13
Range		12-50	16-49	15-45	12-50	16-50	18-50	18-48	13-53	13-53	16-45	16-50	16-50	12-53
<u>Marital Status</u>	N	183	186	200	569	149	170	183	183	685	190	190	380	1,634
Percentage:														
Married		85.3	90.3	97.0	91.0	92.6	97.7	93.4	89.6	93.3	94.2	97.9	96.0	93.2
Widowed		0.5	1.6	1.5	1.2	1.3	0.6	1.1	-	0.7	1.6	0.5	1.0	1.0
Divorced or Separated		13.7	7.0	1.5	7.2	4.0	1.8	3.8	4.4	3.5	2.1	1.6	1.8	4.4
Never Married		0.5	1.1	-	0.5	2.0	-	1.6	6.0	2.5	2.1	-	1.0	1.4
Total		100.0	100.0	100.0	99.9	99.9	100.1	99.9	100.0	100.0	100.0	100.0	99.8	100.1
<u>Mother's Education</u>	N	183	187	199	569	147	170	183	185	685	193	189	382	1,636
Percentage:														
None		41.5	48.1	40.2	43.2	38.8	52.4	48.6	41.6	45.5	79.3	84.7	82.0	53.2
5 Years or less		18.0	7.5	10.6	12.0	26.5	8.2	9.9	29.2	18.2	9.3	5.3	7.3	11.8
6-8 Years		16.4	15.5	12.1	14.6	16.3	22.4	16.4	29.2	21.3	8.3	3.7	6.0	13.8
More than 8 years		24.0	28.9	37.2	30.2	18.4	17.1	25.1	-	14.9	3.1	6.4	4.7	21.1
Total		99.9	100.0	100.1	100.0	100.0	100.1	100.0	100.0	99.9	100.0	100.1	100.0	99.9

Table 5 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Mother's Employment</u>	N	184	187	200	571	147	170	183	184	684	194	189	383	1,638
Percentage:														
None		1.1	11.2	12.5	8.4	13.6	15.9	12.0	12.5	13.4	63.9	36.0	50.1	20.3
Farming		80.4	44.4	0.5	40.6	40.8	21.2	37.2	48.4	37.0	16.0	19.0	17.5	33.7
Trading & Food Processing		22.3	43.3	44.0	36.8	25.2	34.7	30.6	18.5	27.2	14.4	33.3	23.7	29.7
Seamstress		7.1	12.8	22.0	14.2	18.4	16.5	8.7	18.5	15.4	2.1	2.6	2.3	11.9
Clerical		0.5	1.1	6.0	2.6	0.7	0.6	2.7	1.1	1.3	-	2.1	1.0	1.7
Professional		4.9	0.6	10.0	5.3	3.4	4.7	11.5	5.4	6.4	4.1	2.1	3.1	0.6
Other		3.7	2.1	6.5	4.2	1.4	7.1	4.9	0.6	3.5	-	10.1	5.0	4.4
<u>Mother's Height</u> (Centimeters)	N	175	184	197	556	142	168	173	181	664	193	187	380	1,600
Mean		154.86	158.57	156.08	156.52	156.01	157.20	157.23	151.49	155.40	151.25	155.02	153.26	155.24
Std. Dev.		8.67	9.30	9.97		6.62	6.46	7.85	9.78		9.82	14.27		9.84
Range		122-173	132-185	122-188	122-188	124-173	135-173	127-178	124-183	124-183	122-183	122-196	122-196	122-196
<u>Mother's Weight</u> (Kilograms)	N	175	184	195	554	139	92	173	182	586	190	185	375	1,515
Mean		50.12	54.47	57.58	54.19	52.45	50.57	52.20	47.52	50.55	51.62	54.06	52.82	52.45
Std. Dev.		6.87	7.06	9.15		8.64	8.94	8.41	7.90		6.01	7.07		8.23
Range		32-75	40-86	36-85	32-86	37-83	30-75	38-85	31-82	30-85	40-77	36-89	36-89	30-89

Table 6

Mother's Report About Educational Activities, by Clinic and Clinic Rating - Ghana

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Child's Weight or Growth Discussed</u>														
1st Measure (Baseline)	N	196	133	197	526	147	174	188	189	698	195	192	387	1,611
Percent Yes		93.4	24.1	43.2	57.1	87.8	83.3	96.3	85.2	88.3	62.1	96.9	79.4	75.9
2nd Measure (6 months)	N	151	48	73	272	47	91	145	117	400	63	108	171	843
Percent Yes		99.3	33.3	35.6	70.6	51.1	63.7	86.2	75.2	73.7	93.7	92.6	93.0	76.6
3rd Measure (12 months)	N	66	40	24	130	6	44	110	42	202	57	51	108	440
Percent Yes		98.5	60.0	83.3	83.8	100.0	84.1	96.4	78.6	90.1	100.0	98.0	99.1	90.5
<u>Other Topics Discussed</u>														
1st Measure (Baseline)	N	195	130	197	522	147	174	187	189	697	195	192	387	1,606
Percent Yes		95.9	46.2	62.4	70.9	90.5	98.3	97.9	99.5	96.9	89.2	95.8	92.5	87.4
<u>Topics Discussed</u>	N	196	127	196	519	140	174	186	190	690	196	192	388	1,597
Percent reporting:														
None		2.6	47.2	36.7	26.4	1.4	3.5	2.2	1.1	2.1	6.6	2.1	4.4	10.5
Growth Chart related		21.9	10.2	7.1	13.4	14.3	32.2	77.4	4.2	33.0	25.0	56.8	40.7	28.5
Breast feeding/weaning		38.3	7.9	16.3	22.5	12.9	25.9	85.5	47.4	45.2	32.1	52.1	42.0	37.1
Food/diet		90.3	33.9	45.9	59.7	89.3	88.5	91.4	55.8	80.4	37.2	67.7	52.3	66.9
Disease prevention/ vaccination		53.6	11.8	36.7	37.0	28.6	14.4	84.4	42.6	43.9	28.1	37.5	32.7	39.0
Disease treatment		4.1	19.7	14.8	11.9	10.7	4.0	41.4	0.5	14.5	1.5	14.6	8.0	12.1
Family planning		1.5	10.2	12.2	7.7	1.4	27.0	43.6	5.8	20.4	8.2	14.6	11.4	14.1
Other		1.5	1.6	2.6	1.9	-	-	-	0.5	0.1	1.5	0.5	1.0	0.9

Table 6 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>2nd Measure (6 months)</u>	N	151	47	73	271	51	91	145	117	404	63	108	171	846
Percent Yes		100.0	42.6	54.8	77.9	94.1	68.1	85.5	98.3	86.4	96.8	94.4	95.3	85.5
<u>Topics Discussed</u>	N	153	48	73	274	51	91	145	117	404	64	107	171	849
Percent reporting:														
None		-	58.3	41.1	21.2	-	30.8	13.8	-	11.9	3.1	7.5	5.8	13.7
Growth Chart related		85.6	-	-	48.3	27.5	23.1	6.2	2.6	11.6	40.6	18.7	26.9	26.4
Breast feeding/weaning		13.1	-	1.4	7.7	3.9	5.5	-	33.3	11.4	26.6	29.9	28.7	13.7
Food/diet		94.1	41.7	52.1	73.7	80.4	28.6	86.2	53.9	63.1	28.1	65.4	51.4	64.2
Disease prevention/ vaccination		13.1	-	9.6	9.9	17.7	41.8	86.2	47.0	56.2	25.0	15.0	18.7	33.7
Disease treatment		11.1	-	2.7	6.9	3.9	-	-	5.1	2.0	1.6	1.9	1.8	3.5
Family planning		-	-	12.3	3.3	-	5.5	83.5	11.1	34.5	3.1	-	1.2	17.7
Other		-	-	-	-	-	-	-	1.7	0.5	-	-	-	0.2
<u>3rd Measure (12 months)</u>	N	65	36	24	125	5	44	110	42	201	57	52	109	435
Percent Yes		98.5	58.3	95.8	86.4	100.0	86.4	94.6	100.0	94.1	100.0	100.0	100.0	93.3
<u>Topics Discussed</u>	N	65	39	24	128	7	44	110	42	203	57	52	109	440
Percent reporting:														
None		-	43.6	4.2	14.1	-	6.8	6.4	-	4.9	-	-	-	6.4
Growth Chart related		63.1	10.3	12.5	37.3	14.3	-	64.6	-	35.5	29.8	25.0	27.5	34.1
Breast feeding/weaning		23.1	7.7	12.5	16.4	57.1	6.8	57.3	-	34.5	19.3	19.2	19.2	25.5
Food/diet		98.5	43.6	79.2	77.1	57.1	75.0	88.2	73.8	81.3	24.6	38.5	31.2	68.0
Disease prevention/ vaccination		69.2	7.7	41.7	45.3	14.3	13.6	80.0	50.0	57.1	47.4	32.7	40.4	49.6
Disease treatment		47.7	2.6	12.5	27.3	-	-	5.5	2.4	3.5	12.3	17.3	14.7	13.2
Family planning		-	-	41.7	7.8	-	-	82.7	-	44.8	-	-	-	23.0
Other		-	-	-	-	-	11.4	-	4.8	3.5	-	5.8	2.8	2.3

Table 7

Child's Nutritional Status (Weight for Age), by Clinic and by Clinic Rating - Ghana

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Age in Months</u>														
<u>1st Measure (Baseline)</u>	N	195	170	193	558	85	83	142	175	485	187	163	350	1,393
Percent reporting:														
0-6 months		5.6	25.9	49.2	26.9	5.9	22.9	15.5	28.0	19.6	21.4	19.6	20.6	22.8
7-12 months		16.9	17.1	21.3	18.5	38.8	25.3	26.1	21.2	26.4	32.1	19.6	26.3	23.2
13-18 months		28.7	25.3	10.9	21.5	28.2	21.7	20.4	17.7	21.0	24.6	22.8	23.8	21.9
19-24 months		16.4	13.5	6.2	12.0	21.2	14.5	12.7	10.9	13.8	9.1	11.6	10.3	12.2
25-30 months		10.3	7.1	5.2	7.6	4.7	9.6	13.4	8.0	9.3	6.9	11.7	9.1	8.5
31-36 months		14.4	5.9	4.7	8.4	-	-	5.6	5.1	3.5	3.7	5.5	4.5	5.8
More than 37 months		7.7	5.3	2.6	5.2	1.2	6.0	6.3	9.1	6.4	2.1	9.2	5.4	5.7
Total		100.0	100.1	100.1	100.1	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.1
<u>Weight for Age</u>														
<u>1st Measure (Baseline)</u>	N	192	167	177	536	68	49	134	161	412	174	107	281	1,229
Percent reporting:														
60% or less		4.2	1.8	3.9	3.3	7.4	12.2	7.5	2.5	6.1	10.9	4.7	8.5	5.4
More than 60%, up to 70%		9.9	2.4	4.5	5.8	11.8	8.2	9.7	6.2	8.5	17.8	8.4	14.2	8.6
More than 70%, up to 80%		41.2	13.8	14.1	23.7	17.7	30.6	18.7	16.8	19.2	27.6	28.0	27.7	23.1
More than 80%, up to 90%		27.6	22.8	22.6	24.4	22.1	12.2	34.3	28.6	27.4	26.4	29.9	27.7	26.2
More than 90%, up to 100%		12.0	31.1	28.8	23.5	27.9	22.5	16.4	20.5	20.6	10.9	15.0	12.5	20.0
More than 100%, up to 110%		4.2	18.6	14.7	12.1	5.9	6.1	9.0	13.0	9.7	1.2	8.4	3.9	9.4
More than 110%		1.0	9.6	11.3	7.1	7.4	8.2	4.5	12.4	8.5	5.2	5.6	5.3	7.2
Total		100.1	100.1	99.9	99.9	100.2	100.0	100.1	100.0	100.0	100.0	100.0	99.8	99.9
<u>2nd Measure (6 months)</u>	N	141	39	48	228	7	46	74	53	180	47	98	145	553
Percent reporting:														
60% or less		2.1	-	-	1.3	14.3	4.3	5.4	1.9	4.4	6.4	2.0	3.4	2.9
More than 60%, up to 70%		14.9	-	2.1	9.6	-	4.3	20.3	5.7	11.1	12.8	11.2	11.7	10.7
More than 70%, up to 80%		38.3	10.3	22.9	30.3	-	13.0	21.6	18.9	17.8	40.4	24.5	29.6	26.2
More than 80%, up to 90%		25.5	20.5	20.8	23.6	-	43.5	25.7	30.2	30.6	21.3	25.5	24.1	26.4
More than 90%, up to 100%		13.5	43.6	39.6	24.1	14.3	17.4	14.9	32.1	20.6	14.9	22.5	20.0	22.1
More than 100%, up to 110%		4.3	20.5	8.3	7.9	28.6	8.7	8.1	9.4	9.4	2.1	9.2	6.9	7.8
More than 110%		1.4	5.1	6.3	3.1	42.9	8.7	4.1	1.9	6.1	2.1	5.1	4.1	4.0
Total		100.0	100.0	100.0	99.9	100.1	99.9	100.1	100.1	100.0	100.0	100.0	99.8	100.1

Table 7 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foa	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>3rd Measure (12 months)</u> N	42	21	11	74	N	42	56	24	122	21	31	52	248
Percent reporting:					O								
60% or less	-	-	-	-		4.8	3.6	-	3.3	-	-	-	1.6
More than 60%, up to 70%	19.0	-	-	10.7	D	4.8	10.7	-	6.6	9.5	12.9	11.5	8.9
More than 70%, up to 80%	28.6	9.5	9.1	20.3	A	16.7	26.8	16.7	21.3	23.8	19.4	21.2	21.0
More than 80%, up to 90%	28.6	38.1	45.5	33.8	T	33.3	33.9	41.7	35.2	28.6	35.5	32.7	34.3
More than 90%, up to 100%	19.0	38.1	27.3	25.6	A	26.2	17.9	20.8	21.3	19.1	16.1	17.3	21.8
More than 100%, up to 110%	2.4	9.5	9.1	5.4		7.1	7.1	16.7	9.0	14.3	12.9	13.5	8.9
More than 110%	2.4	4.8	9.1	4.1		7.1	-	4.2	3.3	4.8	3.2	3.8	3.6
Total	100.0	100.0	100.1	99.9		100.0	100.0	100.1	100.0	100.1	100.0	100.0	100.1
<u>Summary Weight for Age</u>													
<u>1st Measure</u>													
Up to 90%	82.9	40.8	45.1	57.2	59.0	63.2	70.2	54.1	61.2	82.7	71.0	78.1	63.3
Greater than 90%	17.2	59.3	54.8	42.7	41.2	36.8	29.9	45.9	38.8	17.3	29.0	21.7	36.6
<u>2nd Measure</u>													
Up to 90%	80.8	30.8	45.8	64.8	14.3	65.1	73.0	56.7	63.9	80.9	63.2	68.8	66.2
Greater than 90%	19.2	69.2	54.2	35.1	85.8	34.8	27.1	43.4	36.1	19.1	36.8	31.0	33.9
<u>3rd Measure</u>													
Up to 90%	76.2	47.6	81.9	64.8	-	59.6	75.0	58.4	66.4	61.9	67.8	65.4	65.8
Greater than 90%	23.8	52.4	18.2	35.1	-	40.4	25.0	41.7	33.6	38.2	32.2	34.6	34.3
<u>1st Measure</u>													
Up to 80%	55.3	18.0	22.5	32.8	36.9	51.0	35.9	25.5	33.8	56.3	41.1	50.4	37.1
Greater than 80%	44.8	82.1	77.4	67.1	63.3	49.0	64.2	74.5	66.2	43.7	58.9	49.4	62.8
<u>2nd Measure</u>													
Up to 80%	55.3	10.3	25.0	41.2	14.3	21.6	47.3	26.5	33.3	59.6	37.7	44.7	39.8
Greater than 80%	44.7	89.7	75.0	58.7	85.8	78.3	52.8	73.6	66.7	40.4	62.3	55.1	60.3
<u>3rd Measure</u>													
Up to 80%	47.6	9.5	9.1	31.0	-	26.3	41.1	16.7	31.2	33.3	32.3	32.7	31.5
Greater than 80%	52.4	90.5	91.0	68.9	-	73.7	58.9	83.4	68.8	66.8	67.7	67.3	68.6

Table 8

Mother's Report of Child's Illnesses, by Clinic and Clinic Rating - Ghana

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Child Seriously Ill During Last 6 Months</u>														
<u>1st Measure (Baseline)</u>	N	196	185	196	577	144	174	187	183	688	194	187	381	1,646
Percent Yes		56.6	29.2	26.5	37.6	48.6	37.4	33.7	39.9	39.4	25.8	34.2	29.9	36.6
<u>Type of Illness</u>	N	197	183	199	579	133	174	187	189	683	194	189	383	1,645
Percent reporting:														
None-Child healthy		45.7	68.3	71.4	61.7	47.4	63.8	72.7	61.9	62.5	83.5	66.1	74.9	65.1
Fever		32.5	13.7	10.1	18.8	13.8	11.5	13.4	16.9	14.9	2.1	8.5	5.2	14.0
Childhood disease		15.2	12.6	13.1	13.6	10.5	16.7	6.4	18.0	13.0	13.9	8.5	11.2	12.8
Gastroenteritis		19.3	6.6	8.0	11.4	24.1	8.0	7.0	7.9	10.8	2.1	17.5	9.7	10.8
Respiratory condition		-	3.8	2.5	2.1	3.0	1.2	3.2	1.6	2.2	-	1.1	0.5	1.8
Malnutrition/worms		2.0	-	1.5	1.2	4.5	1.7	0.5	0.5	1.6	-	1.1	0.5	1.2
Eye or skin infection		1.5	1.6	4.5	2.6	2.3	-	0.5	-	0.6	0.5	2.7	1.6	1.5
Injuries, burns		-	-	-	-	1.5	0.6	-	0.5	0.6	-	1.1	0.5	0.4
<u>2nd Measure (6 months)</u>	N	151	51	71	273	51	88	144	116	399	64	108	172	844
Percent Yes		66.2	49.0	53.5	59.7	70.6	38.6	24.3	46.5	39.8	10.9	54.6	38.3	46.0
<u>Type of Illness</u>	N	152	52	72	276	49	86	145	117	397	64	108	172	845
Percent reporting:														
None-Child healthy		36.2	51.9	45.8	41.7	28.6	66.3	80.0	53.9	63.0	90.6	47.2	63.3	56.1
Fever		43.4	34.6	29.2	38.0	36.7	14.0	11.7	24.8	19.1	-	33.3	20.9	25.7
Childhood disease		9.2	23.1	18.1	14.1	8.2	9.3	13.8	11.1	11.3	4.7	9.3	7.6	11.5
Gastroenteritis		13.8	1.9	13.9	11.6	18.4	11.6	11.0	16.2	13.6	3.1	22.2	15.1	13.3
Respiratory condition		0.7	-	-	0.4	8.2	3.5	1.4	0.9	2.5	3.1	2.8	2.9	1.9
Malnutrition/worms		2.0	-	-	1.1	2.0	-	6.2	1.7	3.0	1.6	-	0.6	1.9
Eye or skin infection		1.3	-	4.2	1.8	4.1	-	0.7	2.6	1.5	-	1.9	1.2	1.5
Injuries, burns		0.7	1.9	1.4	1.1	2.0	-	-	-	0.2	-	0.9	0.7	0.6

Table 8 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Erekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>3rd Measure (12 months)</u>	N	66	40	24	130	7	43	110	40	200	54	52	106	436
Percent Yes		50.0	42.5	37.5	45.4	42.9	4.7	21.8	47.5	24.0	9.3	57.7	33.0	32.6
<u>Type of Illness</u>	N	65	40	23	128	5	43	110	42	200	55	52	107	435
Percent reporting:														
None-Child healthy		52.3	65.0	65.2	58.6	60.0	95.4	80.0	59.5	78.5	96.4	44.2	71.0	70.8
Fever		32.3	22.5	30.4	28.9	-	-	8.2	14.3	7.5	1.8	21.2	11.2	14.7
Childhood disease		12.3	10.0	4.4	10.2	20.0	2.3	7.3	16.7	8.5	1.8	15.4	8.4	9.0
Gastroenteritis		9.2	7.5	13.0	9.3	60.0	2.3	1.8	9.5	5.0	-	23.1	11.2	7.8
Respiratory condition		-	2.5	-	0.8	-	-	0.9	4.8	1.5	-	1.9	0.9	1.2
Malnutrition/worms		-	2.5	4.4	1.6	-	-	1.8	-	1.0	-	1.9	0.9	1.2
Eye or skin infection		1.5	2.5	-	1.5	-	-	0.9	-	0.5	-	-	-	0.7
Injuries, burns		1.5	-	-	0.8	-	-	-	-	-	-	-	-	0.2
<u>Acute Illness During Last 2 Weeks</u>														
<u>1st Measure (Baseline)</u>	N	197	188	198	583	145	173	183	186	687	194	188	382	1,652
Percent Yes		35.5	26.6	35.3	32.6	37.2	49.7	34.4	32.8	38.4	25.3	22.9	24.1	33.1
<u>Type of Illness</u>	N	195	187	199	581	139	172	183	188	682	194	189	383	1,646
Percent reporting:														
None-Child healthy		64.1	69.5	67.8	67.1	66.2	54.1	68.3	71.3	65.1	86.6	79.4	83.0	70.0
Fever		24.1	15.5	19.1	19.6	12.2	32.6	15.3	18.1	19.8	2.6	5.8	4.2	16.1
Childhood disease		5.6	11.2	8.0	8.2	8.6	7.6	9.8	4.3	7.5	5.2	1.6	3.4	6.8
Gastroenteritis		9.2	6.4	5.5	7.0	15.8	5.2	6.0	4.8	7.5	3.1	10.6	6.8	7.2
Respiratory condition		-	2.1	4.0	2.0	2.2	1.7	1.1	1.6	1.6	1.6	0.5	1.0	1.6
Malnutrition/worms		1.0	-	0.5	0.5	2.9	-	1.6	-	1.0	-	-	-	0.6
Eye or skin infection		1.5	2.7	4.5	2.9	2.2	-	0.6	0.5	0.7	1.6	2.7	2.1	1.8
Injuries, burns		-	-	0.5	0.2	-	-	-	0.5	0.1	0.5	1.1	0.8	0.3

Table 8 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
		Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Demongo	Total Clinics Rated Low	
<u>2nd Measure (6 months)</u>	N	152	52	72	276	51	88	144	117	400	63	109	172	848
Percent Yes		45.4	46.2	33.3	42.4	29.4	42.0	30.6	41.0	36.0	22.2	41.3	34.3	37.7
<u>Type of Illness</u>	N	153	52	72	277	49	86	145	117	397	64	109	173	847
Percent reporting:														
None-Child healthy		56.9	69.2	68.1	62.1	69.4	66.3	87.6	62.4	73.3	90.6	61.5	72.3	69.4
Fever		26.8	21.2	16.7	23.1	12.2	20.9	4.8	13.7	11.8	3.1	24.8	16.8	16.5
Childhood disease		8.5	15.4	8.3	9.7	-	4.7	6.9	10.3	6.6	6.3	9.2	8.1	7.9
Gastroenteritis		9.8	-	6.9	7.2	10.2	8.1	4.1	14.5	8.8	3.1	6.4	5.2	7.6
Respiratory condition		-	-	-	-	4.1	2.3	0.7	3.4	2.3	1.6	-	0.6	1.2
Malnutrition/worms		0.7	-	1.4	0.7	2.0	-	1.4	0.9	1.0	-	-	-	0.7
Eye or skin infection		0.7	-	2.8	1.1	2.0	-	-	1.7	0.7	-	1.8	1.1	0.9
Injuries, burns		-	-	-	-	-	-	-	-	-	-	0.9	0.6	0.1
<u>3rd Measure (12 months)</u>	N	66	41	24	131	7	43	110	41	161	57	52	109	441
Percent Yes		37.9	34.2	29.2	35.1	28.6	20.9	21.8	48.8	34.1	8.8	36.5	22.0	28.3
<u>Type of Illness</u>	N	66	41	24	131	4	43	110	42	199	57	52	109	439
Percent reporting:														
None-Child healthy		63.6	73.2	83.3	70.2	50.0	86.1	79.1	61.9	76.4	98.3	71.2	85.4	76.8
Fever		27.3	14.6	4.2	19.1	-	4.7	7.3	19.1	9.1	-	7.7	3.7	10.7
Childhood disease		9.1	12.2	12.5	10.7	-	7.0	9.1	7.1	8.0	1.7	3.9	2.7	7.5
Gastroenteritis		6.1	-	-	3.1	50.0	4.7	4.5	11.9	7.1	-	13.5	6.4	5.7
Respiratory condition		-	2.4	-	0.7	-	-	0.9	4.8	1.5	-	-	-	0.9
Malnutrition/worms		-	2.4	-	0.7	-	-	0.9	-	0.5	-	-	-	0.5
Eye or skin infection		-	-	-	-	-	-	-	2.4	0.5	-	3.9	1.9	0.7
Injuries, burns		-	-	-	-	-	-	1.8	-	1.0	-	-	-	0.5

Table 9

Child's Food Consumption Report, by Clinic and by Clinic Rating - Ghana

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Nutritionist's Assessment of Child's Diet</u>														
<u>1st Measure (Baseline)</u>	N	195	123	198	516	112	173	187	189	661	194	161	355	1 532
	Mean	3.86	3.51	3.49	3.63	3.34	3.72	3.75	3.57	3.62	3.33	3.50	3.41	3.58
Percentage:														
Extremely poor	(1)	-	4.1	1.5	1.5	1.0	1.2	1.1	0.5	0.9	2.6	2.5	2.5	1.5
Poor	(2)	7.2	14.6	17.7	13.0	14.3	7.5	4.8	2.1	6.3	20.1	10.6	15.8	10.8
Adequate	(3)	24.6	31.7	32.3	29.2	41.1	31.8	28.9	40.2	35.0	27.3	36.6	31.5	32.2
Good	(4)	43.6	25.2	31.3	34.5	37.5	37.6	48.1	54.0	45.2	41.7	34.8	38.6	40.1
Excellent	(5)	24.6	24.4	17.2	21.7	6.2	22.0	17.1	3.2	12.6	8.2	15.5	11.5	15.4
Total		100.0	100.0	100.0	99.9	100.1	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0
<u>2nd Measure (6 months)</u>	N	148	50	73	271	51	89	145	117	402	63	109	172	845
	Mean	3.34	3.82	3.38	3.44	3.29	3.33	3.42	3.53	3.42	3.44	3.35	3.38	3.42
Percentage:														
Extremely poor	(1)	-	-	-	-	-	11.2	6.2	6.0	6.5	4.8	2.7	3.5	3.8
Poor	(2)	13.5	10.0	13.7	12.9	11.8	5.6	10.3	5.1	7.9	7.9	12.8	11.0	10.2
Adequate	(3)	47.3	18.0	42.5	40.6	51.0	28.1	31.0	22.2	30.3	28.6	36.7	33.7	34.3
Good	(4)	31.1	52.0	35.6	36.2	33.3	49.4	40.0	63.2	48.0	55.6	42.2	47.1	44.0
Excellent	(5)	8.1	20.0	8.2	10.3	3.9	5.6	12.4	3.4	7.2	3.2	5.5	4.7	7.7
Total		100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.9	99.9	100.1	99.9	100.0	100.0
<u>3rd Measure (12 months)</u>	N	66	38	24	128	7	42	109	23	181	54	50	104	413
	Mean	3.48	3.95	3.67	3.66	2.43	3.76	3.50	3.52	3.52	2.78	3.08	2.92	3.41
Percentage:														
Extremely poor	(1)	-	-	-	-	-	-	0.9	-	0.5	1.8	-	0.9	0.5
Poor	(2)	7.6	5.3	-	5.5	57.1	9.5	8.3	4.3	10.0	25.9	-	13.4	9.4
Adequate	(3)	39.4	18.4	50.0	35.1	42.9	21.4	38.5	39.1	34.8	64.8	92.0	77.9	45.8
Good	(4)	50.0	52.6	33.3	47.6	-	52.4	44.9	56.5	46.4	7.4	8.0	7.7	37.0
Excellent	(5)	3.0	23.7	16.7	11.7	-	16.7	7.3	-	8.3	-	-	-	7.3
Total		100.0	100.0	100.0	99.9	100.0	100.0	100.1	99.9	100.0	99.9	100.0	99.9	100.0

Table 10

Mother's Food Consumption Behavior Report, by Clinic and by Clinic Rating - Ghana

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobali	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Nutritionist's Assessment of Mother's Diet</u>														
<u>1st Measure (Baseline)</u>	N	191	108	193	492	63	171	187	187	608	194	138	332	1,432
	Mean	3.45	3.11	3.35	3.33	3.02	3.94	3.63	3.41	3.59	3.45	3.26	3.37	3.45
Percentage:														
Extremely Poor	(1)	0.5	0.9	0.5	0.6	-	0.6	0.5	-	0.3	0.5	1.4	0.9	0.6
Poor	(2)	5.8	23.1	18.6	14.6	22.2	1.7	1.1	2.7	3.9	8.2	13.0	10.2	9.1
Adequate	(3)	50.8	45.4	34.2	43.1	57.1	24.6	45.4	55.1	43.7	36.6	47.8	41.3	42.9
Good	(4)	34.5	25.0	38.9	34.1	17.5	49.1	41.2	40.6	40.8	51.0	33.3	43.6	39.2
Excellent	(5)	8.4	5.6	7.8	7.5	3.2	24.0	11.8	1.6	11.2	3.6	4.3	3.9	8.2
Total		100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.9	100.0	99.8	99.9	100.0
<u>2nd Measure (6 months)</u>	N	139	50	72	261	51	88	144	114	397	63	109	172	830
	Mean	3.29	4.02	3.52	3.50	3.08	3.70	3.56	3.50	3.51	3.38	3.64	3.55	3.52
Percentage:														
Extremely poor	(1)	0.7	-	-	0.4	-	-	0.7	0.9	0.5	-	-	-	0.4
Poor	(2)	13.0	6.0	9.7	10.7	19.6	1.1	9.0	0.9	6.3	-	2.7	1.7	6.7
Adequate	(3)	49.6	10.0	36.1	38.3	54.9	31.8	31.2	46.5	38.8	61.9	34.9	44.8	40.0
Good	(4)	29.5	60.0	45.8	39.8	23.5	62.5	51.4	50.9	50.1	38.1	57.8	50.6	47.0
Excellent	(5)	7.2	24.0	8.3	10.7	2.0	4.5	7.6	0.9	4.3	-	4.6	2.9	6.0
Total		100.0	100.0	99.9	99.9	100.0	99.9	99.9	100.1	100.0	100.0	100.0	100.0	100.1
<u>3rd Measure (12 months)</u>	N	66	37	23	126	6	43	109	22	180	55	50	105	411
	Mean	3.20	3.97	3.52	3.48	2.50	3.79	3.56	3.27	3.54	2.78	3.08	2.92	3.37
Percentage:														
Extremely poor	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-
Poor	(2)	18.2	-	-	9.5	50.0	-	4.6	9.1	5.6	21.8	-	11.4	8.3
Adequate	(3)	45.5	21.6	56.5	40.5	50.0	37.2	40.4	54.5	41.7	78.2	92.0	84.8	52.3
Good	(4)	34.9	59.5	34.8	42.1	-	46.5	49.5	36.4	45.5	-	8.0	3.8	33.8
Excellent	(5)	1.5	18.9	8.7	7.9	-	16.3	5.5	-	7.2	-	-	-	5.6
Total		100.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 11

Mother's Nutritional Knowledges and Attitudes, by Clinic and by Clinic Rating - Ghana

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Number of Months Child Should Breast-Feed</u>														
<u>1st Measure (Baseline)</u>	N	198	183	200	581	145	173	185	185	688	195	186	381	1,650
	Mean	15.52	14.94	14.31	14.92	14.99	13.67	12.65	14.60	13.92	22.25	19.78	21.04	15.92
Percent reporting:														
	0-5 months	1.5	4.4	2.0	2.6	4.1	1.7	-	-	1.3	2.0	-	1.0	1.7
	6-11 months	6.1	7.1	16.5	10.0	9.7	19.7	14.6	15.1	15.0	2.0	4.3	3.1	10.5
	12-17 months	41.4	50.3	49.5	47.0	44.8	52.0	73.0	48.7	55.2	19.0	35.0	26.8	45.8
	18-23 months	39.4	22.4	19.0	27.0	30.4	16.8	8.1	24.9	19.5	14.4	10.8	12.6	20.5
	24-29 months	10.6	13.7	10.5	11.5	9.0	8.7	4.3	11.4	9.7	46.7	41.4	44.1	17.7
	More than 30 months	1.1	2.2	2.5	1.9	2.1	1.2	-	-	0.7	15.9	8.6	12.3	3.8
	Total	100.1	100.1	100.0	100.0	100.1	100.1	100.0	100.1	100.1	100.0	100.1	99.9	100.0
<u>3rd Measure (12 Months)</u>	N	66	39	23	128	7	41	110	68	226	57	53	110	464
	Mean	18.86	14.87	17.04	17.32	16.14	13.93	12.69	12.06	12.83	24.10	17.32	20.83	15.97
Percent reporting:														
	0-5 months	1.5	-	-	0.8	-	2.4	-	2.9	1.3	-	-	-	0.9
	6-11 months	1.5	12.8	4.4	5.5	-	17.1	14.6	17.6	15.5	-	-	-	9.1
	12-17 months	19.7	46.2	59.1	31.2	57.1	48.8	68.2	64.7	63.3	14.0	49.1	30.9	46.8
	18-23 months	45.5	28.2	30.4	37.5	42.9	22.0	17.3	13.2	17.7	10.5	24.5	17.3	23.1
	24-29 months	30.3	12.8	21.7	23.4	-	9.8	-	1.5	2.2	56.1	20.8	39.1	16.8
	More than 30 months	1.5	-	4.4	1.6	-	-	-	-	-	19.3	5.7	12.7	3.4
	Total	100.0	100.0	100.0	100.0	100.0	100.1	100.1	99.9	100.0	99.9	100.1	100.0	100.1

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Age to Introduce Liquid Supplements</u>													
1st Measure (Baseline) N	193	181	200	579	147	173	185	183	688	195	187	382	1,649
Mean	2.29	3.41	3.26	2.97	3.37	3.93	3.13	3.38	3.45	7.31	5.81	6.57	4.01
Percent reporting:													
0-1 month	44.4	8.8	11.0	21.7	4.8	3.5	10.3	8.2	6.8	2.1	1.6	1.8	10.9
2 months	9.1	8.8	19.0	12.4	10.9	3.5	10.3	13.7	9.6	-	5.9	2.9	9.0
3 months	39.9	46.4	44.5	43.5	66.7	58.4	68.1	49.2	60.3	9.2	24.6	16.7	44.3
4 months	5.1	19.9	14.0	12.8	5.4	13.9	8.1	9.8	9.4	25.6	19.3	22.5	13.6
5 months	-	7.2	3.0	3.3	2.0	3.5	-	8.7	3.6	1.0	10.2	5.5	3.9
6 months	0.5	6.1	4.5	3.6	6.8	9.8	1.1	7.7	6.3	20.0	21.4	20.7	8.7
More than 6 months	1.0	2.8	4.0	2.6	3.4	7.5	2.2	2.7	3.9	42.0	17.1	29.8	9.5
Total	100.0	100.0	100.0	99.9	100.0	100.1	100.1	100.0	99.9	99.9	100.1	99.9	99.9
3rd Measure (12 Months) N	64	38	23	125	7	41	108	68	224	57	53	110	459
Mean	2.48	2.29	4.69	2.83	3.71	4.71	3.33	3.22	3.56	4.70	5.89	5.27	3.60
Percent reporting:													
0-1 month	48.4	26.3	-	32.8	-	4.9	1.9	2.9	2.7	-	-	-	10.2
2 months	4.7	15.8	4.4	8.0	14.3	-	1.9	4.4	2.7	1.8	-	0.9	3.7
3 months	43.8	52.6	60.9	49.6	57.1	46.3	73.2	73.5	67.9	17.5	37.7	27.2	53.2
4 months	3.1	5.3	8.7	4.8	-	24.4	14.8	10.3	14.7	56.1	18.9	38.2	17.7
5 months	-	-	8.7	1.6	-	2.4	0.9	4.4	2.2	3.5	15.1	9.1	3.7
6 months	-	-	4.4	0.8	28.6	7.3	7.4	4.4	7.1	15.8	22.6	19.1	8.3
More than 6 months	-	-	13.0	2.4	-	14.6	-	-	2.6	5.3	5.7	5.5	3.3
Total	100.0	100.0	100.1	100.0	100.0	99.9	100.1	99.9	99.9	100.0	100.1	100.0	100.1

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>Age to Introduce Solid Foods</u>													
<u>1st Measure (Baseline)</u> N	194	182	200	576	148	173	181	182	684	194	189	383	1,643
Mean	7.07	7.56	7.37	7.33	6.87	8.26	6.53	7.31	7.25	13.60	10.42	12.03	8.39
Percent reporting:													
0-1 month	0.5	0.5	-	0.3	-	1.2	1.1	0.5	0.7	1.0	0.5	0.7	0.6
2-3 months	10.3	2.8	12.0	8.5	9.5	5.2	4.4	9.3	7.0	-	2.7	1.3	6.2
4-5 months	13.9	9.9	12.5	12.1	18.9	6.9	8.8	19.8	13.4	0.5	4.2	2.3	10.4
6-7 months	54.0	46.7	42.0	47.5	48.0	31.8	71.3	45.1	49.3	16.5	28.0	22.2	42.4
8-9 months	12.9	22.0	14.0	16.1	14.2	23.7	11.6	12.1	15.3	16.0	20.1	18.0	16.3
10-11 months	-	3.9	3.5	2.4	2.0	11.0	-	1.1	3.5	8.8	7.4	8.1	4.2
12-17 months	5.7	12.6	13.0	10.4	5.4	16.8	2.2	8.2	8.2	29.9	27.5	28.7	13.8
18-23 months	1.0	-	1.0	0.7	0.7	1.7	-	2.2	1.2	11.9	2.7	7.4	2.4
More than 24 months	1.6	1.7	2.0	1.8	1.3	1.7	0.6	1.7	1.3	15.5	6.9	11.2	3.8
Total	99.9	100.1	100.0	99.8	100.0	100.0	100.0	100.0	99.9	100.1	100.0	99.9	100.1
<u>3rd Measure (12 Months)</u> N	66	38	23	127	7	41	110	68	226	56	53	109	462
Mean	7.35	7.68	10.26	7.97	5.86	8.49	6.46	6.16	6.72	8.18	7.89	8.04	7.38
Percent reporting:													
0-1 month	-	-	-	-	-	-	-	-	-	-	-	-	-
2-3 months	1.5	2.6	4.4	2.3	14.3	4.9	-	14.7	5.7	-	-	-	3.5
4-5 months	12.1	13.1	-	10.2	-	7.3	5.5	11.8	7.5	1.8	7.6	4.6	7.6
6-7 months	68.2	60.5	39.1	60.6	71.4	39.0	79.1	47.1	61.9	48.2	54.7	51.4	59.1
8-9 months	7.6	18.4	26.1	14.2	14.3	19.5	13.6	23.5	17.7	33.9	9.4	22.0	17.8
10-11 months	-	-	4.4	0.8	-	4.9	0.9	-	1.3	1.8	5.7	3.7	1.7
12-17 months	7.6	2.6	8.7	6.3	-	19.5	-	2.9	4.4	10.7	22.6	16.5	7.8
18-23 months	1.5	-	4.4	1.6	-	2.4	0.9	-	0.9	1.8	-	0.9	1.1
More than 24 months	1.5	2.6	13.0	3.9	-	2.4	-	-	0.4	1.8	-	0.9	1.5
Total	100.0	99.9	100.1	99.9	100.0	99.9	100.0	100.0	99.8	100.0	100.0	100.0	100.1

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>How Should Child be Weaned?</u>													
<u>1st Measure (Baseline)</u> N	197	184	198	579	145	173	184	183	685	195	190	385	1,649
Percent reporting:													
All at once	13.9	14.7	27.8	18.9	20.7	45.1	35.3	19.1	30.3	13.9	27.9	20.9	26.3
Gradually (no time period specified)	50.3	34.2	34.3	39.7	57.2	20.8	55.4	48.6	45.2	50.3	60.5	55.3	43.7
Gradually (over less than 1 month)	6.2	32.1	36.9	24.9	21.4	31.2	7.1	29.0	22.1	6.2	7.4	6.8	21.8
Gradually (over more than 1 month)	29.7	17.4	0.5	15.8	0.7	2.3	2.2	3.3	2.2	29.7	3.7	16.9	7.8
Other	-	1.6	0.5	0.7	-	0.6	-	-	0.1	-	0.5	0.2	0.4
Total	100.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.1	100.0	100.1	100.0
<u>3rd Measure (12 Months)</u> N	66	38	23	127	7	41	110	67	225	57	53	110	462
Percent reporting:													
All at once	43.9	18.4	43.5	36.2	42.9	22.0	36.4	20.9	29.4	-	92.5	44.6	34.9
Gradually (no time period specified)	50.0	42.1	39.1	45.7	14.3	39.0	63.6	61.2	56.9	59.7	5.7	33.7	48.3
Gradually (over less than 1 month)	6.1	5.3	17.4	7.9	28.6	39.0	-	13.4	12.0	1.8	1.9	1.8	8.4
Gradually (over more than 1 month)	-	34.2	-	10.2	14.3	-	-	4.5	1.8	38.6	-	20.0	8.4
Other	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	100.0	99.9	100.0	100.0	100.1	100.0	100.0	100.0	100.1	100.1	100.0	100.1	100.0

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Special Foods to Help Young Child Grow</u>														
<u>1st Measure (Baseline)</u>	N	195	163	194	552	118	172	171	170	631	184	191	375	1,558
Percent reporting:														
No protein mentioned		10.8	5.5	13.4	10.1	23.7	17.4	17.0	27.7	21.2	9.8	3.1	6.4	13.7
One protein mentioned		37.4	19.0	25.3	27.7	39.0	29.7	30.4	54.1	38.2	34.2	16.8	25.3	31.4
More than one protein mentioned		50.8	73.0	58.3	60.0	34.8	52.9	49.1	17.1	38.8	43.5	72.8	58.4	51.0
Don't know		1.0	2.5	3.1	2.2	2.5	-	3.5	1.2	1.7	12.5	7.3	9.8	3.9
Total		100.0	100.0	100.1	100.0	100.0	100.0	100.0	100.1	99.9	100.0	100.0	99.9	100.0
<u>3rd Measure (12 Months)</u>	N	66	38	22	126	5	41	108	63	217	57	53	110	453
Percent reporting:														
No protein mentioned		-	2.6	13.6	3.1	40.0	48.8	2.8	17.5	16.6	1.8	11.3	6.4	10.4
One protein mentioned		9.1	10.5	18.2	11.1	40.0	41.5	30.6	47.6	37.8	15.8	34.0	24.6	27.2
More than one protein mentioned		90.9	86.8	68.2	85.7	20.0	9.8	65.7	34.9	45.1	82.5	52.8	68.2	62.0
Don't know		-	-	-	-	-	-	0.9	-	0.4	-	1.9	0.9	0.4
Total		100.0	99.9	100.0	100.0	100.0	100.1	100.0	100.0	99.9	100.1	100.0	100.1	100.0
<u>Mother Feels Child is Susceptible to Malnutrition</u>														
<u>1st Measure (Baseline)</u>	N	195	174	180	549	140	165	181	170	656	194	173	367	1,572
Percent Yes		67.2	22.4	9.4	34.0	27.1	18.2	33.2	18.2	24.2	75.3	26.6	52.3	34.2
No		32.8	77.6	90.6	65.9	72.9	81.8	66.9	81.8	75.8	24.7	73.4	47.6	65.8
Total		100.0	100.0	100.0	99.9	100.0	100.0	100.1	100.0	100.0	100.0	100.0	99.9	100.0
<u>3rd Measure (12 Months)</u>	N	64	41	23	128	6	43	109	67	225	56	49	105	458
Percent Yes		93.7	36.6	-	58.6	33.3	11.6	42.2	14.9	28.0	94.6	14.3	57.1	43.2
No		6.2	63.4	100.0	41.4	66.7	88.4	57.8	85.1	72.0	5.4	85.7	42.9	56.8
Total		99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low	
<u>What Would You do if Your Child Became Malnourished?</u>													
<u>1st Measure (Baseline)</u> N	197	181	187	565	143	172	183	181	679	192	181	373	1,617
Percent reporting:													
It couldn't happen	0.5	1.6	10.0	4.0	4.8	3.5	16.9	1.1	6.7	16.1	5.4	10.9	6.8
Consult relative/friend	0.5	-	0.5	0.3	3.5	0.6	3.3	-	1.8	1.0	0.5	0.7	1.0
Consult herbalist	-	-	0.5	0.2	5.5	1.2	1.6	1.1	2.2	6.7	11.4	9.0	3.1
Use traditional medicine	0.5	-	0.5	0.3	1.4	1.2	1.1	0.6	1.0	4.7	6.0	5.3	1.8
Use patent medicine	1.0	0.5	1.6	1.0	1.4	1.7	2.2	-	1.3	-	1.6	0.8	1.1
Give special foods	45.2	22.8	34.8	34.6	11.7	4.1	20.1	22.7	15.0	13.0	19.0	15.9	22.2
Go to clinic, etc.	98.5	93.5	83.2	91.8	90.3	93.6	76.1	93.9	88.3	66.3	70.7	68.4	85.7
<u>3rd Measure (12 Months)</u> N	65	41	23	129	7	43	109	68	227	57	49	106	462
Percent reporting:													
It couldn't happen	-	-	-	-	-	27.9	30.3	-	19.8	-	20.4	9.4	11.9
Consult relative/friend	-	-	-	-	-	-	0.9	-	0.4	3.5	2.0	2.8	0.1
Consult herbalist	-	-	17.4	3.1	-	-	-	1.5	0.4	5.3	18.4	11.3	3.7
Use traditional medicine	-	-	-	-	-	-	-	1.5	0.4	-	-	-	0.2
Use patent medicine	-	-	4.4	0.8	-	-	3.7	-	1.8	-	-	-	1.1
Give special foods	16.9	36.6	13.0	22.5	-	2.3	23.9	17.7	17.2	29.8	44.9	36.8	23.2
Go to clinic, etc.	98.5	100.0	78.3	95.4	100.0	69.8	65.1	91.2	74.9	79.0	14.3	49.1	74.7

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Interpretation of Chart Showing Good Growth</u>														
<u>1st Measure (Baseline)</u>	N	186	181	190	557	138	173	184	171	666	194	190	384	1,607
Percent reporting:														
Correct		96.2	63.0	63.2	74.1	75.4	90.2	94.6	74.3	84.3	71.1	73.2	72.1	77.9
Incorrect		2.2	14.4	4.2	6.8	13.0	1.7	2.2	4.7	4.9	2.6	6.8	4.7	5.5
Don't know		1.6	22.7	32.6	19.0	11.6	8.1	3.3	21.0	10.8	26.3	20.0	23.2	16.6
Total		100.0	100.1	100.0	99.9	100.0	100.0	100.1	100.0	100.0	100.0	100.0	100.0	100.0
<u>3rd Measure (12 Months)</u>	N	65	41	20	126	6	44	108	63	221	57	49	106	453
Percent reporting:														
Correct		96.9	97.6	75.0	93.6	83.3	68.2	98.2	87.3	88.7	89.5	55.1	73.6	86.5
Incorrect		-	-	5.0	0.8	16.7	4.6	1.9	1.6	2.7	1.8	16.3	8.5	3.5
Don't know		3.1	2.4	20.0	5.5	-	27.3	-	11.1	8.6	8.8	28.6	17.9	9.9
Total		100.0	100.0	100.0	99.9	100.0	100.1	100.1	100.0	100.0	100.1	100.0	100.0	99.9
<u>Interpretation of Chart Showing Poor Growth</u>														
<u>1st Measure (Baseline)</u>	N	188	183	191	562	143	171	185	169	668	193	186	379	1,607
Percent reporting:														
Correct		92.0	65.0	62.3	73.1	76.2	80.7	90.2	74.6	80.8	68.4	72.0	70.2	75.6
Incorrect		5.3	5.5	4.2	5.0	14.0	11.1	6.6	5.3	9.0	7.8	10.2	9.0	7.6
Don't know		2.7	29.5	33.5	21.9	9.8	8.2	3.3	20.1	10.2	23.8	17.7	20.8	16.8
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.0	100.0	100.0	99.9	100.0	100.0
<u>3rd Measure (12 Months)</u>	N	64	41	20	125	6	44	108	58	216	57	49	106	447
Percent reporting:														
Correct		98.4	70.7	80.0	86.4	83.3	38.6	90.7	72.4	75.0	82.5	61.2	72.7	77.6
Incorrect		-	26.8	5.0	9.6	-	52.3	9.3	13.8	19.0	12.3	26.5	18.9	16.3
Don't know		1.6	2.4	15.0	4.0	16.7	9.1	-	13.8	6.0	5.3	12.2	8.5	6.0
Total		100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.1	99.9	100.1	99.9

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Knows Location of Child's Weight Today</u>														
1st Measure (Baseline)	N	191	183	194	568	139	171	183	179	672	193	186	379	1,619
Percent reporting:														
No chart		4.2	1.6	11.3	5.8	3.6	22.8	2.7	42.5	18.6	37.3	15.1	26.4	15.9
Correct		85.3	45.9	41.2	57.5	64.8	48.5	89.1	43.6	61.6	45.1	26.3	35.9	54.2
Incorrect		7.9	4.9	13.4	8.8	8.6	9.9	2.2	11.2	7.9	7.3	20.4	13.7	9.6
Don't know		2.6	47.5	34.0	27.8	23.0	18.7	6.0	2.8	11.9	10.4	38.2	24.0	20.3
Total		100.0	99.9	99.9	99.9	100.0	99.9	100.0	100.1	100.0	100.1	100.0	100.0	100.0
3rd Measure (12 Months)	N	61	38	22	121	7	44	109	67	227	57	49	106	454
Percent reporting:														
No chart		4.9	18.4	-	8.2	-	2.3	-	22.4	7.0	14.0	2.0	8.4	7.7
Correct		86.9	63.2	45.5	71.9	85.7	54.6	99.1	59.7	78.4	79.0	65.3	72.7	75.3
Incorrect		6.6	5.3	36.4	11.6	14.3	22.7	0.9	11.9	8.8	5.3	10.2	7.6	9.3
Don't know		1.6	13.2	18.2	8.3	-	20.5	-	6.0	5.7	1.8	22.5	11.4	7.7
Total		100.0	100.1	100.1	100.0	100.0	100.1	100.0	100.0	99.9	100.1	100.0	100.1	100.0
<u>Knows Location of Child's Weight at Last Attendance</u>														
1st Measure (Baseline)	N	193	177	195	565	144	172	175	178	669	194	128	322	1,556
Percent reporting:														
No chart		3.6	2.3	18.5	8.3	3.5	20.9	1.1	42.1	17.6	34.5	25.8	31.0	17.0
Correct		83.4	44.1	39.0	55.8	59.7	46.5	93.1	42.7	60.5	34.5	28.9	32.3	53.0
Incorrect		9.3	10.2	11.8	10.4	30.6	14.0	2.9	13.5	14.5	21.7	33.6	26.4	15.5
Don't know		3.6	43.5	30.8	25.5	6.3	18.6	2.9	1.7	7.3	9.3	11.7	10.2	14.5
Total		99.9	100.1	100.1	100.0	100.1	100.0	100.0	100.0	99.9	100.0	100.0	99.9	100.0
3rd Measure (12 Months)	N	63	40	21	124	7	44	109	67	227	57	48	105	456
Percent reporting:														
No chart		4.8	22.5	-	9.7	-	-	-	22.4	6.6	10.5	6.3	8.6	7.9
Correct		85.7	60.0	38.1	69.3	85.7	47.7	98.2	61.2	77.1	75.4	60.4	68.5	73.0
Incorrect		9.5	7.5	57.1	16.9	14.3	29.6	1.8	10.5	10.1	12.3	6.3	9.5	11.8
Don't know		-	10.0	4.8	4.0	-	22.7	-	6.0	6.2	1.8	27.1	13.4	7.2
Total		100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.1	100.0	100.0	100.1	100.0	99.9

Table 11 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics	
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Damongo	Total Clinics Rated Low		
<u>Mother's Interpretation of Own Child's Chart</u>														
<u>1st Measure (Baseline)</u>	N	189	184	197	570	142	172	184	179	677	194	188	382	1,629
Percent reporting:														
No chart		3.2	2.7	13.7	6.7	2.1	20.4	1.1	40.8	16.7	35.1	13.3	24.4	15.0
Correct		88.9	57.6	45.7	63.9	72.5	57.0	89.1	46.9	66.3	39.2	28.7	34.0	57.9
Incorrect		5.3	3.3	9.6	6.1	13.4	5.8	6.0	8.4	8.1	14.4	16.5	15.4	9.2
Don't know		2.7	36.4	31.0	23.3	12.0	16.9	3.8	3.9	8.9	11.3	41.5	26.2	18.0
Total		100.1	100.0	100.0	100.0	100.0	100.1	100.0	100.0	100.0	100.0	100.0	100.0	100.1
<u>3rd Measure (12 Months)</u>	N	63	40	22	125	7	44	109	66	226	57	49	106	457
Percent reporting:														
No chart		4.8	15.0	-	7.2	-	-	-	25.8	7.5	10.5	2.0	6.6	7.2
Correct		87.3	77.5	54.6	78.4	71.4	61.4	99.1	60.6	79.6	84.2	67.4	76.4	78.6
Incorrect		4.8	2.5	31.8	8.8	28.6	15.9	0.9	6.1	6.2	3.5	8.2	5.7	6.8
Don't know		3.2	5.0	13.6	5.6	-	22.7	-	7.6	6.6	1.8	22.5	11.4	7.4
Total		100.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.1	100.1	100.0

Table 12

Clinic Operating Costs by Cost Category, Clinic, and Clinic Rating - Ghana*

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Ghana Sample All Clinics
	Kumasi	Adidome	Kotobabi	Total Clinics Rated High	Berekum	Fijai	Assin Foso	Akim Oda	Total Clinics Rated Medium	Navrongo	Demongo	Total Clinics Rated Low	
Labor Costs	0.42	1.47	0.52	0.80	0.46	0.56	0.29	0.70	0.50	0.46	0.80	0.63	0.63
Capital Equipment (buildings, equipment, vehicles, etc.)	0.04	0.16	0.02	0.07	0.03	0.01	0.02	0.08	0.03	0.03	0.01	0.02	0.04
Commodities	2.16	0.19	3.04	1.80	1.05	2.71	2.14	1.51	1.85	2.07	1.94	2.00	1.87
Vaccines, etc.	0.0029	0.005	0.00	0.0026	0.0136	0.0038	0.0026	0.0017	0.0054	0.0044	0.00	0.0022	0.0037
Other Operating Costs	0.16	0.07	0.13	0.12	0.19	0.06	0.05	0.12	0.105	0.36	0.30	0.33	0.16
TOTALS	2.78	1.89	3.71	2.79	1.74	3.34	2.50	2.41	2.49	2.92	3.05	2.98	2.70

*In U.S. dollars, per recipient visit. Conversion based on 1977 official exchange rate of \$1 U.S. = 1.15 Cedi.

THE GHANA STUDY TEAM

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LESOTHO REPORT

SECTION IV. IMPLEMENTATION OF THE STUDY IN LESOTHO

Background

Lesotho is small, mountainous, landlocked--covering about 11,700 square miles, or about the size of the State of Maryland--and completely surrounded by South Africa. Three-fourths of the country is composed of foothills and mountains, severely limiting the availability of arable land. Only 13 percent of the land is arable. The lowlands support about 50 percent of the population. Population of the country is 1,213,906 as of the 1976 census. Hence, the ratio of population to arable land is less than an acre per person--a statistic of importance to health and nutrition. This condition is offset somewhat by the fact that an estimated 60 percent of the male labor force or about 90 percent of the employed males and 6 percent of the female labor force are employed in South Africa (van der Weil, 1977). While males spend a great amount of the time away from their families, the availability of employment permits the family to purchase food. It also means that a considerable portion of the family income, both rural and urban, is expended for food. Self-sufficiency in food production in Lesotho has been approximately 50 percent (Anderson, 1978); 10 percent comes from food aid; and the remaining 40 percent is imported from South Africa.

The impact of the labor migration phenomenon on nutritional status is also felt in agricultural production. In the absence of the male, agricultural work is left largely to the women, children, and older men. Attempts to expand agriculture, to plant trees, to delimit erosion ditches, to build hillside terracing and dams have largely failed. The problem is compounded by a communal land tenure system, where most land is held by the government, and individuals cannot use a negotiable title as security to obtain agricultural credit.

The literacy rate in Lesotho is estimated at approximately 50 percent. However, the number of youth entering and graduating from secondary school appears to be declining. Schools are overcrowded, standards are low, and the curriculum generally inappropriate to the needs of the population.

Major health problems are communicable diseases--gastroenteritis, tuberculosis, venereal disease, and measles. Typhoid and typhus epidemics occur periodically. These diseases are largely related to poverty, limited access to clean water, poor hygienic standards, and inadequate preventive health services and health education.

Health services are provided in nine government and eight mission hospitals, and through sixty mission and twenty-five government health clinics. Ante- and post-natal services are provided at all health facilities and approximately 30 percent of all deliveries are supervised in hospitals, health centers, or in the home.

In 1977, when the growth chart study began, Catholic Relief Services was operating some 65 preschool programs which distribute food, monitor infant and child weight using the growth chart, provide health and nutrition talks and food demonstrations, and examine and provide immunization for infants and children. An estimated 50,000 preschoolers were registered at the CRS clinics and attendance was reported to be quite regular. Still, CRS records indicate that less than a third of the eligible children are served by the programs.

Anderson (1973) has reviewed the history to date of the reported nutritional status of people of Lesotho and of the programs undertaken to improve nutritional and health conditions. An example of difficulties is worth citing. An applied nutrition program was set up by the Ministry of Agriculture in 1962 in response to recommendations of a study by the World Health Organization. Under this program field workers known as Home Economics Assistants work at the village level to promote food production and encourage proper use of the food for nutrition. Despite these and efforts by some 50 agencies using as many as 1,000 resource centers, it was estimated that only about 25 percent of the population is currently being reached with basic nutrition information. The most recent study of nutritional status, conducted in 1976, reveals the following:

- ✓ Of the children under age five, 23 percent are chronically malnourished, i.e., below 90 percent of the medium Harvard standard of height for age. An additional 22 percent were found to be underweight for age, although not chronically malnourished.
- ✓ Of the mothers examined in the survey, 5 percent were undernourished; 21 percent were obese; and 5 percent were suffering from goiter.

Study Sites in Lesotho

Selection of study sites was made with the assistance of the in-country project team, using such factors as geographic dispersion, sponsor-type representation, and judged quality of nutrition education and growth chart usage. Ten clinics were included in the sample. Each is described briefly in the paragraphs which follow.

St. James, Mokhotlong

Located in the mountain region, this clinic is operated by the Roman Catholic Mission. It provides medical services and some preventive health services. It does not provide recuperative services for the malnourished. The average number of clients served per month is about 1,100. Food is distributed to attendees. Nutrition and related health education is provided, including educational use of the growth chart. Observations indicate that the clinic is well staffed and operated. Lectures are required for all attendees. The physical arrangement of the clinic is conducive to regular counseling of the mothers.

St. Rose, Peka

St. Rose is located in the lowlands and is operated by the Roman Catholic mission. It provides medical services, including maternity care, some preventive health services, and recuperative care for the malnourished. Food is provided. The clinic serves approximately 900 clients per month. Nutrition and related health education is provided. Observations indicate that the growth chart is used primarily as a record. Educational talks are not fully organized, and mothers tend to wander in at odd times and attend lectures only periodically. Still, the staff is stable, the clinic well run, and lectures better than average.

St. James, Mantsonyane

Operated by the Anglican mission, this clinic is located in the mountain region. It provides medical and recuperative services and some preventive health services. It serves approximately 500 clients per month. Nutrition education is provided through lectures and demonstrations; counseling is provided. The growth chart is used primarily as a record. Food is distributed to participants.

Tsakholo, Mafeteng

Tsakholo clinic is in the lowlands. Operated by the government, it provides medical and recuperative services, and some preventive health services. Food is distributed. Participants average approximately 1,300 per month. Nutrition and related education is provided and is judged to be exceedingly good. This clinic is used as one of the government's "show cases" to demonstrate the quality of health care. However, observations during the study suggested that staffing problems tend to have a disruptive effect at times, reducing somewhat the quality of education.

Teyateyaneng

Operated by the Red Cross and the local community, Teyateyaneng is located in the lowlands. It has no medical or recuperative services, but does provide preventive services and distributes food to its participants. Records show an average monthly attendance of approximately 900. Nutrition and related health education is provided for the mothers, using food demonstrations and lectures. The growth chart is used as a clinical record. Extension workers are sometimes enlisted to assist in the educational aspects of the program. During the study year the clinic experienced major staff changes, and at times staffing was a sufficient problem that it was questionable whether the clinic could remain open. These factors of course, affected quality of service and education.

St. Pauls, Butha-Buthe

Located in the foothills, St. Pauls is operated by the Roman Catholic mission. It provides medical and preventive health services. Food is distributed to participants, numbers of which average about 1,500 per month. Nutrition and related health education is provided. During the study year the nurse in charge was ill much of the time. No replacement appeared to be available. Observations suggested that the aides, in absence of the supervisor, did relatively little lecturing and counseling. Nutrition extension workers did assist at the clinic periodically and provided some educational talks. The growth chart is used as a clinic record.

Mofokas

Mofokas is a community sponsored and operated clinic located in the lowlands near the foothills. It has no medical or recuperative services and only limited preventive services. Food is distributed to participants. Education includes lectures about nutrition and health, and food demonstrations. The clinic serves about 400 clients per month. Observations of clinic activity evidenced no attempts at counseling for the mothers; lectures appeared to be only periodic. The growth chart is used as a clinic record.

Queen Elizabeth Maseru

Located in the lowlands, this clinic is operated by the government. Medical service is limited to treatment of minor ailments, ante- and post-natal diagnosis and referral, and some preventive care. It has no recuperative services. No food is distributed to participants. Nutrition education is limited to lectures, sometimes provided by Extension workers. The growth chart is used as a clinic record. The clinic serves about 300 clients per month.

Quithing

This local clinic, located in the Quithing River Valley, is supported by Catholic Relief Services. Its medical service is limited to treatment of minor ailments and some preventive health care. It has no recuperative services. Lectures on nutrition are reportedly provided by village health workers. However, no lectures were observed during visits to the site. Clinic records indicated that almost 2,000 clients were served monthly. Counseling of mothers is exceedingly difficult and irregular, due to the large numbers served and the very difficult field conditions under which the clinic operates. The growth chart is used as a clinic record.

Leribe

The Leribe Clinic is operated by the Red Cross. It serves an average of 450 clients per month. Medical services are limited to referral and inoculations. There is a hospital in the area, and the clinic had at one

time been a part of that complex. Difficulties in that arrangement resulted in the clinic's disassociation from the hospital and relocation at another site during the study year. The clinic provides nutrition and related health education, including lectures on how to prepare baby's food and the importance of weaning. The growth chart is used as a clinic record.

Rating of Clinics in the Lesotho Sample

Clinics were rated in accordance with the rating scheme shown in Table 3. The result was as follows:

<u>Clinic</u>	<u>Rating</u>	<u>Judged Quality</u>
St. James, Mokhotlong	7.24	HIGH
St. Rose, Peka	7.12	
St. James, Mantsonyane	6.49	
Tsakholo, Mafeteng	5.76	MEDIUM
Teyateyaneng	5.33	
St. Paul, Butha-Buthe	5.20	
Mofokas	5.13	
Queen Elizabeth, Maseru	4.82	LOW
Quithing	4.22	
Leribe	3.89	

Data Reduction and Analysis

Data were coded and reviewed at the field sites by supervisors, and subsequently rechecked by members of the project team for accuracy of coding. Key punching and taping of data were accomplished at a government computer center in Maseru. Therein lay the major difficulty in data handling for the entire study.

The computer equipment in Maseru was built and installed by a British firm, ICL. Equipment and tapes were nonstandard with respect to American equipment. The descriptions provided to the project staff for reading the tapes gave incorrect information on the number of tracks and on the header language. Without the correct information tapes could not be read. After several abortive attempts by U. S. firms to unlock the tapes, a representative of ICL was located in New York City and the tapes shipped there for conversion. Whether lost in the initial taping or in the decoding process is not known, but one-third of the data for selected categories at selected clinics was not recovered.

Data were tabulated by clinic and by clinic rating. The data are presented at the end of the section on Implementation of the Study in Lesotho. They include:

- ✓ Table 13. Family Characteristics
- ✓ Table 14. Mother's Characteristics
- ✓ Table 15. Mother's Report About Educational Activities
- ✓ Table 16. Child's Nutritional Status--Weight for Age
- ✓ Table 17. Mother's Report of Child's Illnesses
- ✓ Table 18. Child's Food Consumption Behavior
- ✓ Table 19. Mother's Food Consumption Behavior
- ✓ Table 20. Mother's Nutritional Knowledges and Attitudes
- ✓ Table 21. Clinic Operating Costs

The data were examined on the basis of overall clinic measures rather than on the basis of individual participant measures. The data were first examined for comparability of study participants at the individual clinics and across clinic rating groups.

Characteristics of Families and Mothers

Data in Tables 13 and 14 provide the following picture of the sample of mothers and their families:

- ✓ The average family size across clinics was 5.32 members. There is no essential difference in the mean family size across clinics of different ratings.
- ✓ On the average, families at clinics rated low bear fewer children (2.80) than do those at clinics rated high (3.55) and fewer than those at clinics rated medium (3.02). Further, fewer childhood deaths occur.
- ✓ Almost all families are supported by a male--an average of 90.6 percent and a range from 77.9 percent at St. James Mantsonyane to 96.2 percent at St. Rose, Peka.
- ✓ Two-thirds of the male heads of families are employed in manual labor. Only 4.2 percent were engaged in farming; 8.1 percent were unemployed.

- ✓ About half, 45.5 percent, of the mothers in the sample were employed; 19.8 percent were engaged in farm work, 11.4 percent in professional jobs. Employment in professional jobs was negligible, excepting for the sample at Queen Elizabeth Clinic near the capital city of Maseru where 28.0 percent of the male heads of families were so employed.
- ✓ Almost all residences were owned by the husband, or wife, or both, or by some other member of the family. Less than 1.0 percent of the families rented a home or tenant farmed.
- ✓ Only 5.6 percent claimed urban residence; the vast majority, 91.7 percent, lived in small villages. Only about half lived within 2 kilometers of a clinic; 13.0 percent lived 7 or more kilometers distance from a clinic.
- ✓ Ages of the mothers ranged from 13 to 59 years, with a mean age of 27.8 years. There was no appreciable difference in ages from clinic to clinic. Almost all the mothers (96.1 percent) were married.
- ✓ Almost all or 98.0 percent mothers in the sample were of the Mosotho tribe.
- ✓ Three-fourths of the mothers had gardens of some type where food could be grown.
- ✓ Almost all, or 96.3 percent of the mothers had some formal education; 49.2 percent had more than six years schooling. With respect to the latter, it is noted that the women of Lesotho have one of the highest literacy rates on the continent.

Overall, there are no particularly revealing differences with respect to the families and mothers attending specific clinics and, when examined on the basis of groups of rated clinics, practically what differences there are tend to disappear.

Mother's Report About Educational Activities

Mothers were asked, during each interview, to provide information concerning how the growth chart was used as an educational tool. This was explored in two ways--first by asking if the growth chart had been discussed, and secondly, through an open-ended question which asked what had been discussed during clinic attendances. Responses to these questions are presented in Table 15.

As expected, mothers more frequently responded yes to the first question than they identified growth chart-related teaching in response to the second open-ended question. Only two clinics, St. Rose, Peka and Leribe failed to demonstrate a higher frequency of response at the time of the second data collection than was obtained by the first. (Missing data at the third data collection make this set unrepresentative.) In general, three-fourths of the mothers responded positively to the question about discussion of the growth chart. There was no consistent difference in rate

of positive response associated with the clinic ratings, but in clinics rated medium, there was a 95 percent positive response at the time of the second interview and about 54 percent of these mothers independently mentioned growth chart related instruction during both interviews.

The mothers' report of educational activities, which were used as one input to the clinic ratings as to use of the growth chart as an educational tool, bear very little relationship to that overall rating, as shown in the listing below:

<u>Clinic Ranking on Multiple Parameters</u>		<u>Mother's Report--Weighted Percent Responding "Yes" to "Growth Chart Discussed?" (Across 2 Measures)</u>	
St. James, Mokhotlong	7.24	St. James, Mokhotlong	98.8
St. Rose, Peka	7.12	Tsakholo	97.8
St. James, Mantsonyane	6.49	Quithing	97.4
Tsakholo, Mafeteng	5.76	Teyateyaneng	96.7
Teyateyaneng	5.33	St. Rose, Peka	78.0
St. Paul, Butha-Buthe	5.20	St. Paul, Butha-Buthe	75.2
Mofokas	5.13	Mofokas	64.5
Queen Elizabeth, Maseru	4.82	Leribe	63.7
Quithing	4.22	Queen Elizabeth, Maseru	61.5
Leribe	3.89	St. James, Mantsonyane	29.8

As previously discussed, the clinic ratings were derived from six different measures of which the mother's responses to growth chart usage provide only two out of eleven points. Greater weight was given to observations by the study team and to reports by clinic workers. The mother's perception of education was used as an additional variable for exploring some of the criterion variables of: the child's nutritional status (weight for age), the mother's report of the child's illnesses, the child's food consumption behavior, the mother's food consumption behavior, and the mother's nutritional knowledges and attitudes.

Child's Nutritional Status, as Defined by Weight for Age

Weight and age data were extracted from the growth charts. Nutritional status of the child was determined from the child's weight for age as a percentage of the Harvard standard.* Baseline age distributions for the 1,803 children included in the Lesotho sample, and the nutritional status data for the three sequential measurements examined are presented in Table 16. The following observations are derived from those data:

*Much of these data were lost in the tape conversion process. It was possible to replicate some of these data from a different record, but it was not possible to determine the sex of the child from these data. Therefore, all calculations of percent weight for age were made against the female standards.

- ✓ Usually slightly less than 50 percent of the children at the clinics were 18 months of age or less at the baseline measure. At some clinics, however, the children were, on the average, considerably younger. For example, at Queen Elizabeth in Maseru, 78.2 percent of the children were six months old or younger and 98.9 percent were 18 months or less. At Mofokas, the children were also younger than average, with 63.4 percent of them no older than 18 months.
- ✓ Initially, the majority of the children (77.2 percent) were below 100 percent weight for age. Better than half (52.2 percent) were also below 90 percent weight for age. There is variation among the clinics, but on the whole the high rated clinics have a larger percentage of children under 80 percent weight for age than the other clinics. (31.3 percent for high rated versus 18.8 percent for medium rated clinics and 22.9 percent for low rated clinics.)
- ✓ At the high rated clinics there is not much change in the ratio of children at 80 percent of weight for age or less from the first to the second measurement. For the high rated clinics there is also no change in the percentage of children at 90 percent weight for age from the first to the second measurement. There is not much greater improvement for the low and medium rated clinics. But, the medium rated clinics shift from 51.4 percent rated at 90 percent weight for age or better at the first measurement to 60.3 percent at the second.
- ✓ Where data are available for the third measurement, two clinics made steady positive improvement in the percentage of children at 80 percent or better weight for age, Teyateyaneng and Leribe.
- ✓ There is no apparent relationship between average age in months at the baseline measure and rate of improvement in weight for age, either by clinic or by clinic rating group.

When the weight for age data are examined against the mother's reported frequency of a positive response to the question of whether or not the growth chart was discussed at the clinic, there is no apparent relationship to the rate of weight improvement. No clear patterns emerge as to weight for age changes related to the indicators of the growth chart as an educational tool.

Reported Illness of Children

During each sequential interview, the mother was asked if the child had been seriously ill during the preceding six months. This question was also asked about the two weeks preceding the interview time. The responses are presented in Table 17.

For the high and medium rated clinics, there is a steady decrease in the percent of reported illnesses across the three sequential measures and for both time periods. For the high rated clinics, reported illness during the last six months shifted from 62.8 percent, to 33.8 percent, to 20.9 percent at the third measure. For the medium rated clinics, the comparable percentages were 67.3, 43.1, and 44.0. For the short two-week period prior to the interview, the mothers at the high rated clinics reported illness 45.8 percent of the time initially, and this was reduced to 22.5 and 13.3 percent at the subsequent measures. Comparable percentages for the middle rated clinics are 43.8, 36.8, and 22.9. For the low rated clinics there was very little change in reported frequency of illness for the two weeks preceding the interview. For the six month period, the percentage decreased from 48.5 at the first interview to 39.5 percent at the second, but increased to 67.0 percent at the third.

The data show sporadic outbreaks of gastroenteritis and general reduction in the reported frequency of childhood diseases as the children grow older. But there are no apparent relationships associated with the growth chart education parameters.

Child's Food Behavior

A measure of the child's food behavior was taken by 24-hour food recall reported by the mother. Food recall data were reviewed and rated by the nutritionists. Ratings took account of age and health status of the child, and ranged from extremely poor to excellent. The data are summarized in Table 18.

At the baseline measure, 83.3 percent of the children in the sample had adequate or better than adequate diets. By the second measure, this percentage decreased to 75.4 percent; by the third measure, for those clinics for which data are available, the frequency of adequate or better diet reduced slightly again, to 72.2 percent. Average diet rating (on a scale from 1 to 5) degraded from 3.29 at the first measure, to 3.14 at the second and 3.09 at the third.

The frequency of poor diets tended to be unstable in clinics rated high and low--for the high rated clinics the percentages were 23.5, 32.5 and 18.5 over the three measures; for the clinics rated low, the percentages were 13.1, 18.1, and 6.5. Diets tended to worsen in the clinics rated medium: poor diets were reported for 14.9 percent of the children initially, this worsened to 22.3 percent at the second measure and to 40.7 percent at the third. And the frequency of good diets decreased from about 35 percent at the first measure to about 13 percent at the third.

Within the clinic ratings, clinics vary in their adequacy of the child's diet from reporting period to period. But, there is no evidence to associate the shifts in diet ratings to the measures of use of the growth chart in the clinics nor to the mothers reported exposure to the growth chart as an educational tool.

Mother's Food Behavior

The 24-hour food recall was also used to record the mother's diet which also was rated by the nutritionists assisting with the study. As for the child's diet, ratings ranged from extremely poor to excellent on a 1 to 5 scale. These data are presented in Table 19.

Initially, goodness of diet bears an inverse relationship to the clinic ratings, with low rated clinics having the highest mean diet rating. Across the clinic rating groups, the average rating decreases from the first to the second measure, but again, the low rated clinics maintain the highest average rating. Across all clinics, the percentage of poor or extremely poor diets increased from 32.1 percent at the first measure to 43.9 percent at the second measure. By the end of the study 42.6 percent of the mothers' diets were rated poor or extremely poor. Over the same period, the percentage of good to excellent diets remained exceedingly constant (21.4 percent at the first measure, 20.3 percent at the second, and 18.5 percent at the end of the study). There is no information to explain why the goodness of the mother's diet shifts from time to time.

Mother's Nutritional Knowledges and Attitudes

At the baseline measure and again at measurement three a year later, mothers were asked a series of questions designed to assess knowledge and attitudes about child feeding, weaning, and understanding of the information contained in the growth chart. Comparisons of responses at the first and final interviews are summarized in Table 20. Findings are discussed below in relation to clinic workers expected effects of education on the mothers' knowledges and attitudes.

Number of Months Child Should Breast-Feed. The expected effect was an increase in the mean number of months of breast-feeding reported by the mothers. Across all clinics in the sample, this increase was very small (23.48 months at baseline and 24.95 a year later). However, at the one clinic where reported number of months reported at baseline was seven months lower than the mean, marked change did occur over time. Whereas the mothers at Teyateyaneng reported a mean of 16.69 months on measurement one, a year later the mean number of months reported was 22.48. Other than that single case clinic, there appears to be no great difference across the successive measures either among clinics or clinic ratings.

Age to Introduce Liquid Supplements. The expected effect was a decrease in the age at which mothers believed children should be fed liquid nutrients other than breast-milk. This expected change occurred over time at all clinics excepting Teyateyaneng, and in all groups of clinics by clinic rating. The mean over all shift was from 4.57 months down to 2.40 months; the greatest shift was from 4.48 months to 0.98 months, at St. Paul clinic. Both Teyateyaneng and St. Paul clinics were in the group rated as medium.

Age to Introduce Solid Foods. The expected effect was a decrease in the mean age at which mothers believed children should be fed solid foods, concurrent with breast-feeding. This effect was demonstrated across all

clinics (from 7.74 months to 6.65 months), and in those clinics rated medium (from 8.01 months to 6.09 months) and low (from 8.10 months to 6.70 months). It did not occur in the one clinic rated high for which data were available. At St. Rose the mean age reported by the mothers increased from 7.15 months to 7.56 months.

How the Child Should be Weaned. The expected change here was an increase in the number of mothers responding "gradually, over more than a month," and to decrease the number of mothers responding "all at once." Across the total sample neither of these expectations was met. The mean percent of mothers responding "gradually, over more than a month" decreased from 4.5 to 1.6; the percent of mothers responding "all at once" increased from 64.6 to 73.6. The first expected effect occurred only at two clinics, one rated high and one rated low. At St. Rose, Peka the percentage of mothers responding "all at once" decreased from 74.4 to 65.6 and at Teyateyaneng, the percentage decreased from 97.5 to 81.4 but remained high.

Special Foods to Help Young Child Grow. The expected effect was that mothers would demonstrate knowledge about feeding proteins to children. Across all clinics, such change was not demonstrated since at the baseline measurement almost all mothers or 95.1 percent of the sample mentioned protein, as necessary for the children. This percentage did not change appreciably over time.

Awareness of Susceptibility to Malnutrition and of Corrective Actions. Clinic workers sought to create an awareness that malnutrition can occur with any child unless the mother provides proper nutrition, and that special nutrients can help the malnourished child. Mothers were shown a picture of a malnourished child and asked--what was wrong, could it happen to her child, and if her child became malnourished what action would she take.

There is no evidence that mothers gained a greater awareness that their children could become malnourished. Fewer mothers responded "yes" to the direct question on the third interview than on the first (27.1 percent versus 36.5 percent). But, there is no way of knowing if this was an indication of greater understanding of nutrition and confidence that they could prevent malnutrition, or an indication of declining awareness.

Expected responses as to what the mother could do for a malnourished child were "special feeding" and "take the child to the clinic." Across the sample of clinics there was an increase of the "special feeding" response (28.5 percent to 36.3 percent). This positive change over time was solely the effectiveness of one clinic rated high. In clinics rated medium or low, a reverse trend was demonstrated. No change was demonstrated in the overall percent of mothers responding "take the child to the clinic" (44.3 percent and 44.2 percent). However, at the one clinic rated high, the percent citing this action as appropriate for the malnourished child increased from 36.0 to 90.8 percent; at clinics rated medium or low, the percent citing this action as appropriate actually declined.

Interpretation of the Growth Chart. In a series of questions, mothers were to demonstrate ability to interpret charts showing good and bad growth for the child, and to interpret their own child's chart. Across the study

sample and at the individual clinics also, the rate of correct initial response on this series of questions was generally very high. For most questions, about 85 to 88 percent of the mothers provided the correct interpretation. At the time of the subsequent questioning a year later, some clinics demonstrated slight general improvement in the percent of correct responses; others demonstrated a degradation. The most severe degradation occurred at the clinics rated high in interpretation of the mother's own child's chart. There is no way of determining what characteristics of the situation led to these shifts except to assume a higher than average rate of deselection of mothers having better understanding of the chart.

Clinic Costs

Data on clinic costs per recipient visit were provided by the project team from HIID, and were collected in Lesotho during the period of the growth chart study. Included in the costs are: labor, capital equipment, commodities, preventive medicine, and other operating costs.

The cost data, converted to U. S. dollars at the then current official exchange rate, are summarized in Table 21. Across all clinics, the average total cost per recipient visit was \$4.69, with a range from \$1.59 at Queen Elizabeth clinic near Maseru, to \$7.84 at St. James Mantsonyane. The major cost item was the commodities, which, on the average, represents better than 75 percent of clinic costs.

Clinics which were rated low have the lowest average total cost per recipient visit, at \$3.41. Clinics which were rated high have the highest average total cost per recipient visit, at \$5.73.

Conclusions

There is good evidence of use of the growth chart in all of the selected clinics in Lesotho and that imposition of the study on the clinics probably resulted in its increased use. Wide use of the growth chart as an educational tool was demonstrated; such use generally increased as the study continued.

At the inception of the study there was evidence that a large proportion of the mothers were able to correctly interpret the growth chart information. Subsequent measurement did not demonstrate a consistent pattern in correct interpretation: the percentage of correct responses increased at some clinics and decreased at others. Other positive indications of the effectiveness of the clinic education are found in selected knowledges and attitudes on the part of the mothers. Positive effects are associated primarily with earlier introduction of liquid supplements and solid foods. There was an initial high awareness of the need for feeding protein to young children and no increased knowledge was demonstrated on this related measure.

In general, children who are extremely malnourished appear to be helped more than those who are less extremely malnourished. Overall there is not a great improvement in the percentage of children reaching 90 percent of weight for age or better, but there is improvement in the percentage reaching 80 percent of weight for age or better. There is also a reduction in the overall percentage of children reported ill during the two weeks or six months preceding the clinic visit. Extreme variation among the clinics in these data may indicate different clinic policy with respect to routine visits for healthy children.

Other evidence of the effects of clinic teaching such as the child's and the mother's improved food consumption were sought. Initially, a large majority of the children had adequate or better than adequate diets. This condition did not remain; the children's diets deteriorated over time. For mothers, the percentage of poor or extremely poor diets increased across time. There is no particular known reason for degradation of the diets.

It was not possible to identify a set of factors, or even one factor about the clinics' use of the growth chart associated with improved knowledges, attitudes, and practices on the part of the mothers. Use of the chart no doubt differed as much within clinics from time to time, as across the set of clinics. Other factors, such as the mother's intellectual and financial ability to effect a better diet and therefore better health for her child, certainly must play a considerable role in these data just as they do for all other nutrition education investigations. The nature of the analysis on a clinic by clinic basis, rather than on an individual by individual mother/child combination basis, does not permit investigation of the effect of these compounding variables on the criterion variables. Nor do costs of operating the clinics provide any insight into what makes one clinic more effective than another.

Table 13

Family Characteristics, by Clinic and Clinic Rating - Lesotho

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Total Family Size</u>	N	177	173	197	547	174	199	200	178	751	184	176	193	553	1,851
	Mean	5.91	5.39	5.86	5.73	4.55	5.63	4.98	4.90	5.03	5.52	5.02	5.40	5.32	5.32
	Std. Dev.	2.43	2.27	6.77		1.87	2.41	2.00	2.39		11.45	2.08	2.36		4.74
<u>Number of Children Born</u>	N	175	179	194	548	171	182	192	178	723	177	176	188	541	1,812
	Mean	4.11	2.94	3.60	3.55	2.68	3.61	3.09	2.66	3.02	2.51	2.77	3.09	2.80	3.11
	Std. Dev.	2.79	2.28	2.56		1.96	2.59	1.99	1.84		17.41	1.71	6.87		6.35
	Range	1-11	1-21	1-13	1-21	1-11	1-13	1-9	1-8	1-13	1-9	1-9	1-9	1-9	1-21
<u>Number of Children Dead</u>	N	175	178	191	544	171	180	192	177	720	184	173	189	546	1,810
	Percentage:														
	0	76.6	84.8	67.5	76.1	76.0	71.1	78.7	75.1	75.3	83.7	96.0	87.8	89.0	79.7
	1	11.4	12.4	20.4	14.9	19.3	16.7	16.7	19.2	17.9	13.0	2.3	7.4	7.7	13.9
	2 or more	12.0	2.8	12.0	9.0	4.7	12.2	4.7	5.7	6.8	3.3	1.7	4.8	3.3	6.4
	Total	100.0	100.0	99.9	100.0	100.0	100.0	100.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Number of Children Living</u>	N	175	177	191	543	169	177	193	173	712	182	172	189	543	1,798
	Mean	3.69	2.78	3.50	3.33	2.40	3.21	2.81	2.43	2.72	2.45	2.75	2.91	2.71	2.89
	Std. Dev.	9.47	2.27	11.00		21.10	8.39	1.73	9.48		12.84	15.88	2.03		11.18
	Range	1-11	1-21	1-13	1-21	1-10	1-11	1-8	1-8	1-11	1-9	1-9	1-9	1-9	1-21
<u>Male Supports the Family</u>	N	177	184	199	560	175	199	200	179	753	188	176	193	557	1,870
	Percentage:														
	Yes	88.7	96.2	77.9	87.3	91.4	94.0	93.0	91.6	92.6	95.7	86.9	90.7	91.2	90.6
	No	11.3	3.8	22.1	12.7	8.6	6.0	7.0	8.4	7.4	4.3	13.1	9.3	8.8	9.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantson-yane	Total Clinics Rated High	Tsakhoto	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
Male Employment Type	N	172	170	199	541	174	199	199	180	752	186	171	193	550	1,843
Percentage:															
None		13.4	6.5	18.1	13.0	5.2	5.0	5.0	7.2	5.6	3.2	6.4	10.9	6.9	8.1
Farming		4.7	7.1	6.0	5.9	4.0	3.0	4.0	2.8	3.4	3.2	0.6	6.7	3.6	4.2
Trade		7.6	2.4	4.0	4.6	4.0	10.1	6.0	2.8	5.9	8.1	1.8	10.4	6.9	5.8
Manual labor		58.7	74.7	59.8	64.1	79.3	64.8	74.9	79.4	74.3	52.2	79.0	56.0	61.9	67.6
Manufacturing		4.1	10.0	-	4.4	0.6	1.0	6.0	-	2.0	2.2	1.8	3.6	2.6	2.9
Artisan		2.9	-	2.5	1.8	1.2	5.5	4.5	3.9	3.9	4.3	12.3	4.7	6.9	4.2
Professional		8.1	-	4.0	4.0	1.2	9.1	1.0	3.9	3.9	28.0	7.6	7.8	14.6	7.1
Other		0.6	-	5.5	2.2	5.2	1.5	2.0	0.6	2.3	1.1	-	-	0.4	1.7
Male Employment Location	N	172	171	197	540	173	194	199	180	746	184	165	193	542	1,828
Percentage:															
None/no support		11.1	4.7	23.4	13.6	7.5	7.2	6.5	7.8	7.2	2.7	9.1	10.9	7.6	9.2
Local		16.9	7.6	12.2	12.2	2.9	23.2	10.1	2.8	10.1	42.9	4.2	2.6	16.8	12.7
Distant--usually home		5.8	51.5	16.8	24.3	8.7	21.1	16.6	11.7	14.8	22.8	27.9	48.2	33.4	23.1
Distant--usually away		66.3	36.3	47.7	50.0	80.9	48.5	66.8	77.8	68.0	31.5	58.8	38.3	42.2	55.0
Total		100.1	100.1	100.1	100.1	100.0	100.0	100.0	100.1	100.1	99.9	100.0	100.0	100.0	100.0
Home Location	N	177	184	198	559	182	200	200	180	762	190	184	194	568	1,889
Percentage:															
Rural farm		8.5	1.6	-	3.2	3.3	-	1.0	0.6	1.2	0.5	2.2	1.0	1.2	1.8
Rural nonfarm		0.6	0.5	-	0.3	-	3.0	0.5	-	0.9	2.1	1.6	1.0	1.6	0.9
Village		89.3	97.8	100.0	95.9	96.7	93.0	98.5	98.9	96.7	64.2	95.6	83.0	80.2	91.7
Urban/suburban		1.7	-	-	0.5	-	4.0	-	0.6	1.2	33.2	0.5	15.0	16.4	5.6
Total		100.1	99.9	100.0	99.9	100.0	100.0	100.0	100.1	100.0	100.0	99.9	100.0	100.0	100.0

Table 13 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
		St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyanong	St. Paul Butha-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>Home Ownership</u>	N	177	183	199	559	174	197	200	180	751	187	181	192	560	1,870
Percentage:															
Owned by husband, wife or both		85.3	79.4	79.9	76.2	76.4	70.6	79.5	91.1	79.2	49.2	75.7	73.4	66.1	74.4
Owned by another family member		11.9	33.3	17.6	20.9	23.6	23.9	17.5	8.3	18.4	11.2	18.8	13.0	14.3	17.9
Tribal ownership		-	2.2	-	0.7	-	-	1.0	-	0.3	5.3	1.1	1.0	2.5	1.1
Rented		2.8	1.1	2.5	2.1	-	4.6	2.0	0.6	1.9	27.8	3.9	12.5	14.8	5.8
Tenant farmer status		-	-	-	-	-	0.5	-	-	0.1	-	0.5	-	0.2	0.1
Other		-	-	-	-	-	0.5	-	-	0.1	6.4	-	-	2.1	0.7
Total		100.0	100.0	100.0	99.9	100.0	100.1	100.0	100.0	100.0	99.9	100.0	99.9	100.0	100.0
<u>Home Construction</u>															
<u>Walls</u>	N	177	184	199	560	174	199	200	180	753	187	183	193	563	1,876
Percentage:															
Mud		22.0	4.3	48.2	25.5	62.1	48.7	66.0	37.8	53.8	18.7	6.0	50.8	25.6	36.9
Wood		-	8.7	-	2.9	-	0.5	0.5	1.1	0.5	-	0.5	2.1	0.9	1.3
Brick		4.5	20.1	2.0	8.7	4.6	18.1	9.0	6.7	9.8	54.0	26.8	2.1	27.4	14.8
Stone or cement		73.4	66.3	49.2	62.5	33.3	31.2	19.5	53.9	34.0	23.5	66.7	45.1	44.9	45.8
Metal		-	-	0.5	0.2	-	-	-	0.6	0.1	-	-	-	-	0.1
Other		-	-	-	-	-	-	-	-	-	1.1	-	-	0.4	0.1
Combination		-	0.5	-	0.2	-	1.5	5.0	-	1.7	2.7	-	-	0.9	1.0
Total		99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.1	99.9	100.0	100.0	100.1	100.1	100.0

Table 13 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
	St. James Mokhotlong	St. Rose Peka	St. James Mantson-yane	Total Clinics Rated High	Tsakholo	Teyatevaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>Home Construction</u> (Cont)														
<u>Roof</u> N	177	184	199	560	174	199	200	179	752	189	182	193	564	1,876
Percentage:														
Thatch-grass	96.0	54.3	95.5	82.1	67.8	42.7	76.5	78.2	65.9	25.4	54.4	64.8	48.2	65.5
Metal	3.9	39.1	4.0	15.5	31.6	56.8	22.5	21.8	33.5	70.9	44.5	34.2	49.8	33.0
Tile or shingle	-	-	-	-	0.6	-	0.5	-	0.3	0.5	-	0.5	0.3	0.2
Tar paper	-	0.5	-	0.2	-	-	0.5	-	0.1	-	0.5	-	0.2	0.2
Mud	-	2.2	-	0.7	-	0.5	-	-	0.1	-	0.5	0.5	0.3	0.4
Cement	-	3.8	-	1.2	-	-	-	-	-	-	-	-	-	0.4
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Combination	-	-	0.5	0.2	-	-	-	-	-	3.2	-	-	1.1	0.4
Total	99.9	99.9	100.0	99.9	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	99.9	100.1
<u>Floor</u> N	177	184	199	560	174	199	200	180	753	189	182	193	564	1,877
Percentage:														
Mud	96.6	76.1	92.5	88.4	93.7	77.9	77.0	86.7	83.4	48.1	76.4	67.9	64.0	79.1
Wood	0.6	6.5	4.5	3.9	1.1	2.0	1.0	-	1.0	5.3	6.0	20.7	10.8	4.8
Cement	1.7	15.8	3.0	6.8	-	19.1	9.0	2.2	8.0	32.8	2.2	6.2	13.8	9.4
Other	1.1	1.6	-	0.9	5.2	-	12.0	10.6	6.9	11.1	3.8	4.7	6.5	5.0
Combination	-	-	-	-	-	1.0	1.0	0.6	0.7	2.6	11.5	0.5	4.7	1.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.0	99.9	99.9	100.0	99.8	100.0
<u>Water Source</u> N	177	184	198	559	175	198	199	167	739	187	183	192	562	1,860
Percentage:														
Rainfall	4.0	0.5	1.5	2.0	0.6	1.0	0.5	-	0.5	0.5	2.2	0.5	1.0	1.1
River	14.7	4.9	1.0	6.6	6.3	0.5	-	3.0	2.3	0.5	10.4	1.6	4.1	4.1
Well	30.5	61.4	93.9	63.1	89.1	71.2	80.9	85.6	81.3	41.7	59.6	61.5	54.3	67.7
Piped	26.6	32.1	2.0	19.7	2.9	14.2	17.1	10.8	11.5	23.0	10.4	20.3	18.0	15.9
Piped, filtered	24.3	1.1	1.5	8.6	1.1	13.1	1.5	0.6	4.3	34.2	17.5	16.2	22.6	11.1
Total	100.1	100.0	99.9	100.0	100.0	100.0	100.0	100.0	99.9	99.9	100.1	100.1	100.0	99.9

Table 13 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
		St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mefokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>Sewage Disposal</u>	N	162	192	200	554	182	198	200	187	767	177	184	195	556	1,877
Percentage:															
Indiscriminate		67.3	30.7	98.0	65.7	78.6	76.8	41.2	84.0	69.7	52.5	39.7	59.0	50.4	62.9
Pit latrine		32.1	65.6	0.5	32.3	20.9	20.7	58.8	8.0	27.6	36.7	25.0	36.4	32.7	31.3
Water seal/indoor plumbing		0.6	3.7	1.5	2.0	0.6	1.5	-	8.0	2.5	10.7	34.8	4.6	16.5	5.7
Other		-	-	-	-	-	1.0	-	-	0.3	-	0.5	-	0.2	0.2
Total		100.0	100.0	100.0	100.0	100.1	100.0	100.0	100.0	100.1	99.9	100.0	100.0	99.8	100.1
<u>Home Facilities</u>	N	177	172	199	548	174	198	200	175	747	185	183	193	561	1,856
Percentage with:															
None of the following		70.1	23.3	77.9	58.2	48.9	27.8	37.5	34.3	36.8	26.0	37.7	18.1	27.1	40.2
Electricity		0.6	2.3	0.5	1.1	0.6	1.5	1.0	0.6	0.9	10.3	2.2	6.7	6.4	2.6
Separate kitchen		23.7	32.0	4.0	19.1	16.1	41.9	37.5	34.9	33.1	52.4	16.9	39.4	36.3	30.0
Refrigerator		1.7	0.6	0.5	0.9	-	1.5	1.0	1.1	0.9	2.7	2.7	1.0	2.1	1.3
Radio		12.4	46.5	19.6	25.7	47.1	60.1	45.0	43.4	49.1	53.5	58.5	58.0	56.7	44.5
<u>Land Ownership</u>	N	162	174	198	534	181	200	199	179	759	179	184	194	557	1,850
Percentage:															
None		27.8	8.1	24.2	20.0	1.7	4.0	3.5	3.4	3.2	33.5	16.3	12.9	20.6	13.3
Small garden		36.4	39.1	30.8	35.2	84.5	93.5	60.8	51.4	72.8	35.2	49.5	21.1	35.0	50.6
Large garden		12.4	42.0	13.6	22.5	18.8	1.0	32.7	41.3	23.1	27.4	14.7	68.6	37.5	27.2
Small farm		5.6	5.8	32.3	15.6	40.3	23.5	35.2	25.1	30.9	11.7	37.0	1.6	16.5	22.2
Large farm		35.2	5.2	32.8	24.5	41.4	35.5	25.6	49.2	37.5	2.2	16.3	3.1	7.2	25.9
Grazing land		1.2	-	0.5	0.5	-	-	-	-	-	-	0.5	-	0.2	0.5
<u>Distance to the Clinic</u>	N	175	180	197	552	176	199	131	178	684	190	121	193	504	1,740
Mean		3.77	2.27	9.77	5.42	4.19	3.59	5.42	2.63	3.85	7.10	2.35	3.88	4.73	4.60
Percentage:															
2 Km or less		33.1	91.7	11.7	44.6	37.5	43.7	25.2	77.0	47.2	26.3	92.6	43.5	48.8	46.8
3-4 Km		19.4	5.6	10.2	11.6	13.1	29.7	13.7	10.1	17.3	17.4	3.3	22.3	15.9	15.1
5-6 Km		46.3	1.7	44.2	31.0	36.9	18.1	45.0	9.5	25.8	19.4	2.5	25.4	17.6	25.1
7 Km or more		1.1	1.1	34.0	12.8	12.5	8.5	16.0	3.4	9.6	36.9	1.6	8.8	17.7	13.0
Total		99.9	100.1	100.1	100.0	100.0	100.0	99.9	100.0	99.9	100.0	100.0	100.0	100.0	100.0

Table 13 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Eutha-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Transportation Mode to the Clinic</u>	N	177	184	199	560	182	200	200	180	762	191	184	194	569	1,891
Percentage:															
On foot		94.4	85.9	89.5	89.9	97.8	77.0	77.5	78.3	82.4	13.6	98.9	47.9	52.9	75.7
Public vehicle		0.6	13.6	0.5	4.8	0.6	22.5	22.5	21.7	17.1	77.5	-	52.1	43.8	21.5
Private vehicle		-	-	-	-	1.1	0.5	-	-	0.4	8.9	1.1	-	3.3	1.2
Horse		5.1	0.5	10.1	5.4	0.6	-	-	-	0.1	-	-	-	-	1.6
Other		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		100.1	100.0	100.1	100.1	100.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Travel Time to the Clinic</u>	N	176	181	195	552	178	199	200	178	755	191	142	194	527	1,834
	Mean	85.03	29.36	183.07	101.41	137.15	41.06	65.01	64.79	80.95	27.86	25.08	83.66	47.65	77.54
Percentage:															
Less than 10 minutes		5.1	12.7	1.0	6.1	-	0.5	0.5	3.9	1.2	5.8	6.3	2.6	4.8	3.7
10-20 minutes		6.8	45.9	0.5	17.4	1.7	26.6	5.0	21.4	13.8	43.5	52.1	18.6	36.6	21.4
20-30 minutes		17.1	18.2	2.6	12.3	1.1	35.2	13.0	12.4	15.9	31.4	28.9	15.0	24.7	17.3
30-60 minutes		11.4	18.8	11.8	14.0	23.0	29.2	34.5	34.8	30.5	15.7	10.6	22.2	16.7	21.5
60-120 minutes		33.0	2.8	25.1	20.3	30.3	6.5	41.0	19.7	24.4	3.7	1.4	27.8	11.9	19.6
More than 120 minutes		26.7	1.7	59.0	29.9	43.8	2.0	6.0	7.9	14.3	-	0.7	13.9	5.3	16.4
Total		100.1	100.1	100.0	100.0	99.9	100.0	100.0	100.1	100.1	100.1	100.0	100.1	100.0	99.9

Table 14

Mother's Characteristics, by Clinic and Clinic Rating - Lesotho

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
		St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>Ethnic Group</u>	N	189	198	200	587	197	200	200	200	797	200	187	197	584	1,968
Percentage:															
Mosotho		100.0	100.0	99.0	99.6	100.0	98.5	97.5	100.0	99.0	100.0	85.0	99.5	95.2	98.0
Xhosa		-	-	-	-	-	-	-	-	-	-	7.0	-	2.2	0.7
Tembu		-	-	1.0	0.2	-	-	-	-	-	-	6.4	-	2.0	0.7
Zulu		-	-	-	-	-	0.5	0.5	-	0.2	-	1.6	0.5	0.7	0.3
Other		-	-	-	-	-	1.0	2.0	-	0.7	-	-	-	-	0.3
Total		100.0	100.0	100.0	99.8	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.1	100.0
<u>Mother's Age</u>	N	148	153	151	452	149	139	187	158	633	179	136	168	483	1,568
Mean		29.72	27.91	28.02	28.54	26.68	29.14	27.02	27.41	27.50	26.42	27.11	28.79	27.44	27.77
Std. Dev.		7.37	8.33	8.50	9.75	9.75	19.75	13.62	6.74	5.96	6.08	13.28	11.16	11.16	11.16
Range		18-59	17-50	16-50	16-59	16-50	18-50	16-50	15-44	15-50	17-44	19-48	13-50	13-50	13-59
<u>Marital Status</u>	N	173	177	194	544	173	180	193	180	726	183	181	188	552	1,822
Percentage:															
Married		92.5	100.0	94.3	95.6	96.5	97.2	94.8	95.6	96.0	96.2	96.1	97.3	96.5	96.1
Widowed		2.9	-	2.6	1.8	-	0.6	3.6	2.2	1.6	1.1	-	1.6	0.9	1.5
Divorced or Separated		2.9	-	1.0	1.3	1.2	0.6	0.5	1.7	1.0	0.6	0.6	-	0.4	0.9
Never Married		1.7	-	2.1	1.3	2.3	1.7	1.0	0.6	1.4	2.2	3.3	1.1	2.2	1.6
Total		100.0	100.0	100.0	100.0	100.0	100.1	99.9	100.1	100.0	100.1	100.0	100.0	100.0	100.1
<u>Mother's Education</u>	N	173	175	192	540	172	179	191	178	720	184	180	188	552	1,812
Percentage:															
None		3.5	2.9	3.1	3.2	0.6	2.2	1.1	1.1	1.2	1.6	17.2	5.3	7.9	3.9
5 Years or less		53.8	65.1	70.8	63.5	67.4	48.1	44.5	62.9	55.4	41.9	66.7	50.0	52.7	56.0
6-8 Years		37.0	28.0	22.9	29.1	29.1	42.5	51.3	29.8	38.5	45.7	15.0	41.5	34.2	34.4
More than 8 years		5.8	4.0	3.1	4.2	2.9	7.3	3.1	6.2	4.9	10.9	1.1	3.2	5.1	4.8
Total		100.1	100.0	99.9	100.0	100.0	100.1	100.0	100.0	100.0	100.1	100.0	100.0	99.9	100.1

Table 14 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Mother's Employment</u>	N	174	159	194	527	172	197	192	179	740	183	172	188	543	1,810
Percentage:															
None		84.5	54.1	84.5	75.3	48.3	2.5	44.3	45.3	34.3	77.1	72.7	56.4	68.5	56.5
Farming		3.5	3.8	3.6	3.6	47.1	57.9	10.9	46.9	40.1	3.8	17.4	1.1	7.2	19.8
Trading & Food Processing		2.3	13.2	3.6	6.1	6.4	2.0	2.1	2.2	3.1	6.6	5.8	19.2	10.7	6.2
Seamstress		4.0	6.3	4.6	4.9	9.9	11.7	5.7	3.4	7.7	3.3	2.3	27.7	11.4	8.0
Clerical		1.7	1.9	0.5	1.3	-	-	1.0	0.6	0.4	2.7	1.2	1.6	1.8	1.1
Professional		1.7	2.5	1.0	1.7	-	1.0	0.5	2.2	0.9	6.0	2.3	2.7	3.7	2.0
Other		2.3	19.5	2.1	7.4	18.6	26.9	40.1	-	21.9	0.6	0.6	1.1	0.8	11.4
<u>Mother's Height</u> (Centimeters)	N	83	60	132	275	112	77	N	91	280	155	25	127	307	862
Mean		152.41	150.18	158.70	154.94	151.14	157.04	O	156.87	154.62	160.75	144.72	166.46	161.81	157.28
Std. Dev.		17.60	10.84	5.95		8.82	7.53		5.55		8.99	12.18	17.95		12.54
Range		122-196	127-170	140-175	122-196	125-168	135-180	D A	142-173	125-180	137-180	122-178	127-199	122-199	122-199
<u>Mother's Weight</u> (Kilograms)	N	177	143	N	320	172	88	T	53	313	171	37	182	390	1,023
Mean		60.09	63.46	O	61.59	58.31	70.10	A	62.71	62.37	62.67	59.83	70.85	66.22	63.59
Std. Dev.		7.80	6.86	D		9.60	10.94		3.20		7.47	5.69	13.12		10.23
Range		45-85	45.91	A T A	45-91	41-91	51-89		45-68	41-91	39-91	45-75	45-91	39-91	39-91

Table 15

Mother's Report About Educational Activities, by Clinic and Clinic Rating - Lesotho

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Child's Weight or Growth Discussed</u>															
<u>1st Measure (Baseline)</u>	N	176	174	178	528	178	200	193	176	752	193	182	196	571	1,851
Percent Yes		97.7	82.8	27.0	68.9	96.1	97.0	52.5	55.1	75.3	56.5	97.3	95.4	82.8	75.8
<u>2nd Measure (6 months)</u>	N	174	140	195	509	185	197	182	120	684	95	160	181	436	1,629
Percent Yes		100.0	72.1	32.3	66.4	99.5	96.4	100.0	78.3	95.0	71.6	97.5	29.3	63.5	77.6
<u>3rd Measure (12 months)</u>	N	No Data	191	No Data	191	No Data	No Data	185	No Data	185	18	No Data	58	76	452
Percent Yes			74.9		74.9			97.8		97.8	100.0		75.9	81.6	85.4
<u>Other Topics Discussed</u>															
<u>1st Measure (Baseline)</u>	N	174	175	176	525	175	199	198	177	749	192	179	196	567	1,841
Percent Yes		97.7	82.9	55.7	78.7	76.6	95.0	54.5	54.8	70.5	89.6	97.8	95.9	94.4	80.2
<u>Topics Discussed</u>	N	172	168	182	522	177	200	198	177	752	193	181	196	570	1,844
Percent reporting:															
None		1.7	7.7	45.6	18.9	1.1	3.0	43.4	45.8	23.3	10.9	0.6	4.6	5.5	16.5
Growth Chart Related		6.4	53.0	7.7	21.8	32.2	83.0	46.5	50.9	53.9	41.5	47.5	52.5	47.2	42.7
Breast feeding/ weaning		10.5	16.7	2.2	9.6	35.0	4.0	34.8	20.3	23.2	3.6	18.8	43.4	22.1	19.0
Food/diet		24.4	13.7	10.4	16.1	84.2	39.0	51.5	18.6	48.1	9.3	68.5	65.3	47.3	38.8
Disease Prevention/ vaccination		9.9	9.5	29.1	16.5	-	47.0	3.0	0.6	13.4	51.3	21.6	31.6	35.1	21.0
Disease treatment		2.3	17.9	22.0	14.2	-	23.0	2.5	0.6	6.9	7.3	48.6	4.1	13.3	12.8
Family planning		1.2	23.2	0.6	8.1	9.6	-	-	-	-	4.2	61.9	1.0	21.4	9.8
Other		47.1	0.6	-	15.7	7.3	1.0	-	0.6	0.4	0.5	0.6	-	0.3	5.4

Table 15 (Continued)

DATA CATEGORY		CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
		St. James Mokhotlong	St. Rose Peka	St. James Mentsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>2nd Measure</u> (6 months)	N	173	167	196	536	185	197	182	119	683	95	160	182	437	1,656
Percent Yes		100.0	96.4	48.5	80.0	100.0	90.4	100.0	82.3	94.1	68.4	96.9	29.7	62.7	81.3
<u>Topics Discussed</u>	N	173	171	197	541	185	196	182	117	680	96	159	183	438	1,659
Percent reporting:															
None		-	6.4	49.7	20.1	-	3.1	-	16.2	3.7	32.3	3.1	68.8	36.9	17.8
Growth Chart Related		43.9	11.1	29.4	28.2	24.3	86.7	52.7	46.1	53.6	11.5	2.5	0.5	3.6	32.2
Breast feeding/ weaning		2.3	19.3	1.5	7.4	30.8	16.3	29.1	33.3	26.6	3.1	19.5	0.5	8.0	15.4
Food/diet		88.4	62.0	31.5	59.3	33.5	63.3	91.8	3.4	52.5	24.0	86.8	0.5	37.0	50.6
Disease Prevention/ vaccination		13.3	0.6	1.5	5.0	7.0	15.3	44.0	21.4	21.8	34.4	29.6	21.3	27.2	17.2
Disease treatment		-	-	3.0	1.1	5.4	35.7	12.6	-	15.1	17.7	52.2	-	22.8	12.6
Family planning		-	-	22.8	8.3	15.1	20.4	19.2	-	15.1	3.1	15.1	9.8	10.2	11.6
Other		-	15.8	1.0	5.3	-	-	30.2	-	8.1	-	-	-	-	5.1
<u>3rd Measure</u> (12 months)	N	N	191	N	191	N	106	176	N	282	11	N	53	64	537
Percent Yes		O	73.8	O	73.8	O	16.0	100.0	O	68.4	9.1	O	92.4	78.1	71.5
<u>Topics Discussed</u>	N	D	190	D	190	D	108	181	D	289	12	D	57	69	548
Percent reporting:															
None		A	26.3	A	26.3	A	80.6	2.8	A	31.9	91.7	A	10.5	24.6	29.0
Growth Chart Related		T	43.2	T	43.2	T	-	23.8	T	14.9	8.3	T	12.3	11.6	24.3
Breast feeding/ weaning		A	4.7	A	4.7	A	-	11.6	A	7.3	-	A	21.0	17.3	7.7
Food/diet			69.5		69.5		3.7	40.3		26.6	8.3		56.1	47.8	44.2
Disease Prevention/ vaccination			9.5		9.5		13.0	9.4		10.7	-		42.1	34.8	13.3
Disease treatment			5.8		5.8		1.8	5.0		3.8	-		47.4	39.1	8.9
Family planning			6.8		6.8		-	5.5		3.4	-		8.8	7.3	5.1
Other			2.1		2.1		0.9	2.8		2.1	-		10.5	8.7	2.9

Table 16

Child's Nutritional Status (Weight for Age), by Clinic and by Clinic Rating - Lesotho

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Terateyinyeng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Age in Months</u>															
<u>1st Measure (Baseline)</u>	N	171	178	199	548	178	190	195	164	727	183	150	195	528	1,803
Percent reporting:															
0-6 months		6.4	1.7	20.1	9.8	10.7	3.7	7.7	17.1	9.5	78.2	12.0	12.8	35.2	17.1
7-12 months		19.3	21.9	24.6	22.1	26.4	15.3	18.5	26.8	21.5	18.0	20.7	20.0	19.5	21.1
13-18 months		14.0	20.8	14.1	16.2	18.5	19.5	17.4	19.5	18.7	2.7	11.3	15.9	10.0	15.4
19-24 months		16.4	18.0	21.1	18.6	14.6	13.2	15.9	14.0	14.4	1.1	14.0	18.5	11.2	14.7
25-30 months		7.6	11.2	7.5	8.7	9.0	11.6	11.3	7.9	10.0	-	10.7	7.2	5.7	8.4
31-36 months		9.9	10.7	6.5	8.9	6.7	11.6	9.7	5.5	8.5	-	9.3	9.2	6.0	7.9
37-42 months		6.4	7.3	2.0	5.1	3.9	9.5	6.1	3.0	5.7	-	8.0	6.1	4.5	5.2
43-48 months		8.8	6.7	1.5	5.5	7.3	3.7	6.7	1.8	4.9	-	4.0	6.1	3.4	4.7
49-54 months		5.3	1.1	2.0	2.7	2.2	6.3	2.6	1.8	3.3	-	6.7	2.0	2.6	2.9
More than 55 months		5.8	0.6	0.5	2.2	0.6	5.8	4.1	2.4	3.3	-	3.3	2.0	1.7	2.5
Total		99.9	100.0	99.9	99.8	99.9	100.2	100.0	99.8	99.8	100.0	100.0	99.8	99.8	99.9
<u>Weight for Age</u>															
<u>1st Measure (Baseline)</u>	N	171	178	199	548	178	190	195	164	727	183	150	195	528	1,803
Percent reporting:															
60% or less		1.2	5.0	3.0	3.1	2.2	1.0	1.0	0.6	1.2	7.6	2.7	2.0	4.1	2.7
More than 60%, up to 70%		5.3	11.8	7.0	8.0	7.3	3.7	3.6	5.5	5.0	3.8	4.0	2.6	3.4	5.4
More than 70%, up to 80%		21.0	20.8	19.1	20.2	17.4	7.9	7.7	18.9	12.6	6.0	16.0	14.9	12.1	14.8
More than 80%, up to 90%		37.4	29.8	31.7	32.9	32.6	31.6	30.3	23.8	29.7	14.2	34.7	28.2	25.2	29.3
More than 90%, up to 100%		21.6	17.4	23.1	20.8	21.9	31.6	31.8	29.9	28.9	26.8	21.3	23.1	23.9	25.0
More than 100%, up to 110%		5.3	10.1	11.6	9.1	11.2	14.7	15.4	12.8	13.6	22.4	11.3	13.3	15.9	12.9
More than 110%		8.2	5.0	4.5	5.8	7.3	9.5	10.3	8.5	8.9	19.1	10.0	15.9	15.3	9.9
Total		100.0	99.9	100.0	99.9	99.9	100.0	100.1	100.0	99.9	99.9	100.0	100.0	99.9	100.0
<u>2nd Measure (6 Months)</u>	N	154	143	195	492	185	191	135	119	630	94	163	176	433	1,555
Percent reporting:															
60% or less		-	2.8	1.5	1.4	2.2	0.5	2.2	1.7	1.6	3.2	1.2	0.6	1.4	1.5
More than 60%, up to 70%		6.5	11.9	6.7	8.1	3.2	2.1	2.2	1.7	2.4	1.1	3.7	1.7	2.3	4.2
More than 70%, up to 80%		20.1	24.5	19.0	20.9	11.9	8.4	12.6	11.8	11.0	6.4	9.8	6.8	7.8	13.2
More than 80%, up to 90%		35.1	30.1	37.9	34.7	28.6	16.7	29.6	26.0	24.7	24.5	28.8	25.0	26.3	26.4
More than 90%, up to 100%		27.9	21.7	21.0	23.4	27.6	37.2	31.8	28.6	31.6	31.9	25.1	35.2	30.7	28.7
More than 100%, up to 110%		9.7	7.0	10.3	9.1	15.7	24.1	14.8	16.0	18.1	20.2	22.1	17.6	19.8	15.8
More than 110%		0.6	2.1	3.6	2.2	10.8	11.0	6.7	14.3	10.6	12.8	9.2	13.1	11.6	8.2
Total		99.9	100.1	100.0	99.8	100.0	100.0	99.9	100.1	100.0	100.1	99.9	100.0	99.9	100.0

Table 16 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Tevatyanong	St. Paul Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>3rd Measure (12 months)</u>	N	121	N	121	N	62	74	N	136	19	N	57	76	333
Percent reporting:	O		O		O			O			O			
50% or less		1.7		1.7		1.6	-		0.7	-		1.7	1.3	1.2
More than 60%, up to 70%	D	4.1	D	4.1	D	-	1.3	D	0.7	-	D	-	-	1.8
More than 70%, up to 80%	A	13.2	A	13.2	A	4.8	10.8	A	8.1	-	A	7.0	5.2	9.3
More than 80%, up to 90%	T	40.5	T	40.5	T	33.9	35.1	T	34.5	42.1	T	26.3	30.2	35.7
More than 90%, up to 100%	A	25.6	A	25.6	A	37.1	41.9	A	39.7	26.3	A	38.6	35.5	33.6
More than 100%, up to 110%		13.2		13.2		19.3	9.5		14.0	21.0		19.3	19.7	15.0
More than 110%		1.7		1.7		3.2	1.3		2.2	10.5		7.0	7.9	3.3
Total		100.0		100.0		99.9	99.9		99.9	99.9		99.9	99.3	99.9
<u>Summary Weight for Age</u>														
<u>1st Measure</u>														
Up to 90%	64.9	67.4	60.8	64.2	59.5	44.2	42.6	48.8	48.5	31.6	57.4	47.7	44.8	52.2
Greater than 90%	35.1	32.5	39.2	35.7	40.4	55.8	57.5	51.2	51.4	68.3	42.6	52.3	55.1	47.8
<u>2nd Measure</u>														
Up to 90%	61.7	69.3	65.1	65.1	45.9	27.7	46.6	41.2	39.7	35.2	43.5	34.1	37.8	47.3
Greater than 90%	38.2	30.8	34.9	34.7	54.1	72.3	53.3	58.9	60.3	54.9	56.4	65.9	62.1	52.7
<u>3rd Measure</u>														
Up to 90%	-	59.5	-	59.5	-	40.3	47.2	-	44.0	42.1	-	35.0	36.7	48.0
Greater than 90%	-	40.5	-	40.5	-	59.6	52.7	-	55.9	57.8	-	64.9	63.1	51.9
<u>1st Measure</u>														
Up to 80%	27.5	37.6	29.1	31.3	26.9	12.6	12.3	25.0	18.8	17.4	22.7	19.5	19.6	22.9
Greater than 80%	72.5	62.3	70.9	68.6	73.0	87.4	87.8	75.0	81.1	82.5	77.3	80.5	80.3	77.1
<u>2nd Measure</u>														
Up to 80%	26.6	39.2	27.2	30.4	17.3	11.0	17.0	15.2	15.0	10.7	14.7	9.1	11.5	18.9
Greater than 80%	73.3	60.9	72.8	69.4	81.7	89.0	82.9	84.9	85.0	89.4	85.2	90.9	88.4	81.1
<u>3rd Measure</u>														
Up to 80%	-	19.0	-	19.0	-	6.4	12.1	-	9.5	-	-	8.7	6.5	12.3
Greater than 80%	-	81.0	-	81.0	-	93.5	87.8	-	90.4	99.9	-	91.2	93.3	87.6

Table 17

Mother's Report of Child's Illnesses, by Clinic and Clinic Rating - Lesotho

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Butha-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>Child Seriously Ill During Last Six Months</u>														
<u>1st Measure (Baseline)</u> N	175	179	186	540	179	200	194	173	746	192	175	196	563	1,849
Percent Yes	59.4	72.1	57.0	62.8	63.1	87.0	41.7	77.5	67.3	10.9	66.9	68.9	48.5	60.2
<u>Type of Illness</u> N	136	179	184	499	178	199	194	173	744	185	176	195	556	1,799
Percent reporting:														
None-child healthy	24.3	28.5	44.0	33.1	37.1	15.1	60.8	22.5	34.0	84.9	32.9	30.3	49.3	38.5
Fever	2.9	-	13.6	5.8	-	27.1	3.1	-	8.0	1.6	11.4	0.5	4.3	6.3
Childhood disease	46.3	26.8	14.7	27.6	43.8	57.8	26.8	54.3	45.5	10.3	39.8	54.9	35.3	37.4
Gastroenteritis	15.4	35.2	21.2	24.6	19.7	29.6	13.9	28.9	23.0	2.7	34.7	14.4	16.9	21.6
Respiratory condition	5.9	1.1	8.7	5.2	0.6	6.5	2.6	-	2.6	-	12.5	1.0	4.3	3.8
Malnutrition/worms	2.9	7.3	-	3.4	-	-	-	-	-	0.5	2.3	-	0.9	1.2
Eye or skin infection	1.5	2.2	4.3	2.8	1.7	1.0	2.1	0.6	1.4	-	2.8	-	0.9	1.6
Injuries, burns	1.5	0.6	2.2	1.4	1.1	-	0.5	0.6	0.5	-	4.5	-	1.4	1.1
<u>2nd Measure (6 mos.)</u> N	174	184	196	554	184	181	182	119	666	93	164	183	440	1,660
Percent Yes	32.8	39.7	29.1	33.8	63.6	24.9	28.6	61.3	43.1	60.2	39.6	29.0	39.5	39.0
<u>Type of Illness</u> N	172	184	196	552	184	181	181	119	665	93	164	182	439	1,656
Percent reporting:														
None-child healthy	68.6	58.7	71.4	66.3	37.5	78.4	72.4	38.7	58.3	38.7	59.8	72.5	60.6	61.6
Fever	-	1.6	0.5	0.7	0.5	1.7	1.1	0.8	1.0	4.3	2.4	1.1	2.3	1.3
Childhood disease	5.8	27.7	19.9	18.1	42.9	9.9	13.3	51.3	27.4	32.3	23.8	19.2	23.7	23.3
Gastroenteritis	18.6	6.5	3.6	9.2	12.5	9.3	8.3	8.4	9.7	24.7	15.2	2.7	12.0	10.2
Respiratory condition	11.6	0.5	4.1	5.2	3.3	2.8	6.1	1.7	3.6	11.8	4.9	2.2	5.2	4.6
Malnutrition/worms	-	1.1	0.5	0.5	-	-	-	-	-	1.1	1.8	-	0.9	0.4
Eye or skin infection	0.6	2.2	1.0	1.3	3.3	0.5	-	2.5	1.5	1.1	4.3	1.6	2.5	1.7
Injuries, burns	1.7	5.4	1.5	3.2	-	-	0.5	-	0.1	1.1	1.8	1.1	1.4	1.4

Table 17 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Butha-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>3rd Measure (12 mos.)</u> N	N	177	N	177	N	108	169	N	277	19	N	61	80	534
Percent Yes	O	20.9	O	20.9	O	79.6	21.3	O	44.0	84.2	O	62.3	67.0	39.9
<u>Type of Illness</u> N		175		175		108	166		274	19		60	79	528
Percentage reporting:														
None-child healthy	D	78.3	D	78.3	D	19.4	80.7	D	56.5	15.8	D	41.7	35.5	60.6
Fever	A	0.6	A	0.6	A	1.8	0.6	A	1.1	-	A	5.0	3.8	1.3
Childhood disease		1.1		1.1		36.1	6.6		18.2	36.8		23.3	26.5	13.8
Gastroenteritis	T	9.1	T	9.1	T	19.4	2.4	T	9.1	42.1	T	11.7	19.0	10.6
Respiratory condition	A	9.1	A	9.1	A	14.8	7.8	A	10.5	-	A	13.3	10.1	10.0
Malnutrition/worms		0.6		0.6		0.9	-		0.3	-		-	-	0.4
Eye or skin infection		2.3		2.3		4.6	1.2		2.5	-		10.0	7.6	3.2
Injuries, burns		-		-		8.3	0.6		3.6	5.3		1.7	2.6	2.3
<u>Acute Illness During Last 2 Weeks</u>														
<u>1st Measure (Baseline)</u> N	177	180	198	555	180	200	198	175	753	193	177	196	566	1,874
Percent Yes	42.4	40.0	54.0	45.8	28.9	55.5	31.3	60.0	43.8	20.2	45.2	58.2	41.2	43.6
<u>Type of Illness</u> N	139	180	198	517	179	200	197	174	750	188	176	196	560	1,827
Percentage reporting:														
None-child healthy	44.6	63.3	47.0	52.0	73.2	45.0	71.1	39.1	57.2	75.0	54.0	40.8	56.4	55.5
Fever	0.7	0.6	18.7	7.5	-	20.0	1.5	-	5.7	2.7	10.0	-	4.0	5.7
Childhood disease	36.0	17.2	12.6	20.5	19.5	35.0	22.3	46.5	30.6	13.3	21.6	49.5	28.6	27.1
Gastroenteritis	13.7	13.3	13.1	13.3	6.1	16.0	4.1	17.2	10.8	2.7	25.0	9.7	12.1	11.9
Respiratory condition	4.3	1.7	7.1	4.5	-	3.0	3.5	-	1.7	2.1	11.4	0.5	4.5	3.3
Malnutrition/worms	0.7	2.2	0.5	1.1	-	0.5	-	-	0.1	0.5	0.6	-	0.3	0.5
Eye or skin infection	0.7	2.8	4.5	2.9	1.7	2.0	1.0	1.1	1.4	5.8	1.1	-	2.3	2.1
Injuries, burns	-	0.6	-	0.2	-	-	0.5	0.6	0.3	-	4.0	-	1.2	0.5

Table 17 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakhoto	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>2nd Measure (6 mos.)</u>	N	174	189	196	559	184	186	182	120	672	94	165	184	443	1,674
Percent Yes		29.9	16.4	21.9	22.5	59.8	18.3	30.8	39.2	36.8	51.1	38.8	25.5	35.9	31.8
<u>Type of Illness</u>	N	172	189	196	557	184	187	182	120	673	94	165	184	443	1,673
Percent Reporting:															
None-child healthy		70.9	85.2	78.1	78.3	38.0	82.3	71.4	60.0	63.3	48.9	60.0	78.8	65.4	68.9
Fever		-	1.1	-	0.4	-	1.6	3.3	1.7	1.6	5.3	0.6	-	1.3	1.1
Childhood disease		4.6	9.0	11.2	8.4	50.0	10.2	12.6	31.7	25.6	29.8	17.6	13.6	18.5	18.0
Gastroenteritis		14.5	2.1	5.6	7.2	7.6	5.3	5.5	6.7	6.2	9.6	15.1	2.2	8.6	7.2
Respiratory condition		13.4	0.5	2.5	5.2	3.3	2.7	5.5	1.7	3.4	10.6	8.5	1.1	5.9	4.7
Malnutrition/worms		-	0.5	1.0	0.5	-	-	0.5	-	0.1	-	0.6	0.5	0.4	0.4
Eye or skin infection		1.7	-	0.5	0.7	1.6	1.1	1.1	1.7	1.3	1.1	0.6	2.2	1.4	1.1
Injuries, burns		0.6	2.1	1.5	1.4	0.5	-	-	-	0.1	-	1.2	1.6	1.1	0.8
<u>3rd Measure (12 mos.)</u>	N	N	181	N	181	N	106	169	N	275	19	N	62	81	537
Percent Yes		O	13.3	O	13.3	O	29.2	18.9	O	22.9	42.1	O	37.1	38.3	22.0
<u>Type of Illness</u>	N		179		179		106	165		271	19		62	81	531
Percent reporting:															
None-child healthy	D		89.4	D	89.4	D	71.7	84.2	D	79.3	63.2	D	62.9	63.0	80.2
Fever	A		0.6	A	0.6	A	-	-	A	-	-	A	1.6	1.2	0.4
Childhood disease			4.5		4.5		7.5	5.4		6.2	26.3		6.4	11.1	6.4
Gastroenteritis	T		2.8	T	2.8	T	6.6	2.4	T	4.0	5.3	T	6.4	6.1	3.9
Respiratory condition	A		2.8	A	2.8	A	10.4	4.8	A	7.0	-	A	21.0	16.1	7.0
Malnutrition/worms			0.6		0.6		-	-		-	-		-	-	0.2
Eye or skin infection			-		-		1.9	1.8		1.8	5.3		1.6	2.5	1.3
Injuries, burns			-		-		1.9	1.2		1.5	-		1.6	1.2	0.9

Table 18

Child's Food Consumption Report, by Clinic and by Clinic Rating - Lesotho

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
<u>Nutritionist's Assessment of Child's Diet</u>														
<u>1st Measure</u> N	169	102	170	441	180	183	197	163	723	176	127	191	494	1,658
(Baseline) Mean	2.67	3.24	2.98	2.92	2.93	3.17	3.37	3.71	3.29	3.97	2.96	3.77	3.63	3.29
Percentage:														
Extremely poor (1)	16.0	2.9	7.6	9.7	2.2	3.8	-	0.6	1.6	-	0.8	1.0	0.6	3.5
Poor (2)	18.9	5.9	13.5	13.8	17.8	14.2	11.2	9.8	13.3	1.7	30.7	10.5	12.5	13.2
Adequate (3)	47.9	57.8	55.3	53.0	67.2	47.0	48.7	30.7	48.8	16.5	45.7	26.7	27.9	43.7
Good (4)	16.0	31.4	20.0	21.1	10.0	30.6	32.0	36.2	27.1	65.3	17.3	33.5	40.7	29.5
Excellent (5)	1.2	2.0	3.5	2.3	2.8	4.4	8.1	22.7	9.1	16.5	5.5	28.3	18.2	10.1
Total	100.0	100.0	99.9	99.9	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	99.9	100.0
<u>2nd Measure</u> N	166	182	191	539	177	180	181	113	651	91	154	181	426	1,616
(6 months) Mean	3.14	3.05	2.54	2.90	3.47	3.19	2.94	3.20	3.20	3.57	3.20	3.38	3.35	3.14
Percentage:														
Extremely poor (1)	6.0	3.8	19.4	10.0	-	1.1	0.5	0.9	0.6	1.1	3.9	2.2	2.6	4.3
Poor (2)	22.3	16.5	28.3	22.5	19.8	15.0	31.5	19.5	21.7	5.5	20.1	16.6	15.5	20.3
Adequate (3)	34.9	53.3	34.5	41.0	29.4	52.8	43.1	46.9	42.7	44.0	38.3	35.4	38.3	41.0
Good (4)	24.7	23.6	14.1	20.6	34.5	26.1	22.6	23.9	27.0	34.1	27.3	32.6	31.0	25.9
Excellent (5)	12.0	2.7	3.7	5.9	16.4	5.0	2.2	8.8	8.0	15.4	10.4	13.3	12.7	8.5
Total	99.9	99.9	100.0	100.0	100.1	100.0	99.9	100.0	100.0	100.1	100.0	100.1	100.1	100.0
<u>3rd Measure</u> N	N	168	N	168	N	107	141	N	248	19	N	58	77	493
(12 months) Mean	O	3.32	O	3.32	O	2.74	2.72	O	2.73	3.42	O	3.90	3.78	3.09
Percentage:														
Extremely poor (1)		1.2		1.2		1.9	0.7		1.2	-		-	-	1.0
Poor (2)		17.3		17.3		40.2	39.0		39.5	10.5		5.2	6.5	26.8
Adequate (3)	D	39.3	D	39.3	D	41.1	49.6	D	45.9	42.1	D	27.6	31.2	41.4
Good (4)	A	32.7	A	32.7	A	15.9	9.2	A	12.1	42.1	A	39.7	40.3	23.5
Excellent (5)		9.5		9.5		0.9	1.4		1.2	5.3		27.6	22.1	7.3
Total	T	100.0	T	100.0	T	100.0	99.9	T	99.9	100.0	T	100.1	100.1	100.0
	A		A		A			A			A			

Table 19

Mother's Food Consumption Behavior Report, by Clinic and by Clinic Rating - Lesotho

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Nutritionist's Assessment of Mother's Diet</u>															
<u>1st Measure (Baseline)</u>	N	176	158	189	523	180	174	189	156	699	174	110	188	472	1,694
Mean		2.52	3.03	2.45	2.65	2.89	2.77	2.83	2.99	2.87	3.53	2.64	3.27	3.22	2.90
Percentage:															
Extremely poor (1)		17.6	3.2	14.8	12.2	0.6	2.9	1.6	0.6	1.4	0.6	3.6	3.2	2.3	5.0
Poor (2)		24.4	20.2	37.0	27.7	18.9	36.8	30.2	32.0	29.3	17.2	33.6	22.9	23.3	27.1
Adequate (3)		46.6	50.0	37.0	44.2	72.8	43.7	52.9	39.7	52.8	33.9	58.2	33.5	39.4	46.4
Good (4)		11.4	24.0	10.6	14.9	6.7	13.8	14.3	23.1	14.2	25.3	4.5	25.0	20.3	16.1
Excellent (5)		-	2.5	0.5	0.9	1.1	2.9	1.1	4.5	2.3	23.0	-	15.4	14.6	5.3
Total		100.0	99.9	99.9	99.9	100.1	100.1	100.1	99.9	100.0	100.0	99.9	100.0	99.9	99.9
<u>2nd Measure (6 months)</u>	N	168	179	194	541	149	134	145	105	533	88	146	126	360	1,434
Mean		2.54	2.61	2.43	2.52	2.85	2.89	2.68	2.70	2.78	3.06	2.94	2.98	2.98	2.74
Percentage:															
Extremely poor (1)		8.9	8.4	16.0	11.3	-	2.2	2.1	3.8	1.9	1.1	5.5	0.8	2.8	5.6
Poor (2)		41.7	36.9	44.8	41.2	42.3	29.8	44.8	42.9	39.9	30.7	27.4	37.3	31.7	38.3
Adequate (3)		38.1	39.7	22.2	32.9	32.2	48.5	37.2	36.2	38.4	35.2	39.0	32.5	35.8	35.7
Good (4)		9.5	15.1	14.4	13.1	23.5	15.7	14.5	13.3	17.1	27.3	24.0	22.2	24.2	17.4
Excellent (5)		1.8	-	2.6	1.5	2.0	3.7	1.4	3.8	2.6	5.7	4.1	7.1	5.5	2.9
Total		100.0	100.1	100.0	100.0	100.0	99.9	100.0	100.0	99.9	100.0	100.0	99.9	100.0	99.9
<u>3rd Measure (12 months)</u>	N	N	125	N	125	N	97	143	N	240	19	N	50	69	434
Mean		O	3.11	O	3.11	O	2.64	2.41	O	2.50	2.84	O	3.12	3.04	2.76
Percentage:															
Extremely poor (1)			3.2		3.2		8.2	0.7		3.7	-		-	-	3.0
Poor (2)		D	20.8	D	20.8	D	42.3	58.7	D	52.1	47.4	D	24.0	30.4	39.6
Adequate (3)		D	44.8	D	44.8	D	28.9	39.9	D	35.4	26.3	D	46.0	40.6	38.9
Good (4)		A	24.0	A	24.0	A	18.6	0.7	A	7.9	21.0	A	24.0	23.2	15.0
Excellent (5)		T	7.2	T	7.2	T	2.1	-	T	0.8	5.3	T	6.0	5.8	3.5
Total		A	100.0	A	100.0	A	100.1	100.0	A	99.9	100.0	A	100.0	100.0	100.0

Table

Mother's Nutritional Knowledges and Attitudes, by Clinic and by Clinic Rating - Lesotho

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Butha-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Number of Months Child Should Breast-Feed</u>															
1st Measure	N	176	180	189	545	180	190	200	189	759	191	175	195	561	1,866
(Baseline)	Mean	24.79	23.17	26.81	24.95	24.65	16.69	25.07	23.61	22.51	23.13	23.37	23.72	23.41	23.48
Percent reporting:															
0-5 months		-	-	0.5	0.2	0.6	30.0	0.5	3.7	8.7	-	0.6	0.5	0.4	3.7
6-11 months		0.6	0.6	-	0.4	-	2.6	0.5	0.5	0.9	1.6	4.0	1.0	2.1	1.1
12-17 months		9.1	9.4	7.4	8.6	1.7	5.3	3.0	3.7	3.4	4.2	8.0	10.3	7.5	6.1
18-23 months		8.0	13.3	10.6	10.6	3.3	11.1	10.5	13.2	9.6	8.9	8.6	12.3	10.0	10.0
24-29 months		63.1	69.4	52.9	61.6	88.9	43.7	69.0	66.7	66.8	81.7	68.6	59.0	69.7	66.1
More than 30 months		19.3	7.2	28.6	18.5	5.6	7.4	16.5	12.2	10.6	3.7	10.3	16.9	10.3	12.8
Total		100.1	99.9	100.0	99.9	100.1	100.1	100.0	100.0	100.0	100.1	100.1	100.0	100.0	99.8
3rd Measure	N	N	191	N	191	N	118	185	N	303	21	N	58	79	573
(12 Months)	Mean	O	23.98	O	23.98	O	22.48	28.18	O	25.96	22.09	O	23.90	23.42	24.95
Percent reporting:															
0-5 months		D	0.5	D	0.5	D	-	-	D	-	-	D	-	-	0.2
6-11 months		A	-	A	-	A	-	-	A	-	-	A	-	-	-
12-17 months		T	-	T	-	T	8.5	2.7	T	4.9	9.5	T	3.4	5.0	3.3
18-23 months		A	17.8	A	17.8	A	28.0	1.6	A	11.9	23.8	A	25.9	25.3	15.7
24-29 months			68.6		68.6		57.6	62.2		60.4	61.9		58.6	59.5	63.0
More than 30 months			13.1		13.1		5.9	33.5		22.7	4.8		12.1	10.1	17.8
Total			100.0		100.0		100.0	100.0		99.9	100.0		100.0	99.9	100.0

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantson-yane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Age to Introduce Liquid Supplements</u>															
<u>1st Measure (Baseline)</u>	N	176	187	195	551	179	198	200	189	766	191	175	198	564	1,884
	Mean	3.94	3.74	4.15	4.44	7.08	2.84	4.48	3.81	4.50	5.45	5.30	4.21	4.97	4.57
Percent reporting:															
0-1 month		13.1	1.1	7.2	7.1	1.7	40.9	2.0	7.4	13.3	1.0	5.7	22.7	10.1	10.7
2 months		11.9	3.9	8.7	8.1	2.2	6.1	6.0	9.5	6.0	5.2	5.1	6.6	5.7	6.5
3 months		25.0	10.6	29.2	21.8	3.9	5.0	37.0	38.6	21.4	9.9	31.4	21.2	20.5	21.3
4 months		23.9	11.1	22.6	19.2	0.6	19.7	30.5	21.2	18.4	18.3	13.1	11.6	14.3	17.4
5 months		3.4	7.2	8.7	6.5	5.0	16.7	7.5	11.1	10.2	12.0	3.4	6.6	7.4	8.3
6 months		19.9	62.8	13.3	31.6	59.2	8.6	6.5	6.9	19.4	50.3	12.0	20.2	27.8	25.5
More than 6 months		2.8	3.3	10.2	5.6	27.4	3.0	10.5	5.3	11.2	3.1	29.1	11.1	14.0	10.4
Total		100.0	100.0	99.9	99.9	100.0	100.0	100.0	100.0	99.9	99.8	99.8	100.0	99.8	100.1
<u>3rd Measure (12 Months)</u>	N	N	189	N	189	N	118	183	N	301	20	N	58	78	568
	Mean	0	2.39	0	2.39	0	3.63	0.98	0	2.02	2.95	0	4.19	3.87	2.40
Percent reporting:															
0-1 month		D	25.4	D	25.4	D	5.9	76.5	D	48.8	25.0	D	5.2	10.3	35.7
2 months		A	33.3	A	33.3	A	20.3	7.6	A	12.6	5.0	A	5.2	5.1	18.5
3 months		T	32.8	T	32.8	T	36.4	5.5	T	17.6	25.0	T	25.9	25.7	23.8
4 months		A	5.8	A	5.8	A	10.2	3.8	A	6.3	40.0	A	32.8	34.6	10.0
5 months			1.1		1.1		8.5	0.5		3.6	-		13.8	10.3	3.7
6 months			1.1		1.1		11.9	4.9		7.6	5.0		10.3	8.9	5.6
More than 6 months			0.5		0.5		6.8	1.1		3.3	-		6.9	5.1	2.6
Total			100.0		100.0		100.0	99.9		99.8	100.0		100.1	100.0	99.9

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Age to Introduce Solid Foods</u>															
<u>1st Measure (Baseline)</u>	N	176	178	177	531	180	198	200	180	758	186	172	197	555	1,858
	Mean	6.49	7.03	7.94	7.15	10.43	7.12	7.88	6.71	8.01	8.14	8.49	7.72	8.10	7.74
Percent reporting:															
0-1 month		0.6	0.6	-	0.4	-	1.0	-	-	0.3	-	-	2.0	0.7	1.0
2-3 months		5.1	1.7	1.7	2.8	-	1.0	2.0	2.8	1.4	1.1	1.2	2.5	1.6	1.8
4-5 months		20.5	-	19.8	13.4	3.3	15.7	24.0	30.5	18.4	11.8	10.5	13.7	12.1	15.3
6-7 months		51.7	0.6	31.1	27.7	2.8	54.5	32.0	42.8	33.5	26.9	26.2	36.5	30.1	37.0
8-9 months		13.1	-	19.8	10.9	55.6	15.2	22.5	10.6	25.6	49.5	26.2	27.4	34.4	26.1
10-11 months		0.6	-	7.9	2.8	13.3	6.6	5.0	4.4	7.2	2.7	20.9	5.1	9.2	6.6
12-17 months		8.0	8.7	18.6	11.8	13.9	5.6	12.0	8.3	9.9	6.4	12.8	9.6	9.5	9.7
18-23 months		-	14.0	0.6	4.9	6.1	-	-	0.6	1.6	-	-	2.0	0.7	0.9
More than 24 months		0.6	74.4	0.6	25.3	5.0	0.5	2.5	-	2.0	1.6	2.3	1.0	1.6	1.5
Total		100.2	100.0	100.1	100.0	100.0	100.1	100.0	100.0	99.9	100.0	100.1	99.8	99.9	99.9
<u>3rd Measure (12 Months)</u>	N	N	182	N	182	N	118	184	N	302	21	N	60	81	565
	Mean	O	7.56	O	7.56	O	6.84	5.61	O	6.09	5.57	O	7.10	6.70	6.65
Percent reporting:															
0-1 month	D		0.5	D	0.5	D	-	7.6	D	4.6	4.8	D	1.7	2.5	3.0
2-3 months	A		-	A	-	A	2.5	10.9	A	7.6	9.5	A	3.3	4.9	4.8
4-5 months	T		2.2	T	2.2	T	32.2	18.5	T	23.8	28.6	T	23.3	24.7	17.0
6-7 months	A		47.3	A	47.3	A	40.7	41.3	A	41.1	38.1	A	36.7	37.1	42.5
8-9 months			45.1		45.1		11.9	17.4		15.2	14.3		15.0	14.8	24.8
10-11 months			2.7		2.7		4.2	2.2		3.0	4.8		1.7	2.5	2.8
12-17 months			2.2		2.2		6.8	2.2		4.0	-		18.3	13.5	4.8
18-23 months			-		-		-	-		-	-		-	-	-
More than 24 months			-		-		1.7	-		0.7	-		-	-	0.3
Total			100.0		100.0		100.0	100.1		100.0	100.1		100.0	100.0	100.0

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokis	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>How Should Child be Weaned?</u>															
<u>1st Measure (Baseline)</u>	N	176	172	196	544	178	198	199	190	765	191	177	198	566	1,875
Percent reporting:															
All at once		93.2	74.4	96.9	88.6	9.5	97.5	38.7	67.9	54.4	64.4	96.0	10.6	55.5	64.6
Gradually (no time period specified)		6.8	1.2	3.1	3.7	33.1	-	44.2	17.4	23.5	28.8	3.4	33.8	22.6	17.5
Gradually (over less than 1 month)		-	3.5	-	1.1	54.5	2.0	13.6	11.6	19.6	6.3	0.6	36.9	15.2	12.9
Gradually (over more than 1 month)		-	20.9	-	6.6	2.8	0.5	1.0	3.2	1.8	0.5	-	17.2	6.2	4.5
Other		-	-	-	-	-	-	2.5	-	0.6	-	-	1.5	0.5	0.4
Total		100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.1	99.9	100.0	100.0	100.0	100.0	99.9
<u>3rd Measure (12 Months)</u>	N	N	183	N	183	N	118	183	N	301	21	N	55	76	560
Percent reporting:															
All at once		D	65.6	D	65.6	D	81.4	77.6	D	79.1	80.9	D	67.3	71.0	73.6
Gradually (no time period specified)		A	33.9	A	33.9	A	11.0	1.1	A	5.0	-	A	14.5	10.5	15.2
Gradually (over less than 1 month)		T	0.5	T	0.5	T	5.1	1.1	T	2.7	14.3	T	10.9	11.8	3.2
Gradually (over more than 1 month)		A	-	A	-	A	2.5	0.5	A	1.3	4.8	A	7.3	6.6	1.6
Other		-	-	-	-	-	-	19.7	-	12.0	-	-	-	-	6.4
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.1	100.0	100.0	100.0	100.0	99.9	100.0

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW			Total Lesotho Sample All Clinics		
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tzakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe		Total Clinics Rated Low	
<u>Special Foods to Help Young Child Grow</u>															
<u>1st Measure (Baseline)</u>	N	174	122	148	444	179	191	198	187	755	186	155	198	539	1,738
Percent reporting:															
No protein mentioned		4.0	1.6	9.5	5.2	2.8	2.6	2.0	2.1	2.4	2.7	9.0	1.0	3.9	3.6
One protein mentioned		17.2	14.7	25.7	19.3	16.2	18.3	14.6	9.6	14.7	11.8	24.5	12.1	15.6	16.2
More than one protein mentioned		77.6	82.0	64.9	74.6	80.4	72.2	83.3	88.2	81.0	85.5	62.6	86.9	79.4	78.9
Don't know		1.1	1.6	-	0.9	0.6	6.8	-	-	1.9	-	3.9	-	1.1	1.4
Total		99.9	99.9	100.1	100.0	100.0	99.9	99.9	99.9	100.0	100.0	100.0	100.0	100.0	100.1
<u>3rd Measure (12 Months)</u>	N	N	114	N	114	N	118	174	N	292	21	N	55	76	482
Percent reporting:															
No protein mentioned		D	0.9	D	0.9	D	11.0	3.4	D	6.5	4.8	D	9.1	7.9	5.4
One protein mentioned		A	35.1	A	35.1	A	28.0	43.1	A	37.0	-	A	25.4	18.4	33.6
More than one protein mentioned		T		T		T			T			T			
Don't know		A	61.4	A	61.4	A	61.0	52.9	A	56.2	95.2	A	65.4	73.6	60.2
Total			2.6		2.6		-	0.6		0.3	-		-	-	0.8
			100.0		100.0		100.0	100.0		100.0	100.0		99.9	99.9	100.0

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Mother Feels Child is Susceptible to Malnutrition</u>															
<u>1st Measure (Baseline)</u>	N	164	171	194	529	159	197	185	179	720	182	178	196	556	1,805
Percent Yes		41.5	67.2	2.1	35.3	38.4	43.1	30.3	24.0	34.0	47.8	46.1	29.6	40.8	36.5
No		58.5	32.7	97.9	64.9	61.6	56.8	69.7	76.0	65.9	52.2	53.9	70.4	59.2	63.5
Total		100.0	99.9	100.0	99.9	100.0	99.9	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0
<u>3rd Measure (12 Months)</u>	N	N	272	N	272	N	286	401	N	687	43	N	136	179	501
Percent Yes		O	7.3	O	7.3	O	39.2	25.4	O	31.1	23.3	O	20.6	21.2	27.1
No		D	92.6	D	92.6	D	60.8	74.6	D	68.8	76.7	D	79.4	78.7	72.3
Total		A	99.9	A	99.9	A	100.0	100.0	A	99.9	100.0	A	100.0	99.9	99.9
		T		T		T			T			T			
		A		A		A			A			A			

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantson-yene	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>What Would You do if Your Child Became Malnourished?</u>															
<u>1st Measure (Baseline)</u>	N	171	175	195	541	161	196	194	180	731	181	178	196	555	1,827
Percent reporting:															
It couldn't happen		18.1	16.0	93.8	44.7	32.3	30.6	19.6	61.1	35.6	13.3	39.9	2.0	17.8	32.9
Consult relative/friend		9.9	0.6	-	3.3	0.6	1.0	2.6	2.2	1.6	1.7	28.1	1.5	10.1	4.7
Consult herbalist		3.5	21.7	2.0	8.8	-	1.5	3.6	0.6	1.5	7.2	15.7	11.7	11.5	6.7
Use traditional medicine		5.3	2.3	-	2.4	-	0.5	4.6	0.6	1.5	8.3	2.8	1.5	4.1	2.6
Use patent medicine		1.7	7.4	-	2.9	-	9.7	3.6	0.6	3.7	16.6	7.9	1.5	8.5	4.9
Give special foods		11.7	23.4	1.0	11.6	29.2	49.5	40.2	25.0	36.5	20.4	43.3	39.3	34.4	23.5
Go to clinic, etc.		60.2	36.0	3.1	31.8	55.3	34.7	66.0	17.8	43.4	51.9	36.5	82.6	57.8	44.3
<u>3rd Measure (12 Months)</u>	N	N	141	N	141	N	116	175	N	291	19	N	58	77	509
Percent reporting:															
It couldn't happen		D	0.7	D	0.7	D	52.6	21.7	D	34.0	78.9	D	27.6	40.2	25.7
Consult relative/friend		A		A		A			A			A			
Consult herbalist		T	19.1	T	19.1	T	1.7	4.0	T	3.1	-	T	-	-	7.1
Use traditional medicine		A	2.1	A	2.1	A	1.7	6.9	A	4.8	-	A	5.2	3.9	3.9
Use patent medicine			1.4		1.4		-	2.9		1.7	-		-	-	1.4
Give special foods			18.4		18.4		-	14.3		8.6	5.3		-	1.3	10.2
Go to clinic, etc.			58.2		58.2		14.7	37.1		28.2	15.8		31.0	27.2	36.3
			90.8		90.8		30.2	16.6		22.0	15.8		51.7	42.8	44.2

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakhclo	Teyateyaneng	St. Paul Butha-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Interpretation of Chart Showing Good Growth</u>															
<u>1st Measure (Baseline)</u>	N	173	180	194	547	161	195	198	181	735	183	184	196	563	1,845
Percent reporting:															
Correct		95.9	95.6	86.1	92.3	88.2	86.1	81.8	80.7	84.1	80.3	94.6	92.3	89.1	88.1
Incorrect		2.9	-	5.1	2.7	10.6	6.7	6.6	11.6	8.7	7.6	0.5	3.1	3.7	5.4
Don't know		1.2	4.4	8.8	4.9	1.2	7.2	11.6	7.7	7.2	12.0	4.9	4.6	7.1	6.5
Total		100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	99.9	100.0
<u>3rd Measure (12 Months)</u>	N	N	143	N	143	N	115	177	N	292	19	N	61	80	515
Percent reporting:															
Correct		D	96.5	D	96.5	D	74.8	93.8	D	86.3	100.0	D	75.4	81.2	88.3
Incorrect		A	2.1	A	2.1	A	20.9	3.9	A	10.6	-	A	9.8	7.5	7.8
Don't know		T	1.4	T	1.4	T	4.3	2.3	T	3.1	-	T	14.7	11.2	3.9
Total		A	100.0	A	100.0	A	100.0	100.0	A	100.0	100.0	A	99.9	99.9	100.0
<u>Interpretation of Chart Showing Poor Growth</u>															
<u>1st Measure (Baseline)</u>	N	173	176	197	546	161	197	198	181	737	183	183	196	562	1,845
Percent reporting:															
Correct		94.2	97.2	86.3	92.3	91.3	83.8	80.8	86.2	95.2	85.2	88.0	87.2	86.8	87.8
Incorrect		5.8	1.7	3.0	3.5	8.1	8.1	7.1	5.5	7.2	5.5	4.9	6.6	5.7	5.6
Don't know		-	1.1	10.7	4.2	0.6	8.1	12.1	8.3	7.6	9.3	7.1	6.1	7.5	6.6
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0
<u>3rd Measure (12 Months)</u>	N	N	141	N	141	N	116	176	N	292	19	N	59	78	511
Percent reporting:															
Correct		O	90.1	O	90.1	O	94.0	90.3	O	92.1	100.0	O	64.4	73.1	88.6
Incorrect		D	6.4	D	6.4	D	1.7	6.8	D	4.8	-	D	25.4	19.2	7.4
Don't know		A	3.5	A	3.5	A	4.3	2.3	A	3.1	-	A	10.2	7.7	3.9
Total		T	100.0	T	100.0	T	100.0	100.0	T	100.0	100.0	T	100.0	100.0	99.9
		A		A		A			A			A			

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantson-yane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Knows Location of Child's Weight Today</u>															
<u>1st Measure (Baseline)</u>	N	173	181	196	550	161	196	198	177	732	181	182	196	559	1,841
Percent reporting:															
No chart		0.6	0.5	24.0	8.9	3.1	13.8	3.0	12.4	8.2	1.7	1.1	6.1	3.0	6.8
Correct		96.5	98.3	67.9	86.9	90.1	78.6	92.4	77.4	84.6	94.5	82.4	90.8	89.3	86.7
Incorrect		2.3	0.5	5.1	2.7	6.8	4.1	-	7.9	4.5	1.1	13.7	2.5	5.7	4.3
Don't know		0.6	0.5	3.1	1.4	-	3.6	4.5	2.3	2.7	2.8	2.7	0.5	2.0	2.1
Total		100.0	99.8	100.1	99.9	100.0	100.1	99.9	100.0	100.0	100.1	99.9	99.9	100.0	99.9
<u>3rd Measure (12 Months)</u>	N	N	138	N	138	N	93	177	N	270	17	N	60	77	485
Percent reporting:															
No chart		D	2.2	D	2.2	D	6.4	2.8	D	4.0	-	D	1.7	1.3	3.1
Correct		A	68.8	A	68.8	A	72.0	86.4	A	81.4	100.0	A	83.3	87.0	78.8
Incorrect		T	2.9	T	2.9	T	12.9	7.3	T	9.2	-	T	1.7	1.3	6.2
Don't know		A	26.1	A	26.1	A	8.6	3.4	A	5.2	-	A	13.3	10.4	12.0
Total			100.0		100.0		99.9	99.9		99.8	100.0		100.0	100.0	100.1

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantson-yane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Knows Location of Child's Weight at Last Attendance</u>															
<u>1st Measure (Baseline)</u>	N	173	180	196	549	161	198	196	179	734	181	182	196	559	1,842
Percent reporting:															
No chart		1.2	0.6	24.0	9.1	3.1	13.6	3.6	11.7	8.2	3.3	1.1	5.6	3.4	7.0
Correct		97.1	98.9	67.9	87.3	89.4	77.8	91.8	76.5	83.8	93.4	78.6	91.8	88.0	86.1
Incorrect		1.2	0.6	5.6	2.6	7.4	4.5	1.0	10.1	5.6	1.1	17.6	2.0	6.8	5.0
Don't know		0.6	-	2.5	1.1	-	4.0	3.6	1.7	2.4	2.2	2.7	0.5	1.8	1.8
Total		100.1	100.1	100.0	100.1	99.9	99.9	100.0	100.0	100.0	100.0	100.0	99.9	100.0	99.9
<u>3rd Measure (12 Months)</u>	N	N	133	N	133	N	103	177	N	280	18	N	58	76	489
Percent reporting:															
No chart		D	2.3	D	2.3	D	4.8	2.8	D	3.5	-	D	1.7	1.3	2.9
Correct		A	72.9	A	72.9	A	77.7	83.0	A	81.0	100.0	A	89.7	92.1	80.6
Incorrect		T	3.0	T	3.0	T	7.8	11.3	T	10.0	-	T	-	-	6.5
Don't know		A	21.8	A	21.8	A	9.7	2.8	A	5.3	-	A	8.6	6.6	10.0
Total			100.0		100.0		100.0	99.9		99.8	100.0		100.0	100.0	100.0

Table 20 (Continued)

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics	
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Butha Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low		
<u>Mother's Interpretation of Own Child's Chart</u>															
1st Measure (Baseline)	N	173	181	196	550	161	198	198	180	737	181	181	198	560	1,845
Percent reporting:															
No chart		0.6	1.1	24.5	9.3	1.9	13.1	4.0	11.7	7.9	2.2	1.1	5.1	2.9	6.8
Correct		94.8	97.8	64.3	84.9	89.4	78.8	88.9	75.6	83.0	90.6	74.6	90.8	85.5	84.3
Incorrect		4.0	0.5	8.7	4.5	8.1	4.0	-	10.0	5.3	1.7	22.6	3.6	9.1	6.2
Don't know		0.6	0.5	2.5	1.2	0.6	4.0	7.1	2.8	3.8	5.5	1.7	0.5	2.5	2.7
Total		100.0	99.9	100.0	99.9	100.0	99.9	100.0	100.1	100.0	100.0	100.0	100.0	100.0	100.0
3rd Measure (12 Months)	N	N	138	N	138	N	82	176	N	258	18	N	59	77	473
Percent reporting:															
No chart		D	2.2	D	2.2	D	6.1	5.1	D	5.4	-	D	1.7	1.3	3.8
Correct		A	63.0	A	63.0	A	65.8	83.5	A	77.9	100.0	A	84.7	88.3	75.3
Incorrect		T	8.7	T	8.7	T	17.1	6.2	T	9.7	-	T	1.7	1.3	8.0
Don't know		A	26.1	A	26.1	A	11.0	5.1	A	7.0	-	A	11.9	9.1	12.9
Total			100.0		100.0		100.0	99.9		100.0	100.0		100.0	100.0	100.0

Table 21

Clinic Operating Costs by Cost Category, Clinic, and Clinic Rating - Lesotho*

DATA CATEGORY	CLINICS RATED HIGH				CLINICS RATED MEDIUM					CLINICS RATED LOW				Total Lesotho Sample All Clinics
	St. James Mokhotlong	St. Rose Peka	St. James Mantsonyane	Total Clinics Rated High	Tsakholo	Teyateyaneng	St. Paul Buthe-Buthe	Mofokas	Total Clinics Rated Medium	Queen Elizabeth Maseru	Quithing	Leribe	Total Clinics Rated Low	
Labor Costs	0.20	0.15	0.48	0.28	0.26	0.18	0.14	0.38	0.24	0.60	0.21	0.38	0.40	0.30
Capital Equipment (buildings, equipment, vehicles, etc.)	0.02	0.03	0.10	0.05	0.04	0.02	0.01	0.01	0.02	0.03	0.11	0.05	0.06	0.04
Commodities	3.61	3.32	6.26	4.40	2.45	3.78	5.07	4.18	3.87	0.00	2.75	4.16	2.30	3.56
Vaccines, etc.	0.93	0.93	0.91	0.92	0.93	0.91	0.93	0.00	0.69	0.93	0.02	0.93	0.62	0.74
Other Operating Costs	0.09	0.08	0.09	0.09	0.06	0.08	0.02	0.04	0.05	0.03	0.03	0.02	0.03	0.05
TOTALS	4.85	4.51	7.84	5.73	3.74	4.97	6.17	4.61	4.87	1.59	3.12	5.54	3.41	4.69
*In U.S. dollars, per recipient visit. Conversion based on 1977 official exchange rate of \$1 U.S. = .86 Rand.														

THE LESOTHO STUDY TEAM

Co-leaders of the in-country study team in Lesotho were Ms. Aa Mopeli and Ms. Patricia Drewry, both of the Health Education Unit, Ministry of Health. Other members of the team included:

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Field supervision for the project, including supervision of data collection and review of data in the field, was provided by the following persons:

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SECTION V. GENERAL CONCLUSIONS AND IMPLICATIONS

This study grew out of recommendations of a conference on the "Use of Growth Charts for the Assessment of Progress of Individual Children and for the Teaching of Parents" held at the Urban Life Center, Columbia, Maryland on May 10-12, 1971.* In particular, the study is in response to a recommendation to evaluate the effectiveness of the growth chart as a program tool in improving the health of the young child. The study has demonstrated in the selected clinics in both countries that extensive and effective use is made of the growth chart and that it has been effectively implemented in providing education to the mothers. In Lesotho, the vast majority of mothers were able at the initiation of the study to effectively interpret growth chart information. In Ghana, where initial comprehension was not so high, mothers demonstrated improved ability to interpret growth chart information over the year's period of study. Attempts to isolate conditions of growth chart usage as an educational tool which effected improved health and nutrition knowledges, attitudes, and practices were unsuccessful. Clinic conditions did not remain stable during the course of the study; use of the chart no doubt differed as much within the clinics as it did across the clinics. Subtle factors such as the specific attention given to a mother whose child is at risk elude studies such as this one. The mother's intellectual and financial ability to feed and care for her child--to effect a better diet and therefore better health--are pervasive factors which were obscured in the clinic by clinic review dictated by the study design. But, there is no reason to suggest that extensive use of the growth chart does not have a bearing on the mother's ability to care for her child.

One of the most serious implications of the study is that subtleties of growth chart usage over associated education, such as sought in this study, would be better explored through a series of smaller scale and better controlled investigations. Team members, clinic workers, and the study staff all recognized that the evaluation of the educational effects on behaviors, knowledges, attitudes, and motivations requires direct intervention and control on a continuing basis--such as instruction of clinic workers and control over varied modes of growth chart use for educational purpose. Given the results of such controlled experimentation, the most effective modes might be isolated and instructional kits be prepared, as was recommended by the 1971 conference. Team members and clinic workers associated with this study in both Ghana and Lesotho appear willing to undertake such investigation, given the opportunity to maintain control and surveillance of effects of their programs.

* *Use of growth charts for assessing progress of children and teaching of parents.* Washington, D. C.: Office of Nutrition, Technical Assistance Bureau, Agency for International Development, 1971.

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