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CARE PRESCHOOL NUTRITION PROJECT:
PHASE II REPORT

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CARE

August 1977

New York

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CARE Preschool Nutrition Project:
Phase II Report

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ABSTRACT

In 1976 CARE evaluated its preschool take-home feeding programs in Colombia, the Dominican Republic, and Pakistan, and its on-site feeding programs for preschoolers in Tamil Nadu, India and Costa Rica. These surveys were conducted as Phase II of a three phase project CARE is conducting to study its preschool nutrition program worldwide. The purpose of this ongoing AID-funded review is to identify essential factors for high nutrition impact feeding programs for preschool children in specific environments, and to develop guidelines for use in CARE's preschool feeding programs.

A consistent method of data collection was followed in all five countries. Mothers of participants and non-participants were interviewed, and weight, height and arm circumference measurements were taken on one of their children from 1-5 years old. Participant and non-participant groups were generally well matched on socioeconomic characteristics and, therefore, the nutritional status of the two groups could be compared to assess program impact, except in Costa Rica where the non-participants were considerably advantaged economically. Nutritional status improvement in program beneficiaries was also measured by comparing nutritional status of newcomers in the program to that of longtime participants. Total dietary intake and ration consumption were collected by the 24-hour recall method on a subsample of program beneficiaries in their homes. Center administrators were also interviewed and cost data collected consistently on all programs.

The major factors found to be associated with higher nutritional impact were: A higher rate of malnutrition among newcomers to the program and a higher percent of program centers reaching a group with malnutrition rates equal to or greater than those of non-participants; fewer working mothers; higher percent of mothers introducing solid foods to their children by six months of age; smaller families with fewer people sharing the ration in take-home feeding; more frequent ration consumption; more nutritionally adequate diets; less serious illness in the past year, and higher nutrition knowledge among mothers about the cause and treatment of malnutrition.

Program design hypotheses have been formulated based on the factors found to be associated with nutritional impact. The hypotheses and program modification suggested by the findings of this report will be tested as pilot projects in Phase III of this grant. These modifications include: 1) Recruitment and emphasis on 0-3 year old children, malnourished preschoolers of all ages, and mothers of child-bearing age, 2) Increased caloric intake of preschoolers through providing larger rations and commodities with higher caloric density,

- 3) Provision of protected water, health services, and nutrition and health education including training of project staff, and
- 4) Monitoring the nutritional impact of the program.

I. INTRODUCTION

In July, 1975, CARE commenced a three phase project to study its preschool nutrition programs worldwide. The purpose of this ongoing AID-funded review is to identify essential factors for high nutrition impact feeding programs for preschool children in specific environments, and to develop guidelines for use in CARE's preschool feeding programs. In Phase I of the project, descriptions of all CARE preschool nutrition programs in eighteen countries were summarized and classified. Based on this classification, five countries, which represented the major types of CARE preschool nutrition programming, were chosen for evaluation surveys as Phase II of the project. The findings of the five country surveys have been used to formulate high impact program design hypotheses to be tested in pilot projects in Phase III.

The following is the Final Report for Phase II. The results of the five country evaluation surveys will be presented as well as a preliminary description of hypotheses for enhancing nutritional impact to be tested through pilot projects.

Supplementary feeding is CARE's major activity in preschool nutrition programming. The Phase I classification of CARE preschool feeding programs worldwide identified two major types of programs and five countries were chosen for evaluation which represented these two types as follows:

Type 1 On-Site feeding six days per week, utilizing PL480 Title II Commodities and indigenous foods, free of charge to beneficiaries, representing 68% of CARE's programming worldwide or 32% when India is excluded.

Countries chosen for evaluation:
Costa Rica
India (Tamil Nadu)

Type 2 Take-home feeding representing 32% of CARE's programming worldwide or 68% when India is excluded.

Countries chosen for evaluation:
Colombia - PL480 foods plus indigenous foods distributed twice a month in dry form with a charge to beneficiaries.
Dominican Republic - Only PL480 foods distributed in liquid form six days per week or in dry form periodically with a charge to beneficiaries.
Pakistan - PL480 foods distributed in dry form twice a month or monthly, free of charge to beneficiaries.

All five programs chosen for evaluation had generally efficient delivery systems in which food reached the feeding centers at least nine months out of an intended twelve.

All five programs distributed foods primarily through health posts or feeding centers and provided some nutrition education and limited health services to some of the beneficiaries. None of the five programs were targeted to only the malnourished, but did service the economically needy. Complete descriptions of all components of the five programs, are presented in the results section of this report. All five evaluation surveys were conducted from March through November 1976.

The findings reported here represent CARE's experience with its own preschool feeding programs, and are not being proffered as universally applicable guidelines for other providers of supplementary feeding services.

II. METHODS AND MATERIALS

Data in all five countries were collected in a consistent and comparable manner using the same method and type of equipment for each of the surveys. The survey work was directed by CARE's Nutrition Advisor in all five countries to assure consistency. An average of five weeks was spent in each country and this was found to be sufficient time for completing all tasks. Information was collected on program participants and non-participants through questionnaires, center records and anthropometric measurements. The cost, history and delivery system of each program were also studied. The study incorporated various aspects of evaluation methodologies previously developed by Checchi and Company, and MIT/Harvard University.¹⁻³

Questionnaires

Four questionnaires were designed for each survey: one for mothers in the random sample survey of program and non-program comparison sites; one for the in-depth survey of a subsample of program mothers; one for the feeding center administrators, and one for community officials (see sample questionnaires attached) All questionnaires were translated and modified appropriately for each country after pre-testing. Questionnaires were pre-coded to facilitate computer processing of the data and were printed in each country. Coding instructions were prepared for the interviewers and code guides showing data format were printed for use during data analysis in New York. Other materials prepared for the surveyors were a table for converting local money to U.S. dollars, a table for calculating the current age in months of the child from birthdate information, a chart showing the Western months corresponding to the Islamic and Hindu lunar months for calculating age (Pakistan and Tamil Nadu, India), a classification of castes for India, and a metric conversion table for previous measurements. Age of dentition was also used to assess age.⁴

The community questionnaires, designed primarily to collect demographic data at the site level, were found to be of little use because of the non-existence of data of this nature at the community level.

Sampling

In consultation with the project statistician it was determined that twenty feeding centers per country, randomly selected with

stratification for various counterparts and geographic variations, would provide a suitable sample size for generalizing about the program nationwide, and for detecting differences between centers at a level of $P = .05$. Twenty centers were evaluated in Colombia, the Dominican Republic and Pakistan; twenty two in Costa Rica, and thirty-one in Tamil Nadu. The number was increased to thirty-one in Tamil Nadu because of the larger size of the program and small enrollment at each center. The random sample of feeding centers was drawn once the team arrived in each country.

At each sampled center fifty mothers of preschool participants were randomly selected on a first-come, first-serve basis for interviews and one of their preschool children from 1-5 years old was measured. The sample was limited to one child from each family to allow the greatest variation in characteristics of participants. There were approximately equal proportions of male and female children in the sample. In India due to small enrollments a pair of centers in the same block were sampled together and twenty-five children from each were measured to provide a per site total of fifty children.

A sample of fifty mothers and children who had never participated in a feeding program were drawn from each program community or a nearby community with similar characteristics to serve as a comparison group. These mothers were interviewed in the same manner as program mothers and one of their 1-5 year old children measured. Basic characteristics used for matching program and comparison sites were: total population of the community, geographic proximity and similarity, major occupation, access to health facilities and water supply, and income level. One comparison site was matched to more than one program site if characteristics were similar among the sites.

Incentives including candy, cooking oil, aluminum bowls, and Ragu spaghetti sauce were used to attract the mothers to the center for interviews.

All centers were notified in advance to have mothers ready for the survey on the scheduled day. In general, mothers were waiting when the team arrived. However, if an insufficient number of mothers and children were present, the surveyors went door to door and conducted interviews and measurements in the homes.

The names of the program sites evaluated in each country are as follows:

COLOMBIA

Buenavista
Cachipay
Chinavita
Fuquene
Guacamayas
John F. Kennedy
La Despensa
La Uvita
Monte Redondo
Padre Prieto
Pacho
Páez
Rafael Reyes
Reventones
Guayabetal
San Juan de Betulia
Santa Isabel
Sesquile
Tausa
Vereda Portachuelo

COSTA RICA

Barba
Bataan
Cartago
Ciudad Quesada
Ciudadela La Mora
Matillo
Invu Las Cañas
La Mansion de Nicoya
Miramar de Montes de Oro
Moracia de Nicoya
Orosi de Paraíso
Palmar Norte de Osa
Quebrada Grande de Liberia
Quepos
Sagrada Familia
Santa Barbara de Santa Cruz
San Marcos de Tarrazú
Santiago de Paraíso
Tres Ríos
Villa Fonita
Villa Colón de Mora

DOMINICAN REPUBLIC

Arroyo Fondo
Baoba del Pinal
Barrio 30 de Mayo
Basima
Eatey Bienvenido
Eatey Central Boca Chica
Centro Sanitario San Fco. de
Macorís
El Avispero
El Limón
Fernanco Taveras
Guanito
Ing. Amistad
Jima Ahajo
La Paloma
Loma del Chivo
Piña Vieja
Realidad
Rincón Claro
Sta. Maria Parahona
San José de Ocoa

TAMIL NADU, INDIA

Adiamankottai
Burgur/Santhur
Kamavaripalayam/Devaçanam
Kambainallur
Mahadanapuram/Lalapettai
Melasinthamani
Muduganapalli/Conalvadi
IV Puram Center
Mennagaram
Padamaneri/Kadamboduvaluvu
Pakkam
Pattala Municipal School
Pudupalayam
Seerkatchi/Paramankurichi
Sessions Court Compound
Tharagarpatti/Veeranarpatti
Therukukadavetti/Sivalaperi
Vedal/Armapakkam
Venkatesapuram/Sellipalayam

(cont'd..) Names of Sites Evaluated

PAKISTAN

Aga Khan, Kharadar
Aga Khan, Sultanabad, Hyderabad
Aga Khan, Sultanabad, Karachi
Aga Khan, Talhar
APWA, Orangi Town
Cantt. Board Hospital, Malir
Civil Hospital, Uthal
Dadu, Schwan
Gularchi, Badin
Indus Rangers
Jacobabad
K.M.C., Miranpir
Khairpur, Pirjo Goth
Methodist, P.E.C.H.S.
Mission Welfare Center, Quetta
N.R.I.F.C., Malir
Pishin
Public Health School, Malir
Public Health School, Quetta
Tando Ghulam Ali

Subsequent to the random sample survey an in-depth survey was conducted in the homes of a subsample of approximately 250 program mothers previously interviewed in the random sample survey. Twenty-five mothers were randomly chosen from the original sample of fifty at ten centers. The ten centers were chosen on the basis of the survey teams observations of the five apparently more effective and five apparently less effective centers visited in the random sample survey at twenty centers. It was during the in-depth survey that 24 hour recall information on the diet of the previously measured preschool child, and his/her consumption of the ration was collected. The in-depth survey also provided an opportunity to revisit the centers unannounced and to get more candid answers from the mothers due to interviewing them in their homes and not at the feeding center.

Sampling for the whole survey was done nationwide in Costa Rica and the Dominican Republic. In Colombia and India (Tamil Nadu), due to the size of the program the sample was chosen from several departments purposely selected to represent major geographic zones and areas of program concentration. In Pakistan the program operates in only two provinces so these were all that were visited. Table I shows the size and location of the samples in all five countries.

The surveys collected data primarily of a cross-sectional nature by which program participants could be compared with non-participants and recent program participants could be compared with long-timers. Reliable baseline data were practically non-existent in all five countries making it impossible to conduct a longitudinal analysis of the growth of the children. This lack of longitudinal data is probably the greatest weakness of the present study because following the individual growth record of each child over time provides a more reliable assessment of nutritional impact, than comparing different groups of children who may be coming from different past circumstances. However, the expense and time necessary to conduct a longitudinal study made it unfeasible under the present grant. Furthermore, it was felt that a general indication of program impact should be apparent even in a cross-sectional study.

Staff and Training

The international survey team in each country consisted of one or two nutritionists from CARE-New York, one program officer from CARE-New York, one CARE field representative or assistant country director from the same region as the country, and one to two consultants (primarily pediatricians or anthropologists). The

TABLE 1
 LOCATION, SAMPLE SIZE AND MONTH OF THE YEAR FOR
 EVALUATIONS OF FIVE CARE PRESCHOOL FEEDING PROGRAMS IN 1976

	Month When Evaluated	Program Participants		Non-Parti- cipants	Location of Centers Province/Dept.
		Random Sample Survey	In-Depth Survey		
Colombia	November	897	244	536	Boyaca Cundinamarca Sucre
Costa Rica	March	507	201	266	Nationwide
Dominican Republic	June	1201	246	822	Nationwide
India (Tamil Nadu)	August/ September	963	253	859	Chingleput Dharmapuri Tirunelveli Trichinapalli
Pakistan	August	794	254	464	Baluchistan Sind

* Numbers represent mothers interviewed. For each mother interviewed anthropometric measurements were taken on one of her preschool children.

local team consisted of ten to sixteen surveyors hired especially for the project, usually recent University graduates with training in nutrition, home science, or social work and four to six CARE field inspectors. Training for the random sample survey was conducted for three days. Interviewing and measuring techniques were standardized. A practice day was provided to go through all survey procedures at a feeding center. A separate training session was conducted prior to the in-depth survey to familiarize the surveyors with the questionnaire and methods for collecting 24 hour dietary recall data.

Random Sample Survey

In the random sample survey each team would spend one day at a center. Upon arrival equipment was set up and mothers were organized and clearly identified as belonging either to the program or comparison group. The survey sample was drawn, and selected mothers were interviewed and one of their children measured. Concurrently, one team member interviewed the center administration and a community leader. The ration being distributed was weighed on a food scale. After all interviews were completed center records were checked to verify the birth date of each child, the attendance and date of initial enrollment, and previous weight or height measurements if available. The surveyors coded their questionnaires each day and all coding was checked and corrected by the team leader at the end of each day. Each interviewer talked with approximately 12-25 mothers per day.

In-Depth Survey

All mothers were interviewed in their homes. This was extremely time consuming because of long walks to the homes and difficulty locating families from addresses taken in the random sample survey at the feeding centers. Once in the home, dietary recall information was collected by interviewing the mother about the previous day's intake for the preschooler on whom anthropometric measurements had been collected. Food scales were used to measure foods available in the home but in general quantities were estimated by showing the mother local cups and spoons of various sizes. Local nutrient composition tables were used to manually determine the caloric and protein content of the diet. Breastmilk quantity by age and nutritive value was estimated using data from India.⁵

CARE foods were coded separately so that dietary intake from the ration could be identified. The mother's knowledge of the cause and treatment of protein-calorie malnutrition was assessed by showing her a picture of a severely malnourished child and asking her to describe what she saw and what she would do to correct the condition. Each interviewer visited 4-6 homes per day. One day was spent per site to interview the required twenty-five mothers.

Equipment and Measurements

For measuring the children's weight, Salter hanging scales, called portable baby weighers, were used. The scales were standardized daily, using known iron weights of five kilograms. Arm circumference was measured by first assessing the mid-point of the left upper arm and marking this point with a felt pen. Then the circumference was measured at the mid-point using an insertion style arm tape.

Children were weighed with minimal clothing and without shoes. Height of children with their shoes removed was measured using a metric tape attached to the wall and sliding a right-angle piece of wood flat on the children's crown to take the reading.

For children unable to stand, recumbent length was measured using a Grafco plastic, slide-rule type infantometer, or by attaching a tape to a table against a wall and sliding a right angle against the soles of the child's feet to take the reading. Few children were unable to stand. All measurements were taken three times and the average of the three trials was recorded.

The Salter scales held up remarkably well through much use in the field and shipment from country to country. All equipment was highly portable fitting into a shoulder bag for each surveyor. This made house to house survey work possible. CARE vehicles, when available, were used in each country for transporting the survey teams, forms and equipment; otherwise rented vehicles were used.

Data Processing and Analysis

Data from the questionnaires were keypunched onto IBM cards in New York and then taped for analysis using the SPSS computer

program at Columbia University. Before taping the data considerable time was spent screening it for coding and punching errors and correcting them. A special subroutine for analyzing the anthropometric data based on the National Academy of Sciences reference population was obtained from the center for Disease Control and added to the program at Columbia University.

It was found vital to analyze frequency distributions as well as means on anthropometric data and dietary data. Means can be very deceiving due to wide standard deviations with highs masking the lows. Frequency distributions make it easier to see how many children are actually malnourished, calorie deficient, etc. Another problem in handling the data is that nutritional impact that may exist on individual children, or sitewise, tends to get masked when you aggregate all sites into a nationwide verdict on program impact. Thus in each country, although nationwide impact was minimal, there were always some sites with sizeable nutritional impact. Nutritional impact on individual children could not be assessed because of the cross-sectional nature of the study.

Cost of the Program

Cost data for all five countries were collected in a consistent manner through totalling all costs of the program including food, administration, distribution, and local operating expenses.

III. RESULTS AND DISCUSSION

Feeding Program Characteristic - (Table 2)

In the programs surveyed most of the foods are distributed through feeding centers set up expressly for that purpose. However, 20-41% of the distribution centers are health posts, except in Pakistan where 95% of the program operates in health posts. All programs have been in operation at the average center surveyed for three to four years, except the Costa Rica program which has been running for ten years. The on-site feeding programs in India (Tamil Nadu) and Costa Rica average 82 beneficiaries per center, whereas the take-home feeding programs average five times as many beneficiaries (442). There are 19 to 58 beneficiaries per every staff member in all countries except in the Dominican Republic where the staff load is 272. The programs in general reach 6-10% of the preschool population, with highest coverage of preschoolers in the Dominican Republic (13%), and lowest in Pakistan at 1%.

The project's definition of an urban area was a community with over 5,000 inhabitants. Using this definition, the following percentage of sites evaluated were in urban communities: Colombia-25%, Costa Rica-36%, The Dominican Republic-25%, Tamil Nadu-36%, and Pakistan-90%.

In all sites evaluated, the delivery system was functioning relatively smoothly with food having been received by the beneficiaries at least nine months out of the intended twelve. The exceptions were one site in Colombia and one in the Dominican Republic. The rations distributed to the beneficiaries were, in general, of the planned quantity.

Differences between Program and Comparison Group

Some significant differences emerged between the participant children and the non-participant children on characteristics such as age, birth order, family size, socioeconomic status, access to protected water and latrines, and incidence of serious illness in the past year. However, these differences were not felt to be large enough to render the two groups not comparable for the purpose of evaluating the impact of the program on nutritional status, except in Costa Rica. In Costa Rica the comparison group was "advantaged" by smaller families, lower birth order of sampled children, higher family income and possessions score, more literate mothers, more piped water and more latrines. All these differences were highly significant at $P < .01$ except literacy which was significant at $< .05$. An approximately equal number of boys and girls were sampled in both program and comparison groups.

The most common significant differences between program and comparison groups taking all five countries into consideration were:

TABLE 2
 TYPE OF CENTERS, SPONSORS, AND NUMBER OF
 BENEFICIARIES IN FIVE CARE PRESCHOOL FEEDING
 PROGRAMS

Country	Total beneficiaries 0-7yrs.	Sponsors (Ministries)	Type of Centers	Average months since program began at Centers	Average beneficiaries per Center	Average Beneficiaries per staff
Colombia	236,666	Family Welfare	Health 30% Feeding 70%	47.8	360	55
Costa Rica	18,000	Health	Health 41% Feeding 59%	120.0	84	19
Dominican Republic	130,302	Health National Sugar Council Dominican Agri- culture Institute	Health 20% Feeding 80%	33.1	600	272
India (Tamil Nadu)	496,000	Health Social Welfare Rural Development & Social Admini- stration	Health 23% Feeding 77%	35.1	79	33
Pakistan	23,761	Health Population Plan- ning Aga Khan	Health 95% Feeding 5%	45.2	367	58

1. Greater access to protected water in the comparison group - Costa Rica, Colombia, Pakistan.
2. Greater literacy among mothers in the comparison group - Costa Rica, India, Pakistan.
3. More years education among fathers in the comparison group - Colombia, India, and Pakistan.
4. Fewer children under 13 years among families in the comparison group - Costa Rica, India, Pakistan.

The actual numerical differences in these factors and other characteristics are small as can be seen in Tables 3-5, except in Costa Rica. Since it is impossible to ever perfectly match two groups of children, especially from different communities, there may be other unmeasured differences between groups that affect nutritional status. However, it was encouraging to find the groups as well matched as they were on most variables measured, and it is felt that nutritional status of both groups can be compared to assess the impact of the program, except in Costa Rica.

Age, Birth Order and Family Size - (Table 3)

The mean age of children surveyed in all programs was three years. In take-home feeding programs approximately half the beneficiaries are under three years and half are over three years. Thus, these programs are reaching the most nutritionally vulnerable preschoolers from 6-36 months of age. In fact, approximately one-fourth of the beneficiaries in take-home feeding programs are under two years old. The on-site feeding programs on the other hand cater to older children with approximately one-third of the beneficiaries under three years old and 14% under two years old. These programs are less likely to reach the most vulnerable younger preschooler because of the difficulty of transporting the young toddler to the center daily. In both the India and Costa Rica programs participants are significantly older than the non-participants.

The birth order of participants in CARE feeding programs is highest in Colombia at 5.2 and lowest in India at 3.1. Birth order is also high in the Dominican Republic at 4.8. High parity children may be at a nutritional disadvantage due to competing for limited family food resources. Most families surveyed have seven members with an average of four children under thirteen years old. Tamil Nadu's figures are less with an average family size of six and three children under age thirteen. The low birth order, and smaller family size of both participants and non-participants in

TABLE 3
 AGE, BIRTH ORDER AND FAMILY SIZE OF PARTICIPANTS AND
 NON-PARTICIPANTS IN FIVE CARE PRESCHOOL FEEDING PROGRAMS
 MEANS ARE PRESENTED + STANDARD DEVIATION

Mean	Colombia	Costa Rica	Dominican Republic	India	Pakistan
Sample Size					
Participants	897	507	1201	963	794
Non-Participants	536	266	822	859	461
Age of Child (mos.)					
Participants	35.7+13.5	41.2+13.3*	34.7+13.3	37.7+12.1***	33.9+13.6***
Non-Participants	35.7+13.5	38.9+13.6*	34.8+13.9	32.3+12.7***	31.0+13.3***
Birth Order					
Participants	5.2+3.2	4.2+3.3***	4.8+2.9***	3.1+2.0	4.1+2.6
Non-Participants	4.8+3.4	3.2+2.8***	4.3+3.1***	3.0+1.9	3.8+2.5
Children under 13 yrs.					
Participants	3.7+1.7	4.0+2.1***	4.2+2.9***	2.9+1.4***	4.0+2.0
Non-Participants	3.7+1.8	3.3+2.1***	3.7+2.1***	2.7+1.4***	4.0+2.3
Total Family Size					
Participants	7.1+2.7	7.9+3.4***	7.4+2.9**	5.9+2.2	7.4+3.0
Non-Participants	7.1+2.7	6.8+3.5***	7.1+3.0**	5.8+2.3	7.4+3.6

* Significantly different at $P < .05$ level.

** Significantly different at $P < .02$ level.

*** Significantly different at $P < .01$ level.

Tamil Nadu, India may be a favorable indicator of the positive impact of active family planning programs there. Families are largest in Costa Rica with eight members. Number of children under thirteen years old and total family size influence the number of people sharing the CARE ration in take-home feeding programs. Non-participant families had significantly fewer children under age thirteen and smaller total family size than program participants in Costa Rica, the Dominican Republic and India. Birth order was also significantly lower among non-participants in Costa Rica and the Dominican Republic

Participation and Attendance - (Table 4)

On the average, participants had been enrolled in the feeding programs for eleven to fourteen months except in the Dominican Republic (20 months) and Pakistan (19 months). Attendance was calculated from center records based on the percent of scheduled times the mother actually collected the ration or brought her child to be fed. As the records were inconsistently maintained at many centers the attendance data is not very reliable, nevertheless, it shows rates of 72-95% attendance. A more reliable and meaningful figure is the percent of children who actually ate the ration on the day prior to the 24-hour recall. This information will be presented in the section on dietary intake. The CARE Poshak study⁶ in India found food collection rates to be 53% for take-home feeding and the Tamil Nadu nutrition study found 61% collection rates when the distribution centers were located in the same village.

Socioeconomic Background of Families - (Table 5)

Literacy is highest among mothers in the Latin America programs with the highest rate at 80% in Costa Rica. In India only 23% of the mothers can read and in Pakistan, 30%. In Costa Rica, Pakistan, and India significantly more mothers in the comparison group can read than program mothers. Costa Rica also scores highest on all the other socioeconomic variables with the highest reported monthly family income, most educated fathers, and greatest number of household possessions of any of the countries surveyed. India is the poorest country surveyed as evidenced by lowest reported family incomes and number of household possessions, and least number of years education of the fathers. Lower family incomes and household possessions scores as well as fewer years education of fathers were found to be significantly associated with the malnourished group in Colombia and Pakistan.

TABLE 4
 PARTICIPATION AND ATTENDANCE OF PRESCHOOLERS
 OR THEIR MOTHERS IN FIVE CARE FEEDING PROGRAMS
 MEANS ARE PRESENTED + STANDARD DEVIATION

Country	Sample Size	Mean Participation (mos.)	Sample Size	Mean Attendance* (% of possible times)
Colombia	897	13.5 ₊ 10.6	838	94.5 ₊ 12.9
Costa Rica	507	14.2 ₊ 13.1	155	82.8 ₊ 21.1
Dominican Republic	1093	20.1 ₊ 12.0	477	72.3 ₊ 24.7
India	963	11.4 ₊ 8.3	653	95.4 ₊ 11.3
Pakistan	780	19.0 ₊ 13.5	630	79.1 ₊ 26.7

* Attendance data derived from inconsistently maintained records at many centers.

TABLE 5

SOCIO-ECONOMIC BACKGROUND OF FAMILIES IN FIVE CARE
PRESCHOOL FEEDING PROGRAMS AND OF NON PARTICIPANT FAMILIES.
MEANS ARE PRESENTED + STANDARD DEVIATIONS.

Socio-Economic Factors	Colombia	Costa Rica	Dominican Republic	India (Tamil Nadu)	Pakistan
Sample Size					
Participants	897	507	1198	962	794
Non-Participants	537	266	822	859	461
Literate Mothers (%)					
Participants	66.6	79.5***	54.1	23.2***	29.8**
Non-Participants	69.5	88.0***	57.5	28.1***	38.4**
Education of Fathers					
Participants	2.3+2.1**	5.1+5.4	2.6+2.5	2.2+3.7**	4.1+4.6**
Non-Participants	2.8+2.4**	5.1+5.3	2.8+2.6	3.9+4.0**	6.0+5.3**
Family Income per Month (\$U.S.)					
Participants	30.9+23.0	74.8+55.6**	65.5+41.2**	15.4+14.9	39.6+34.4
Non-Participants	30.3+20.8	98.3+77.4**	76.9+46.1**	15.8+13.4	41.7+29.4
Household Possessions Score (0-8)*					
Participants	3.0+1.5	3.8+1.7**	2.7+1.0	1.2+1.5	3.0+2.0**
Non-Participants	2.9+1.5	4.6+1.6**	2.6+1.1	1.3+1.7	2.4+2.1**
Principal Occupation	Seasonal Agriculture	Seasonal Agriculture	Seasonal Agriculture	Seasonal Non-Skilled Labor	Non-Skilled Labor
Working Mothers (%)					
Participants	23.8	14.4	12.0	53.7 **	16.8 **
Non-Participants	22.7	13.5	11.4	46.8 **	8.6 **

*Household Possession Score - One point from 0-8 was granted for each of the following possessions: bicycle, wristwatch, radio, chair, more than one bed, sewing machine, stove and television. In India, brass and steel vessels, and gold or silver jewelry were substituted for the television and more than one bed categories.

**Significant level at $P < .01$

***Significant level at $P < .05$

In all the Latin American countries the major occupation is seasonal agriculture, whereas in the Asian programs the primary occupation is non-skilled labor. The highest number of working mothers was found in Tamil Nadu, India (54%) and the least in the Dominican Republic (12%). The number of working mothers was found to be significantly higher among malnourished children than healthy children in Colombia, Costa Rica and Tamil Nadu, India. Similar findings were reported in Project Poshak in Madhya Pradesh, India.⁴² While the mothers are out working, children are often left in the care of siblings who may not know proper childrearing practices. Therefore, there may be a need for education in childcare for siblings.

Program families have similar incomes to the non-participant families except in Costa Rica and the Dominican Republic where program families are significantly poorer.

Breastfeeding and Weaning Practices - (Tables 6-8)

Only 2-7% of the mothers interviewed had never breastfed their children, except in Costa Rica where 23% had never breastfed their children. In fact, breastfeeding practices were nutritionally favorable in all countries except Costa Rica where only 35% of the mothers breastfeed their children for six months or more and the average age of stopping was seven months. However, significantly more mothers breastfeed for six months or longer in rural areas of Costa Rica, 40.6%, versus 25% in urban areas (Table 7). There is also a significant urban/rural difference in the Dominican Republic where 81.6% of the rural mothers breastfeed for six months or more in contrast to 68.1% of the urban mothers. Breastfeeding and weaning practices are similar in Colombia and the Dominican Republic where mothers breastfeed on the average for 13-14 months and introduce solids around 8-9 months of age. Similarities also exist between India and Pakistan where mothers breastfeed for an average of 17-20 months, and introduce solid foods at 12-14 months of age.

The introduction of solid foods later than six months can be a prominent determinant of malnutrition in the preschooler. One of the major factors significantly associated with malnutrition in both the Dominican Republic and Pakistan was a higher percentage of children who had received solid foods later than six months (60% among the malnourished in the Dominican Republic and 81% in Pakistan) compared to 41% and 69% among the well-nourished in the Dominican Republic and Pakistan respectively. Furthermore,

TABLE 6.

BREASTFEEDING PRACTICES OF MOTHERS
IN CARE PRESCHOOL FEEDING PROGRAMS AND AVERAGE
AGE WHEN SOLID FOODS INTRODUCED

Country	Sample Size	Percent Who Never Breastfed or Stopped When Newborn	For Those Who Breastfed, Average Age of Stopping (Months)	Average Age When Solids Introduced (Months)
Colombia	244	6.3	14.0	9.2
Costa Rica	266	23.4	7.1	5.6
Dominican Republic	246	7.3	13.3	7.8
India (Tamil Nadu)	253	2.4	19.9	14.3
Pakistan	254	3.6	16.8	11.9

TABLE 7

BREASTFEEDING AND WEANING PRACTICES
OF MOTHERS OF PRESCHOOLERS IN FIVE CARE FEEDING
PROGRAMS

Country	Sample Size	Breastfeeding Duration (% \geq 6mos.)	Introduction of Solid foods (% \leq 6mos)
Colombia	244	79.0	43.2
Costa Rica	266	34.8	73.6
Dominican Republic	246	77.6	55.3
Tamil Nadu	253	94.9	10.7
Pakistan	254	89.0	24.8

TABLE 8

PERCENT OF URBAN AND RURAL MOTHERS WHO BREASTFEED THEIR CHILDREN FOR SIX MONTHS OR MORE, AND WHO INTRODUCE SOLID FOODS TO THEIR CHILDREN BY THE SIXTH MONTH OF AGE *

	Breastfeeding Duration (≥ 6 Mos.)					Introduction of Solid Foods (≤ 6 Mos.)				
	Urban(%)	N	Rural(%)	N	P**	Urban(%)	N	Rural(%)	N	P**
COLOMBIA	77.5	218	92.0	25	N.S.	46.3	218	16.0	25	$<.01$
COSTA RICA	25.0	72	40.6	128	$<.05$	73.6	72	73.6	128	N.S.
DOMINICAN REPUBLIC	68.1	72	81.6	174	$<.05$	61.1	72	52.9	174	N.S.
INDIA (TAMIL NADU)	98.1	104	92.6	149	N.S.	4.8	104	14.8	149	$<.05$
PAKISTAN	89.0	254	----	---		24.8	254	----	---	

*Urban is defined as a community with a population greater than 5000.

**N.S. = Not Significant Difference between urban and rural groups.

$<.05$ = Significant Difference between urban and rural groups.

$<.01$ = Very Significant Difference between urban and rural groups.

late introduction of solid foods was significantly associated with lower nutritional impact of the program in India. In all countries surveyed except Costa Rica, the average age of introduction of solid foods exceeds six months with the greatest problem in India where the mean age of introduction of solid foods is 14.3 months (Table 6). The majority of the mothers introduce solid foods too late in all countries except Costa Rica and the Dominican Republic (Table 7). Late introduction of solid foods occurs significantly less in urban areas in Colombia and significantly more in urban areas in the Dominican Republic. No urban/rural differences in age at introduction of solid foods were found in the other countries (Table 8).

The weaning practices which are detrimental to nutritional status among most mothers interviewed would provide good subject matter for a nutrition education campaign. The problem lies more in introduction of solid foods too late than in too short a period of breastfeeding. There is no evidence in the present findings to support the fear sometimes voiced that feeding programs reduce breastfeeding. A similar finding about feeding programs not being deterrents to breastfeeding was reported in the Checchi study where program mothers in Colombia, Kenya, and the Philippines breastfed an average of 10.3 months and control mothers for 9.9 months.⁸ Mothers' literacy did not significantly affect breastfeeding or weaning practices in contrast to the finding reported by Heller and Drake in Colombia where more educated mothers breastfed less.⁹

Description of Rations Distributed - (Tables 9 and 10)

The average ration distributed provides each beneficiary with 2.6 kilograms of PL 480 foods per month and supplies 320 calories and 17.4 grams protein with a net dietary protein calories percent (NDPCAL %) score of 20. The rations fill 22-25% of the daily FAO calorie requirements of 1360 calories for 12-47 month old children and 59-68% of the protein requirement of 27 grams per day. The rations distributed, if eaten entirely as supplements to the normal diet, could close 62-83% of the calorie gaps found in the present survey and from six to fourteen times the protein gaps. The ration in Costa Rica is exceptionally large in all ways providing eight kilograms of food per month, almost entirely of local origin, with 737 calories and 30 grams protein. The Costa Rica ration could fill 54% of the calorie requirement and 111% of the protein requirement, while closing 225% of the calorie gap; on the average, no protein gap was found.

TABLE 9
DESCRIPTION OF TYPE, AMOUNT, AND FREQUENCY
OF FOODS PROVIDED IN FIVE CARE PRESCHOOL FEEDING
PROGRAMS

Country	PL480 Foods Used	Kilograms Per Person Monthly	Distribution Frequency Per Month	% Local foods in Total Ration
Colombia Take-Home	Bulgur 12% Soy For- tified Wheat Flour, Bienes- tarina, Oil, Non-fat Dry milk	2.5	Every two weeks	5
Costa Rica On-Site	Wheat Soy Blend Corn Soy Milk Milk Powder	8	Daily except Sunday	95
Dominican Republic Take-Home	Corn Soy Milk Wheat Soy Blend Soy Fortified Rolled Oats	2.7	Daily except Sunday (CFA & IAD) (Monthly) (SESPAS)	0
India (Tamil Nadu) On-Site	Soy Fortified Bulgur Wheat Balahar Soy Fortified Sorghum Oil	2.6	Daily except Sunday	7
Pakistan Take-Home	Whey Soy Drink Mix Oil	1.6	Every two weeks or once a month at some centers	0

TABLE 10

NUTRITIVE VALUE AND NET DIETARY PROTEIN CALORIES PERCENT
(NDP CAL %) OF DAILY RATIONS IN FIVE CARE PRESCHOOL
FEEDING PROGRAMS COMPARED TO FAO REQUIREMENTS AND AVERAGE
NUTRIENT GAPS

Country	Ration Calories	% of FAO Calorie Requirement *	% of Average Calorie Gap	Ration Protein Gms.	% of FAO Protein Requirement*	% of Average Protein Gap	NDP Cal % Ratio
Colombia (Take-Home)	305	22	80	18.3	68	1408	24
Costa Rica (On-Site)	737	54	225	30.0	111	No Gap	16
Dominican Republic (Take-Home)	337	25	70	17.9	66	778	21
India (On-Site)	340	25	62	16.0	59	615	19
Pakistan (Take-Home)	298	22	83	7.6	28	No Gap	10

* Most children were within the 12-47 month age group and would require 1360 calories and 27 grams protein by FAO standards.

The Pakistan ration is the smallest at 1.6 kilogram per month providing 298 calories and 7.6 grams protein with an NDPCal% of 10 due to the low amount of protein in the ration. The NDPCal% of the ration is important, as it was found in the present survey, and has been reported by many others in developing countries,^{6,17,18,20} that calorie deficiency is more common and sizeable than protein deficiency. An NDPCal% of ten for foods distributed to malnourished preschoolers in nutrition rehabilitation centers has been recommended by Beghin and Viteri to correct the most commonly observed mistake in operating such programs, i.e. an inadequate supply of calories in contrast to a high percent of calories from protein origin.²⁰ All of the CARE programs evaluated except Pakistan, provide rations with an NDPCal% greater than ten. This is not surprising as most of the PL-480 foods available for distribution are soy-fortified, high protein foods with high NDPCal% scores (Table 11).

Research is necessary to find ways to boost the calorie content of present rations, possibly through the addition of oil or sugar, or to formulate new commodities with higher caloric density.

Costa Rica has the only ration which meets the AID Food for Peace 1976 recommendation of a minimum of 510 calories in rations for preschoolers in supplementary feeding programs. If larger rations were distributed, consideration would have to be given to the likelihood of local governments being able to provide similar levels of food assistance if PL-480 inputs were to be withdrawn. Rations of high caloric density would also be needed to counteract the bulk constraint of the young preschool child's digestive capacity.

Total Calorie and Protein Intake and Ration Consumption

The 24-hour recall dietary survey was conducted on a subsample of program participants, in each country, primarily to ascertain the impact of the ration on closing the calorie and protein gaps. FTO requirements of 1360 calories and 27 grams protein per day for children 12-47 months of age were used for consistency in assessing the adequacy of the diets in each of the five countries although several of the countries have their own standards.²¹ Mothers were asked to recall for the interviewer everything that the sampled preschool child had eaten on the day prior to the

TABLE 11

NUTRITIVE VALUE AND NET DIETARY PROTEIN CALORIES
 PERCENT (NDP CAL. %) OF PL480 COMMODITIES USED IN CARE
 PRESCHOOL FEEDING PROGRAMS

PL480 Commodity	Calories/100gm	Protein/100gm	NDP Cal. %
Bulgur	359	9.3	10.4%
12% Soy fortified Wheat Flour	357	16.5	18.5%
Bienestarina	340	25.3	29.8%
NFDM	359	35.8	39.9%
Wheat Soy Blend (WSB)	360	20.0	22.2%
Corn Soy Milk (CSM)	373	19.0	20.4%
Soy fortified Rolled Oats	381	20.0	21.0%
Soy fortified Bulgur	383	17.5	18.3%
Balahar	400	22.0	22.0%
Soy fortified Sorghum	359	15.0	16.7%
Whey Soy Drink Mix	435	20.0	18.4%
Cornmeal	364	7.9	8.7%
Wheat Flour	333	13.3	16.0%
Oats	390	14.2	14.6%

interview. Although all mothers interviewed were participants in the feeding program, a sizeable number of children in each country had not eaten any CARE foods on the day prior to the interview. This made it possible to use the diet of this group of children who had not eaten the ration as a baseline estimate of the normal home diet before introduction of the ration. By comparing this diet without the ration to the diet of the children who ate CARE foods it was possible to estimate the need of children for supplementary calories and protein which a ration could provide, and the effect of the current rations on meeting that need.

The bulk of the children's diets in all countries was composed of staple cereals, legumes, and dairy products. Fruits and vegetables were noticeably absent in the preschoolers' diets in all five countries. It can be seen in Table 12 that the average calorie gap, when home diets without the ration are compared to FAO requirements, ranges from a low of 327 calories in Costa Rica to a high of 549 calories in India. The mean protein gap on the other hand is much smaller, with no gap encountered in Costa Rica or Pakistan, and the highest gap equal to 2.6 grams protein in India.

When the ration is consumed along with the home diet, a sizeable calorie gap still remains in all countries except Costa Rica, whereas the average protein gap is closed in all countries except the Dominican Republic. This points out the imbalance in the present rations which are inadequate in calories. This imbalance can be more easily seen in Figure I where the average child who consumes the home diet plus the ration fulfills more than his protein requirement in all countries except the Dominican Republic while failing to meet his caloric requirement except in Costa Rica. The imbalance due to excessive protein is highest in Costa Rica and least in Pakistan. It is a known fact that if caloric requirements are met through a normal cereal pulse diet of adequate quantity, then protein requirements will also be filled without special intake of high-protein foods. Furthermore, if caloric intake is insufficient, protein cannot be used for growth and maintenance, but will be converted to calories to meet the body's primary need for energy. Conversion of expensive protein foods to energy sources is not a very cost/effective approach to the problem of caloric deficiency.

However, statistical averages can be deceiving as they mask high and low values. Therefore, it is important to view the actual number of children affected with mild or severe calorie and protein deficiencies (Tables 13 and 14). Without assistance of the CARE

TABLE 12
 DAILY TOTAL CALORIE AND PROTEIN INTAKE WITH AND WITHOUT RATION
 AND NUTRIENT GAP USING FAO REQUIREMENTS FOR PRESCHOOLERS IN
 FIVE CARE FEEDING PROGRAMS^a

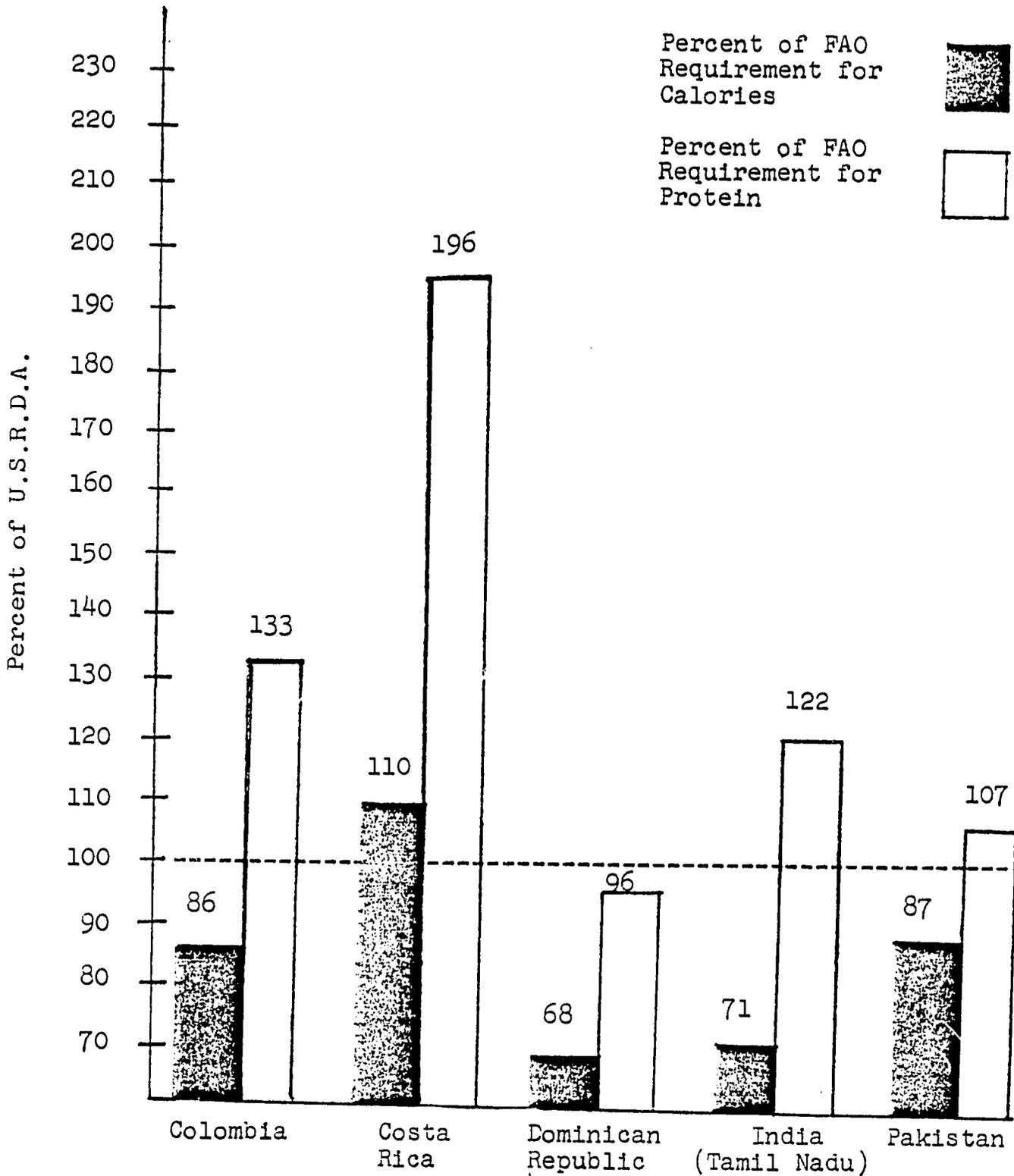
Country	Total Intake Without Ration		N	Gap Without Ration		Total Intake With Ration		N	Gap With Ration	
	Calories	Protein		Calories	Protein	Calories	Protein		Calories	Protein
COLOMBIA	978±347	25.7±13.4	149	382	1.3	1,170±384	35.8±17.2	97	190	0
COSTA RICA	1,033±385	31.0±16.0	105	327	0	1,495±349	53.0±12.0	61	0	0
DOMINICAN REPUBLIC	877±351	24.7±14.0	130	483	2.3	925±384	25.8±12.3	116	435	1.2
INDIA (TAMIL NADU)	811±451	24.4±15.4	60	549	2.6	972±339	32.9± 7.7	193	388	0
PAKISTAN	1,004±424	27.8±15.2	207	356	0	1,187±598	29.0±16.8	47	173	0

^aMost children were within the 12-47 month age group and would require 1,300 calories and 27 grams protein per day by FAO standards. Means are presented ± Standard Deviation.

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FIGURE 1

PERCENT OF FAO REQUIREMENTS FILLED BY
TOTAL DAILY DIET INCLUDING RATION FOR
PRESCHOOLERS IN FIVE CARE FEEDING PROGRAMS*



*Most children were within the 12-47 month age group and would require 1360 calories and 27 grams protein.

TABLE 13
 PREVALENCE OF DAILY DIETS DEFICIENT IN PROTEIN AND CALORIES
 AMONG PRESCHOOLERS AND AVERAGE PROTEIN AND CALORIE GAP OF
 DEFICIENT CHILDREN IN FIVE CARE PRESCHOOL FEEDING PROGRAMS*

Country	WITHOUT RATION					WITH RATION				
	N	Percent Deficient in:		Average Gap Among:		N	Percent Deficient in:		Average Gap Among:	
		Calories	Protein	Calorie Deficient	Protein Deficient (Gms.)		Calories	Protein	Calorie Deficient	Protein Deficient (Gms.)
COLOMBIA	147	85**	57**	481	10.0	97	71**	34**	388	8.3
COSTA RICA	105	78**	40**	492	10.4	61	44**	5**	289	2.4
DOMINICAN REPUBLIC	130	91	65	559	10.3	116	85	55	557	9.8
INDIA (TAMIL NADU)	60	88	67**	677	11.5	193	93**	17**	430	3.5
PAKISTAN	207	82	55	506	4.3	47	72	45	447	9.6

*Deficient Diets are those with less than the FAO requirements for 12-47 month old children of 1360 calories and 27 grams protein per day. The protein and calorie gaps represent the difference between average intake and FAO requirements.

**Indicates a very significant difference ($P < .01$) in percent with protein or calorie deficiency among the group who ate the ration and the group who did not.

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TABLE 14
PREVALENCE OF SEVERE PROTEIN AND CALORIE DEFICIENCY
AMONG PRESCHOOLERS IN FIVE CARE FEEDING PROGRAMS*

Country	N	Without Ration		N	With Ration	
		Percent Consuming ≤700 Calories	≤15 gms Protein		Percent Consuming ≤700 Calories	≤15 gms Protein
Colombia	147	20.4 **	20.4 **	97	5.1 **	7.3 **
Costa Rica	105	18.7 **	3.7	61	1.1 **	0
Dominican Republic	130	35.1	22.3	116	28.4	22.4
India (Tamil Nadu)	60	50.0 **	28.3 **	193	9.3 *	0 **
Pakistan	207	23.2	16.9	47	17.0	17.1

*Severe protein and calorie deficiency equal consumption of less than or equal to 700 calories and 15 grams protein per day. This represents approximately half of the FAO requirement of 1360 calories and 27 grams protein for 12 - 47 month old children

**Indicates a very significant difference $P < .01$ in percent with severe calorie or protein deficiency among the group who ate the ration and the group who did not.

ration, nearly all of the children in the feeding programs surveyed (78-91%) have diets deficient in calories (<1360 calories per day), with the lowest percentage in Costa Rica and the highest in the Dominican Republic. Far fewer children, but still a sizeable number, are affected by some protein deficiency (<27 grams protein per day), ranging from a high in India of 67% affected to a low in Costa Rica of 40%. The CARE feeding programs are clearly reaching children with inadequate home diets. Severe calorie deficiency without the ration as evidenced by intake less than 700 calories (approximately half the FAO requirement) affects a high of 50% of the children in the India program to a low of 19% of the children in Costa Rica. Again, severe protein deficiency (\leq 15 gram protein per day) affects far fewer children ranging from a high of 28% in India to a low of 4% in Costa Rica.

In Colombia, Costa Rica, and India, due to consumption of the CARE ration, there is a significant drop in the percent of children with mild to severe caloric deficiency, except in India where severe caloric deficiency has been reduced but a higher percentage of children are affected by mild calorie deficiency after eating the ration. However, the average calorie gap of the mildly deficient children in India has been reduced from 677 calories without the ration to 430 calories with the ration. In other words, more children are affected by calorie deficiency after eating the ration, possibly due to the high rates of substitution of the rations for the home diet as found in India, but the average caloric gap of the affected children is less.

The average calorie gap among deficient children has been reduced through consumption of the ration in all countries by 59 to 247 calories, except in the Dominican Republic where the calorie gap among deficient children remained the same with and without the ration, probably due to high rates of substitution of the ration for the home diet. The on-site feeding programs in Tamil Nadu and Costa Rica resulted in twice as great a reduction of the calorie gap among the deficient children, as compared to the take-home feeding programs in the other countries.

Intake of the ration also greatly reduced or completely eradicated the incidence of children with mild to severe protein deficiency, and reduced the protein gap among the deficient, except in Pakistan and the Dominican Republic, where rates of severe protein deficiency remained unchanged after consumption of the ration.

CARE foods are reaching children with a high incidence of caloric insufficiency, and helping to lower that incidence as well as

reducing the size of the calorie gap of the deficient children. The rations are, however, inadequate in calories to totally eradicate the incidence of children with a calorie gap. Calorie deficiency is the major problem among program participants. There are far fewer children with protein deficiency, making the high protein content of the present rations excessive except in the case of the approximately one-out-of five children who are severely protein deficient. A more balanced ration is needed with a higher caloric content.

It can be seen in Table 15 that the rations consumed in the on-site feeding programs are larger than in the take-home feeding programs thus providing a higher proportion of the child's total caloric intake, 35-49%, than the rations in take-home feeding programs which provide from 11-16% of the total daily calories. CARE foods provide 49-57% of the total protein intake in on-site feeding, and 17-30% in take-home feeding. Thus, it is apparent that there is a much greater dependence on CARE foods in on-site feeding programs. Another interesting difference is that CARE foods provide a larger percent of the total caloric intake in diets of deficient children than in diets of children whose caloric intake is adequate, thus confirming the fact that mothers of deficient children are more dependent on CARE foods, than mothers of well nourished children.

In general, in the on-site feeding programs in Costa Rica and India the children consumed the entire ration they were served. Therefore, the planned ration was used as the actual consumed ration in all calculations. However, it should be noted that in India a number of children took the cooked meal home. In the take-home feeding programs, mothers on the average feed their children only half the intended amount they received from the center (Table 16). The rate is consistent among all take-home feeding programs studied, and agrees with the previous finding among preschoolers in the take-home feeding scheme of Project Poshak in which average daily consumption was only 43% of the distributed ration.⁶ This may partially be due to the fact that the ration intended for one child is shared by an average of two family members in take-home feeding programs, thus making only half the intended amount available to the child.

The number of people sharing the ration emerged as one of the strongest factors associated with low nutritional impact in two of the three take-home feeding programs - Colombia, and the Dominican Republic - where the number of people sharing the ration was higher at low impact centers. Mothers in the present study were very uninhibited in answering that several family members share the ration,

TABLE 15
 PERCENT OF TOTAL DAILY CALORIC AND PROTEIN INTAKE PROVIDED
 BY RATION CONSUMED IN FIVE CARE PRESCHOOL FEEDING PROGRAMS

Country	Sample Size	Total Caloric Intake±S.D.	Ration Calories±S.D.	% of Total Calories From Ration	Total Protein Intake±S.D.	Ration Protein±S.D.	% of Total Protein From Ration	
COLOMBIA (Take-Home)	97	1,170±384	165±147	14.1	35.8±17.2	9.6±9.3	26.8	
COSTA RICA (On-Site)	Lunch Only	28	1,198±325	504± 0*	42.1	41.0±15.3	18.6±0*	45.4
	Breakfast and Lunch	61	1,495±349	737± 0*	49.3	53.0±12.0	30.0±0*	56.6
DOMINICAN REPUBLIC (Take-Home)	116	925±384	153±120	16.5	25.8±12.3	7.8±5.5	30.2	
INDIA (TAMIL NADU) (On-Site)	193	972±239	340± 0*	35.0	32.9± 7.7	16.0±0*	48.6	
PAKISTAN (Take-Home)	47	1,187±598	131± 98	11.0	29.0±16.8	4.8±3.7	16.6	

*Costa Rica and India conducted on-site feeding programs, and every participant was provided approximately the same amount of Calories and Protein in the Ration.

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TABLE 16
 RATION CONSUMPTION IN THREE
 CARE TAKE HOME FEEDING PROGRAMS FOR
 PRESCHOOLERS

Country	Sample Size	MEAN DAILY RATION CONSUMPTION			
		Calories+S.D	% of Calories distributed*	Protein+S.D	% of Proteins distributed*
Colombia	97	165+147	54.1	9.6+9.3	52.5
Dominican Republic (wet)	98	153+120	44.8	7.8+5.5	43.6
Dominican Republic (dry)	22	166+ 76	49.2	8.8+3.9	49.2
Pakistan	47	131+ 98	44.0	4.8+3.7	63.1

* Calculated on basis of total ration distributed for daily consumption.

thus indicating that little effort had been made by the centers to impress the mothers with the fact that the ration was intended for the preschool child only. There is more need for education along these lines at the time the food is distributed to the mothers. Nevertheless, many question the feasibility of changing the family eating pattern and getting mothers to prepare special foods for one child. Therefore, some have suggested that rations should be greatly increased in take-home feeding programs to allow enough food to mitigate the effects of intrafamilial distribution.

Another factor which greatly limits the possible nutritional impact of the feeding programs is the number of children who do not eat the ration on a daily basis. Again the pattern varies greatly between on-site feeding and take-home feeding. Through the dietary survey it was found that in the on-site feeding programs 79-86% of the children had eaten the ration on the day prior to the interview. Thus, on any one day we can assume in on-site feeding that the majority of the children are eating the ration as intended. However, in two out of three of the take-home feeding programs (Colombia and the Dominican Republic) only half the children had eaten the ration on the previous day. In Pakistan, the percent who ate was even lower (18%) but this was due to poor acceptability of the foods received.

The primary explanation of why many children hadn't eaten the ration in take-home feeding was that the mothers had run out of food ahead of schedule due to sharing the child's ration with the entire family. In Colombia 65% of those who hadn't eaten the ration the previous day stated that they had no CARE foods left and in Pakistan 73% of those not eating had run out CARE foods ahead of schedule. Rations need to be increased in take-home feeding to assure that the supplies are not exhausted ahead of schedule, and that the intended child gets fed an adequate quantity. Most of the mothers (74%) who had CARE food available in Colombia fed it to their children. However, even when mothers who had run out of the ration were excluded from the calculation in Pakistan only 46% had fed CARE foods to their children. Again, this low rate may be attributed to the poor acceptability of the foods received. Also in the Dominican Republic, although the mothers receive the ration daily in the form of CSM or WSB mixed with water, only 51% had fed the ration to their child on the previous day. This too may be due to an acceptability problem because the mothers complained that adding water to the ration caused it to spoil in the course of the day due to the tropical heat and lack of refrigeration. It is also interesting to note that in Colombia where the rates of eating the ration are much higher among mothers who still have CARE food on hand than in the Dominican Republic or Pakistan, the ration given is also more varied-five commodities in Colombia versus two in Pakistan and three in the Dominican Republic. Sheer monotony

with the foods given may reduce the number who feed the ration to their children daily.

The number who ate was not found to be significantly lower or higher among children who currently had diarrhea. The number who ate the ration was also not significantly higher among children whose physical measurements indicated that they were well-nourished (90% of reference weight for height) when compared to the malnourished group.

Another factor affecting percentage of children who ate the ration was age. A higher percentage of the older children (3-5 years) ate the ration than of the 1-3 year olds in all countries, which was similar to the findings of Project Poshak.⁶ The figures for the present study are as follows:

Country	1 - 3 years old		3 - 5 years old	
	Sample Size	% Who Ate Ration	Sample Size	% Who Ate Ration
Colombia	94	48.9	99	50.5
Costa Rica	33	72.7	80	81.3
Dominican Republic	83	49.4	90	62.2
India	94	84.0	126	87.3
Pakistan	123	15.4	113	23.9

None of the above differences in percent who ate are significant.

Although it is often stressed that preschool feeding programs should be geared to the more nutritionally at risk preschoolers from 6-36 months of age, it is not sufficient to merely make food available to these younger children. In addition, special efforts must be made to find ways to actually get more of the mothers to feed the ration regularly to these younger preschoolers.

The types of food being distributed were well received by the mothers, except in Pakistan where many mothers found the Whey-Soy Drink Mix (WSDM) they received unacceptable. Cooking oil, which could greatly increase caloric intake, was one of the most popular commodities received, but of all foods this one was most likely to end up being used in cooking for the whole family and not for the preschool child. There was little sign of any CARE foods being sold by the mothers. The nature of the commodities which are primarily soy and cereal blends safeguards against this, as these foods are not known and readily saleable in the market place.

Use of the ration as a substitute for foods normally fed to the child at home plays a large role in reducing the net effect of the ration on closing the nutrient gap in both on-site feeding and take-home feeding programs. Therefore, the ration's effect on the normal home diet through increased calories and substituted calories was studied. It should be pointed out that the figures presented for increased and substituted calories represent rough estimates derived by the following calculations:

$$\begin{aligned} \frac{\text{Increased}}{\text{Calories}} &= \text{Average Caloric Intake of children who ate} \\ &\quad \text{the ration} \\ &\quad \text{Minus} \\ &\quad \text{Average caloric intake of children who did} \\ &\quad \text{not eat the ration.} \end{aligned}$$

$$\begin{aligned} \frac{\text{Substituted}}{\text{Calories}} &= \text{Average Ration Calories Consumed} \\ &\quad \text{Minus} \\ &\quad \text{Increased Calories} \end{aligned}$$

The data reported here are of a cross-sectional nature and represent gross calculations. Having been derived from two different groups of children, they are not as precise as data gathered on the same group of children before and after eating CARE foods would be. However, such baseline data were not available in the present survey. Nevertheless, the two groups being compared for the dietary calculations appear the same on all characteristics except some ate the ration on the previous day and some did not. The substitution effect of the ration on the home diet can vary considerably sitewise in each of the countries studied, from no substitution to total substitution, but the site level sample sizes are too small to make these estimates reliable. Therefore, only the overall program calculation will be presented for each country.

There appears to be little or no substitution of the ration for the normal home diet in either Colombia or Pakistan (Table 17). This is understandable in Pakistan as so few children ate the ration, and the low acceptability of the foods received in the opinion of the mother would not lead her to consider these foods equivalent substitutes for foods she normally gives. However, the result of no substitution in Colombia is surprising since other studies there have shown substitution to be a major factor in take-home feeding. Some possible explanations are put forth as follows. Among all five countries the calorie gap among the calorie deficient children is the lowest in Colombia both before and after eating the ration, and the rate of current malnutrition (weight less than 90% of reference weight for height) is also the lowest of the five countries. The percent of children with no calorie gap after eating the CARE ration is double the rate in all other countries except Costa Rica. All these factors point to a more adequate family food situation making the need for substitution less. More families are involved in subsistence agriculture in Colombia than in the other countries, making the amount of food in the home less likely to be influenced by purchases; being less monetized with respect to family food supply, the amount of money to be saved by substitution would be greatly reduced. One final possible explanation is that the nutrition education component is strongest in the Colombia feeding program compared to all the others and mothers exhibited the most knowledge as to cause and treatment of malnutrition. Greater nutritional knowledge combined with a more adequate family food supply would seem to be a plausible explanation for the minimal substitution found overall in the Colombia program.

In the other three countries 37-69% of the consumed ration was substituted for the normal home diet with the lowest percent in Costa Rica and the highest in the Dominican Republic. The rates of substitution seem to parallel the size of the calorie deficit in the normal home diet; in cases of high deficit substitution was higher. The calorie gaps are very large in both the Dominican Republic and India which would point to serious inadequacies in the family food situation explaining the need to substitute a large part of the ration for the normal diet. These data confirm the commonly held suspicion of widespread substitution in supplementary feeding programs.

TABLE 17

PLANNED AND CONSUMED RATIONS COMPARED TO
CALORIE GAP FOR PRESCHOOL CHILDREN USING FAO REQUIREMENTS
IN FIVE CARE FEEDING PROGRAMS*

Country	Calorie Gap (FAO)	Planned Ration		Consumed Calories/ Ration	% Who Ate Ration **	Ration Effect on Diet		Days per Month No Food Provided	Net Daily % Calorie Gap Closed For Group***
		Calories	% of Gap Closed			Increased Calories	Substituted Calories		
Colombia (Take-Home)	382	305	80	165	50	165	0	0	21.6
Costa Rica (On-Site)	327	959	293	737	79	462	275	6	88.2
Dominican Republic (Take-Home)									
Wet Daily	465	337	72	151	51	37	114	0	4.0
Dry Monthly	557	337	61	166	47	92	74	0	8.0
India (Tamil Nadu) (On-Site)	549	383	70	340	86	160	180	6	28.2
Pakistan (Take-Home)	356	298	83	131	18	131	0	0	6.6

*Most children are within the 12-47 month age group and would require 1300 calories per day and 27 grams protein by FAO Standards. A minimal Protein gap was found in the present survey.

**Mothers who used CARE foods in total dietary intake of child on the day prior to the 24 hour recall.

***Increased Calorie Intake divided by Calorie Gap and multiplied by percent of the month when food provided (100% in take-home programs) and by percent who ate ration.

It is likely that substitution will always be a major factor in on-site feeding programs in particular because of the connotation that a cooked meal at the center has to mothers, vis-a-vis, the need to cook that meal again at home for the child. A suggestion has been made that perhaps scheduling on-site feeding activities more as snack programs at an hour of the day not normally associated with a meal might reduce the substitution problem. Suggested measures to counteract the substitution problem are increased rations, education, and research into the determinants of the problem.

Taking the substitution effect into account the net caloric intake increase was less than the caloric value of the ration consumed, and considerably less than the amount of calories distributed to the mothers and intended for daily consumption. The net calorie increase is represented here as a percent of the intended increase according to program design from the rations distributed:

	<u>Net Calorie Increase as Percent of Intended In- crease</u>
Colombia (Take-home)	54
Costa Rica (On-site)	63
Dominican Republic (Take-home)	Wet Daily 11 Dry Monthly 27
India-Tamil Nadu (On-site)	47
Pakistan (Take-home)	44

The program with the largest ration, Costa Rica, had the most success in increasing dietary caloric intake. The rates are similar among Pakistan, India, and Colombia, suggesting that net calorie increase can be as great in take-home feeding as in on-site feeding. The Dominican Republic had the least effect due to the high rate of substitution there. The Cantor Tamil Nadu Nutrition Study⁷ of take-home feeding found a net caloric intake increase of 18% of the intended one and the Poshak Study⁶ found net caloric increases ranging from 32-54% of the intended at various phases of the study. These figures give a realistic view of what results to expect supplementary feeding to have on total dietary intake. Even at a very high ration level (Costa Rica) and among a relatively higher income and less nutritionally deficient group, only 63% of the ration represented a net caloric increase.

The net daily percent of the calorie gap closed for program participants as a group is also shown in Table 17. This calculation divides the net caloric increase resulting from the ration by the average calorie gap and multiplies the result by the percent of the total group who actually ate the ration. The six days per month when food is not provided in on-site feeding programs was also taken into account. These results again show the on-site feeding in Costa Rica to be having the most effect as it closes 88.2% of the calorie gap. The next most effective program is on-site feeding in Tamil Nadu, India which closes 28.2% of the calorie gap. The greater effectiveness of the on-site feeding approach in closing the calorie gap is due both to more ration calories consumed and higher percent eating on a daily basis. Colombia has the greatest calorie impact of the take-home feeding programs through closing 21.6% of the calorie gap. This is largely a result of the low rates of substitution there, but percent who ate is much lower than in on-site feeding. The Pakistan and Dominican Republic programs appear to have minimal effect on closing the calorie gap due to high substitution in the Dominican Republic, and low percent eating in Pakistan.

The dietary intake and supplementation and substitution effects of the ration were studied separately for 1-3 year old children and 3-5 year olds (Tables 18 and 19). In Costa Rica, India, and Pakistan the calorie gaps of 1-3 year old children who did not eat the ration were much greater than the gaps of 3-5 year olds. In India and Pakistan this is a result of the practice of late introduction of solid foods. The ration calories consumed by the different age groups were not significantly different. However, substitution was greater among the 3-5 year olds in all three countries where substitution was previously noted, in the total group, i.e. Costa Rica, the Dominican Republic, and Tamil Nadu, India. The percent of ration calories substituted for the normal home diet in 3-5 year olds was 54% in Costa Rica, 74% in the Dominican Republic, and 84% in India. Younger preschool children tend to be fed less and fewer foods in general. Therefore, the ration being given to the mother especially for those children does not replace other foods. This is especially true in India where the average 1-3 year old is severely calorie deficient before he receives the CARE ration; with the ration, the calorie gap of 1-3 year olds has been sizeably reduced by 270 calories. On the other hand the older child consumes more of the adult diet for which the ration is substituted. Thus it would appear that supplementary feeding is more effective in raising the net calorie intake of children younger than three years, than in older children. The 1-3 year olds are the most nutritionally at risk due to greater caloric deficiencies.

TABLE 18
 MEAN DAILY CALORIE AND PROTEIN INTAKE + STANDARD DEVIATION
 OF PRESCHOOLERS GROUPED BY AGE IN FIVE CARE FEEDING PROGRAMS

Country	Total Intake Without Ration			Gap Without Ration*		Total Intake With Ration			Gap With Ration*	
	Calories	Protein	N	Calories	Protein	Calories	Protein	N	Calories	Protein
COLOMBIA (Take Home)										
1-3 Yrs.	988±358	25.7±13.4	68	372	1.3	1213±397	39.2±18.3	46	142	----
3-5 Yrs.	970±341	25.2±11.7	78	399	1.8	1125±369	32.6±15.7	50	235	----
COSTA RICA (On-Site)										
1-3 Yrs.	917±347	30.8±16.0	36	443	----	1325±251	51.6±15.6	24	35	----
3-5 Yrs.	1063±393	29.8±15.1	68	297	----	1404±329	48.7±11.2	65	----	----
DOMINICAN REPUBLIC (Take Home)										
1-3 Yrs.	883±352	26.0±15.5	58	477	1.0	925±384	26.1±14.1	47	436	0.9
3-5 Yrs.	884±350	23.6±12.1	53	476	3.4	929±375	25.3±10.8	63	431	1.7
INDIA (TAMIL NADU) (On-Site)										
1-3 Yrs.	667±365	20.7±13.7	26	693	6.3	937±236	30.9± 6.7	79	423	----
3-5 Yrs.	935±483	27.7±16.4	33	425	----	990±237	34.2± 8.2	110	370	----
PAKISTAN (Take Home)										
1-3 Yrs.	947±418	25.7±14.3	104	413	1.3	1036±592	29.0±19.6	19	274	----
3-5 Yrs.	1060±442	29.1±16.6	86	300	----	1257±603	32.0±12.1	27	103	----

*Gap based on FAO requirement of 1360 calories and 27 grams protein for 12-47 month old children

TABLE 19
 SUPPLEMENTATION AND SUBSTITUTION EFFECTS
 OF RATION ON THE HOME DIET OF PRESCHOOLERS GROUPED
 BY AGE IN FIVE CARE FEEDING PROGRAMS

	Mean Ration Consumed+S.D.		Sample Size	Effect on Diet		
	Calories	Protein(gms)		Increased Mean	Calories % of Intended*	Substituted Calories
Colombia						
Take-Home						
1-3 yrs.	194+162	11.9+11.1	46	230	75.4	0
3-5 yrs.	138+126	7.2+6.5	50	155	50.8	
Costa Rica						
On-Site						
1-3 yrs.	737	30	24	408	55.4	329
3-5 yrs.	737	30	65	340	46.1	397
Dominican Republic						
Take-Home						
1-3 yrs.	128+97	6.7+5.1	47	42	12.5	86
3-5 yrs.	173+131	8.7+5.6	63	45	13.4	128
India						
On-Site						
1-3 yrs.	340	16	79	270	79.4	70
3-5 yrs.	340	16	110	55	16.2	285
Pakistan						
Take-Home						
1-3 yrs.	124+96	4.3+2.9	19	139	46.6	0
3-5 yrs.	136+101	5.1+4.2	27	197	66.1	0

* Calculated on Basis of Total Ration Distributed for Daily Consumption.

There are a few children with adequate caloric intake before or after consuming the CARE ration. Therefore, few program resources are being spent to feed a group whose home diets are already adequate. However, the children whose diets were adequate in calories consumed more ration calories and a greater number of these calories were substituted for the home diet in all countries surveyed. (Table 20).

TABLE 20

MEAN CALORIC INTAKE AND THE SUPPLEMENTATION AND SUBSTITUTION EFFECTS OF RATION
ON THE HOME DIET OF PRESCHOOLERS WITH AND WITHOUT A CALORIE GAP* IN FIVE CARE
PRESCHOOL FEEDING PROGRAMS

Country	Mean Calorie Intake <u>Without</u> Ration	N	Mean Calorie Intake <u>With</u> Ration	N	Mean Ration Consumed	% of Total Calories From Ration	Ration Effect on Diet Calories		Percent Who Ate Ration
							Increment	Substitute	
COLOMBIA									
Calorie Gap-Yes	879	125	972	68	139	14	93	46	51
Calorie Gap-No	1539	22	1650	28	228	14	111	117	60
COSTA RICA									
Calorie Gap-Yes	868	83	1071	42	737	89	203	534	17
Calorie Gap-No	1611	23	1659	53	737	44	48	689	26
DOMINICAN REPUBLIC									
Calorie Gap-Yes	801	119	803	99	144	18	2	142	85
Calorie Gap-No	1626	12	1635	17	209	13	9	200	100
INDIA (TAMIL NADU)									
Calorie Gap-Yes	683	53	930	180	340	57	247	93	66
Calorie Gap-No	1776	7	1545	13	340	32	-231	340	93
PAKISTAN									
Calorie Gap-Yes	854	170	913	34	114	12	114	59	45
Calorie Gap-No	1692	37	1906	13	175	9	214	0	67

*Children with a calorie gap have diets containing less than 1360 calories per day which is the FAO requirement for 12-47 month old children.

Nutrition Status

Three measures of nutritional status were collected on all children: weight, height, and arm circumference. The results were analyzed by computer using an anthropometric sub-routine developed by the Center for Disease Control of the U.S. Department of Health Education and Welfare for nutrition assessment surveys, which they have conducted recently in Nepal, Sri Lanka and Sahelian Africa. The U.S. National Academy of Sciences (NAS) reference population was used as a standard throughout the study for consistency. The NAS standard is based on U.S. children as measured in the Fels Research Institute Growth Study for children 0-24 months old, the Preschool Nutrition Survey for ages 25-59 months, and the National Health Examination Survey, Cycle II for ages 60-143 months.^{22,23} This anthropometric standard is thought by the NAS to be the most accurate one available presently for a reference population because until recently other references in use have not been based on a randomly selected sample, representative of the general population. The commonly used Harvard (and Iowa) standards of Stuart and Meredith were drawn from special studies conducted several decades ago on small numbers of relatively well-nourished children and may not be normative values for U.S. children today. However, the recent studies on which the NAS references are based include large and representative samples of certain age segments of the entire United States population.²⁴ Reference data from the United States population were used although local standards were available in some of the countries, because it was necessary to have one internationally accepted standard for use in all five country evaluations. Furthermore, recent evidence has shown that ethnic differences play a minor role in growth when compared with the overwhelming influence of nutrition and disease.^{25,26}

For the purposes of the present evaluation survey, weight for height was considered to be the most appropriate criterion for assessing impact. The traditional measure of weight for age (Gomez Classification)²⁷ does not take into account the fact that children who are stunted (short for their age) may be of a weight perfectly proportional to their height. Furthermore, some children start life with low birth weights and thus remain deficient in weight for age by the Gomez standard.²⁸ There is little hope in a supplementary feeding program of greatly increasing stunted height, because a marked slowing of linear growth early in life often means that the child will never catch up to the full stature or a normal child of his same age. Several feeding programs have reported their failure at being able to significantly improve stunted height.^{6,7,20,30,31} However, other programs have been described where height for age appears to improve more rapidly than weight for height, causing children to be thin for their height, and program results to appear negative.^{9,28} This trend toward significant improvement in height for age was not encountered in the present survey.

Weight for age measurements fail to distinguish between currently malnourished children, and children who are currently of a weight proportionate to their height but remain stunted from malnutrition in the past. On the other hand, the use of a weight for height and height for age classification of children makes it possible to distinguish the currently malnourished children, from the chronically malnourished children or children who remain short for their age due to past malnutrition. Cogent arguments have been presented on the advantages of using a weight for height and height for age classification due to its added diagnostic power.^{20,28,32-35} Beghuin and Viteri have suggested that the high percentage of children who fail to recuperate after feeding programs in nutritional rehabilitation centers may be as much due to poor choice of evaluation criteria, i.e. weight for age, as to real failure, and they state that performance of feeding programs should never be assessed by the Gomez Classification.²⁰

When height is ignored, a child is expected to achieve a certain weight for his age, despite the very real limitations to ever achieving that weight which are imposed by his height. Nevertheless, weight for age measurements in the children in the present study will be presented to make comparison of the data with previous studies possible. It is possible to increase weight in proportion to the existing height through supplementary feeding programs, and weight for height growth charts have been developed by F.E. Viteri at INCAP, and by ICBF in Colombia.³²

The weight for height measure also has the added advantage of being apparently age independent. Although it was found possible to gather accurate age data in the present survey through careful interviewing techniques, checking center records, and verification by counting the number of teeth erupted, this is not always the case in field surveys in developing countries.

Mean arm circumference and arm circumference for height were also used as additional nutrition status indexes. The validity of these measures has not been fully tested, but they appear to offer the practical advantage of requiring very minimal and inexpensive equipment (metric tape measure and a right angle). A separate report is being prepared on the correlations between all the different measures of nutritional status and their consistency and diagnostic power in identifying malnutrition in all five countries.

A preliminary analysis of the data revealed that average arm circumference is an accurate method for detecting severe malnutrition in 1-3 year old children in countries with a high prevalence of severe malnutrition. In India and Pakistan, using a cutoff point of 13.5 centimeters arm circumference, it was found that 85% of the children with third degree malnutrition by weight for age and 83% of the children with acute malnutrition (<80% weight for height) were identified correctly through arm circumferences less than 13.5 centimeters. Therefore, arm circumference is sensitive enough to detect almost all cases of severe malnutrition. It is of limited use in Latin America where little severe malnutrition was encountered. Although arm circumference could be used for detection there is some question as to how rapidly it would reflect growth improvement, and therefore how useful it would be for program evaluation and monitoring.

The impact of feeding programs on nutritional status was measured both by comparing the anthropometric measurements of participants with those of non-participants, and by comparing measurements of children within the program by length of participation, ie. newcomers versus long time participants. This latter analysis by length of participation was found to be invaluable due to the lack of baseline data on the measurements of program participants at the time of first enrolling in the feeding program. A program versus comparison group test of impact assumes that the starting rates of malnutrition among the two groups are the same, and that the primary difference between groups is the receipt of food by the program beneficiaries. This assumption may prove to be false, and programs which enroll children with higher malnutrition rates than their comparison group may, therefore be judged as ineffective, when indeed they are making significant progress in lowering initially high malnutrition rates.

The measurements of a newcomer group formed by all those children in the sample who had participated in the program for five months or less (average of three months) were used to estimate the starting malnutrition rates of program children. The five month cut off point was set arbitrarily to allow enough sample size for comparing groups. The malnutrition rates of this newcomer group in the program were compared to those of the non-participant group to see if recent enrollees in the program tended to be more or less malnourished than children from the community-at-large. It should be stressed here that this study was purely cross-sectional and that all the groups being compared were composed of different children and not the same children measured over time. Thus, other variables such as different community circumstances at various times of enrollment, the nutritional status of program drop-outs and the reasons why the recent enrollees had not started in the program earlier, cannot be ruled out as possible explanations for differences in malnutrition among groups. Furthermore length of participation data were obtained from mother's recall and center records and therefore were subject to some degree of error. With these caveats in mind it is felt that the malnutrition rate of children in the program for five months or less can serve as a useful estimate in the absence of baseline data. The malnutrition rate of children in a nutrition program for less than a year was used successfully as an estimate of baseline nutrition rates in the Candelaria study.³⁷ The assumption that there will be little impact in the first few months of participation in a feeding program seems to be a safe one based on the findings of Project Poshak and the Tamil Nadu Nutrition Study in which the programs had little effect in the first six to seven months.^{6,7} This was primarily because of the time lag between initial enrollment and the establishment of a regular pattern of feeding the ration to the child, during which the mother experimented with the ration and gradually became convinced that it was acceptable for her child.

The measurements of the newcomer group were also compared to those for program participants as a whole, and in particular to those of longtime participants who had been in the program for an average of twenty-two months (all enrolled for more than nine months). Thus the newcomers served as a second comparison group for measuring program impact because as participants in the program and residents of the same community they tended to share background characteristics more similar to those of the other participants than did the non-participant group derived from the community at large or from a nearby community.

In referring to children as "malnourished" in this section of the report it should be stressed that this diagnosis has been based entirely upon physical evidence of malnutrition as reflected in retarded growth. Malnutrition as measured by inadequate nutrient intake was not used to classify children as malnourished if their physical growth remained normal and was not affected by the dietary deficiencies.

The nutritional status results of non-participants, and of program participants by different 'length of participation' groupings are presented in Table 21 and Figures 2-4. The number of children whose percent of NAS reference median weight for age, weight for height, and height for age are below acceptable limits are listed. Average age differences between groups were only three months and none exceeded six months, except between the ± 5 month participants and > 9 month participants in Costa Rica where the age difference was 8.5 months. Therefore, differences in nutritional status between groups are not likely to be due to the natural effect of aging.

Few differences in nutritional status among the various groups within each country are large enough to be significant on any of the measures as can be readily seen from the graphic presentation of results in Figures 2-4.

When the newcomer group in the program was compared to the non-participant group it was found that the Colombia and Costa Rica programs enroll children significantly more malnourished than the comparison group. In Colombia, there were significantly more stunted children (<90% height for age) and more children with first degree malnutrition (75-90% of weight for age) among the newcomers than in the comparison group. In Costa Rica the newcomers had significantly lower weights for their heights (both less than 90% and less than 80% of the reference) and more children with second degree malnutrition (60-75% of weight for age.) In fact, newcomers to the program in Costa Rica were the most malnourished by weight for height and weight for age of all the children in this group in the Latin Countries. Thus, these two programs are reaching the more malnourished children in the community. In the

TABLE 21
NUTRITIONAL STATUS BY LENGTH OF PARTICIPATION IN FIVE CARE PRESCHOOL
FEEDING PROGRAMS (NAS REFERENCE POPULATION)

	Non- Participants	Participants for:		Total Participants
		≤ 5 Mos.	> 9 Mos.	
<u>COLOMBIA</u>				
Sample Size	536	232	502	897
Participation (Mos.)	0	3.4	20.2	13.5
Mean Age (Mos.)	35.7	34.4	37.7	35.7
Weight for Age (%)*				
1st Degree	43.0***	52.6***	51.8***	52.1***
2nd Degree	10.2	10.3	12.2	11.6
3rd Degree	0.9	0.4	0.0	0.4
% < 90% Reference Weight for Height	11.0	9.5	11.8	11.6
(% < 80% Ref. Weight for Height)	(0.4)	(0)	(0.6)	(0.8)
% < 90% Reference Height for Age	25.7 ****	30.6 ****	30.8 ****	30.7 ***
<u>COSTA RICA</u>				
Sample Size	266	129	249	500
Participation (Mos.)	0	2.9	20.8	14.2
Mean Age (Mos.)	38.9	36.0	44.5	50.0
Weight for Age (%)*				
1st Degree	40.2	40.3	38.5	42.4
2nd Degree	5.3**	11.6**	8.2	9.0
3rd Degree	1.5	3.1 (****)	0 (****)	0.8
% < 90% Reference Weight for Height	18.0****	32.6****	29.3****	28.5****
(% < 80% Ref. Weight for Height)	(2.6)**	(7.0)**	(3.2)	(3.7)
% < 90% Reference Height for Age	10.6	12.4	8.4	9.5

For explanation of asterisks see last page.

TABLE 21 (Continued)
 NUTRITIONAL STATUS BY LENGTH OF PARTICIPATION IN FIVE CARE PRESCHOOL,
 FEEDING PROGRAMS (NAS REFERENCE POPULATION)

	Non- Participants	Participants for:		Total Participants
		≤ 5 Mos.	> 9 Mos.	
<u>DOMINICAN REPUBLIC</u>				
Sample Size	822	157	811	1079
Participation (Mos.)	0	2.6	23.2	20.0
Mean Age (Mos.)	34.8	31.7	35.9	34.6
Weight for Age (%)*				
1st Degree	39.4	35.0	39.1	38.9
2nd Degree	9.1	13.4	8.0	9.3
3rd Degree	1.6	0.6	1.1	1.2
% < 90% Reference Weight for Height	22.1****	20.5	16.3****	17.5***
(% < 80% Ref. Weight for Height)	(2.2)	(3.2)(***)	(0.9)(***)	(1.5)
% < 90% Reference Height for Age	19.3	21.8	17.8	18.6
<u>INDIA (TAMIL NADU)</u>				
Sample Size	859	197	504	963
Participation (Mos.)	0	2.6	19.7	11.4
Mean Age (Mos.)	32.3	34.7	40.4	37.7
Weight for Age (%)*				
1st Degree	35.8	36.5	38.7	38.2
2nd Degree	47.8****	40.6****	41.5****	40.7***
3rd Degree	11.2	10.7	11.1	11.2
% < 90% Reference Weight for Height	67.5	60.4(**)	68.5(**)	64.9
(% < 80% Ref. Weight for Height)	(14.9)	(14.2)	(15.9)	(15.4)
% < 90% Reference Height for Age	51.6****	44.7****	44.4****	44.5***

For explanation of asterisks see last page.

PAE 2: (Co nuc)

NUTRITIONAL STATUS BY LENGTH OF PARTICIPATION IN FIVE CARE PRESCHOOL
FEEDING PROGRAMS (NAS REFERENCE POPULATION)

	Non- Participants	Participants for:		Total Participants
		5 Mos.	79 Mos.	
<u>PAKISTAN</u>				
Sample Size	464	137	534	779
Participation (Mos.)	0	3.1	25.5	21.0
Mean Age (Mos.)	31.0	31.5	35.3	33.9
Weight for Age (%)*				
1st Degree	44.4	51.8	46.6	48.1
2nd Degree	29.7	29.9	27.7	28.6
3rd Degree	7.3 ***	1.5 ***	6.6	5.4
% < 90% Reference Weight for Height	56.2	51.8	52.8	52.8
(% < 80% Ref. Weight for Height)	(10.1)	(5.1)	(7.7)	(7.6)
% < 90% Reference Height for Age	30.0	28.5	30.5	29.6

175

*Normal = 90+% of NAS Reference Weight for Age Median.

First Degree = 75-89.9% of NAS Reference Weight for Age Median.

Second Degree = 60-74.9% of NAS Reference Weight for Age Median.

Third Degree = Less than 60% of NAS Reference Weight for Age Median.

**Indicates significant difference between participants and non-participants at $P < .05$

***Indicates significant difference between participants and non-participants at $P < .02$

****Indicates very significant difference between participants and non-participants at $P < .01$

(*)Indicates significant differences by length of participation among participants only.

FIGURE 2
 NUTRITIONAL STATUS BY LENGTH OF PARTICIPATION IN FIVE CARE
 PRESCHOOL FEEDING PROGRAMS AS MEASURED BY PERCENT OF PRESCHOOLERS
 WITH WEIGHTS LESS THAN 90% OF THE NAS REFERENCE WEIGHT FOR HEIGHT

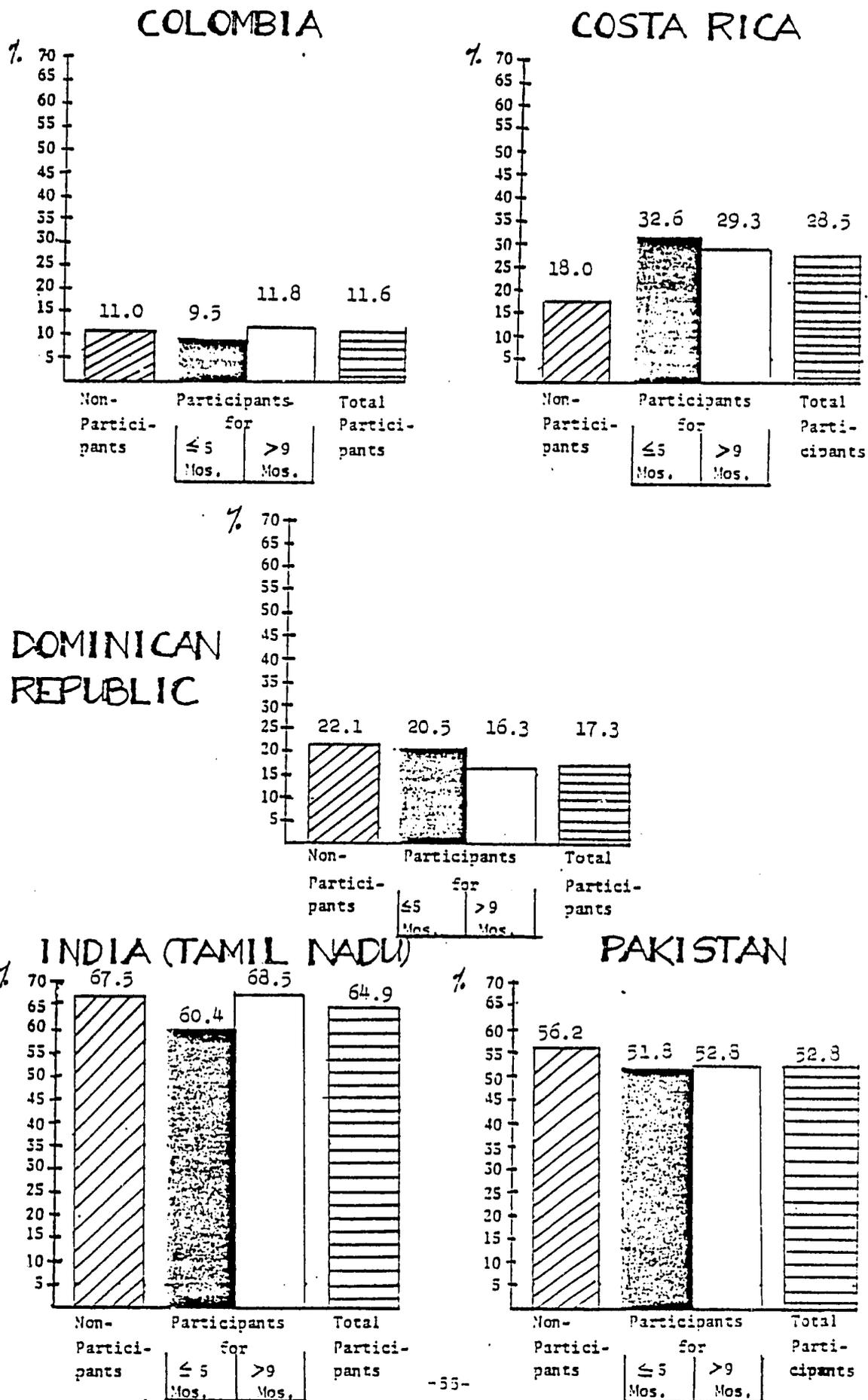


FIGURE 3
 STUNTING BY LENGTH OF PARTICIPATION IN FIVE CARE PRESCHOOL
 FEEDING PROGRAMS AS MEASURED BY PERCENT OF PRESCHOOLERS WITH
 HEIGHTS LESS THAN 90% OF THE NAS REFERENCE HEIGHT FOR AGE

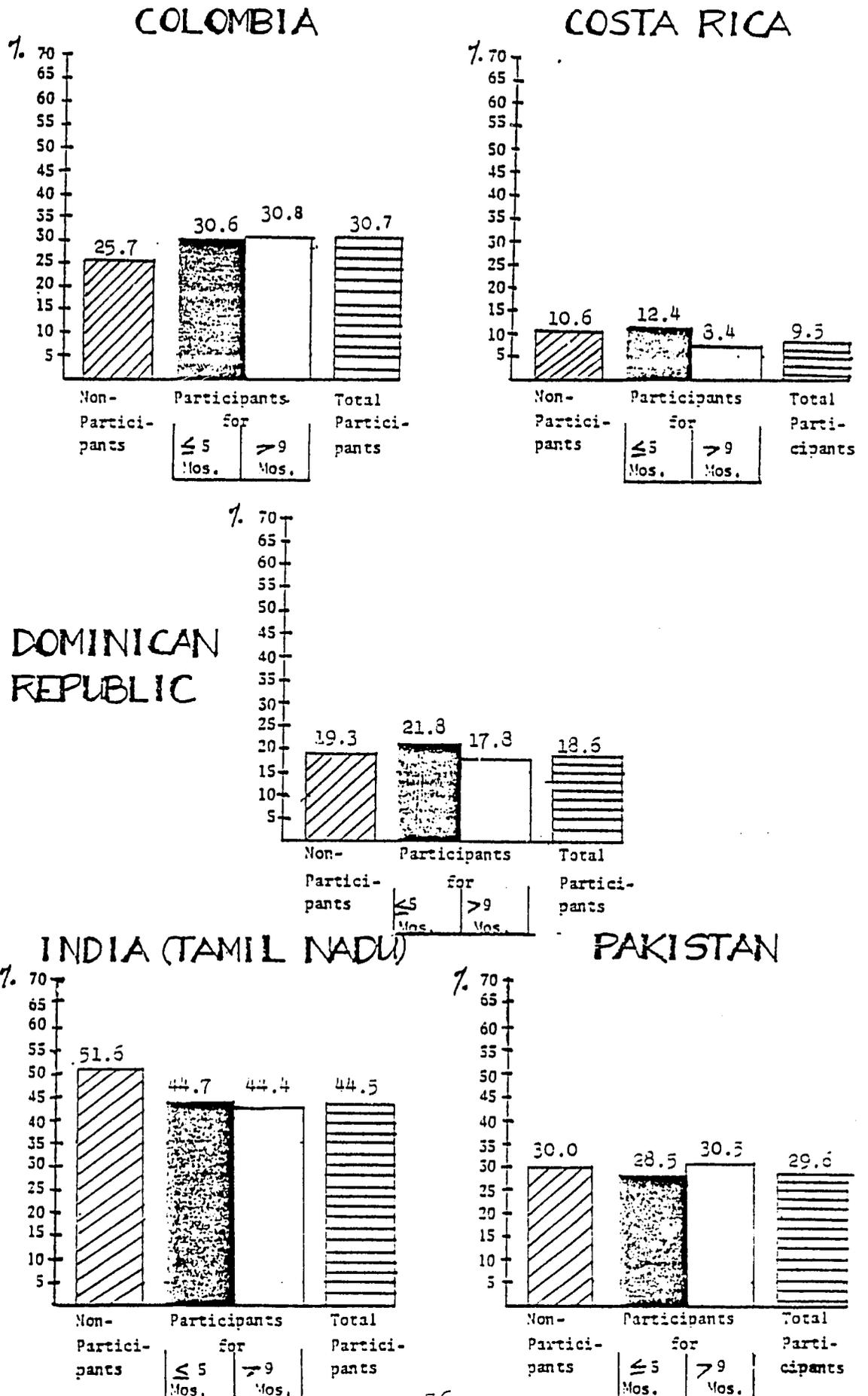
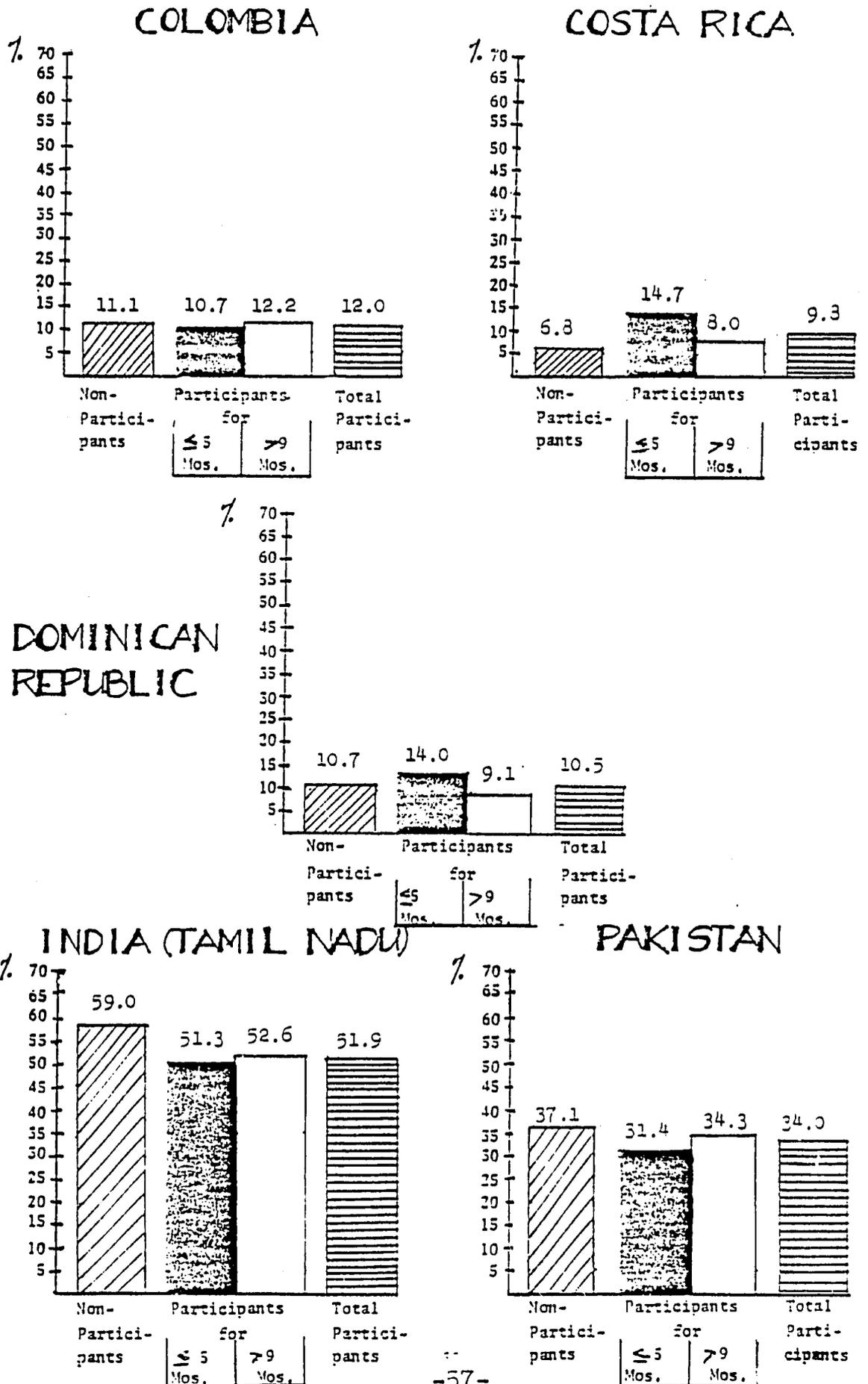


FIGURE 4

NUTRITIONAL STATUS BY LENGTH OF PARTICIPATION IN FIVE CARE PRESCHOOL FEEDING PROGRAMS AS MEASURED BY PERCENT OF PRESCHOOLERS WITH WEIGHTS LESS THAN 75% OF THE NAS REFERENCE WEIGHT FOR AGE (RATES OF SECOND AND THIRD DEGREE MALNUTRITION—GOMEZ CLASSIFICATION)



Dominican Republic the program is reaching a group whose malnutrition rates are approximately equal to those of the comparison group from the community at large; there is more second and third degree malnutrition among newcomers in the program than non-participants but the difference is not significant.

The Tamil Nadu, India program is reaching the greatest number of malnourished children of any of the countries surveyed. The Pakistan Program is also reaching a group with very high malnutrition rates. However, high as the malnutrition rates are among participants in Tamil Nadu and Pakistan, the children not enrolled in the program are even more malnourished. There is significantly less second degree malnutrition and stunting among newcomers to the program in Tamil Nadu, than among children in the community at large. In Pakistan there is less third degree malnutrition among newcomers than in the comparison group.

Although the Latin American programs are reaching far fewer malnourished children than the India and Pakistan programs, they are doing a better job of reaching the more malnourished children in the community.

These apparent initial differences in rates of malnutrition between participants and non-participants must be kept in mind when comparing the nutritional status of the total program group to the non-participant group. It would appear that all the significant differences in nutritional status between the total participants and non-participants can be traced to these initial differences in malnutrition between newcomers to the program and non-participants. Thus significant differences in nutritional status between the program overall and the comparison group do not appear to be due to a nutritional impact or lack thereof from the feeding program, but rather appear to be due to initial differences in the type of children which the program tends to enroll.

Turning to the comparison of malnutrition rates of newcomers who have been in the program for five months or less (an average of three months) and longtime participants who have been enrolled for more than nine months (an average of twenty-two months) interesting results on program impact emerge. No significant reduction in rates of malnutrition by weight for height criteria were seen by length of participation in the program, except in the Dominican Republic where significantly fewer longtime participants (2.9%) were affected by acute malnutrition (<80% weight for height) than newcomers (3.2%). Figure 2 and Table 21 show that although not

significant, the trend was toward holding malnutrition rates by weight for height constant or slightly reducing them by longer participation in the program, except in Tamil Nadu where the rate of malnutrition was significantly higher among longtime participants (68.5%) versus newcomers (60.4%). This failure of the India program to lower or hold stable the malnutrition rates may be due to higher substitution of the ration for the home diet among longtime participants who are slightly older. Other studies have not found significant impact of feeding programs on weight for height.^{6,8} Positive impact on weight for height has been accomplished in nutritional rehabilitation centers at which the child receives all its meals at the center under supervision for a period of four months.²⁰

Striking differences in rates between regions emerged with two to five times as many children less than 90% of the reference weight for their height in all groups in South Asia compared to those in Latin America. The highest rates of malnutrition were found in the Tamil Nadu children.

As expected, the program had no significant effect on lowering rates of stunting (<90% of reference height for age) among newcomers and longtime participants (Figure 3 and Table 21). However, there was a trend toward lowered rates of stunting among longtime participants in Costa Rica and the Dominican Republic. The rate of stunting which is an indicator of past malnutrition, or current chronic malnutrition was highest in India and lowest in Costa Rica. Rates were similar in Pakistan and Colombia and slightly lower in the Dominican Republic. As previously pointed out, it may take years, if possible at all, to correct the chronic malnutrition evidenced by the rates of stunting; stunting implies a more subtle nutritional deprivation from long term dietary inadequacies in chronically ill children whose linear growth is retarded. Mortality and morbidity are not as traceable to chronic malnutrition as to current acute malnutrition (low weight for height), and the influence of a moderate height deficit on a child's health has not been established.

Analysis of weight for age variations among newcomers and longtime participants also reveals little significant nutrition impact, except in Costa Rica where the incidence of third degree malnutrition has been totally eradicated among longtime participants (Figure 4 and Table 21). As in the weight for height results, the trend (although not significant) was toward holding malnutrition rates by weight for age constant or slightly reducing them, except in India where the rate was higher among longtime participants.

Again regional differences emerged with four times as much second and third degree malnutrition in South Asia as in Latin America. Project Poshak found no significant differences in percent of standard weight for age of feeding program participants, but noted a trend toward improved nutritional status and less regression.⁶ However, weights of children in the Poshak program were significantly superior to controls after one year, if their mothers collected the ration at least 50% of the intended times. Other feeding programs have reported marginal or no change in weight for age.^{31,39} The Narangval program in India, after one year of nutritional supplementation and medical care, found no significant increases in weight of beneficiaries, and the overall malnutrition rates by weight for age were only lowered from 25 to 17.5% with no reduction in the percentage of children who were severely malnourished.³⁰ However, the Tamil Nadu nutrition study reported significantly higher weight increases in participants of a take-home feeding program after one year (despite a daily intake increase of only 66 calories from the ration) when compared to non-participants.⁷ Furthermore, nutrition rehabilitation centers have shown greater than normal weight gain with an average of a 3-5 percent increase in weight for age of preschool children after four months of eating the total daily diet at the center itself.²⁰ Thus even within integrated programs, which provide the total nutritional requirements of the child daily, improvement in weight for age percent of the standard may not be very large.

Within each country's program, when feeding centers are judged individually as to the nutritional impact they are having on the growth of their beneficiaries, a wide variety in levels of effectiveness emerges. The evaluation methodology was designed to try to identify centers with the most impact and those with the least impact and to explore factors which might be statistically related to the high nutritional impact or lack thereof at various centers.

A system for ranking all centers from highest nutrition impact to least impact was devised which took into account the difference in malnutrition rates (percent of children less than 90 percent of the reference weight for their height) between the feeding program participants and the non-participant comparison group. Again due to the absence of longitudinal data an attempt was made to estimate the starting rate of malnutrition among newcomers to the program. However, the definition on length of participation of the newcomer group had to be raised from the five month cut off point used in the national analysis to a nine month cut off point for the sitewise analysis in order to allow enough sample size for comparing groups due to the small number of children at each site. The average length of participation of the sitewise newcomer group was five months.

A nutrition impact score was assigned to each center by combining the difference in malnutrition rates among participants, as well as the estimate of early program malnutrition rates among participants for nine months or less and the non-participant group. The actual formula was:

$$\frac{\% < 90\% \text{ wt. for ht. among participants for 9mos. or}}{\% < 90\% \text{ wt. for ht. among non-participants}} \quad \text{Proportion of Malnutrition between Recent Participants and Non-Participants.}$$

MINUS

$$\frac{\% < 90\% \text{ wt. for ht. among total participants}}{\% < 90\% \text{ wt. for ht. among non-participants}} \quad \text{or Total proportion of Malnutrition between Participants and Non-Participants.}$$

The basis of the nutrition impact score is that progress toward reducing the initial rate of malnutrition would be reflected in a lower malnutrition rate for the total program than for the newcomer group. The total program malnutrition rate would be less than that of the comparison group except in the cases where program participants are initially more malnourished than the comparison group.

The percent of the total centers surveyed in each country which had positive nutrition impact are shown in Table 22. Costa Rica had the highest proportion of sites with positive impact (64%) and Tamil Nadu India the lowest (21%). Although there were sizeable differences in malnutrition rates among the various groups at many sites, none of the sitewise differences in malnutrition rates between total participants, newcomers, or comparison groups were significant.

None of the centers in any of the programs use criteria to target the program only to the malnourished. However, it can be seen, in Table 22 that the majority of centers in Colombia and Costa Rica are reaching children with as much or more malnutrition as found among non-participants; the rates are lower in the Dominican Republic where 45% of the centers reach an equally or more malnourished group as found in the community at large; and in Pakistan, where 41% of the centers reach such a group. The Tamil Nadu, India program, on the other hand, is only reaching equally or more malnourished children in 21% of the sites surveyed.

TABLE 22

PERCENT OF CENTERS EVALUATED IN EACH OF FIVE
CARE PRESCHOOL FEEDING PROGRAMS WITH POSITIVE NUTRITIONAL
IMPACT AND COMPARISON OF THE MALNUTRITION RATE AMONG RECENT
ENROLLEES WITH THE RATE AMONG NON-PARTICIPANTS

	Number of Centers	Percent of Centers with Positive Nutri- tional Impact*	Percent of Centers with Malnutrition Rate of Participants for ≤ 9 mos. Greater than or Equal to Comparison Group Rate**
Colombia	20	45.0	55.0
Costa Rica	22	50.0	63.6
Dominican Republic	20	55.0	45.0
India (Tamil Nadu)	29	27.6	20.7
Pakistan	17	41.2	41.2

* Positive Nutritional Impact = Positive Score on the following calculation:

$$\frac{\% < 90\% \text{ weight for height among participants for } \leq 9 \text{ months minus} \\ \% < 90\% \text{ weight for height among total participants}}{\% < 90\% \text{ weight for height among non-participants.}}$$

** Malnutrition Rate = The percent of children less than 90% of the Reference Weight for their height.

These rates of coverage of the malnourished are important because of all factors correlated with impact, the strongest one of all was the incidence of malnutrition. In other words, high rates of malnutrition for newcomers in the program equal high nutritional impact.

An important finding of the present surveys based on the analysis of the malnutrition rates of the newcomer groups in the program as a whole is that the feeding programs enroll many children who are not malnourished. This is primarily because no criteria are used to target any of the programs to only the malnourished. Therefore, the malnutrition rates of the newcomers in the program generally reflect those of the community at large, though slightly higher or lower in some programs as previously described. This means that in Latin America where malnutrition rates are low, the majority of the participants in the feeding programs are not malnourished. In fact there may be as few as one in ten participants malnourished (< 90% weight for height) which is the case in Colombia or one in five malnourished in the Dominican Republic. Although not showing physical signs of malnutrition the majority of children in the Latin American programs are calorie deficient. Results are more favorable in India and Pakistan where at least every other child in the program shows physical signs of malnutrition. In Latin America, it is particularly important to consider a way of establishing nutritional criteria for enrolling more malnourished children.

The feasibility of targeting the programs to only the malnourished has not been tested. There may be political constraints to eliminating certain communities. If within a community, some mothers are excluded, and only mothers of the malnourished are enrolled, the potential stigma associated with the malnourished group may impede program results. Furthermore, it is questionable whether the administrator in the center could withstand the hostility she might encounter for excluding some mothers. If the program were catered only to the malnourished would there be enough participants to make the program economically viable? In many Latin American communities with their low rates of malnutrition there are not likely to be enough malnourished children in a geographically concentrated area to warrant an entire feeding center and program just for them. How do you locate the few malnourished and induce them to join the program? Is it worth the added expense of seeking this group out?

Perhaps the most feasible solution would be to define a minimum malnutrition rate necessary in order to warrant a feeding program, and then feed everyone in communities with this malnutrition rate or more.

The rate encountered in the present surveys, below which little impact occurred, e.g. 15% of the newcomers less than 90% of reference weight for height in Latin America, could be used to select communities. There is little evidence that the malnourished children in the program currently would regress nutritionally if withdrawn from the program, because overall the malnutrition rates of the non-participants are not that different from those of children in the programs. The problem may well be with selection of the communities themselves because in all countries surveyed except India many of the centers are already enrolling children with as much or more malnutrition as that in the community at large (Table 22). The overall nutritional status results of all five programs can be summarized as follows:

Colombia is reaching a more chronically malnourished group than children in the community at large and malnutrition rates on all measures are being held constant. Sitewise, 45% of the centers had a positive impact on weight for height.

Costa Rica is reaching a more currently malnourished group than children in the community at large and there is a trend toward improving weight for height and weight for age, and significant improvement in weight for age. Sitewise, 50% of the centers had a positive impact on weight for height.

The Dominican Republic is reaching a group of children whose malnutrition rates are approximately equal to those of the non-participants, except for the greater incidence of second and third degree malnutrition among newcomers to the program. There is a trend toward improving height for age, and weight for age, and a significant improvement in weight for height (acute malnutrition). Sitewise, 55% of the centers had a positive impact on weight for height.

India (Tamil Nadu) is reaching children with less chronic malnutrition (stunting) than the non-participants and less second degree malnutrition. The program appears to hold height for age and weight for age constant, but there is a significant rise in the rate of malnutrition by weight for height among longtime participants. Only 21% of the centers had a positive impact on weight for height.

Pakistan is reaching children with significantly less severe malnutrition than in the non-participant group, and less mild malnutrition as judged by less than 90% weight for height. The program appears to be holding malnutrition rates on all measures constant. Sitewise, 41% of the centers show positive impact on weight for height.

The Waterlow classification³³⁻³⁵ of nutrition status by "Wasting" and "stunting" of all program and comparison groups is shown in Table 23. The Waterlow classification is a useful one for deciding on appropriate remedial programs as it clearly sorts out the children with chronic malnutrition (stunting) from those with current acute malnutrition (wasting). Current morbidity and/or recent inadequate food intake resulting in acute malnutrition may respond to a quickly instituted short-term remedial program. Whereas it may take years to change the prevalence of chronic malnutrition, if possible at all. Except in Tamil Nadu, India and Pakistan few children are suffering from current acute malnutrition as evidenced by wasting or wasting combined with stunting. Far more children are in the chronically malnourished or stunted category and it is debateable what role a feeding program can play in correcting this mild chronic malnutrition. All children suffering from wasting or combined wasting and stunting can be considered acutely malnourished and in need of immediate nutrition interventions. For these children - the feeding programs are indeed efforts at nutritional rehabilitation.

The Gomez classification²⁷ of first, second and third degree malnutrition by weight for age of program and comparison groups is presented in Table 24. Again it can be seen that few children are in the moderate to severe malnutrition categories (second and third degree) except in Tamil Nadu, India and Pakistan.

The analysis of nutritional status based on mean arm circumference and arm circumference for height is presented in Table 25. Various borderlines have been suggested for diagnosing moderate to severe malnutrition based on arm circumference and height measurements and these were applied to the present data, i.e. 1) Percent less than 85% of reference arm circumference for height⁴⁰ and 2) Percent with mean arm circumferences less than 13.5 centimeters.⁴¹ Few children in Latin America were identified as malnourished using these parameters, but there were a sizeable number in India and Pakistan. Although a more thorough analysis is needed of the correlations of the arm circumference diagnosis of malnutrition with the other measures i.e. weight for height and weight for age, it does not appear to be sufficiently sensitive for use in mildly malnourished populations such as are found in Latin America. Its major usefulness appears to be in situations where severe malnutrition is prevalent, e.g. Pakistan and India.

The means of all anthropometric measurements taken as a percent of MAS reference medians are presented in Table 26. As stated earlier these means tend to mask the actual number of children affected by severe malnutrition and also blur the sizeable differences in nutritional status between groups.

The correlation coefficients between calorie and protein intake and the various measurements are presented in Table 27. Small positive correlations were found to be significant between total protein and calorie intake and height for age, as well as weight for age. Weight for height was positively correlated to a significant degree with calorie and protein intake only in

RATES OF STUNTING AND WASTING OF CHILDREN 12-59 MONTHS OF AGE
BY PARTICIPATION IN FIVE CARE FEEDING PROGRAMS (NAS REFERENCE POPULATION)

	Sample Size	Normal ¹	Stunting ²	Wasting ³	Wasting and Stunting ⁴
<u>COLOMBIA</u>					
Participants	897	68.6 *	30.5 *	0.6	0.2
Non-Participants	536	74.1 *	25.6 *	0.2	0.2
<u>COSTA RICA</u>					
Participants	507	87.6	8.7	3.0	0.8
Non-Participants	266	87.2	10.2	2.3	0.4
<u>DOMINICAN REPUBLIC</u>					
Participants	1199	80.2	18.3	1.2	0.3
Non-Participants	820	79.1	18.7	1.6	0.6
<u>INDIA (TAMIL NADU)</u>					
Participants	963	49.3	35.3 **	6.1	9.2
Non-Participants	859	49.3	43.8 **	7.1	7.8
<u>PAKISTAN</u>					
Participants	793	66.4	26.0	3.9	3.7
Non-Participants	1464	64.7	25.2	5.4	4.7

¹Normal = At least 80% of median weight for height and 90% of median height for age.

²Stunting = At least 80% of median weight for height but less than 90% of median height for age.

³Wasting = Less than 80% of median weight for height but at least 90% of median height for age.

⁴Wasting and Stunting = Less than 80% of median weight for height and less than 90% median height for age.

* Differences between groups are significant at P < .05 level.

** Differences between groups are significant at P < .01 level.

TABLE 24
 RATES OF MALNUTRITION BY THE GOMEZ CLASSIFICATION OF CHILDREN
 12-59 MONTHS OF AGE BY PARTICIPATION IN FIVE CARE FEEDING PROGRAMS
 (NAS REFERENCE POPULATION)

	Sample Size	Normal	First Degree	Second Degree	Third Degree
<u>COLOMBIA</u>					
Participants	897	35.9 **	52.1 **	11.6	0.4
Non-Participants	536	45.8 **	43.0 **	10.2	0.9
<u>COSTA RICA</u>					
Participants	507	47.1	43.0	9.1	0.8
Non-Participants	266	53.1	40.2	5.3	1.5
<u>DOMINICAN REPUBLIC</u>					
Participants	1198	51.8	37.8	9.2	1.2
Non-Participants	820	49.9	39.4	9.1	1.6
<u>INDIA (TAMIL NADU)</u>					
Participants	963	9.8 **	38.2	40.7 **	11.2
Non-Participants	860	5.2 **	35.8	47.8 **	11.2
<u>PAKISTAN</u>					
Participants	794	17.9	48.4	28.5	5.3
Non-Participants	464	18.5	44.4	29.7	7.3

* Normal = 90+% of NAS Reference Weight for Age Median
 First Degree = 75-89.9% of NAS Reference Weight for Age Median
 Second Degree = 60-74.9% of NAS Reference Weight for Age Median
 Third Degree = Less than 60% of NAS Reference Weight for Age Median

** Differences between groups are significant at $P < .01$.

TABLE 25
 RATES OF MALNUTRITION BY ARM CIRCUMFERENCE MEASUREMENTS
 OF PARTICIPANTS AND NON-PARTICIPANTS IN FIVE CARE PRESCHOOL
 FEEDING PROGRAMS IN 1976 (HAS REFERENCE POPULATION)

Country	Sample Size	% <85% Reference Arm Circumference for Height	Mean Arm Circumference (Cms. + S.D.)	% <13.5 Cm. Arm Circumference
COLOMBIA				
Participants	897	2.6	15.3+1.2**	5.4
Non-Participants	536	3.4	15.5+1.3**	5.6
COSTA RICA				
Participants	503	1.2	16.3+1.3***	1.6
Non-Participants	252	0.4	16.7+1.5***	0.4
DOMINICAN REPUBLIC				
Participants	1201	2.4	15.8+1.3	3.5
Non-Participants	822	2.3	15.8+1.4	3.4
INDIA (TAMIL NADU)				
Participants	963	19.8	14.1+1.2	27.3
Non-Participants	859	18.3	14.0+1.2	31.7
PAKISTAN				
Participants	794	14.1*	14.3+1.2*	21.8*
Non Participants	464	20.0*	14.1+1.4*	29.7*

*Difference between group is very significant at $P < .01$

**Difference between group is significant at $P < .02$

***Difference between group is significant at $P < .05$

LE 5
 ANTHROPOMETRIC MEANS AS PERCENT OF HAS REFERENCE
 MEDIANS FOR PARTICIPANTS AND NON-PARTICIPANTS IN
 FIVE CARE PRESCHOOL FEEDING PROGRAMS. MEANS ARE
 PRESENTED \pm STANDARD DEVIATION

Country	Sample Size	Weight for Age	Weight for Height	Height for Age	Arm Circumference for Height
Colombia					
Participants	897	87.1+11.5*	98.7+8.2	92.6+5.6*	98.1+7.2***
Non-Participants	536	88.8+12.3*	99.2+7.9	93.4+5.9*	98.9+8.0***
Costa Rica					
Participants	506	89.8+12.9*	95.5+10.8*	96.5+5.7	102.0+7.8*
Non-Participants	266	93.4+16.5*	98.9+14.3*	96.5+5.7	105.4+8.9*
Dominican Republic					
Participants	1201	91.9+30.1	97.2+11.6	96.1+8.2	100.4+7.8
Non-Participants	822	92.2+30.1	98.7+34.5	96.1+7.7	100.7+8.0
India					
Participants	963	74.5+12.1*	87.4+8.0	90.7+7.2*	90.5+7.1
Non-Participants	859	72.9+10.6*	87.0+7.4	89.7+6.3*	91.0+7.1
Pakistan					
Participants	793	79.5+12.0	89.8+7.5	92.8+6.7	92.1+6.9**
Non-Participants	454	79.4+13.1	89.3+8.1	93.1+7.2	91.1+7.6**

* Differences between groups are very significant at $P < .01$

** Differences between groups are significant at $P < .02$

*** Differences between groups are significant at $P < .05$

TABLE 27

CORRELATION COEFFICIENTS BETWEEN TOTAL CALORIE AND PROTEIN INTAKE AND PERCENT OF NAS REFERENCE MEDIAN FOR WEIGHT FOR AGE, WEIGHT FOR HEIGHT, AND HEIGHT FOR AGE IN FIVE CARE PRESCHOOL FEEDING PROGRAMS

Country	Total Calorie Intake With			Total Protein Intake With		
	Wt. for Age	Wt. for Ht.	Ht. for Age	Wt. for Age	Wt. for Ht.	Ht. for Age
Colombia	N.S.	N.S.	.106***	.107***	N.S.	.108***
Costa Rica	N.S.	.193*	.116***	.128***	.189*	N.S.
Dominican Republic	.154*	N.S.	.165*	.158*	N.S.	.150*
India (Tamil Nadu)	.167*	N.S.	.145*	.167*	N.S.	.155*
Pakistan	.255*	N.S.	.258*	.220*	.130**	.208*

* Very Significant at $P < .01$
 ** Significant at $P < .02$
 *** Significant at $P < .05$
 N.S.= Not Significant

Costa Rica, and with protein intake in Pakistan. However, there was no significant difference in mean caloric or protein intake between the malnourished (< 90% weight for height) and the well nourished because of the large variations in intake within groups. No statistically significant differences were found in the protein and calorie intake of the malnourished and well nourished groups in project Poshak either.⁴² Another study of fat and lean children in the U.S. failed to find statistically significant differences in caloric intake.⁴³ The association between weight for age and nutrient adequacy was found to be very significant as the sanitary level of the environment improved from fair to very good.⁵⁴ High incidence of infectious disease and diarrhea reduces the availability of ingested nutrients for growth thus partially explaining the low level of correlation between nutritional intake and growth.

When anthropometric data were analyzed by sex it was found that the prevalence of malnutrition in general among females was lower than males in Latin America on all measures, but particularly with reference to stunting. A reverse situation was found in India where more stunting and second and third degree malnutrition by weight for age were found in females. However, more females than males in India had weights in normal proportion to their heights, probably because of their shortness. In Pakistan the rates of malnutrition were approximately equal between males and females.

When nutritional status is analyzed by age it was found that the rates of stunted children with low height for age tended to increase with each of the preschool years. A similar trend was found with rates of second and third degree malnutrition by weight for age increasing with each of the preschool years. On the other hand malnutrition rates as measured by weight for height tend to decrease with each of the preschool years. This is particularly true of acute malnutrition (< 80% weight for height) the incidence of which was highest among 1-2 year olds, probably because of the nutritional crisis of weaning experienced at this age.

The Role of Diarrhea and Morbidity Factors

The interaction of nutrition and infection has been well documented and this interaction can greatly influence the nutritional impact of any feeding program.⁴⁴⁻⁵³ Scrimshaw has stated that, "Infections of almost any degree of severity worsen nutritional status by interfering with food intake and by causing an increased loss of essential nutrients from the body. Conversely, the most common types of malnutrition, even when subclinical, affect one or more of the mechanisms of resistance to infections or to the resulting infectious disease."⁴⁷ Diarrhea plays a synergistic role with infection in malnutrition particularly in the preschool years through loss of ingested foods from the body, malabsorption, and withholding of food by the mother. Diarrhea occurs more often and has more serious consequences among children with malnutrition, and after a bout with diarrhea a marginally malnourished child may become seriously malnourished.^{9,54,55} Therefore information was collected on the disease history, diarrhea patterns, and access to protected water and latrines of program participants.

The percent of children who have suffered from various common communicable diseases of early childhood is presented in Table 28. On the average 4-10% of the children surveyed have had chickenpox, except in India where the rate is much higher at 44%. The incidence of all diseases was lowest in Costa Rica especially for measles and pneumonia. There is an active immunization campaign against measles in Costa Rica. The highest incidence of measles was in the Dominican Republic where 44% of the children had been affected. The highest incidence of pneumonia was in Pakistan where 38% of the children had been affected. Both measles and pneumonia had affected many children in all countries, and the nutritional consequence of these diseases is known.⁴⁷

All mothers in the program and comparison group were asked if their preschool child had suffered from any serious illness in the past year that had the child bedridden or not eating normally for more than two weeks. The rates in this past illness category were very similar for participants and non-participants, except in India where there was significantly more serious illness among program participants. However, the rate of serious illness was lowest in India for program participants and non-participants when compared to all other countries. The highest rates of past illness were found in the Dominican Republic where the lowest percentage of the program is conducted in health centers (20%). It is not surprising that rates of past illness are similar between program participants and non-participants because few health services are delivered to program beneficiaries as integral components of the feeding programs. Of all variables studied past illness showed the strongest association with malnutrition in India, Pakistan and the Dominican Republic, and similar findings were reported in

TABLE 28
 PERCENT OF PRESCHOOLERS IN FIVE CARE
 FEEDING PROGRAMS WHO HAVE SUFFERED FROM VARIOUS
 DISEASES

Disease	Colombia	Costa Rica	Dominican Republic	India	Pakistan
(Sample Size)	243	200	246	253	254
Chickenpox (%)	4.5	7.0	9.3	43.9	10.2
Measles (%)	27.2	14.5	43.9	20.2	38.6
Pneumonia (%)	28.0	5.5	7.3	10.7	38.2
Past Illness (%)*					
Participants	32.9 (N=897)	26.6 (N=507)	40.6 (N=1,200)	21.5** (N=963)	23.9 (N=794)
Non-Participants	33.0 (N=536)	26.7 (N=266)	45.5 (N=822)	17.6** (N=859)	27.4 (N=461)

*Past illness equals a general category for any sickness that had child bedridden or not eating normally for more than two weeks in the past year.

**Difference between groups is significant at $P < .05$

Project Poshak.⁴² Therefore it would seem that the weak health services component of the present feeding programs may be serving as a deterrent to nutritional impact.

When prevalence of infectious disease is high, the level of nutrient intake has little or no effect on nutritional status. Beghin has stated that a program to combat communicable diseases is a necessary complement to any nutritional rehabilitation program because of the interference of infections and parasitic disease with the recuperation process.²⁰ The need to integrate feeding programs with health services has often been stated.^{6,11,44,54,56-58} In Project Poshak the synergistic effect of all three combined inputs: food, medical services and childcare education, resulted in the greatest improvement in nutritional status.⁶ Preventive health services particularly immunizations are needed as well as deworming. Since at least one-fifth of the food distribution centers evaluated were health centers and up to 95% of the centers in Pakistan, it would seem feasible to make a planned effort at integrating health services with the present feeding activities. The food distributed at present is probably already serving as an incentive to bring more mothers into the health centers where they can avail themselves of medical care, but the provision of health services to feeding program beneficiaries should be made more routine. Only when morbidity rates are low can increased food intake improve nutritional status. Furthermore there is a need to encourage greater acceptance of family planning among program mothers through education and ready access to services. Family size remains large and the number of people sharing limited financial resources increases the likelihood of malnutrition in the preschooler. Furthermore larger family size and a greater number of people sharing the ration within the family has been linked in a causative way to reduced nutritional impact in the present study.

As well as communicable diseases, and intestinal parasites, diarrhea is a key determinant of the nutritional status of the preschool child.⁵⁵ The prevalence of diarrhea and the access to protected water and latrines among program participants are presented in Table 29. Diarrhea is four or more loose bowel movements per day. Mothers were asked if their child had diarrhea currently, how many days in the past week the child had diarrhea, and whether the child had ever suffered from severe diarrhea or dysentery. It should be stressed that since the diarrhea information is based merely on the mother's recall it may be subject to some degree of error. However, other studies have shown that diarrhea recall is reasonably accurate up to one week after its occurrence.⁹ Current diarrhea and diarrhea in the past week were lowest in Pakistan where the highest percentage of families had access to protected water (82%) and a high percent also had latrines (59%).

TABLE 29
PREVALENCE OF DIARRHEA AMONG PRESCHOOLERS
AND ACCESS TO PROTECTED WATER AND LATRINES IN FIVE
CARE FEEDING PROGRAMS

	Colombia	Costa Rica	Dominican Republic	India	Pakistan
Sample Size	243	200	246	254	253
Current Diarrhea (%Yes)	9.1	9.0	16.3	13.4	5.9
Diarrhea in Previous Week Percent Yes	14.8	15.0	32.1	34.6	13.4
Mean Days Diarrhea in Previous Week \pm S.D	2.8 \pm 1.4	2.9 \pm 1.7	3.5 \pm 2.0	3.5 \pm 1.9	3.5 \pm 1.8
Severe Diarrhea (%who have had)	65.0	50.7	80.6	42.7	54.3
Sample Size	897	507	1201	963	794
Access to Protected Water (%)	28.3 (41.9)*	78.1 (86.8)*	39.2 (38.7)	19.5 (14.8)	82.2 (88.7)*
Access to Latrines (%)	32.6 (42.3)*	87.8 (89.8)	71.6 (65.4)**	5.6 (4.8)	59.0 (74.7)*

()Values for non-participants presented for the sake of comparison

*Indicantes very significant difference at $P < .01$ between participants and non-participants

**Indicantes significant differencet at $P < .05$ between participants and non-participants

Costa Rica had the second lowest incidence of current diarrhea, and severe diarrhea, probably because the access to latrines is the highest there and the access to protected water is 78%, second highest. On the contrary, current diarrhea and diarrhea in the past week, were highest in India and the Dominican Republic which have low access to protected water. Furthermore almost no one has a latrine in India but the results are contradictory for the Dominican Republic where most families have latrines. The percentage of children who had suffered from severe diarrhea was significantly higher among children without latrines in both Colombia and the Dominican Republic. In no other country was the prevalence of diarrhea found to be significantly associated with access to protected water or latrines. In Colombia, Costa Rica and Pakistan significantly fewer families in the program had access to protected water and latrines than in the comparison group. The lack of a significant association between diarrhea rates and access to protected water is plausible because no attempt was made in the present survey to actually test the potability of the protected water supply. Rates of diarrhea were not significantly lower among participants at feeding centers connected to health posts either.

The results of the present study show an average prevalence of 8% for current diarrhea and are in agreement with rates reported by others, i.e. Mata (7%)⁵¹, Kielmann et al. (7.4%)³⁰, and Briscoe (8%).^{58,59}

Diarrhea is known to affect dietary intake particularly through the mother withholding food from the preschooler during the episode, as well as through loss of appetite. In the present study the percent of children who ate the ration on the previous day was not significantly lower among children who currently had diarrhea, and the size of the ration eaten was also not significantly decreased due to diarrhea. However, the total calorie and protein intake with and without the ration was consistently lower by 100-200 calories among children who currently had diarrhea, and significantly so in the Dominican Republic, India (Tamil Nadu) and Pakistan (Table 30). This reduction in nutrient intake due to diarrhea may increase the child's calorie gap by one-third to one-half and combined with the nutrient losses due to malabsorption may have serious consequences on nutritional status. The highest calorie gaps—483 in the Dominican Republic and 549 in Tamil Nadu, India—were found in the two countries with the highest rates of diarrhea in the past week 32% in the Dominican Republic and 35% in India (similar agreement was found between size of the calorie gap and rates of current diarrhea). Childhood

TABLE 30

EFFECT OF CURRENT DIARRHEA ON TOTAL CALORIE AND PROTEIN INTAKE AND RATION CONSUMPTION OF PRESCHOOLERS IN FIVE CARE FEEDING PROGRAMS

Country	Percent Who Ate Ration	N	Daily Intake Without Ration		N	Daily Intake With Ration		Mean Ration Consumed	
			Calories	Protein		Calories	Protein	Calories	Protein
COLOMBIA									
With Diarrhea	65	11	936	24.3	11	1097	33.2	184	7.7
Without Diarrhea	48	136	981	25.9	85	1180	36.1	162	9.9
COSTA RICA									
With Diarrhea	83	8	906	27.6	10	1408	51.8	737	30
Without Diarrhea	74	98	1039	31.3	85	1398	49.2	737	30
DOMINICAN REPUBLIC									
With Diarrhea	46	21	796	21.8	18	774	22.3	132	7.1
Without Diarrhea	47	109	893	25.2	98	953	26.4	157	7.9
INDIA (TAMIL NADU)									
With Diarrhea	77	5	742	21.2	10	763	26.4	340	16
Without Diarrhea	86	55	817	24.7	183	983	32.7	340	16
PAKISTAN									
With Diarrhea	24	26	895	24.2	8	928	25.9	100	4.0
Without Diarrhea	18	181	1020	28.3	39	1241	29.9	137	5.0

malnutrition has been shown to be sensitive to increased food supply only when incidence of diarrhea and infectious disease is low. Preschool children can't hold a sufficient quantity of foods from a cereal-based diet to bring their intake up to a level sufficient to overcome the deleterious effects on their health status resulting from an unsanitary environment.⁵⁴

If CARE feeding programs are to have a nutritional impact something must be done to reduce the prevalence of diarrhea in the participants and to treat cases of diarrhea through oral rehydration such that their duration is lessened and fatalities due to them are reduced. Possible methods of reducing the incidence of diarrhea that are within CARE's command are installation of latrines and potable water systems in communities served by the feeding programs, and education of the mothers in sanitary practices that will prevent diarrhea and methods of treating diarrhea through oral rehydration to reduce its duration and debilitating effects. In many of the same countries where CARE has feeding programs, it also is involved in installation of water systems. Therefore it would seem feasible to consider integrating these two activities to maximize the impact of both of them.

Nutritional Knowledge and Education

Nearly all the centers visited in the present survey claimed to be providing nutrition education to the mothers. However, little evidence of nutrition education was observed except in Colombia where nutrition education is an integral component of the feeding program. Mothers are not supposed to receive food in Colombia if they do not attend the nutrition education classes, but this rule was not enforced. It was encouraging to see that of all five countries, nutrition knowledge was highest among program mothers in Colombia. This judgement was derived from the percent of mothers who correctly described the cause and treatment for malnutrition when shown a photograph of a severely malnourished child (Table 31). Nutrition knowledge was next highest in the Dominican Republic and lowest in Pakistan. More mothers knew the cause of malnutrition than what they could do to treat it.

Almost none of the centers visited were measuring children. Therefore growth charts were not being used to monitor the progress of beneficiaries nor to educate mothers regarding the nutritional status of their children. Growth charts were

TABLE 31

NUTRITION KNOWLEDGE OF MOTHERS
OF PRESCHOOLERS IN FIVE CARE FEEDING
PROGRAMS

	Sample Size	Described Cause of Malnutrition Accurately (%)	Described Treatment of Malnutrition Accurately (%)
Colombia	243	83.1	74.1
Costa Rica	200	68.5	41.2
Dominican Republic	245	74.7	46.7
India	253	52.2	50.6
Pakistan	251	46.6	35.1

available for use in several countries but their value was not seen by the center administrators. In Colombia, although weight and height measurements are taken on most beneficiaries, these are not shared with the mothers or used for educational purposes. Growth charts have been found to be an effective means of recording a child's health and development as well as educating mothers and supervisory medical and paramedical staff.^{5,60,81} However, growth charts have been found to be of little use if not accompanied by an education campaign to thoroughly explain their significance to the mother.⁷ Children should be measured on a regular basis in CARE feeding programs so there is some means of evaluating program impact. The measurements should be recorded on growth charts which are given to, or shared with the mothers.

Nutrition education for mothers should be part of all supplementary feeding programs if recuperation of the malnourished child is to take place and be retained once a child leaves the program. In Project Poshak it was found that the best nutrition impact results took place when a package of services including food, health care, and nutrition education was provided to the mother; the second best result came from food combined with nutrition education.⁶ Messages that especially need to be stressed in a nutrition education campaign based on the findings of the present survey are: identification and treatment of malnutrition, need for fruits and vegetables in the diet, importance of introducing an adequate quantity of solid foods by age six months, the prevention of diarrhea through sanitary practices and the treatment of diarrhea through oral rehydration, and the importance of feeding the ration daily to the intended child in the intended quantity without cutting back on other foods normally fed at home. As stated earlier some of the nutrition education should be directed not at the mothers but at those in charge of the child's care in cases where the mother is working. Many mothers listen to the radio daily in all the countries except India so a mass media nutrition education campaign might be a good way of creating awareness about certain nutrition concepts. The rates of listening to the radio daily are as follows: Colombia (68%), Costa Rica (65%), the Dominican Republic (53%), Tamil Nadu, India (23%), and Pakistan (57%).

Mother's Role in Feeding Program

The impact of the take-home feeding programs on the nutritional

status of pregnant and lactating mothers who are given a ration for their own consumption was not measured in the present survey. However, this is a major goal of take-home feeding and can play an important role in preventing malnutrition in preschoolers through increased birth weights, and more adequate milk supply during lactation.⁶² No food assistance is provided to mothers in on-site feeding, but occasionally they were seen sharing food from the child's plate, particularly in Costa Rica. Whether or not food is provided to the mother there is no denying that she is the key figure in assuring the nutritional impact of the program on the preschool child who is dependent on her. The mother must collect the ration, feed it to the child in the adequate quantity, and feed the balance of the home diet in adequate quality and quantity also. In on-site feeding the mother must bring the child to the center daily and feed an adequate home diet as well. As has been mentioned these responsibilities of the mother may be assumed by a sibling when the mother works outside the home. On-site feeding programs tend to reduce the responsibilities of the mother and create a greater dependency on outside sources for childcare. For this reason Gopalan cautioned against on-site feeding, stating that, "If the mother can't be entrusted with feeding her child who can?"⁶³ If on-site feeding were ceased this dependence of the mother on the center which provides one-third to one-half of her child's food needs would seem to have serious ramifications. Nevertheless, on-site feeding programs provide a vital childcare service for working mothers. The key role played by the mother in influencing nutritional impact of both take-home feeding and on-site feeding through the home diet she feeds the child should not be forgotten.

Cost and Cost Effectiveness of the Feeding Programs

The total cost per child per year of each of the five feeding programs including the costs of food, network distribution, administration, and local operating expenses is shown in Table 32. Food is the most expensive component in all the programs representing from 54% to 76% of the total cost of the program.

Total costs of all programs except Costa Rica range from approximately \$14 to \$25 per year, with Costa Rica being far more expensive at \$95 per year. In countries with both dry, biweekly or monthly take-home distribution, and prepared on-site daily distribution, i.e. Tamil Nadu and the Dominican Republic, the dry distribution is \$1.69 to \$2.69 cheaper overall per child per year when equal rations are distributed

TABLE 32

COST PER CHILD PER YEAR OF
CARE PRESCHOOL FEEDING PROGRAMS IN
FIVE COUNTRIES IN U.S. DOLLARS

Country	Total Cost Per Child/Yr.	Food	Distribution	Administration	Local Operating Expenses
Colombia Take-Home	24.75	13.41	2.01	4.56	4.77
Costa Rica On-Site	94.54	70.58	--	2.46	21.50
Dominican Republic					
Dry Take-Home	13.55	10.34	0.72	1.42	1.07
Wet Take-Home	15.24	10.34	0.72	1.46	2.72
India (Tamil Nadu)					
On-Site	14.46	10.69	0.21	0.69	2.87
Take Home	14.38	13.30	0.21	0.68	0.19
Pakistan Take-Home	23.51	16.64	0.54	5.50	0.83

However, the largest difference in cost between on-site feeding and take-home feeding emerges in the category of local operating expenses. In India the local operating expenses are fifteen times higher in on-site feeding than in take-home and in the Dominican Republic the local operating expenses for prepared food distribution are almost three times as high as for dry distribution. This is an important consideration because the availability of local funds for operating programs is often one of the largest constraints on program expansion. Another factor that must be taken into consideration in weighing the cost effectiveness of on-site feeding versus take-home feeding is that take-home programs reach over four times as many children at the food distribution site as on-site feeding programs.

Costs of all programs per kilogram and nutrient of food delivered are shown in Table 33. Again the range in cost of one to two cents per 100 calories delivered is close among all countries except Costa Rica where the cost is five cents. Cost per ten grams protein delivered varies more among countries depending on the protein content of the ration with a low of two cents in the Dominican Republic to a high of eleven cents in Costa Rica.

Table 34 shows the proportion of total program cost presently provided by local funds and the cost of local foods of equivalent caloric value to PL-480 inputs. Almost the entire Costa Rica program (94%) is locally funded primarily because 95% of the foods distributed are purchased locally by the government of Costa Rica. Local input is the least in Pakistan where only 6% of the cost is paid by the government of Pakistan. The percent of total cost currently paid by the local government gives some indication of the feasibility of the feeding programs being continued under totally local support if PL-480 assistance was withdrawn. Only in India and Pakistan could local foods of equivalent nutritional value be provided at a lower cost than the current PL-480 ration. However the actual availability of such foods and the funds necessary to purchase them is particularly questionable in India and Pakistan.

Since none of the programs are targeted to only malnourished children it is important to calculate the excess cost incurred in reaching the malnourished due to all the well nourished children that are fed in blanket coverage type programs (Table 35). The cost per year per malnourished child reached remains low in India (\$24) and Pakistan (\$45) because the majority of participants are malnourished, but rises to very expensive levels in Latin America, particularly in Costa Rica (\$290) and in Colombia (\$261) because of the low rates of malnutrition among participants. However, most of the participants in all the programs are calorie deficient and therefore cost per child with a calorie gap is only slightly higher than the normal cost per child per year (Table 35). Fewer children are protein deficient so the cost per child with a protein gap elevates the base cost of all programs (Table 35).

TABLE 33

COST PER KILOGRAM AND NUTRIENT OF FOOD DELIVERED IN CARE
PRESCHOOL FEEDING PROGRAMS IN FIVE COUNTRIES IN U.S. DOLLARS

Country	Cost Per Kilogram of Food Delivered	Cost Per 100 Calories Delivered	Cost Per 10 Grams Protein Delivered
<u>COLOMBIA</u> (Take-Home)	0.825	0.022	.037
<u>COSTA RICA *</u> (On-Site)	0.985	0.045	.109
<u>DOMINICAN REPUBLIC</u> (Take-Home)			
Wet Daily	0.470	0.012	.023
Dry Monthly	0.418	0.011	.021
<u>INDIA (TAMIL NADU) *</u> (On-Site)	0.463	0.015	.031
<u>PAKISTAN</u> (Take-Home)	1.224	0.022	.084

*Costs in the Costa Rican and Indian on-site feeding programs have been adjusted because food is served only six days a week (288 days per year) whereas in the other programs food is provided daily for take-home consumption.

TABLE 34

PERCENT OF TOTAL COST OF FIVE CARE PRESCHOOL PROGRAMS PROVIDED
BY LOCAL INPUTS AND COST OF LOCAL FOODS OF EQUIVALENT NUTRITIVE
VALUE TO THE PL-480 COMMODITIES DISTRIBUTED

	Percent of Total Cost Locally Funded *	Local foods Cost/100 Calories(\$)**	PL480 Foods Cost/100 Calories CCC Value(\$)**
Colombia	49	0.0226	0.0120
Costa Rica	94	-	-
Dominican Republic	29	0.0189	0.0084
India	39	0.0087	0.0109
Pakistan	6	0.0095	0.0153

*Local costs normally include transport of commodities in country, operating expenses at the centers, and administration, whereas food is the major foreign input. However, in Costa Rica, nearly all foods are purchased locally as well as a small percentage of the food in India and Colombia. In Pakistan no administration costs are locally funded.

**Costs are presented merely for food, exclusive of the costs of network distribution, administration and local operating expense necessary to program them. Foods in Costa Rica Preschool Feeding Program are already mostly local.

TABLE 35

COST PER YEAR PER MALNOURISHED CHILD AND PER CHILD
WITH CALORIE OR PROTEIN GAP OF FIVE CARE PRESCHOOL FEEDING
PROGRAMS IN U. S. DOLLARS

Annual Cost	Colombia Take-Home	Costa Rica On-Site	Dominican Republic		India (Tamil Nadu) On-Site	Pakistan Take-Home
			Dry	Wet		
Per Malnourished Child*	260.53	290.00	66.10	74.34	23.94	45.39
Per Child with Calorie Gap **	29.11	121.21	14.89	16.75	16.43	28.67
with Protein Gap **	43.42	236.35	20.95	23.45	21.58	42.75

* Malnourished = Percent of recent enrollees (\leq 5 months in the program) with weights less than 90% of NAS reference weight for height. This rate was applied to the total program to approximate the number of malnourished children prior to the effects of the program.

** Children whose home diet without the CARE ration is less than the FAO daily requirement of 1360 Calories and 27 grams protein for 12-47 month old children.

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These findings are in agreement with the analysis of Reutlinger and Selowsky from which they conclude that "target-group-oriented programs are potentially much more cost effective and are probably the only feasible means to eliminate undernutrition in subgroups of the population."¹² Non-targeted programs can cost up to ten times the cost of reaching only the malnourished.

In two of the programs evaluated—Colombia and the Dominican Republic—the local government charges a fee to mothers to participate, while the other three programs are free of charge. In these two countries mothers fees are used to fund the local operating expenses of the center. While the Dominican Republic does not generally exclude mothers who cannot pay the fee, this does occur in Colombia and may further reduce the likelihood of reaching the most needy. When the possibility of charging fees to mothers was explored, Project Poshak in India found it difficult to reach the nutritionally vulnerable members of families below the poverty line on a regular basis even with a heavily subsidized food distribution.

Gopalan has observed that in Indian communities that are severely disadvantaged, economically and socially, free feeding for the 'at risk' groups may be the only answer for some time to come.⁶² It would appear that these generalizations would also hold true for families below the poverty line in Latin America.

In all five countries mothers stated that they were able to spend less on foods for their family since being enrolled in the CARE feeding program, but no information was gathered on what is done with the savings. The high rates of substitution of the ration for the home diet which were found also serve as proof of the savings resulting from participation in the program. Thus feeding programs in one sense can be seen as indirect income subsidies and may, through these released funds, be having a positive impact on other development goals. The possibility of finding a method to harness the food budget savings and direct these funds toward nutritional improvement goals could be explored.

Various cost effectiveness measures of the feeding programs are presented in Table 36, and the foodnotes to the table explain the method of calculation. The cost per net daily intake increase in calories and protein or for closing the entire calorie or protein gap is greatly influenced by the amount of the ration which is substituted for the home diet, and the percent of the participants who eat the ration daily. In general the India program is the most cost effective for increasing calorie and protein intake and closing the gap because the program is the cheapest overall, the net calorie increase is high and 86% of the children eat the ration daily. Nevertheless, it would still cost \$73 per child per year to close the calorie gap based on the present program operations.

COST EFFECTIVENESS OF CARE PRESCHOOL FEEDING PROGRAMS
IN FIVE COUNTRIES IN U.S. DOLLARS

Daily Cost	Colombia (Take-Home)	Costa Rica (On-Site)	Dominican Republic (Take-Home)		India (On-Site)	Pakistan (Take-Home)
			Wet Daily	Dry Monthly		
Per Child Total	0.068	0.328	0.042	0.037	0.050	0.064
(Percent Eating Ration Day Prior to Interview)	50	79	51	47	86	18
Per 100 Calorie Net Intake Increase*	0.082	0.090	0.221	0.086	0.036	0.273
(Actual Calorie Increase)	165	462	37	92	160	131
Per Closing Average Child's Calorie Gap (FAO 1360 Cal/day requirement)	0.314	0.294	1.029	0.478	0.200	0.972
(Actual Calorie Gap)	382	327	465	557	549	356
Per Gram Protein* Net Intake Increase	0.013	0.019	0.091	0.039	0.007	0.298
(Actual Protein Increase gms.)	10.1	22.0	0.9	2.0	8.5	1.2
Per Closing Average Child's Protein Gap (FAO 27gm./day requirement)**	0.017	No Gap	0.173	0.168	0.018	No Gap
(Actual Protein Gap gms.)	1.3	No Gap	1.9	4.3	2.6	No Gap
Per Child Improved*** Calorie Gap Closed	0.471	0.753	0.596	0.619	0.810	1.263
Protein Gap Closed	0.207	0.441	0.199	0.218	0.071	0.631

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(Continued...)

TABLE 36 (Continued)

Daily Cost	Colombia (Take-Home)	Costa Rica (On-Site)	Dominican Republic (Take-Home)		India (On-Site)	Pakistan (Take-Home)
			Wet Daily	Dry Monthly		
(Actual % of total Participants with No Gap after Eating Ration)						
Calories	14	44	7	6	6	5
Protein	33	74	21	17	71	10

*
$$\frac{\text{Cost Per Calorie or Protein Net Intake Increase}}{\text{Total Cost Per Day}}$$

Daily Increased Calories or Protein x % Who Ate

Increased calories or protein represent supplementary effect of ration on the usual home diet (without ration). Substitution for normal home diet has been taken into account.

** In Costa Rica and Pakistan, the average child had no protein gap. In the other countries, the average protein gap was minimal (1.3-2.6 grams) and the program ration succeeded in closing the gap completely with considerable protein consumed in excess. The cost of closing the protein gap (required) was calculated by multiplying the actual gap by Cost per Gram Net Protein Intake Increase. The Cost (actually spent) equals the total daily cost of the current programs.

*** Cost divided by percent of total program participants who had no calorie or protein gap after eating the ration.

On the other hand the Dominican Republic (wet distribution) and the Pakistan programs are the least cost effective in increasing protein and calorie intake and closing the gap because substitution is high in the Dominican Republic and few children eat the ration in Pakistan. If programs were to continue in their present mode of operation the annual costs of closing the calorie gap per child would be exorbitant at \$376 in the Dominican Republic and \$355 in Pakistan. Intermediate levels of cost effectiveness for increasing protein and calorie intake and closing the gap were found to be similar in Colombia, Costa Rica, and the dry take-home distribution in the Dominican Republic. The cost of totally closing the calorie gap per child per year in these programs ranges from \$107 to \$174. In reviewing the high costs of totally closing the calorie gap in the present programs a valid question becomes can CARE or any government afford the price of achieving such a goal through supplementary feeding. Of course cost effectiveness could be greatly increased if ways could be found to get more children to eat the ration daily as an increment to the home diet and not as a substitute. These factors seem to be largely the prerogative of the mother or of the father who is always fed first, and may lie beyond the control of the program.

Cost per child whose calorie gap was closed after eating the ration is also very high. In this category Colombia is the most cost effective program because among the programs of similar cost (all except Costa Rica) it had the highest percent of its beneficiaries with no calorie gap after eating the ration, and the least amount of substitution. Still the Colombia program would cost \$172 per year for every child improved to a no calorie deficit position. In other countries the cost would be more, rising to a high of \$461 per year in Pakistan because of the low percent of the participants who actually eat the ration.

Cost effectiveness is considerably higher when based on number of children with adequate protein intake after ration consumption because the incidence of protein deficiency and the size of the protein gap is much less than in the case of calories. If the goal of the programs was merely to close the protein gap, cost could possibly be reduced by lowering the protein content of the rations to the level necessary to close the gap, as the current rations are excessive in protein compared to the deficiencies of the children, particularly in Costa Rica and India.

The major leakages of program inputs which result in lowered cost effectiveness are shown in Table 37. Unless ways are found to target programs to more malnourished children, to reduce the number of family members sharing the ration, to reduce substitution, and to increase the number of children eating the ration daily, it is doubtful that feeding programs can be a cost effective means of reducing the rates of malnutrition among preschoolers in developing countries. However, the dilemma is further complicated by the lack of other cost effective alternatives for improving the nutritional status of preschool children.

Cost effectiveness of supplementary feeding needs to also be reviewed in terms of cost per child whose nutritional status improved as measured by physical growth. However, the lack of baseline anthropometric data on the children in the present survey made it impossible to assess actual rates of improvement in growth. Therefore no conclusions can be drawn here on the cost effectiveness of the various programs for actually improving nutritional status.

TABLE 37

RANGE OF LEAKAGES OF PROGRAM INPUTS AMONG TEN SITES EVALUATED
IN EACH OF FIVE CARE PRESCHOOL FEEDING PROGRAMS

Country	Number of People Sharing Each Ration	Percent of Participants With No Caloric Deficit*	Percent of Participants Without Malnutrition** (20 Sites)	Percent of Participants Not Eating Ration***	Percent of Consumed Ration Substituted For Home Diet
COLOMBIA (Take-Home)					
Range	1.6-2.7	0-33	71-100	28-74	----
National	2.2	15	89	50	0
COSTA RICA (On-Site)					
Range	No Sharing	0-33	36-93	13-36	----
National	No Sharing	22	73	21	37
DOMINICAN REPUBLIC (Take-Home)					
Range	1.8-2.8	0-36	55-93	4-73	----
National	2.2	9	76	50	69
INDIA (TAMIL NADU) (On-Site)					
Range	No Sharing	0-25	26-57	4-44	----
National	No Sharing	12	39	14	53
PAKISTAN (Take-Home)					
Range	2.3-3.6	5-36	0-71	61-100	----
National	2.8	18	47	82	0

*Comparison of home diet without the ration to FAO requirement of 1360 calories for 12-47 month old children.

**Percent of recent enrollees in program for less than or equal to 9 months with weights less than 90% of IAS reference weight for height.

***Based on number of mothers who mentioned feeding CARE foods to their child on the day prior to the 24 hour recall survey. On-site feeding programs precluded sharing of foods.

Factors Associated With Nutritional Impact

The main objective of the present study was to identify factors associated with high nutrition impact in preschool feeding programs for use by CARE as program design and implementation guidelines. Some of these factors have just been elucidated in the discussion of cost effectiveness, and will be re-emphasized here. All factors that were found in the present study to be associated with greater nutritional impact in supplementary feeding will be discussed: 1) as they distinguish and explain the variance in levels of nutritional impact between the five countries, and 2) as they predict which sites will have the highest impact within a country.

Countries with higher impact had the following characteristics:

1. Higher malnutrition rates among newcomers to the program (Latin America). In the two positive impact programs--Costa Rica and the Dominican Republic--only 36% and 30% of the sites respectively had a newcomer group with less than 15% malnutrition whereas in Colombia where impact was neutral 60% of the sites had a newcomer group with less than 15% malnutrition. Although malnutrition rates of program participants in Tamil Nadu, India were up to five times higher than those found in Latin America, this did not result in high impact in India because the program resources and size of the ration were not increased to deal with the magnitude of the problem. Program beneficiaries in Tamil Nadu receive a ration of the same quantity as delivered in Colombia, and the Dominican Republic.
2. Higher percent of centers enrolling children with as much or more malnutrition than the comparison group.
3. Higher family income and literacy rates among mothers.
4. Fewer working mothers.
5. Higher access to protected water and latrines.
6. Higher percent of mothers introducing solid foods to their children by six months of age.

Within countries the following factors were associated with higher impact at various sites or with lower rates of malnutrition. (Factors listed were dominant in at least two of the five countries surveyed).

1. More malnourished newcomers in the program from poorer families with less educated fathers.
2. Smaller families with fewer people sharing the ration (take home feeding).
3. Ration consumed more frequently.
4. More nutritionally adequate diets.
5. Higher nutrition knowledge among mothers of the cause and treatment of malnutrition.
6. More mothers who introduced solid foods to their children by six months of age.
7. Less serious illness in the past year.
8. Fewer working mothers (Colombia, Costa Rica, and India).
More working mothers (Dominican Republic and Pakistan).

IV. PROGRAM DESIGN HYPOTHESES

From the data and evidence gathered in the study a number of hypotheses have been formulated concerning factors which appear to be associated with nutritional impact in preschool feeding. Some of these hypotheses will be tested in Phase III of this project.

It is hypothesized for testing in Phase III pilot projects that if the following components are included in the program then nutritional status of the participants will improve more than it will in the absence of these activities. The proposed hypotheses for testing are as follows:

HYPOTHESIS 1 Nutritional impact of feeding programs on preschool children will be increased by higher total daily caloric intake in the diets of preschool children and mothers. Two possible methods for increased caloric intake are:

- A. Continuing to give the present ration but blending into it ingredients that will increase its caloric content, e.g. sugar or oil. The caloric content of the ration should be high enough to ultimately close the average child's caloric gap.
- B. Increasing the quantity of the ration to a level adequate to ultimately close the average child's caloric gap.

As part of both of the above methods of increasing caloric intake, instructions would be provided to mothers and fathers about the importance of: 1) feeding the ration to the intended child only in the intended amount and the harm caused by substitution, 2) the importance of feeding the ration to the child daily, 3) the importance of an adequate home diet in addition to the ration, particularly with increased consumption of fruits and vegetables, and 4) sanitary preparation of the ration.

HYPOTHESIS 2 Nutritional impact of feeding programs on preschool children will be increased by provision of basic health services to beneficiaries including: immunizations, deworming, malaria prevention, treatment for skin infections, vitamins and minerals which are deficient in the local diet, and rehydration for diarrhea. Special health workers will need to be trained to carry out these services.

HYPOTHESIS 3 Nutritional impact of feeding programs on preschool children will be increased by access to protected water and instruction in its proper use.

HYPOTHESIS 4 Nutritional impact of feeding programs on preschool children will be increased by provision of nutrition and health education to improve mother's knowledge, attitudes, and practices. Some messages to be stressed are:

- A. The importance of introducing solid foods in adequate quality and quantity by the sixth month of age and of feeding the ration from this age onwards.
- B. The prevention of diarrhea and disease through washing hands, covering food, boiling water, etc. and how to treat diarrhea through oral rehydration with a water, salt and sugar solution.
- C. The importance of increased caloric intake during pregnancy and consumption of the CARE ration as a means of doing this.
- D. The use of local foods for providing an adequate diet to preschool children.

Consideration would be given to nutrition education for those in charge of childcare in place of mothers who are working outside the home.

All these messages would be part of one course before which mothers knowledge, attitudes, and practices would be measured. A special health worker would be trained in these messages and given assistance and materials as necessary for teaching mothers.

A mix of these hypotheses could be applied to existing or new programs chosen for inclusion in Phase III of this grant. This will allow for comparison of the nutritional impact of feeding programs with and without these added inputs. In many cases new special workers would have to be hired and trained to carry out these additional program activities as present staff are already carrying a full work load. CARE's feeding programs have a three faceted goal of: 1) improving nutritional status of the malnourished, 2) maintaining good nutrition status among children who have been recuperated through participation in the feeding program and preventing malnutrition among "at risk" children who are on the borderline of malnutrition, and 3) providing food to needy children.

However the purpose of this project is to enhance CARE's ability to improve nutritional status. Therefore Phase III pilot projects will be deliberately located in communities where an adequate number of malnourished children can be found for enrollment in the CARE feeding program.

In all pilot projects special attention would be given to greater recruitment and emphasis on 0-3 year old children, malnourished preschoolers from 0-6 years old, and mothers. Children from 3-6 years old and non-malnourished children would not be excluded from the program. Campaigns (possibly house to house screening) would be conducted to enroll more children under three years old, more malnourished preschoolers, and more mothers. This might increase nutritional impact through preventing malnutrition in later years by treating the "at risk" 0-3 year old, and by increasing birth weights and the ability of mothers to provide breastmilk of an adequate quality and quantity. Irreversible stunting might also be prevented. Measurable nutritional impact could also be enhanced by enrolling more children in the program with physical signs of malnutrition.

The nutritional status of preschool participants in all pilot projects will be carefully monitored through regularly scheduled measurement of weight and height at each feeding center. Measurements would be plotted on growth charts which would be given to mother's with an explanation of their child's growth progress. Growth charts to be used i.e. weight for age versus weight for height would be those most readily available in the particular country. Monitoring would also be used to show the center staff what impact the feeding program was having and provide them information needed for improving the program. At the national level nutritional status data provided by monitoring could be used by CARE and its counterparts as a basis for program implementation decisions.

Training will be provided through the pilot projects to the administrative staff at the feeding centers so that they understand the purpose of the program and the way their activities can contribute to accomplishing this purpose. Particular stress would be placed on the importance of keeping accurate records for monitoring and evaluating the program.

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CARE

PRE - SCHOOL NUTRITION PROJECT

RANDOM SAMPLE SURVEY FOR MOTHERS

PRE - SCHOOL CENTRE NAME: _____

SITE NAME _____

Note: *For Program Mothers:* Determine which child or children are currently enrolled in the pre - school feeding program. If this mother has more than one child currently enrolled, choose only the oldest enrolled child between the age of 1 and 5 years inclusive. This will be the 'sampled child'; questions and measurements should concern only this child.

For Control Mothers: Select a mother as control only if she has a child between the age of 1 and 5 years inclusive. The oldest child within this range, who has never been in any feeding programs, will be the 'sampled child.' Make sure this child is at home.

Mother's Name _____

Sampled Child's Name _____

Belongs to 1. _____ Feeding Program

2. _____ Control

Date of Interview _____
Day Month Year

Name of Interviewer _____

Checked by _____

Country Code

4

2

Site Code

--	--

3

4

Institution Code

--

5

Sponsor Code

--

6

Group Code

--

7

Family Code

--	--

8

9

105

Section 1: Questions for all mothers in the Random Sample Survey

1. Record child's sex: 1. _____ Male

குழந்தை ஆண் பெண்ணா

ஆண்

2. _____ Female

பெண்

Sex	
10	

2. What is the child's date of birth :

குழந்தை பிறந்த தேதி

Day	Month	Year
நாள்	மாதம்	வருடம்

Age Months			
11		12	

DERIVE LATER Age of child (in months) _____

பின்னர் கணக்கிட்டு எழுதவும் குழந்தையின் வயது (மாதங்களில்)

3.a) How many children have you given birth to so far?

உங்களுக்கு எத்தனை குழந்தைகள் பிறந்துள்ளன?

_____ children (Count only those born alive)

(குழந்தைகள் (உயிருடன் பிறந்த குழந்தைகளை மட்டும் கணக்கில் எடுத்துக்கொள்ளவும்))

Birth Order	
13 14	

b) What is the order of birth of this sampled child?

இதற்கெடுக்கப்பட்ட குழந்தை எத்தனையாவது?

4. Has this child been ill continuously for two weeks or more during the past year?

இந்த குழந்தைக்குப் போன வருடத்தில் பதின்ந்து நாள் அல்லது அதற்கும் மேலாக தொடர்ந்தாற்போல் உடல் சுகமில்லாமல் இருந்ததா?

1. _____ No.

இல்லை

2. _____ Yes ; how long ago? _____

ஆம் என்பவளவு நாட்களுக்கு முன்

Illness	
15	

We would like to obtain a few personal details about you and your family :

உங்களைப்பற்றியும், உங்கள் குடும்பத்தைப்பற்றியும் சில விவரங்களைத் தெரிந்துக்கொள்ள விரும்புகிறோம்.

5. What is your Religion?

- 1 Hindu — Forward
2. Hindu - Backward
- 3 Hindu — Schedule caste/Scheduled tribe
4. Christian — Forward
5. Christian — Backward
6. Christian — Scheduled caste Scheduled tribe
7. Muslim
8. Others

Religion	
16	

6. Can you list the members of your family who are normally living with you :

உங்கள் வீட்டில் உங்களுடன் வழக்கமாக வசிக்கும் நபர்கள் யாவர்?

Adults

பெரியவர்கள்

Children
(12 years or under)

12 வயதிற்குட்பட்ட குழந்தைகள்

17	18

Adults

19	20

Children

DERIVE LATER : No. adults _____

பெரியவர்களின்

பின்னர் எழுதவும் : எண்ணிக்கை

No. children _____

குழந்தைகளின்

எண்ணிக்கை

Total _____

மொத்தம்

21	22

Total

7a) How old are you? _____ years

உங்கள் வயது என்ன?

வருடங்கள்

23	24

Mother's Age

b) Can you read this? (show sample of local writing)

உங்களால் இதைப் படிக்க முடிகிறதா? (உள்ளூர் மொழியில் உள்ள வாசகத்தைக் காண்பிக்கவும்)

1. _____ No

இல்லை

2. _____ Yes

ஆம்

--

Literacy

25

c) What is your occupation (s) :

உங்களது தொழில்(கள்) என்ன?

26	27

Mother's Occupation

CODE LATER (see instructions)

அறிவுரையைப் பார்த்து குறி எண்ணைப் பின்னர் எழுதவும்.

8a) How many years of formal schooling has your husband had?

உங்களது கணவர் எதுவரை படித்திருக்கிறார்?

None _____

படிக்கவில்லை

Class _____

படிவம்

28	29

Husband's Schooling

b) What is your husband's occupation?

உங்கள் கணவரது தொழில் என்ன?

30	31

Occupation

CODE LATER (see instructions)

அறிவுரையைப் பார்த்து குறி எண்ணைப் பின்னர் எழுதவும்

9. Do you possess any of these things in your house now? (Circle as many as are applicable)

இந்தப் பொருட்கள் உங்கள் வீட்டில் இப்போது உங்களுக்குச் சொந்தமாக உள்ளனவா? (உரிய பொருட்களை வட்டமிடவும்.)

Bicycle

சைக்கிள்

Wristwatch

கைகடியாரம்

Radio

ரேடியோ

Chair

நாற்காலி

Stove

ஸ்டவ்

Sewing machine

சையல் மெஷின்

Brass/Steel vessels

பித்தளை/எவர்சில்வர் பாத்திரங்கள்

(Jewellery (Gold/Silver)

தங்கள்/வெள்ளி கணக்கள்

Give one point for each possessed, and derive total score :

ஒவ்வொரு உரிமைப் பொருட்களுக்கும் ஒரு மதிப்பெண் தந்து மொத்தத்ததைக் கணக்கிடவும்.

(0-8)

Possession Score

32

10. What would be the average income for your family per month?

உங்கள் குடும்பத்தின் சராசரி மாத வருமானம் என்ன?

Local currency : _____

உள்ளூர் நாணயம்

US\$ Equivalent : _____

அமெரிக்க டாலர்

Family

Income

per

month

33

34

35

ASK TO SEE SAMPLED CHILD SO THAT MEASUREMENTS CAN BE TAKEN.

தேர்ந்தெடுத்த குழந்தையைப் பார்த்து, கீழ்க்கண்ட அளவுகளை எடுத்து எழுதவும்.

11. Measure and record child's arm circumference to the nearest 1/10 centimeter.

CODE WITH 1 DECIMAL

Arm
Circum.

36

37

38

_____ cm.

12. Measure and record child's height to nearest 1/10 centimeter.

CODE WITH 1 DECIMAL

Trial No. 1 : _____ cm.

Trial No. 2 : _____ cm.

Trial No. 3 : _____ cm.

Ht.

39

40

41

42

13. Measure and record child's weight to nearest 1/10 Kilogram

CODE WITH 1 DECIMAL

Trial No. 1 : _____ kg.

Trial No. 2 : _____ kg.

Trial No. 3 : _____ kg.

Wt.

43

44

45

14. When did this child first attend the feeding program?

இந்தக்குழந்தை சத்துணவுத் திட்டத்தில் முதல் முறையாக எப்போது சேர்ந்தது?

_____ Derive months of participation of the child

எத்தனை மாதங்கள் குழந்தை பங்குபெற்றது என்பதை கணக்கிட்டு எழுதவும்.

Participation
Months

46

47

15. Has this child participated in any other feeding program?

இந்தக்குழந்தை வேறு ஏதாவது சத்துணவுத் திட்டத்தில் சேர்ந்திருந்தது உண்டா?

1. _____ No 2. _____ Yes. If Yes, for how many months? _____

இல்லை

ஆம்

ஆம், என்றால் எத்தனை மாதங்கள்?

Other Feeding Program

48

How old was he then? _____

அப்போது குழந்தையின் வயது என்ன?

16. Do you have piped water in your house?

உங்கள் வீட்டில் குழாய்த் தண்ணீர் இருக்கிறதா?

1. _____ No 2. _____ Yes

இல்லை

ஆம்

Water

49

17. Do you have a latrine in your house?

உங்கள் வீட்டில் சுக்கூள் இருக்கிறதா?

1. _____ No 2. _____ Yes

இல்லை

ஆம்

Latrine

50

Stop here. Thank Mother for help.

*** LATER FROM CENTRE RECORDS, IF ANY, OBTAIN AND RECORD THE FOLLOWING :

18.a) During the past year, how many times could the child/mother (or substitute) have attended? _____

b) How many times actually attended : _____

Derive Percent Attendance : _____ %

			Attendance
51	52	53	

19. Date of birth from records : _____

Verify with Question 2

1. _____ Does not agree 2. _____ Agrees fairly

	Agreement of age
54	

20. Weight of sampled child at the time of first visit to the Pre-school centre or other prior weighing (to nearest $\frac{1}{2}$ Kilogram):

_____ Kg.

			Weight
55	56	57	

Age of child at time of 1st weighing : _____ months

		Age
58	59	

STOP HERE FOR RANDOM SAMPLE SURVEY

C A R E - COLOMBIA
PROGRAMA DE NUTRICION PRE-ESCOLAR

ENCUESTA DE MADRES

NOMBRE DEL CENTRO _____

LOCALIDAD _____

NOTA: Para las madres inscritas en el Programa:

Determiné cuál niño o cuales niños están inscritas en el Programa de Nutrición Pre-Escolar. Si esta madre tiene más de un hijo incluido, escoja al niño mayor que tiene una edad entre 1 y 5 años, inclusive. Este va a ser el "niño modelo" y las preguntas y medidas deberán relacionarse sólo con este niño.

Para las madres en el control:

Seleccione una madre en control sólo si tiene un hijo cuya edad este entre 1 y 5 años, inclusive. Este niño con la edad más cerca a los 60 meses será el niño modelo para el control si no ha participado en un programa de alimentación suplementario durante el año pasado. Esté seguro que el niño esta en casa.

Código del país

Código del lugar

Código de la institución

Código del patrono

Código del grupo

Código de la familia

Nombre de la madre _____

Nombre del niño escogido _____

Pertenece a: 1. _____ Programa alimenticio

2. _____ Control

5
2
3 4
5
6
7
8 9

8. a) ¿Cuántos años de educación escolar ha tenido su esposo? _____ Ninguno _____ Grado

28 29

b) ¿Cuál es la ocupación de su esposo?

ocupación (espos

30 31

(CODIFIQUE DESPUES SEGUN INSTRUCCIONES)

9. ¿Posee usted alguna de estas cosas en su casa en este momento? (Ponga un círculo alrededor de las palabras que se apliquen.)

posesiones

Bicicleta Reloj de pulsera Radio Silla
Más de una cama Máquina de coser Estufa (cocina) Televisor

32

(DE UN PUNTO POR CADA COSA POSEIDA Y DEDUZCA EL RESULTADO 0 - 8.) TOTAL: _____

ingreso mensual

10. ¿Cuál es el promedio de entradas para su familia durante el mes? _____ Moneda Nacional _____ Dólares

33 34 35

11. Mida e indique la circunferencia del brazo del niño hasta el último milímetro: _____ cm.

circ. del brazo

(CODIFIQUE CON UN DECIMAL)

36 37 38

talla

12. Mida e indique la talla del niño hasta el último medio centímetro:

Prueba #1: _____ cm.)
Prueba #2: _____ cm.) CODIFIQUE CON DECIMAL:
Prueba #3: _____ Cm.) (Promedio de las 3)

39 40 41 42

13. Mida e indique el peso del niño hasta el último medio kilogramo. (Anote el promedio de las tres pruebas.)

peso

Prueba #1: _____ kg.
Prueba #2: _____ kg. (CODIFIQUE CON DECIMAL)
Prueba #3: _____ kg.

43 44 45

PARE AQUI CON LAS MADRES DEL GRUPO CONTROL

SECCION II: Preguntas para las madres en el Programa de Nutrición en la Encuesta de Muestras al Azar

14. ¿Cuándo vino este niño por primera vez al Programa de Nutrición? _____

participación

(DEDUZCA LOS MESES DE PARTICIPACION DEL NIÑO: _____)

46 47

otro programa

15. ¿Ha participado este niño en algún otro programa de nutrición suplementario?

1. _____ No 2. _____ Sí ¿Cuál? _____

48

agua potable

16. ¿Tiene agua potable en casa? 1. _____ No 2. _____ Sí

49

servicio sanit.

17. ¿Tiene servicio sanitario en casa o en su propiedad?

1. _____ No 2. _____ Sí

50

..... DELE LAS GRACIAS A LA MADRE POR SU AYUDA

DESPUES, DE LOS REGISTROS O TARJETAS (SI LOS HAY),
COMPLETE LAS SIGUIENTES PREGUNTAS:

asistencia

18. a) Durante el año pasado, cuántas veces pudo haber
venido la madre (o sustituto)? _____ veces

b) ¿Cuántas veces vino en realidad? _____ veces
(DEDUZCA EL PORCENTAJE DE ASISTENCIA: _____%)

_____/_____/_____
51 52 53

19. Fecha de nacimiento según registro: _____
Verifique con la pregunta #2. día mes año

concordancia de
edad

1. _____ No concuerda 2. _____ Sí concuerda

54

20. Peso del "niño modelo" cuando hizo su primera visita
al Centro u otra medida de peso hecha con anterioridad
(Hasta el último medio kilogramo) _____ kg.

peso anterior

_____/_____/_____
55 56 57

Edad del niño cuando lo pesaron la primera vez:
_____ meses

edad al pesarse

_____/_____
58 59

PARE AQUI CON LA ENCUESTA DE LA MUESTRA AL AZAR. LAS
PREGUNTAS QUE QUEDAN ESTAN DIRIGIDAS HACIA AQUELLAS
MADRES INCLUIDAS EN LA ENCUESTA A FONDO.

IN DEPTH SURVEY OF MOTHERS

ON SITE FEEDING

PRESCHOOL CENTRE NAME: _____

SITE NAME: _____

Repeat identification code numbers for this mother as found on the first page of the questionnaire filled out for her during the Random Sample Survey.

Country Code

4

2

Site Code

--	--

3

4

Institution Code

--

5

Sponsor Code

--

6

Group Code

--

7

Family Code

--	--

8

9

Mother's Name _____

Sampled Child's Name _____

Date of Interview _____
Day Month Year

Name of Interviewer _____

Checked by _____

SECTION III: IN DEPTH SURVEY OF MOTHERS

We are interested in having your responses to certain aspects of child nutrition, and some more details concerning your child's nutritional and health status.

உங்கள் குழந்தையைப்பற்றி, குழந்தையின் ஆரோக்கியம். உடல் வளர்ச்சி, சத்துணவு இவைகளைப்பற்றி சில தகவல்களை அறிந்துகொள்ள விரும்புகின்றோம்.

21. What is the cause of malnutrition? (Show photo of child with malnutrition)

ஊட்டக்குறைவு நோயின் காரணம் என்ன? (ஊட்டம் குறைந்த குழந்தையின் படத்தைக் காண்பிக்கவும்)

DERIVE LATER: 1.-----Valid 2.-----Invalid
பின்னர் எழுதவும் சரி தவறு

22. What should be done if the child has malnutrition?

குழந்தைக்கு ஊட்டக்குறைவு நோயாக இருந்தால் என்ன செய்யவேண்டும்?

DERIVE LATER: 1.-----Valid 2.-----Invalid
பின்னர் எழுதவும் சரி தவறு

23. Is the child breastfed? 1.-----No. 1.-----Yes

குழந்தைக்குத் தாய்ப்பாலை
கொடுக்கிறீர்களா?

இல்லை ஆம்

If No, at what age was breastfeeding stopped?

இல்லையென்றால்,

தாய்ப்பாலை நிறுத்தியபோது உங்கள் குழந்தைக்கு வயதென்ன?

-----age in months
வயது - மாதங்களில்

DERIVE LATER: 1.-----Valid 2.-----Invalid
பின்னர் எழுதவும் சரி தவறு

4 Q. 21
10

Q. 22
11

12

breastfeeding
12

24. Does child receive solid food? 1. ---No. 2. --- Yes

குழந்தைக்கு சாதம்போன்ற திட
உணவுகளைக் கொடுக்கிறீர்களா? இல்லை ஆம்

solid feeds
14

If YES, at what age was it started? --- age in months

ஆம் என்றால், எந்த வயதில் திட
உணவுக் கொடுக்கத் துவங்கினீர்கள்? வயது மாதங்களில்

DERIVE LATER: 1. ---Valid 2. ---Invalid

பின்னர் எழுதவும் சரி தவறு

Derive later nutrition knowledge score by totalling how many of the
questions 21-24 have valid responses.

total score
15

21-ம் கேள்வியிலிருந்து 24-ம் கேள்விவரையில் உள்ள சரியான பதில்களுக்கான
மதிப்பெண்களைக் கூட்டி, சத்துணவு கல்விதரத்திற்கான மொத்த மார்க்கை
பின்னர் கணக்கிட்டு எழுதவும்.

25. Dietary recall for 'Sampled Child' Yesterday

I would like you to tell me about everything your child eat and drank from
the time he got up in the morning until the time he went to bed at night.
Be sure to mention everything he eat or drank at home, at school, and away
from home. Include snacks and drinks of all kinds and everything else he
put in his mouth and swallowed. I also need to know where he eat the
food, but now let us begin.

உங்கள் குழந்தை நேற்று காலை யில் தூங்கி எழுந்ததிலிருந்து, இராத்திரி தூங்கும்
வரையில் என்னென்ன சாப்பிட்டது என்பதை எங்களுக்குச் சொல்லுங்கள்.
வீட்டில் சாப்பிட்டது, வெளியில் சாப்பிட்டது, பள்ளிக்கூடத்தில் சாப்பிட்டது
எல்லாவற்றையும் சொல்லுங்கள் குழந்தை சாப்பிட்டது, குடித்தது, பலகாரம்,
தீன்பண்டம் எல்லாவற்றையும், எங்கெங்கே சாப்பிட்டது என்றும் தயவு
செய்து சொல்லுங்கள்.

What time did he get up yesterday?

நேற்று காலை யில் குழந்தை தூங்கி எழுந்தபோது மணி என்ன?

Was it the usual time ?

வழக்கமாக குழந்தை அந்த நேரத்தில்தான் எழுந்திருக்கிறதா?

What was the first time he eat or had anything to drink yesterday morning?

நேற்று காலையில் முதல் முதலாக உணவோ அல்லது பானமோ சாப்பிடும் போது நேரம் என்ன?

Where did he eat?

குழந்தை இதை எங்கே சாப்பிட்டது?

Now tell me what he had to eat, and how much?

இப்பொழுது எனக்கு இந்த குழந்தை என்ன உணவுகளை எவ்வளவு சாப்பிட்டது என்று சொல்லுங்கள்,

(Occasionally the interviewer will need to ask)

எப்போதாகிலும் கேள்வியாளர் கீழ்க்கண்டவாறு கேட்கவேண்டும்)

When did he eat again? or, Is there anything else?

மறுமுறை எப்பொழுது சாப்பிட்டது? (அல்லது) வேறு ஏதாவது சாப்பிட்டது உண்டா?

25. Dietary Recall (continued)

a) First, what did the sampled child eat for breakfast or other morning meal?

முதலாவதாக குழந்தை காலை யில் என்ன சாப்பிட்டது?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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b) What did the child eat for lunch or other mid-day meal?

மதிய உணவிற்கு என்ன சாப்பிட்டது?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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c) What did the child eat for dinner or other evening meal?

குழந்தை இரவில் என்ன சாப்பிட்டது?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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d) Are there any other foods or drinks that you gave to the child yesterday?

இவைகளைத் தவிர வேறு ஏதாவது உணவோ, பானமோ இக்குழந்தை சாப்பிட்டதா?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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TOTAL :

மொத்தம்

16	17	18	19
20	21	22	

Calories

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Protein

119

Does Diet Contain Adequate Quantities of These Foods?

குழந்தையின் சாப்பாட்டில் கீழ்க்கண்ட உணவுவகைகள் தேவையான அளவு இருக்கின்றதா?

Category 1.

பிரிவு 1.

Milk or milk substitutes

பால் அல்லது பாலுக்கு ஈடானது

1. --- No 2. --- Yes
இல்லை ஆம்

Category 2.

பிரிவு 2.

Meat or meat substitutes-beans, eggs, fish, etc.

இறைச்சி அல்லது இறைச்சிக்கு ஈடானது-பீன்ஸ், முட்டை, மீன் போன்றன.

1. No 2. Yes
இல்லை ஆம்

Category 3.

பிரிவு 3.

Fruit

பழம்

1. No 2. Yes
இல்லை ஆம்

Category 4.

பிரிவு 4.

One green, one yellow, vegetable

ஒரு பச்சை, ஒரு மஞ்சள் காய்கறி

1. No 2. Yes
இல்லை ஆம்

Category 5.

பிரிவு 5.

Caloric Value Adequate

கலோரி அளவு போதுமானதா?

1. No 2. Yes
இல்லை ஆம்

Category 6

பிரிவு 6

Protein Value Adequate

புரத அளவு போதுமானதா?

1. No 2. Yes
இல்லை ஆம்

Category 1-7

பிரிவுகள் 1-7 இந்து 7 வரை

Food practices scale (score 0-7, add yes scores for categories 1-6 giving one point for each yes)

1. No 2. Yes
இல்லை ஆம்

23 milk

24 meat

25 fruit

26 vegetable

27 calories

28 protein

total score
29

Category 7.

பிரிவு 7

Feeding Program commodities served in correct quantity

சத்துணவு பொருள் சரியான அளவில் சேர்க்கப்பட்டுள்ளதா?

1. No- இல்லை 2. Yes ஆம்

ration
30

26. Was food given in the past 24 hours usual for the child?

நேற்றைக்கு குழந்தை சாப்பிட்டது, சாதாரணமாக பழக்கமாக சாப்பிடுவது தூரா?

1. No. இல்லை 2. Yes ஆம்

Q. 25
31

If No, explain :

இல்லை என்றால், விளக்கவும்.

Go back to Q. 25 and circle unusual foods, add foods usually given.

25-ம் கேள்விக்கு மறுமுறை சென்று, வழக்கமான உணவுகளைச் சுற்றி வட்டமிடவும், வழக்கமாகக் கொடுக்கும் உணவுகளைச் சேர்க்கவும்.

27. Does the child consume any vitamin pills?

இந்தக் குழந்தை வைட்டமின் மாத்திரைகள் அல்லது டானிக் ஏதாவது சாப்பிடுகிறதா?

1. No. இல்லை
2. Yes ஆம்

vitamins
32

28. Has the child had any of the following diseases?

இந்த குழந்தைக்கு கீழ்க்கண்ட நோய்களில் ஏதாவது வந்திருக்கிறதா?

Chickenpox 1 No 2. Yes
விளையாட்டம்மை இல்லை ஆம்

chickenpox
33

Measles 1. No. 2. Yes
தட்டம்மை இல்லை ஆம்

measles
34

Severe diarrhoea (dysentery or stools with blood/mucus)

1. No. 2. Yes
சீதபேதி இல்லை ஆம்

diarrhoea
35

Pneumonia 1. No 2. Yes
கபசரம் இல்லை ஆம்

pneumonia
36

29. Does the child have diarrhoea now?

இப்போது இந்த குழந்தைக்கு வயிற்றுப்போக்கு இருக்கிறதா?

1. No. இல்லை 2. Yes ஆம்

current
diarrhoea
37

30. On how many days during the past 7 days has the child had diarrhoea?

போன வாரத்தில், இந்த குழந்தைக்கு எத்தனை நாட்கள் வயிற்றுப்போக்கு இருந்தது.

days. நாட்கள்.

duration of
diarrhoea
38

31. How often has the child had diarrhoea during its life?

இந்த குழந்தைக்கு இதுவரை எத்தனை தடவை வயிற்றுப்போக்கு ஏற்பட்டிருக்கிறது?

1. Rarely or never
எப்போதாக்கிலும்
2. Occasionally (3-4 times a year)
சில சமயங்களில் (வருடத்திற்கு 3, 4 தடவைகள்)
3. Frequently (about once a month)
அடிக்கடி (மாதம் ஒருமுறை)
4. Very frequently (more than once a month)
அடுத்தடுத்து (மாதத்தில் ஒரு முறைக்கும் மேல்)

Total period of diarrhoeas
39

32. How long does it take for you, usually, to travel from your home to the preschool centre? (One way trip)

உங்கள் வீட்டிலிருந்து உணவு வழங்கும் இடத்திற்குச் செல்ல எவ்வளவு நிமிடங்கள் ஆகிறது?

minutes நிமிடங்கள்

Travel time
40 41 42

33. When you are not at home who usually watches the child?

நீங்கள் வீட்டில் இல்லாதபோது உங்கள் குழந்தையை யார் கவனித்துக் கொள்வார்கள்?

1. No one; யாருமில்லை
2. Father; தந்தை
3. Siblings; சகோதர சகோதரியர்
4. Grandfather/Grandmother தாத்தா/பாட்டி
5. Other (Who) மற்றவர் (யார்)

Mother substitute
43

34. How often do you listen to the radio?

நீங்கள் எத்தனை தடவை ரேடியோ கேட்கிறீர்கள்?

1. Daily தினமும்
2. Two or Three times/week வாரத்தில் 2, 3 தடவைகள்
3. Once/week வாரமொன்றுமுறை
4. Once/month மாதமொன்றுமுறை
5. Never எப்போதுமில்லை.

Radio
44

35. Do you pay anything to the Feeding Program?

சத்துணவு திட்டத்திற்காக நீங்கள் ஏதாவது பணம் தருகிறீர்களா?

1. No இல்லை
2. Yes ஆம்

If Yes, how much do you pay each month per child?

ஆம் என்றால், மாதம் எவ்வளவு பணம் தருகிறீர்கள்?

Local currency :

US \$

உள்ளூர் நாணயம்

அமெரிக்க டாலர்

Fee
45

Amt US\$
46 47 48

36. Since your child has been enrolled in the Feeding Program, do you spend less for your family's food?

உங்கள் குழந்தை, சத்துணவுத்திட்டத்தில் சேர்ந்ததிலிருந்து, உங்கள் குடும்பத்தில் உணவிற்கான செலவு குறைந்திருக்கிறதா?

1. No இல்லை
2. Yes ஆம்

If Yes, about how much less do you spend on food each month?

ஆம் என்றால் ஒரு மாதத்திற்கு எவ்வளவு செலவு குறைந்திருக்கிறது?

Local currency :

US \$

உள்ளூர் நாணயம்

அமெரிக்க டாலர்

Spends less
49

US\$ saving
50 51 52

37. Do you have suggestions for ways in which the program could be improved?

இத்திட்டம் இன்னும் மேலும் நன்றாக நடைபெற உங்கள் ஆலோசனைகள் என்ன?

C 53-61 Punch zero

Calories from CARE ration.

Protein from CARE ration.

IN DEPTH SURVEY OF MOTHERS

PRESCHOOL CENTRE NAME: _____

SITE NAME: _____

Repeat identification code numbers for this mother as found on the first page of the questionnaire filled out for her during the Random Sample Survey.

Country Code

4

2

Site Code

--	--

3

4

Institution Code

--

5

Sponsor Code

--

6

Group Code

--

7

Family Code

--	--

8

9

Mother's Name _____

Sampled Child's Name _____

Date of Interview _____
Day Month Year

Name of Interviewer _____

Checked by _____

SECTION III: IN DEPTH SURVEY OF MOTHERS

We are interested in having your responses to certain aspects of child nutrition, and some more details concerning your child's nutritional and health status.

உங்கள் குழந்தையைப்பற்றி, குழந்தையின் ஆரோக்கியம், உடல் வளர்ச்சி, சத்துணவு இவைகளைப்பற்றி சில தகவல்களை அறிந்துகொள்ள விரும்புகின்றோம்.

21. What is the cause of malnutrition? (Show photo of child with malnutrition)

4 Q. 21
10

ஊட்டக்குறைவு நோயின் காரணம் என்ன? (ஊட்டம் குறைந்த குழந்தையின் படத்தைக் காண்பிக்கவும்)

DERIVE LATER: 1.-----Valid 2.-----Invalid
பின்னர் எழுதவும் சரி தவறு

22. What should be done if the child has malnutrition ?

குழந்தைக்கு ஊட்டக்குறைவு நோயாக இருந்தால் என்ன செய்யவேண்டும்?

11 Q. 22

DERIVE LATER: 1.-----Valid 2.-----Invalid
பின்னர் எழுதவும் சரி தவறு

12

23. Is the child breastfed? 1.-----No. 1.-----Yes

குழந்தைக்குத் தாய்ப்பாலை
கொடுக்கிறீர்களா?

இல்லை ஆம்

If No, at what age was breastfeeding stopped ?

இல்லையென்றால்,
தாய்ப்பாலை நிறுத்தியபோது உங்கள் குழந்தைக்கு வயதென்ன?

-----age in months
வயது - மாதங்களில்

breastfeeding
12

DERIVE LATER: 1.-----Valid 2.-----Invalid
பின்னர் எழுதவும் சரி தவறு

24. Does child receive solid food? 1.---No. 2.---Yes

குழந்தைக்கு சாதம்போன்ற திட

உணவுகளைக் கொடுக்கிறீர்களா?

இல்லை

ஆம்

solid feeds

14

If YES, at what age was it started?--- age in months

ஆம் என்றால், எந்த வயதில் திட

உணவுக் கொடுக்கத் துவங்கினீர்கள்?

வயது மாதங்களில்

DERIVE LATER: 1.---Valid 2.---Invalid

பின்னர் எழுதவும்

சரி

தவறு

Derive later nutrition knowledge score by totalling how many of the questions 21-24 have valid responses.

total score

15

21-ம் கேள்வியிலிருந்து 24-ம் கேள்விவரையில் உள்ள சரியான பதில்களுக்கான மதிப்பெண்களைக் கூட்டி, சத்துணவு கல்விதரத்திற்கான மொத்த மார்க்கை பின்னர் கணக்கிட்டு எழுதவும்.

25. Dietary recall for 'Sampled Child' Yesterday

I would like you to tell me about everything your child eat and drank from the time he got up in the morning until the time he went to bed at night. Be sure to mention everything he eat or drank at home, at school, and away from home. Include snacks and drinks of all kinds and everything else he put in his mouth and swallowed. I also need to know where he eat the food, but now let us begin.

உங்கள் குழந்தை நேற்று காலை யில் தூங்கி எழுந்ததிலிருந்து, இராத்திரி தூங்கும் வரையில் என்னென்ன சாப்பிட்டது என்பதை எங்களுக்குச் சொல்லுங்கள். வீட்டில் சாப்பிட்டது, வெளியில் சாப்பிட்டது, பள்ளிக்கூடத்தில் சாப்பிட்டது எல்லாவற்றையும் சொல்லுங்கள் குழந்தை சாப்பிட்டது, குடித்தது, பலகாரம், தின்பண்டம் எல்லாவற்றையும், எங்கெங்கே சாப்பிட்டது என்றும் தயவு செய்து சொல்லுங்கள்.

What time did he get up yesterday ?

நேற்று காலை யில் குழந்தை தூங்கி எழுந்தபோது மணி என்ன?

Was it the usual time ?

வழக்கமாக குழந்தை அந்த நேரத்தில்தான் எழுந்திருக்கிறதா?

What was the first time he eat or had anything to drink yesterday morning?

நேற்று காலை முதல் முதலாக உணவோ அல்லது பானமோ சாப்பிடும் போது நேரம் என்ன?

Where did he eat?

குழந்தை இதை எங்கே சாப்பிட்டது?

Now tell me what he had to eat, and how much?

இப்பொழுது எனக்கு இந்த குழந்தை என்ன உணவுகளை எவ்வளவு சாப்பிட்டது என்று சொல்லுங்கள்,

(Occasionally the interviewer will need to ask)

எப்போதாகிலும் கேள்வியாளர் கீழ்க்கண்டவாறு கேட்கவேண்டும்)

When did he eat again? or, Is there anything else?

மறுமுறை எப்பொழுது சாப்பிட்டது? (அல்லது) வேறு ஏதாவது சாப்பிட்டது உண்டா?

25. Dietary Recall (continued)

a) First, what did the sampled child eat for breakfast or other morning meal?

முதலாவதாக குழந்தை காலை யில் என்ன சாப்பிட்டது?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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b) What did the child eat for lunch or other mid-day meal?

மதிய உணவிற்கு என்ன சாப்பிட்டது?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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c) What did the child eat for dinner or other evening meal ?

குழந்தை இரவில் என்ன சாப்பிட்டது?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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d) Are there any other foods or drinks that you gave to the child yesterday?

இவைகளைத் தவிர வேறு ஏதாவது உணவோ, பானமோ இக்குழந்தை சாப்பிட்டதா?

Type of Food

Estimated Amount

Calories

Protein

உணவின் வகை

கணக்கிடப்பட்ட அளவு

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TOTAL :

மொத்தம்

--	--	--	--

16 17 18 19 Calories

20 21 22

--	--	--

Protein

Does Diet Contain Adequate Quantities of These Foods?

குழந்தையின் சாப்பாட்டில் கீழ்க்கண்ட உணவுவகைகள் தேவையான அளவு இருக்கின்றதா?

Category 1.

பிரிவு 1.

Milk or milk substitutes

பால் அல்லது பாலுக்கு ஈடானது

1. --- No 2. --- Yes
இல்லை ஆம்

Category 2.

பிரிவு 2.

Meat or meat substitutes-beans, eggs, fish, etc.

இறைச்சி அல்லது இறைச்சிக்கு ஈடானது-பீன்ஸ், முட்டை, மீன் போன்றன.

1. No 2. Yes
இல்லை ஆம்

Category 3.

பிரிவு 3.

Fruit

பழம்

1. No 2. Yes
இல்லை ஆம்

Category 4.

பிரிவு 4.

One green, one yellow, vegetable

ஒரு பச்சை, ஒரு மஞ்சள் காய்கறி

1. No 2. Yes
இல்லை ஆம்

Category 5.

பிரிவு 5.

Caloric Value Adequate

கலோரி அளவு போதுமானதா?

1. No 2. Yes
இல்லை ஆம்

Category 6

பிரிவு 6

Protein Value Adequate

புரத அளவு போதுமானதா?

1. No 2. Yes
இல்லை ஆம்

Category 1-7

பிரிவுகள் 1-லிருந்து 7 வரை

Food practices scale (score 0-7, add yes scores for categories 1-6 giving one point for each yes)

1. No 2. Yes
இல்லை ஆம்

milk
23

meat
24

fruit
25

vegetable
26

calories
27

protein
28

total score
29

Category 7.

பிரிவு 7

Feeding Program commodities served in correct quantity

சத்துணவு பொருள் சரியான அளவில் சேர்க்கப்பட்டுள்ளதா?

1. No- இல்லை 2. Yes ஆம்

ration
30

26. Was food given in the past 24 hours usual for the child?

நேற்றைக்கு குழந்தை சாப்பிட்டது, சாதாரணமாக பழக்கமாக சாப்பிடுவதுதானா?

1. No. இல்லை 2. Yes ஆம்

Q. 25
31

If No, explain :

இல்லை என்றால், விளக்கவும்.

Go back to Q. 25 and circle unusual foods, add foods usually given.

25-ம் கேள்விக்கு மறுமுறை சென்று, வழக்கமான உணவுகளைச் சூழறி வட்டமிடவும், வழக்கமாகக் கொடுக்கும் உணவுகளைச் சேர்க்கவும்.

27. Does the child consume any vitamin pills?

இந்தக் குழந்தை வைட்டமின் மாத்திரைகள் அல்லது டானிக் ஏதாவது சாப்பிடுகிறதா?

1. No. இல்லை
2. Yes ஆம்

vitamins
32

28. Has the child had any of the following diseases?

இந்த குழந்தைக்கு கீழ்க்கண்ட நோய்களில் ஏதாவது வந்திருக்கிறதா?

Chickenpox 1. No இல்லை 2. Yes ஆம்
விளையாட்டம்மை

Measles 1. No இல்லை 2. Yes ஆம்
தட்டம்மை

Severe diarrhoea (dysentery or stools with blood/mucus)

1. No இல்லை 2. Yes ஆம்
சீதபேதி

Pneumonia 1. No இல்லை 2. Yes ஆம்
கபசரம்

chickenpox
33

measles
34

diarrhoea
35

pneumonia
36

29. Does the child have diarrhoea now?

இப்போது இந்த குழந்தைக்கு வயிற்றுப்போக்கு இருக்கிறதா?

1. No இல்லை 2. Yes ஆம்

current
diarrhoea
37

30. On how many days during the past 7 days has the child had diarrhoea?

போன வாரத்தில், இந்த குழந்தைக்கு எத்தனை நாட்கள் வயிற்றுப்போக்கு இருந்தது.

days. நாட்கள்.

duration of
diarrhoea
38

31. How often has the child had diarrhoea during its life?

இந்த குழந்தைக்கு இதுவரை எத்தனை தடவை வயிற்றுப்போக்கு ஏற்பட்டிருக்கிறது?

1. Rarely or never
எப்போதானும்
2. Occasionally (3-4 times a year)
சில சமயங்களில் (வருடத்திற்கு 3, 4 தடவைகள்)
3. Frequently (about once a month)
அடிக்கடி (மாதம் ஒருமுறை)
4. Very frequently (more than once a month)
அடுத்தடுத்து (மாதத்தில் ஒரு முறைக்கும் மேல்)

Total period of diarrhoeas
39

32. How long does it take for you, usually, to travel from your home to the preschool centre? One way trip)

உங்கள் வீட்டிலிருந்து உணவு வழங்கும் இடத்திற்குச் செல்ல எவ்வளவு நிமிடங்கள் ஆகிறது?

minutes நிமிடங்கள்

Travel time
40 41 42

33. When you are not at home who usually watches the child?

நீங்கள் வீட்டில் இல்லாதபோது உங்கள் குழந்தையை யார் கவனித்துக் கொள்வார்கள்?

1. No one; யாருமில்லை
2. Father; தந்தை
3. Siblings; சகோதர சகோதரியர்
4. Grandfather/Grandmother தாத்தா/பாட்டி
5. Other (Who) மற்றவர் (யார்)

Mother substitute
43

34. How often do you listen to the radio?

நீங்கள் எத்தனை தடவை ரேடியோ கேட்கிறீர்கள்?

1. Daily தினமும்
2. Two or Three times/week வாரத்தில் 2, 3 தடவைகள்
3. Once/week வாரமொருமுறை
4. Once/month மாதமொருமுறை
5. Never எப்போதுமில்லை.

Radio
44

35. Do you pay anything to the Feeding Program?

சத்துணவு திட்டத்திற்காக நீங்கள் ஏதாவது பணம் தருகிறீர்களா?

1. No இல்லை
2. Yes ஆம்

If Yes, how much do you pay each month per child?

ஆம் என்றால், மாதம் எவ்வளவு பணம் தருகிறீர்கள்?

Local currency :

US \$

உள்ளூர் நாணயம்

அமெரிக்க டாலர்

Fee
45

Amt US\$
46 47 48

36. Since your child has been enrolled in the Feeding Program, do you spend less for your family's food?

உங்கள் குழந்தை, சத்துணவு திட்டத்தில் சேர்ந்ததிலிருந்து, உங்கள் குடும்பத்தில் உணவிற்கான செலவு குறைந்திருக்கிறதா?

- 1 No இல்லை
- 2 Yes ஆம்

If Yes, about how much less do you spend on food each month?

ஆம் என்றால் ஒரு மாதத்திற்கு எவ்வளவு செலவு குறைந்திருக்கிறது?

Local currency :

US \$

உள்ளூர் நாணயம்

அமெரிக்க டாலர்

Spends less
49

US\$ saving
50 51 52

37. Do you have suggestions for ways in which the program could be improved?

இத்திட்டம் இன்னும் மேலும் நன்றாக நடைபெற உங்கள் ஆலோசனைகள் என்ன?

C 53-61 Punch zero

Calories from CARE ration.

--	--	--	--

Protein from CARE ration.

--	--	--

IN DEPTH SURVEY OF MOTHERS

PRESCHOOL CENTER NAME _____

TAKE-HOME FEEDING

SITE NAME _____

Repeat identification code numbers for this mother as found on the first page of the questionnaire filled out for her during the Random Sample Survey.

Mother's Name _____

Sampled Child's Name _____

Country Code

Site Code

Institution Code

Sponsor Code

Group Code

Family Code

3
2
5 4
5
6
7
8 9

Date of Interview

Day Month Year

Name of Interviewer _____

Checked By _____

* Form PS-10/1

SECTION III: IN-DEPTH SURVEY OF MOTHERS

We are interested in having your responses to certain aspects of child nutrition, and some more details concerning your child's nutritional and health status.

21. What is the cause of malnutrition? (show photo of child with malnutrition) _____

Q.21
10

DERIVE LATER: 1. _____ Invalid 2. _____ Valid

22. What should be done if child has _____ malnutrition?

Q 22
11

DERIVE LATER: 1. _____ Invalid 2. _____ Valid

23. Is child breastfed? 1. _____ No 2. _____ Yes

If NO, at what age was breast-feeding stopped? _____ age in months

breastfeed.
12

DERIVE LATER: 1. _____ Invalid 2. _____ Valid

24. Does child receive solid food? 1. _____ No 2. _____ Yes

If YES, at what age was it started? _____ age in months.

solid foods
13

DERIVE LATER: 1 _____ Invalid 2 _____ Valid

Derive later nutrition knowledge score by totalling how many of the questions #21-24 have valid responses.

total score
14

25. Dietary recall for "Sampled Child": YESTERDAY

I would like you to tell me about everything your child ate and drank from the time he got up in the morning until the time he went to bed at night. Be sure to mention everything he ate or drank at home, at school, and away from home. Include snacks and drinks of all kinds and everything else he put in his mouth and swallowed. I also need to know where he ate the food, but now let us begin.

What time did he get up yesterday?

Was it the usual time?

What was the first time he ate or had anything to drink yesterday morning?

Where did he eat?

Now tell me what he had to eat and how much?

(Occasionally the interviewer will need to ask:)

When did he eat again? or, is there anything else?

25. Dietary Recall (continued)

a. First, what did the sampled child eat for breakfast or other morning meal?

<u>Type of Food</u>	<u>Estimated Amount</u>
_____	_____
_____	_____
_____	_____

b. What did the child eat for lunch or other mid-day meal?

<u>Type of Food</u>	<u>Estimated Amount</u>
_____	_____
_____	_____
_____	_____

c. What did the child eat for dinner or other evening meal?

<u>Type of Food</u>	<u>Estimated Amount</u>
_____	_____
_____	_____
_____	_____

d. Are there any other foods or drinks that you gave to the child yesterday?

<u>Type of Food</u>	<u>Estimated Amount</u>
_____	_____
_____	_____
_____	_____

TOTAL:

DIETARY INTAKE

Calories Protein

_____	_____
_____	_____
_____	_____

Calories Protein

_____	_____
_____	_____
_____	_____

Calories Protein

_____	_____
_____	_____
_____	_____

Calories Protein

_____	_____
_____	_____
_____	_____

15 16 17 18 Cal.

19 20 21 Protein

25. Diet: Recall (continued)

Does Diet Contain Adequate Quantities of These Foods?

CATEGORY 1

Milk or milk substitutes

1. _____ No 2. _____ Yes

milk
22

CATEGORY 2

Meat or Meat Substitutes--beans, eggs, fish, etc.

1. _____ No 2. _____ Yes

meat
23

CATEGORY 3

Fruit

1. _____ No 2. _____ Yes

fruit
24

CATEGORY 4

One green, one yellow, vegetable

1. _____ No 2. _____ Yes

vegetable
25

CATEGORY 5

Caloric Value Adequate

1. _____ No 2. _____ Yes

calories
26

CATEGORY 6

Protein Value Adequate

1. _____ No 2. _____ Yes

protein
27

CATEGORY 7

Feeding Program commodities served in correct quantity

1. _____ No 2. _____ Yes

ration
28

CATEGORIES 1 - 7

Food practices scale (score 0-7, add yes scores for categories 1 - 6 giving one point for each yes)

total score
29

1. ___ No
 2. ___ Yes.

If no, explain:

Go back to Q.25 and circle unusual foods, add foods usually given.

Q 25
 30

27. Does the child consume any vitamin pills ?

1. ___ No
 2. ___ Yes

Vitamins
 31

28. Has the child had any of the following diseases ?

Chickenpox 1. ___ No 2 ___ Yes

Measles 1. ___ No 2 ___ Yes

Severe diarrhea (dysentery or stools with blood/mucous)
 1. ___ No 2 ___ Yes

Pneumonia 1. ___ No 2 ___ Yes

Chickenpox
 32

Measles
 33

Diarrhea
 34

Pneumonia
 35

29. Does the child have diarrhea now ?

1. ___ No 2 ___ Yes

Current
 Diarrhea
 36

30. On how many days during the past 7 days has the child had
 diarrhea ? _____ days

Duration of
 Diarrhea
 37

31. How much diarrhea has the child had during its life ?

1. ___ Rarely or never
 2. ___ Occasionally (3-4 times a year)
 3. ___ Frequently (About once a month)
 4. ___ Very frequently (More than once a month)

Total Period
 Of Diarrhea
 38.

32. How long does it take for you, usually, to travel from your

home to the pre-school center ? (One-way trip) _____ minutes

Travel
 Time
 39 40 41

33. When you are not at home, who usually watches the child ?

1. ___ No one; 2 ___ Father; 3 ___ Siblings;
 4. ___ Grandfather/grandmother; 5 ___ Other (Who ?)

Mother
 Substitute
 42

34. How often do you listen to the radio?

1. ___ Daily 2. ___ Two or Three times/Week 3. ___ Once/week
 4. ___ Once/month 5. ___ Never

Radio
 43

35. Do you pay anything to the Feeding Program?

1. No

2. Yes

If YES, how much do you pay each month per child?

Local currency: US \$:

36. Since your child has been enrolled in the Feeding Program, do you spend less for your family's food?

1. No

2. Yes

If YES, how much less do you spend on food per month?

Local currency: US \$:

37. When you get the food from the pre-school center, how many days does the food usually last before it is all gone?

days food lasts

38. How many people usually eat the food you bring home from the center?

number of people sharing food

39. Who usually eats the food? (Do not read responses; probe for ages and circle what best applies.)

1. MCH Child

2. MCH Child plus other children

3. MCH child plus other children and/or adults

4. Only other children

5. Only adults

6. Other (specify)

40. Who (specifically) eats most of the food that you bring home from the MCH center? (check only one)

1. MCH child

2. Other child; 0-5 years old

3. Other child; 6-12 years old

4. Adult (anyone over 12 years old)

5. Other (specify)

Fee
44

Amt. US\$
45 46 47

Spends
48 Less

US\$
49 50 51 Savings

days
52 53 food lasts

of people
54 55 sharing food

Family Distr.
56

Q.40
57

41. a. Did you receive food from the MCh center on your last visit?

1. No 2. Yes

b. How many days has it been since you received this food from the MCH Center?

Days

c. Do you have any of the food left?

1. No 2. Yes

42. Do you have any suggestions for ways in which the program could be improved?

Days

<input type="text"/>	<input type="text"/>
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58 59

<input type="text"/>

Food left

60

C A R E - C O L O M B I A

PROGRAMA DE NUTRICION PRE-ESCOLAR

****ESTUDIO A FONDO****

ENCUESTA DE MADRES

NOMBRE DEL CENTRO _____

LOCALIDAD _____

Código del país

 / /
2

Código del lugar

 / / /
3 4

Código de la institución

 / /
5

Código del patrono

 / /
6

Código del grupo

 / /
7

Código de la familia

 / / / /
8 9

Nombre de la madre _____

Nombre del niño escogido _____

- Pertenece a: 1. _____ Programa alimenticia
2. _____ Control

SECCION III: ESTUDIO A FONDO

"Estamos interesados en saber sus respuestas a ciertos aspectos de la nutrición del niño, y otros detalles relativos al estado de nutrición y de salud de su hijo."

causa de la desnutrición

21. ¿Cuál es la causa de la desnutrición de este niño? (Muestre la foto del niño.) _____

10

DEDUZCA DESPUES: 1. _____ Válido 2. _____ No-válido

que hacer

22. ¿Qué debe hacerse si un niño padece de desnutrición? _____

11

DEDUZCA DESPUES: 1. _____ Válido 2. _____ No-válido

C12-0 amamantando

23. ¿Está amamantando al niño? (¿Está dándole el pecho?) 1. _____ Sí 0. _____ No

13

Si la respuesta es negativa, ¿a qué edad dejó de amamantarlo? _____ edad en meses

DEDUZCA DESPUES: 1. _____ Válido 2. _____ No-válido

alimentos sólido

24. ¿Recibe el niño alimentos sólidos? Sí ___ 1 No ___ 0

Si los recibe, ¿A qué edad empezó? _____ edad en meses

14

DEDUZCA DESPUES: 1. _____ Válido 2. _____ No-válido

puntaje total

Deduzca luego los resultados del conocimiento sobre la nutrición totalizando cuántas respuestas válidas ha dado de las preguntas #21 - 24.

15

Puntaje total, 0 - 4

25. Consumo de alimentos:

"Me gustaría que me contara todo lo que su hijo comió y bebió desde el momento en que se levantó en la mañana de ayer hasta el momento en que se acostó anoche, y que cosas comió y bebió durante la noche.. Esté segura de mencionar todo lo que el comió y bebió en la casa, la escuela (si asiste) y fuera de la casa. Incluya cualquier bocadillo (picadera) y bebidas de cualquier clase y cualquier otra cosa que se puso en la boca y tragó. También necesito saber en que lugar comió estas cosas, pero ahora comencemos. ¿A qué hora se levantó el niño ayer?" (No es necesario apuntar las respuestas a estas preguntas; son para ayudar a la madre "reconstruir" el día.)

"Era ésta su hora habitual de levantarse? ¿Cuándo fue la primera vez que el comió o bebió algo ayer en la mañana? ¿Dónde comió? Ahora dígame qué comió y qué cantidad!" (Ocasionalmente el entrevistador necesitará preguntar: "Cuándo volvió él a comer?, o, "¿Hay algo más?")

DEDUZCA DESPUES

a) Primero, ¿qué comió el niño para el desayuno u otra comida de la mañana?

Tipo de comida

Cantidad aproximada

CALORIAS

PROTEINAS

b) ¿Qué comió el niño para el almuerzo?

Tipo de comida

Cantidad aproximada

CAL.

PROT.

c) ¿Qué comió el niño para la comida u otra comida de la tarde?

Tipo de comida

Cantidad aproximada

CAL.

PROT.

d) ¿Le dió usted al niño algún otro tipo de alimento o bebida ayer?-- incluya todo que no se anotó arriba.

Tipo de comida

Cantidad aproximada

CAL.

PROT.

TOTAL:

=====
=====

calorias

____/____/____/____
16 17 18 19

proteínas

____/____/____/____

DEDUZCA DESPUES

La dieta contiene la cantidad adecuada de estos alimentos?

CATEGORIA 1

La leche o los derivados de la leche?

1. No 2. Sí

leche

23

CATEGORIA 2

Carne o sustitutos de la carne: frijoles, huevos pescado, etc.?

1. No 2. Sí

carne

24

CATEGORIA 3

Las frutas?

1. No 2. Sí

frutas

25

CATEGORIA 4

Un vegetal amarillo y un vegetal verde?

1. No 2. Sí

vegetales

26

CATEGORIA 5

Valor calórico adecuado?

1. No 2. Sí

27

valor calórico

CATEGORIA 6

Valor proteico adecuado?

1. No 2. Sí

28

valor proteico

CATEGORIA 7

Los productos del programa alimenticio son servidos en la cantidad correcta?

1. No 2. Sí

29

ración adicional

total

TOTAL: Escala de la práctica alimenticia;
(puntaje 0 - 7)

Suma los puntajes afirmativos de las categorías 1 - 7, dándole un punto a cada "Sí".

30

26. ¿La comida que se le dió al niño en las últimas 24 horas fué la de costumbre?

1. No 2. Sí

Si no fué la de costumbre, explique: _____

costumbre

31

Refierase a la pregunta 25 y ponga un círculo alrededor de las comidas especiales; agréguele los alimentos que acostumbre recibir.

27. ¿El niño toma alguna pastilla de vitaminas?

1. No 2. Sí

vitaminas

32

28. ¿Ha tenido el niño alguna de las siguientes enfermedades?

Varicela 1. No 2. Sí

Sarampión 1. No 2. Sí

Diarrea 1. No 2. Sí (diarrea fuerte o deposiciones con sangre)

Neumonía 1. No 2. Sí

varicela

33

sarampión

34

diarrea

35

neumonía

36

diarrea ahora

29. ¿El niño tiene diarrea ahora?

1. No 2. Sí

37

duración

30. ¿Cuántos de los últimos 7 días ha tenido el niño diarrea?

_____ días

38

frecuencia

31. ¿Con qué frecuencia ha tenido el niño diarrea desde que nació?

1. Raras veces o nunca

2. Ocasionalmente (3 o 4 veces al año)

3. Frecuentemente (aprox. una vez al mes)

4. Muy frecuentemente (más de 1 vez al mes)

39

32. ¿Cuánto tiempo tarda usted normalmente para llegar de su casa hasta el centro o puesto? (Viaje de ida.)

_____ minutos

distancia

40 41 42

sustituto

33. ¿Quién cuida al niño cuando usted no está en casa?

1. Nadie

3. Los hermanos 5. Otra

2. El papá 4. Abuelo(a)

Si ha marcado "5" otra persona, ¿quién es? _____

43

40. a. Recibió comida en su última visita al centro?

_____ No _____ Si

b. Cuantos días hace que Ud. recibió comida del Centro?

_____ Días

c. Todavía le queda comida?

1. _____ No 2. _____ Si

41. Tiene Ud. alguna sugerencia sobre cómo podrá mejorarse el Programa de Nutrición? (Use hojas adicionales si es necesario).

C58=0

Días

 / /
59 60

Comida que queda

 /
61

--	--	--	--

62 63 64 65 RACIÓN CALORIAS

--	--	--

66 67 68 RACION PROTEINAS

.....DELE LAS GRACIAS A LA MADRE POR SU AYUDA.....

CARE

PRE - SCHOOL NUTRITION PROJECT

SURVEY OF PRE - SCHOOL ADMINISTRATORS

PRE - SCHOOL CENTRE NAME: _____

Name of local community/site : _____

The sample of mothers and children is taken from those Attending :

- 1) Main centre or centre having only one location
- 2) _____ Subcentre, list name of main centre _____
location of main centre _____

Country Code : _____

Site Code :

Institution Code :

Sponsor Code :

1. When did the feeding program begin operating at this location?

இந்த சத்துணவுத்திட்டம் இந்த இடத்தில் எந்நேரம் ஆரம்பிக்கப்பட்டது?

Month _____ Year _____

மாதம் வருடம்

DERIVE months of operation

பின்னர் திட்டம் செயல்பட்ட மாதங்களைக் கணக்கிட்டு எழுதவும்.

2. How long have you been working at this centre?

நீங்கள் எத்தனை மாதங்களாக இம்மையத்தில் வேலை செய்கிறீர்கள்?

_____ months.

மாதங்கள்

3. How many recipients are served in the program now?

இத்திட்டத்தில் பயன்பெறுகுவார் எண்ணிக்கை என்ன?

_____ Total.

மொத்தம்

Pregnant or lactating mothers receiving food _____

கர்ப்பிணி அல்லது பாலூட்டும் தாய்மார்கள்

Other mothers receiving food _____

மற்ற தாய்மார்கள்

4	country		
3			
4	5	site	
	6	Institution	
6		Sponsor	
7			
8	9	10	Program Months
			service
11	12	13	
			total
14	15	16	17
			Pregnant Lactating
18	19	20	
			Other mothers
21	22	23	

Children under 3 years old receiving food _____

மூன்று வயதுக்குட்பட்ட குழந்தைகள்

			< 3
--	--	--	-----

Children 3 years old or more receiving food _____

மூன்று வயதிற்கு மேற்பட்ட குழந்தைகள்

24	25	26	> 3
----	----	----	-----

27	28	29	

4. How many staff help in the feeding program?

இத்திட்டத்தை நடத்துவதற்கு எத்தனைபேர் உதவுகின்றனர்

Full time _____

முழுநேரம் பணி புரிவோர்

	Full time
30	

Part time _____

பாதிநேரம் பணி புரிவோர்

	Part time
31	

Volunteers/Non-staff _____

கொளவப் பணியாளர்

	Non-staff
32	

5. By what criteria do you select families whose children receive food? Check as many as apply and fill in details as required.

இத்திட்டத்தில் பயன்பெறும் குடும்பங்களுக்கு இருக்க வேண்டிய தகுதிகள் யாவை

CODE LATER
(see instructions)

a) _____ No criteria

எந்த தகுதியும் இல்லை

	None, Code 1
33	

b) _____ Age of children : the age limits are from

குழந்தையின் வயது

_____ years to _____ years

வயதிலிருந்து

வயதுவரை

	Age to Age
34	35

c) _____ Weight for age : Up to what degree of malnutrition are eligible:

வயதிற்கேற்ற எடை ; எந்த அளவு வரை ஊட்டக்குறைவு இருந்தால் சேர்க்கப்படும்

_____ first degree

முதல் படி

_____ second degree

இரண்டாம் படி

_____ third degree

மூன்றாம் படி

	Degree (code)
36	

d) _____ Low income; Below what income are eligible degree?

குறைந்த வருமானம் எந்த அளவிற்கு குறைவாக இருந்தால் சேர்க்கப்படும்

_____ Local Currency

உள்ளூர் நாணயம்

	Income (code)
37	

e) _____ Residence : Should be members of this village or reside within _____ miles

வசிக்கலிடம் / இந்த கிராமத்திலிருந்து எத்தனை மைல் தூரத்திற்குள் வசிக்கவேண்டும்

	Residence
38	

f) _____ Other ; Specify :

பிற்பவை. குறிப்பிடுக

	Other
39	

6. Do the children in the program eat the food you give them here at the centre, or is the food taken home, or both?

இத்திட்டத்தைச் சார்ந்த குழந்தைகள் நீங்கள் கொடுக்கும் உணவை இங்கேயே சாப்பிடுகிறார்களா? அல்லது வீட்டிற்கு கொண்டு செல்கிறார்களா? அல்லது இரண்டும் செய்கிறார்களா?

1. _____ Food consumed at centre only.

மையத்திலே உண்கிறார்கள்.

2. _____ Food taken home and consumed there only.

வீட்டிற்கு எடுத்து சென்று உண்கிறார்கள்.

3. _____ Both of the above.

மேற்கூறிய இரண்டும் செய்கிறார்கள்.



Where eaten

40

8. Summarize the following from Question No. 7 :

(i) Type of imported foods used : a _____

b _____

c _____

(ii) Contribution of local foods to total ration :

1. _____ None 2. _____ Less than 10%
3. _____ 10% - 25% 4. _____ 25% - 50%
5. _____ 50% - 75% 6. _____ Over 75%

(iii) Total Ration/Month _____ Kg.

(iv) No. of times per month ration distributed to one recipient _____

(v) Total calories per child per day _____

(vi) Total protein (in gm) per child per day _____

41

PL 480
Foods

42

43

44

45

Local
Foods

46	47	48

Total
Ration
Kg/Mth

49	50

No. of times

51	52	53	54

Calories

55	56

Protein

9. Has there been any change in the amount of ration in the past year?
கடந்த வருடத்தில் கொடுக்கப்பட்ட உணவின் அளவில் ஏதாவது மாற்றம் இருந்ததா?

1. _____ None
இல்லை

2. _____ Increased since _____
அதிகரிக்கப்பட்டது

3. _____ Decreased since _____
குறைக்கப்பட்டது

Ration change

57

10. Do you maintain any records on (Check as many as apply)

நீங்கள் வைத்திருக்கும் பதிவேடுகள் யாவை?

_____ Weight of children at time of entry to program?

திட்டத்தில் சேரும்போது குழந்தையின் எடை?

_____ Attendance of children and mothers?

குழந்தை மற்றும் தாய்மார்களின் வருகைப் பட்டியல்?

If yes to either question, ask to see these records for the sampled children and mothers, and record this information on mother's questionnaire.

பதிவேடு(கள்) வைக்கப்படுவது உண்டு என்றால், அதனை பார்வையிட்டு, தேர்ந்தெடுக்கப்பட்ட தாய்மார்களுக்கும் குழந்தைக்கும் ஆன விவரங்களை தாய்மார்களுக்கான கேள்வித்தாளில் எழுதவும்.

Weight records : 1. _____ Not maintained
எடைபதிவேடு இல்லை

2. _____ Maintained poorly
சுமாராக இருக்கிறது

3. _____ Maintained well
நன்றாக இருக்கிறது

Weight records

58

Attendance Log : 1. _____ Not maintained
வருகை பதிவேடு இல்லை

2. _____ Maintained poorly
சுமாராக இருக்கிறது

3. _____ Maintained well
நன்றாக இருக்கிறது.

Attendance Log

59

11. Does food arrive on a regular basis?

உணவு முறை தவறாமல் வருகிறதா?

1. _____ No
இல்லை

2. _____ Yes
ஆம்

Receipt of food

60

12. Do you distribute food on a regular basis ?

நீங்கள் உணவை முறை தவறாமல் வழங்குகின்றீர்களா ?

1. _____ No
இல்லை

2. _____ Yes
ஆம்

Distribution

61

13. What are the major problems you encounter in running this program ?

இத்திட்டத்தை நடத்துவதில் உங்களுக்கு உள்ள முக்கிய கஷ்டங்கள் என்ன ?

1. _____

2. _____

3. _____

Problems

62

14. Could this program be expanded ?

இத்திட்டத்தை மேலும் விரிவு படுத்த முடியுமா ?

1. _____ No
இல்லை

2. _____ Yes
ஆம்

Expansion

63

If no, Give reasons :

இல்லை என்றால் காரணங்களைக் கூறவும்

15. Are mothers required to pay a fee for participation in the feeding program ?

இத்திட்டத்தில் பயன்பெறும் தாய்மார்கள் ஏதாவது கட்டணம் செலுத்த வேண்டுமா ?

1. _____ No
இல்லை

2. _____ Yes
ஆம்

Fees Paid

64

15 (a) If Yes, what type of payment is it? (Check as many as apply)

ஆம் என்றால் எந்த முறையில் கட்டணம் செலுத்த வேண்டும் ?

1. _____ Fees
பணம்

2. _____ In kind contribution; Specify :
பொருள், குறிப்பாக கூறவும்

3. _____ Other
மற்றவை.

Type of fees

65

15 (b) If fee is paid: What is the monthly charge per child?

கட்டணம் செலுத்துவதானால் ஒரு மாதத்திற்கு ஒரு குழந்தைக்கான கட்டணத் தொகை.

Local currency _____
உள்ளூர் பணம்

US Dollar equivalent: \$ _____
அமெரிக்க டாலர்

		Charge
		\$ \$
66	67	

16. Do you provide instruction in nutrition and health care to mothers?

நீங்கள் நாய்மார்களுக்கு சத்துணவு கல்வி அல்லது உடல் நலக்கல்வி போதிக்கிறீர்களா?

1. _____ No
இல்லை

2. _____ Yes
ஆம்

	Type of Nut. Ed.
68	

If YES:

a) Exactly what type of instruction do you provide? (Check as many as apply)
ஆம் என்றால் குறிப்பாக எந்தமாதிரி கல்வி அளிக்கிறீர்கள்? (குறி எண் பின்னர் எழுதவும்)

i) _____ Classes, how often? _____ Daily _____ Weekly
வகுப்புகள் எத்தனை முறை? தினமும் வாரமொன்றுமுறை

_____ Fortnightly _____ Monthly
இரு வாரத்திற்கொருமுறை மாதமொன்று முறை

	Type of Nut. Ed.
69	

ii) _____ Growth charts and other printed materials given to mothers.

குழந்தைகளின் ஆரோக்கிய வளர்ச்சி அட்டை மற்றும் அச்சிட்ட புத்தகங்கள் போன்ற மற்றைய வழங்குதல்

iii) _____ Mothers required to work in centres.

நாய்மார்கள் காப்பகத்தின் வேலைகளில் பங்கு பெறுதல்

iv) _____ Other
மற்றவை

17. Do you provide medical services to the mothers and children?

குழந்தைகளுக்கும் நாய்மார்களுக்கும் மருத்துவ வசதிகளை அளிக்கிறீர்களா?

1. _____ No
இல்லை

2. _____ Yes
ஆம்

	Medical services
70	

If YES:

ஆம் என்றால்

a) Exactly what type of medical services do you provide?

எவ்வகையான மருத்துவ வசதிகளை அளிக்கிறீர்கள்?

CODE LATER (see instructions)

Immunization _____

தடுப்பூச்சி

Deworming _____

வயிற்று பூச்சி மருந்து

Examination by Doctor _____

மருத்துவ பரிசோதனை

How often (specify) _____

எத்தனை முறை (குறிப்பாக)

Medicines _____

மருந்துகள்

Type of medical services

71

18. How many of the following kinds of staff do you have ?
(Write in number of each type; use decimals for part-time staff)
அடியில் கண்ட அலுவலர்களில் யாவர் காப்பக வேலையில் பங்கு பெறுகின்றனர் ?

_____ Doctors

டாக்டர்

_____ Nutritionists

சத்துணவாளர்

_____ Nurses

நர்ஸ்

Other para-professionals

மற்றவர்கள்

.....

.....

Doctors

72

Nutritionists

73

Nurses

74

Other staff

75

Other staff

76

19. Are centre staff given special training about the pre-school nutrition program ?

உங்கள் மையத்தில் பணிபுரிபவர்களுக்குச் சத்துணவுத்திட்டத்திற்கான விசேட பயிற்சி அளிக்கப் படுகின்றதா ?

1. _____ No

இல்லை

2. _____ Yes

ஆம்

Training

77

IF YES, PLEASE DESCRIBE

ஆம் என்றால் விவரம் சொல்லவும்

20. Is there is limit to the length of time a mother or child may remain in the pre-school program ?

இத்திட்டத்தில் ஒருநாய் அல்லது குழந்தை பங்கு பெறுவதற்கு காலவரையறை ஏதாவது உள்ளதா ?

1. _____ No

இல்லை

2. _____ Yes

ஆம்

Limit to stay

78

IF YES, PLEASE CHECK AT WHAT POINT PARTICIPANTS ARE REMOVED FROM THE PROGRAM:

ஆம் என்றால், எந்த நிலையில் பயடைவோர் திட்டத்திலிருந்து நீக்கப்படலாம்?

1. _____ After recuperated from malnutrition
ஊட்டக்குறைவு நோய்தீர்ந்ததுடன்
2. _____ After set period of time ; how long _____
குறிப்பிட்ட காலத்திற்கு பிறகு எவ்வளவு மாதம்
3. _____ Other. Please explain
மற்றவை, விவரம் எழுதவும்.

Removal

79

Date of Interview :

Day Month Year

Name of Interviewer _____

Checked by _____

9. Type of Change

மாறுதல்கள்

Details: what Commodities or
How Much

விவரம்
எந்த உணவுப்பொருள்
அல்லது எவ்வளவு

Effective
எந்த தேதியிலிருந்து
From Which Date
துவக்கம்
To Which Date
முடிவு

Commodities Added -

புதிதாக சேர்க்கப்பட்ட
உணவுப் பொருள்

Commodities Deleted

நீக்கப்பட்ட உணவுப்பொருள்

Increase in Ration

உணவு அளவு அதிகம்

Decrease in Ration

உணவு அளவு குறைவு

LIST ALL CHANGES EVEN IF INTRODUCED AT DIFFERENT TIMES

வெவ்வேறு தேதிகளில் துவங்கப்பட்டிருந்தாலும் எல்லா மாறுதல்களையும் எழுதவும்.

(Derive Codes Later)

(பின்னர் குறிகளை எழுதவும்)

b) Medio Tiempo _____

Medio Tiempo

31

c) Voluntarios (no maestros) _____

No maestros

32

¿En qué se basa usted para seleccionar familias cuyos niños reciben comida? Marque las posibilidades dadas y llene los detalles requeridos.

CODIFIQUE DESPUES

a. _____ No tengo ninguna base.

Ninguno/Código:

33

b. _____ Edad de los niños: Los límites de edad son:

Edad a edad

De _____ años

A _____ años

34 35

c. _____ Peso de acuerdo a la edad: Hasta qué punto de mala nutrición son elegibles: _____ 1; _____ 2; _____ 3 gr.

Grado(CODIFIQUE)

36

CODIFIQUE DESPUES (Vea instrucciones)

d. _____ Pocos recursos: ¿Cuál es el grado de ingreso elegible? \$ _____ pesos.

Ingresos (CODIFIQUE)

37

e. _____ Residencia: ¿Deben ser miembros de este pueblo o vivir a _____ kilómetros de distancia?

Residencia

38

f. _____ Otros: Especifique.

Otros

39

CODIFIQUE DESPUES (Vea Instrucciones.)

6. Los niños del programa comen aquí mismo la comida que se les dá, o se la llevan a la casa, o las dos cosas al mismo tiempo?

Donde se come

40

1. _____ Comida consumida en el centro solamente.

2. _____ Comida llevada a la casa y consumida ahí solamente.

3. _____ Las dos cosas.

7. RACIONES DE COMIDA DISTRIBUIDAS CORRIENTEMENTE A CADA NIÑO

1.) Tipo de Comida	2.) Cantidad de Comida (kg.)	3.) Número de veces por mes que la ración se distribuye a cada persona
ALIMENTOS IMPORTADOS		
_____	_____	_____
_____	_____	_____
_____	_____	_____
ALIMENTOS LOCALES		
_____	CARE	_____
_____	TOTAL	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

6. CALORIAS

7. PROTEINAS

TOTAL

DEDUZCA DESPUES:

RACION TOTAL POR DISTRIBUCION _____ kg.

RACION TOTAL POR MES _____ kg.

(Para gramos use la décima parte de un kilogramo; de este modo, 100 gramos = 0.1 kg.)

8 De la pregunta #7, resuma lo siguiente:

- (i) Tipo de comida importada que se usa: A _____
 B _____
 C _____
 D _____

(ii) Contribución de comida nacional a la ración total:

1. Ninguna / 2. Menos de 10% / 3. De 10% a 25%
 4. 25% a 50% / 5. 50% a 75% / 6. Más de 75%

(iii) Ración Total por Mes: _____ kg.

(iv) Número de veces por mes que la ración se distribuye a cada persona _____

(v) Total de calorías al día para cada niño _____

(vi) Total de proteínas(en gramos) al día para cada niño _____

Comida Importada

41

42

43

44

Comida Local

45

Ración Total

46 47 48

Número de Veces

49 50

Calorías

51 52 53 54

Proteínas

55 56

9. ¿Ha habido algún cambio en el tamaño de la ración durante el pasado año?

Cambio de Ración

- 1. _____ Ninguno
- 2. _____ Ha aumentado _____
- 3. _____ Ha disminuído _____

57

Si ha habido algún cambio, dé detalles en la hoja anexa, en la página siguiente.

10. ¿Lleva usted algún record en cuanto a:
(Marque las que se apliquen)

- _____ ¿Peso de los niños al empezar el curso lectivo?
- _____ ¿Asistencia diaria de las madres?

Si alguna de las respuestas es SI, pida que le muestren los records de niños y madres y ponga esta información en el cuestionario de las madres.

CODIFIQUE LUEGO COMO SIGUE:

- Records de Peso: 1. _____ Sin mantener
 2. _____ No muy bien mantenido
 3. _____ Bien mantenido
- Asistencia Diaria: 1. _____ Sin mantener
 2. _____ No muy bien mantenida
 3. _____ Bien mantenida

Records de Peso

58

Diario de Clase

59

11. ¿La comida llega regularmente?

Recibo de Comida

- 1. _____ No
- 2. _____ Sí

60

12. ¿Distribuye usted la comida regularmente?

Distribución

- 1. _____ No
- 2. _____ Sí

61

13. ¿Cuáles son los mayores problemas que usted encuentra en este programa?

Problemas

- 1. _____
- 2. _____
- 3. _____

62

E F E C T I V O

DETALLES
CUALES ALIMENTOS
O CUANTO

TIPO DE CAMBIO (i)

DESDE QUE FECHA

HASTA QUE FECHA

(i) LISTA DE TODOS LOS CAMBIOS OCURRIDOS
INCLUIR SI FUERON INTRODUCIDOS EN DIAS DIFERENTES
(DEDUCIR CODIFICACIONES DESPUES.)

-160-

14. ¿Podría éste programa ser aumentado?

1. _____ No

2. _____ Sí

Si la respuesta es no, diga porqué.

Expansión

63

15. ¿Las madres tienen que pagar una cuota para participar en el programa alimenticio?

1. _____ No

2. _____ Sí

Si la respuesta es sí, diga porqué.

Cuotas Pagadas

64

(a) ¿Qué tipo de pago es éste?
(Marque las que se apliquen)

1. _____ Cuota

2. _____ Contribución en especie

3. _____ Otras

Tipo de Cuota

65

(b) Si pagan una cuota:

¿Cuál es la cuota mensual por niño?

Moneda Local: _____

Equivalente en Dólares: _____

Cantidad

66 67

16. ¿Les dá usted clases a las madres sobre nutrición y cuidado de la salud?

1. _____ No

2. _____ Sí

Si la respuesta es sí,

a) Exactamente, ¿qué tipo de clases son éstas? (Marque las que se apliquen.)

CODIFIQUE LUEGO (según instrucciones.)

1. _____ ¿Con qué frecuencia? _____ Diarias
_____ Semanales
_____ Quincenales
_____ Mensuales

2. _____ ¿Les dá tablas de crecimiento o materiales impresos a las madres?

3. _____ ¿Les pide a las madres que trabajen en centros?

4. _____ Otros.

Instrucción

68

Tipo de Instrucción

69

17. ¿Provee de servicio médico a las madres y a los niños?

1. _____ No

2. _____ Sí

Si la respuesta es sí,

a) Exactamente qué tipo de servicio médico es éste? (Marque las que se apliquen.)

CODIFIQUE LUEGO (según instrucciones.)

1. Inmunizaciones (vacunas) _____

2. Deparasitación _____

3. Exámen por un doctor _____ ¿Con qué frecuencia? Especifique. _____

4. Medicinas _____

Servicio Médico

70

Tipo de Servicio Médico

71

18. ¿Cuál es el número de cada tipo de consejero médico que usted tiene? (Escriba el número de cada tipo. Use decimales para personas de medio tiempo.)

_____ Doctores

_____ Nutricionistas

_____ Enfermeras

_____ Otros Asistentes

Doctores

72

Nutricionistas

73

Enfermeras

74

Otros Asistentes

75

Otros Asistentes

76

19. ¿Recibe el personal del Centro Educativo entrenamiento especial acerca del programa de nutrición pre-escolar?

1. _____ No

2. _____ Sí

Entrenamiento

77

Si la respuesta es sí, favor de describir: _____

20. ¿Existe algún límite en cuanto al tiempo que una madre o un niño puedan permanecer en el programa de MCH?

1. _____ No

2. _____ Sí

Límite de tiempo

78

Si la respuesta es sí, favor de indicar cuando se eliminan a los participantes del programa.

1. _____ Después de recuperarse de desnutrición.

2. _____ Después de un período determinado.
¿Cuánto tiempo? _____

3. _____ Otros. Favor de explicar. _____

Eliminación

79

PRE SCHOOL NUTRITION PROJECT

SURVEY OF COMMUNITIES

Note: Fill in one form for each community in which a preschool nutrition program or preschool control area is located.

Name of local community _____

Block or municipality: _____

Province or State: _____

Country: _____; Country Code _____

Community Code _____

4
3

Country

4	5

Community

6

Availability

7	8

Year

9

Population

10	11

Birth Rate

12	13

Death Rate

14	15	16

Infant Mortality

17	18

Doctors

19	20

Beds

21	22

Health Facilities

A. POPULATION CHARACTERISTICS

Note: Use most recent official data.

Most recent official data for this area: 1. _____ Not available
2. _____ Available

If available:

Source _____ Year _____

For the following, indicate information against each item; if no data are available put N.A.

DERIVE LATER
Population size code
(See instructions)

1. Population: _____
2. Crude birth rate (per 1000): _____
3. Crude death rate (per 1000): _____
4. Infant mortality rate (per 1000 live births): _____

B. HEALTH RESOURCES

5. Doctors per 1000 population _____
6. Hospital beds per 1000 population _____
7. Health facilities per 10,000 population _____

Date of Interview: _____
Day Month Year

Interviewer: _____

Checked by: _____

C. SANITATION

8. For what proportion of the population of the community are public drains provided?

Drains
23

- 1. _____ None
- 2. _____ Very few (Less than 10%)
- 3. _____ Few (10-29%)
- 4. _____ Many (30-79%)
- 5. _____ Almost all (80% or more)

9. For what proportion of the population of the community are public garbage removal services provided?

Garbage
24

- 1. _____ None
- 2. _____ Very few (Less than 10%)
- 3. _____ Few (10-29%)
- 4. _____ Many (30-79%)
- 5. _____ Almost all (80% or more)

10. What proportion of the population of the community has Latrines?

Latrines
25

- 1. _____ None
- 2. _____ Very few (Less than 10%)
- 3. _____ Few (10-29%)
- 4. _____ Many (30-79%)
- 5. _____ Almost all (80% or more)

11. What proportion of the population of the community has access to "treated" or "protected" water?

Water
26

- 1. _____ None
- 2. _____ Very few (Less than 10%)
- 3. _____ Few (10-29%)
- 4. _____ Many (30-79%)
- 5. _____ Almost all (80% or more)

D. FOOD AVAILABILITY AND PRICES

12. Name *three* of the most commonly eaten staple foods eaten daily and list their prices. (Check through a personal visit to the market.)

	Staple Food	Price per kg local currency	Price per kg. U.S. dollars
a)			
b)			
c)			

Food Price
\$

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Staple
27	28	29	30	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Food &
31	32	33	34	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Price
35	36	37	38	

E. ETHNIC GROUPINGS

13. What is the largest religion group in the community ?

1. Hindu: Forward Backward Schedule Caste/Tribe
2. Christian: Forward Backward Schedule Caste/Tribe
3. Moslems
4. Others _____ (specify)

Religion
39

14. What proportion of the people in the community belong to this group ?

Percent
40 41

F. BELIEFS AND ATTITUDES

15. What unusual beliefs, if any, does this group have about any particular types of food ?

Beliefs
42

CODE LATER

43

44

16. What unusual beliefs, if any, does this group have about health ?

45

CODE LATER

46

G. OTHER

17. Has anything unusual happened in this community during the past year which may have affected the health, or food consumption either in a good way or a bad way ?

1. _____ None
2. _____ Good
3. _____ Bad
4. _____ Both good and bad

47

48

Describe: (Use reverse side)

E. AGRUPACIONES ETNICAS:

13. ¿Cuál es el grupo étnico más grande en la comunidad?

etnicidad

1. _____ Mestizo

2. _____ Moreno

3. _____ Blanco

39

14. ¿Qué proporción de la población de la comunidad pertenece a este grupo?

porcentaje

_____ %

40 41

F. CREENCIAS Y ACTITUDES:

15. ¿Qué creencias raras --si las haya-- tiene este grupo acerca de algún tipo de alimento en particular? CODIFIQUE DESPUES

creencias (alimentos)

42

43

44

16. ¿Qué creencias raras --si las haya-- tiene este grupo acerca de la salud? CODIFIQUE DESPUES

creencias (salud)

45

46

47

G. OTROS:

17. En esta comunidad, durante el año pasado, ¿ha pasado algo poco usual que pueda haber afectado la salud o el consumo de alimentos, tanto para bien como para mal?

eventos

1. _____ Nada

2. _____ Bueno

3. _____ Malo

4. _____ Tanto bueno como malo

48

Describalo. (Use el otro lado de la página.)