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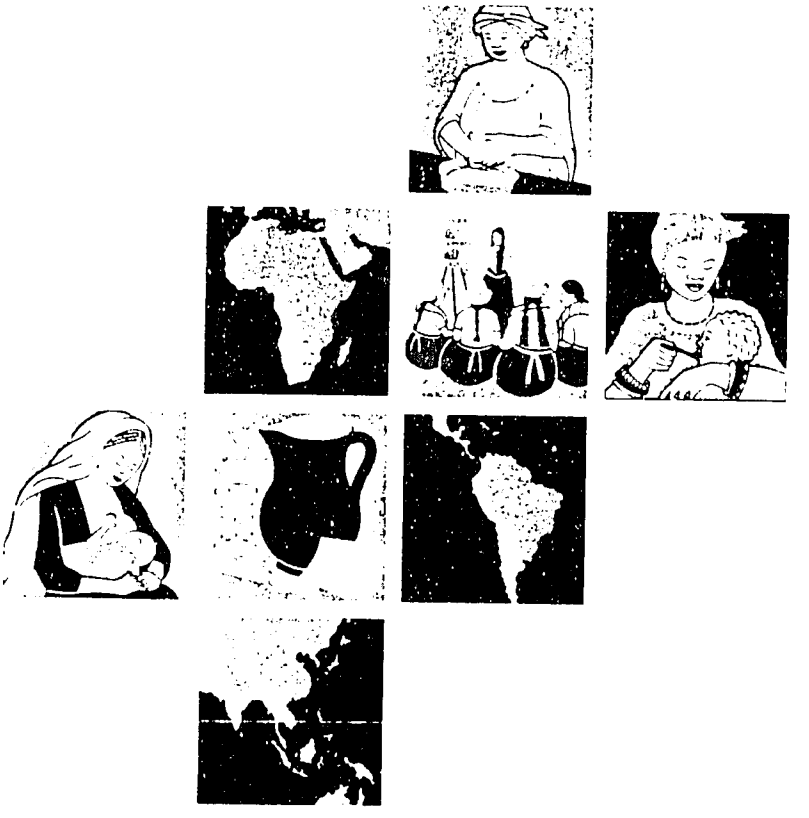
IMPROVING INFANT AND YOUNG CHILD FEEDING PRACTICES IN THE GAMBIA

A Summary report of Weaning Food and Education Message Trials Conducted by The Gambia Food and Nutrition Association Between April and October 1992



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Education Message Trials Conducted by
The Gambia Food and Nutrition Association
Between April and October 1992

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EXECUTIVE SUMMARY

Between April and October 1992. The Gambia Food and Nutrition Association (GAFNA), with the support of PRITECH conducted weaning food and education message trials to assess mothers' acceptability of a series of weaning food and education messages. These messages were aimed at improving the feeding practices of young children under the age of 24 months.

The trials were conducted in three phases. In the first phase a Household Trial Counselling Chart was developed. This chart described the ideal feeding pattern, feeding problems, feeding recommendations and motivations and constraints to adopting these recommendations for four age groups of children: 0 to 3 months, 4 to 6 months, 7 to 9 months and 10 to 24 months.

In the second phase, community discussions and demonstrations were held in 2 rural villages with a view to refining sections of the Household Trial Counselling Chart.

The third phase involved household trials of selected weaning food recipes and recommendations with 60 mother-child pairs in 3 villages: Sarrakunda, Sankuley kunda and Sintet. The main objective of the household trials was to find out which feeding recommendations mothers were most willing to try and had the greatest potential to improve infant and young child feeding practice in The Gambia.

There appeared to be no difference in response to specific recommendations between the different communities studied. Most mothers of infants in the 0 to 3 month age group, with the exception of those who had already introduced weaning foods to their infants, agreed to practice exclusive breastfeeding for the first four months of life.

From a selection of options to enhance the nutritional value of weaning foods, most mothers preferred to add groundnut paste to pap instead of beans or oil. This applied to both the 4 to 6 month and 7 to 9 month age group. Mothers were motivated to choose this option because of the pleasant taste and appearance of the groundnut pap. They also noted that the pap helped their children to gain weight. A strong constraint was the lack of availability and accessability of groundnuts to some households particularly during the rainy season.

The table below summarizes the recommendations that mothers were most willing to try.

Table 1: Summary of results of Household trials

AGE GROUP	RECOMMENDATIONS MOTHERS MOST WILLING TO TRY
0-3 months	• to breastfeed exclusively for the first 4 months of life
4-6 months	• to cook pap at least twice a day • to add groundnut paste to pap (groundnut pap) • to feed one more meal per day
7-9 months	• to feed at least one more meal per day • to add groundnut paste to pap • to encourage child to eat more adult/family type foods • to feed *churah gerteh*
10-24 months	• to feed child from a seperate bowl • to feed children with snack foods eg *futu kanya*

The next steps for GAFNA will include:

- Refining the Household Trial Counselling Chart, by incorporating the motivations and constraints highlighted during the household trials and deleting recommendattions mothers were not willing to try.

- Producing the refined Counselling Chart and distributing it to Community Health Nurses for use in community health education activities.

- Incorporating of the accepted weaning and education messages into the GAFNA nutrition education programme.

1. INTRODUCTION & JUSTIFICATION

In The Gambia, malnutrition is most common in children between the ages of 6 and 36 months of age (Nutrition Unit, 1988). This age range, coincides with the period when infants are receiving local supplementary weaning foods which are usually introduced around the age of 3 to 4 months (Samba & Gittelsohn, 1991, Semega-Janneh, 1990, Kearns, 1986).

The traditional early weaning foods have been reported to be very light watery paps, characterised by a low energy density (approximately 50% of the energy density of breastmilk) as a result of their high water content (Rowland & Whitehead, 1979). A staple cereal, for example millet or maize is usually the main ingredient (Kearns, 1986, Rowland & Whitehead, 1979), with sugar and milk as the most common additions (Samba & Gittelsohn, 1991).

A study of the bacteriology of traditional weaning paps, which also looked at their method of preparation and storage, labelled them as potential causes of diarrhoeal disease (Rowland, 1980, Barrell & Rowland, 1979, Rowland et al, 1978), a major cause of malnutrition, morbidity and mortality in Gambian children (Rowland & McCollum, 1977, Rowland et al, 1988, GAFNA, 1990).

In The Gambia, strategies to improve the energy density of weaning paps have relied on encouraging mothers to thicken weaning paps, by adding more cereal or include additional ingredients such as eggs, bananas, oil, groundnut paste and fish. Most of this nutrition education takes place during maternal and child health clinics, where other services such as immunisation and growth monitoring are usually given priority. Community Health Nurses also give nutrition education at village level, but the main target group tend to be mothers of malnourished children amongst whom nutrition education is serving more as a curative rather than a preventative measure. These approaches appear culturally unacceptable as mothers prefer to give their children 'light' watery paps as they more closely resemble breastmilk. Mothers are also very reluctant to add foods other than milk or sugar to weaning paps, especially those of limited availability, for example bananas, in the rural area (Samba & Gittelsohn, 1991).

Another important group of individuals who have been ignored in the process of educating communities to improve infant feeding practice are other child care-givers, such as older siblings and grandmothers, who are largely responsible for child care in the rainy seasons, when mothers are busy with farming activities (Lawrence et al, 1985, Samba & Gittelsohn, 1991).

The inability of mothers and other child care-givers to prepare energy dense and nutritionally adequate weaning foods suitable for consumption by their children remains a major problem.

There are no clear guidelines for improving infant and young child feeding practices in The Gambia, and the lack of success in addressing the issue of poor child feeding practices could be because communities have been expected to adopt foreign and culturally unacceptable practices through ineffective promotion exercises. The absence of a national food and nutrition policy is another a major obstacle.

The Gambia Food and Nutrition Association's (GAFNA) primary approach to improving infant and young child feeding practices in The Gambia is through a nutrition education process that will give rural mothers and other secondary child caregivers the ability to prepare nutritionally adequate and culturally acceptable weaning foods based on locally available food products. It is assumed that this mode of nutrition intervention will require the least behavioural change as socio-cultural factors affecting the proper infant and young child feeding practices such as cost, maternal time required for preparation, traditional practices and food availability will have been considered during the planning of the intervention process.

GAFNA's efforts to improve infant and young child feeding practices was launched by an ethnographic study of infant and young child feeding practices in 5 villages in The Gambia. One of the main objectives of this study was to provide a base of information on infant and young child feeding practices on which to develop and implement appropriate and effective nutrition intervention strategies.

The study provided information on the different types of foods that are given to children of weaning age. It also provided evidence of a variation in type of weaning food given depending on age of the child. In general, millet based paps such as ***ogi***, a pap made from fermented millet flour, were given to children below the age of 8 months and ***tia kere churo*** or ***churah gerteh*** to children over 8 months. ***Tia kere churo*** is a thick lumpy porridge of groundnut and rice with an energy value of approximately 68 kcals per 100g (GAFNA, 1988). This suggests a need to develop and promote 2 types of weaning foods; an early weaning food for children under 8 months of age and a late weaning food for children over 8 months of age.

Mothers willingness to add other ingredients to infant weaning paps was also investigated during the ethnographic study. Even though sugar, salt, baobab and cow's milk were the most common foods reported to be added to pap, some mothers expressed a willingness to consider adding ingredients such as groundnuts, fish and oil to weaning pap.

The first session of the Child Nutrition Working Group (GAFNA technical notes 02, 1991) established by GAFNA to develop an integrated set of strategies for the improvement of infant and young child nutrition in The Gambia, reviewed the report of the ethnographic study with a view to identifying a list of potentially acceptable weaning food combinations for promotion. The Working Group recommended the promotion of weaning paps based on fermented cereal flour as an early weaning food, and ***tia kere churo*** as a late weaning food.

The Child Nutrition Working Group also approved one of the recommendations of the report, that is, to implement weaning food trials which will assess the acceptability of the potential weaning foods.

GAFNA has completed and evaluated an 8 month nutrition education pilot campaign. One of the objectives of the campaign was to investigate the effectiveness of different media and approaches for the dissemination of nutrition education.

The campaign also involved the trial testing of three nutrition messages using Community Health Nurses and village-based traditional communicators as educators. The methods of communication tested were role plays, drama and songs supported by posters and flyers.

The results of this campaign now forms the basis of the GAFNA action-plan for nationwide dissemination of nutrition education messages, which includes the promotion of weaning foods.

2. AIM & OBJECTIVES OF THE TRIALS

The main aim of the trials was to identify nutritionally adequate and culturally acceptable weaning food recipes and feeding recommendations for promotion in The Gambia. The trials attempted to identify acceptable recommendations designed to support change towards improved feeding practices especially during the weaning period, that is the period between 4 and 24 months of age. These weaning foods and recommendations will then be promoted through a nationwide nutrition education campaign.

2.1 OBJECTIVES OF THE TRIALS

- To identify nutritionally adequate early and late weaning food recipes for testing and promotion in 3 rural Gambian communities.

- To develop and test specific behavioural change recommendations aimed at improving infant and young child feeding practices.

3. METHODOLOGY OF THE TRIALS

The methodology for the trials consisted of three phases.

3.1 PHASE I - THE DEVELOPMENT OF THE HOUSEHOLD TRIALS COUNSELLING CHARTS FOR THE DIFFERENT AGE GROUPS OF CHILDREN

A Household Trial Counselling Chart describing the ideal feeding pattern, feeding problems, feeding recommendations, and constraint and motivations to adopting the recommendations was developed for the four different age groups of children. For the purpose of the trials, children under 24 months were divided into 4 groups. These were children between 0 to 3 months, 4 to 6 months, 7 to 9 months and 10 to 24 months.

The characteristic feeding practice at any given age was the criteria for division into these groups. At 0 to 3 months, infants are predominantly breastfed. Very few are fed any other food. At around the age of 4 months, most mothers will start to introduce a weaning food of some sort and the average age for the cessation of breastfeeding is around 24 months of age. The weaning food given at 4 months may differ from that given later and for this reason, we divided the 4 to 24 month age group into three groups.

The chart was developed to serve as a guide for field workers who worked with the mothers to identify the recommendations they were willing to try which translate into those recommendations suitable for adoption. Most of the information on the Counselling Charts was obtained from the qualitative study of infant and young child feeding practices conducted by GAFNA in 1991.

3.2 PHASE II - COMMUNITY DISCUSSIONS AND DEMONSTRATIONS IN 2 RURAL VILLAGES TO IDENTIFY WEANING FOOD RECIPES AND MOTHERS REACTION TO RECOMMENDATIONS IN COUNSELLING CHARTS

Focus group discussions and recipe trials were held with 2 groups of 6 mothers of infants aged 4 to 7 months in each of 2 village, that is Sintet and Sankule kunda. The discussions were limited to mothers of children aged 4 to 7 months as most of their children would be receiving weaning foods and these mothers would have recent experience in preparing such foods.

The specific objectives of the focus group discussions and recipe trials were:

- To investigate mothers' views on specific issues concerning young child feeding, including:
  - consistency of pap and changes in consistency,
  - addition of other ingredients to weaning paps,
  - motivations and constraints for changing early feeding practices and perceptions of a healthy child.

- To learn how a small sample of mothers usually prepares pap, their reasons for using these ingredients and methods, the desired consistency and other qualities of the pap.

- To investigate how much the pap can be enriched by using larger quantities of the usual ingredients, specifically millet, sugar, and milk, and mothers' willingness to feed a thicker pap.

- To ask small groups of mothers to develop recipes to enrich pap by adding energy- and protein-rich local foods such as groundnut, cowpea (beans), and/or vegetable oil. To observe which ingredients are preferred and why, what methods are used in preparation, and the response of mothers and children to the final products.

- To use the above information to refine the sections of the Household Trial Counselling Chart on recommendations, constraints and motivations related to enriching paps for young child feeding.

3.3 PHASE III - TRIALS OF THE SELECTED WEANING FOOD RECIPES AND RECOMMENDATIONS AT HOUSEHOLD LEVEL TO IDENTIFY THE ONES WHICH ARE MOST ACCEPTABLE AND THEREFORE HAVE THE POTENTIAL OF IMPROVING CHILD FEEDING PRACTICES IN THE GAMBIA

The household trials were conducted in three villages chosen because they include a mixture of various ethnic groups. These were Sarra kunda, in the North Bank of the Central Region, Sintet in the Western Region and Sankule kunda, in the MacCarthy Island Division of the Eastern Region.

The specific objectives of the houshold trials were:

- To observe mothers' responses to recommended changes in weaning practices and recipes for increasing the nutritional value of weaning paps.

- To investigate the constraints and motivations that affect mothers' willingness to try new practices, during the process of counselling them on children's diets.

- To determine whether the recommended practices are feasible for mothers to implement and whether they report success and willingness to continue the recommended practices.

- To determine which recommendations are most appropriate for promotion on a wider scale.

3.3.1 The study sample for the household trials

The household trials were carried out on mother-child pairs selected from the 3 trial villages. A total of 60 children aged 0 to 24 months, from three categories healthy, malnourished and suffering from diarrhoea participated in the trials. Malnourished children were identified following consultation with the Community Health Nurse for the list of children identified as malnourished during the August/September nutrition surveillance programme. These children were followed-up and where their poor nutritional status was confirmed using weight-for-age measurements, they were considered for selection into the study. Weight measurements were taken using Salter Hanging scales and weight-for-age assessed using the local infant welfare card.

The children were divided into age, community and health status as follows:

Table 2: Sample frame for Household trials

Age	Sintet			Sarrakunda			Sankule kunda			Total
	H	U	D	H	U	D	H	U	D	
0-3	2	0	0	3	0	0	2	0	0	7
4-6	3	1	0	4	1	0	7	1	0	17
7-9	2	4	1	2	2	1	8	0	0	20
10-24	2	2	2	2	2	1	4	1	0	16
Total	9	7	3	11	5	2	21	2	0	60

note: H = healthy, U = undernourished, D = diarrhoea

3.3.2 Selection and training of field staff

Five field staff, two females and three males were identified, one from the Nutrition Unit Ministry of Health, one from the Women's bureau, two from the School of Public Health and one from GAFNA. All of them were fluent in at least two of the local languages. Three of them had previous experience in data collection and of this three, two had been previously involved in qualitative data collection. The GAFNA Projects Assistant who works under the Supplements Development Unit, served as Field Supervisor.

A five day training programme facilitated by Kate Dicken and Kinday Samba Ndure was conducted. The training covered a whole series of issues including: An overview of the methodology of the household trials, principles of qualitative research, steps in counselling, use of the 24 hour recall method in dietary assessment, use of household data forms, demonstration of recommended recipes, training on weighing of children to asess nutritional status. A field trip to test the counselling chart and data forms was carried out on the final day of the training programme.

3.3.3 Methodology of household trials

A preliminary visit was made to each village to explain the study and prepare the community for the field team's arrival. Once on site to conduct the research, field workers spent one to two days identifying eligible children and selecting households to participate in the study. Four subsequent visits were made to each household during the trial, as described below.

Initial visit:

Field workers visited each mother to collect background information and conduct a 24-hr recall and dietary assessment of study children using Form H-1 (see appendix C). Based on this dietary information, problems were identified and recorded using the codes from the counselling chart. Areas of child feeding that need improvement and recommended changes in practices were explained to the mother. Through a process of negotiation with the mother, the field worker assessed and recorded the mother's reaction, and reasons for accepting or not accepting each suggested practice.

Agreement was reached on one or two specific changes the mother was willing to try during the following two weeks. Her choice was recorded on Form H-1 (see appendix C) and a reminder of the practice to be tried was left with the mother.

Where necessary, the field worker provided detailed instructions or a cooking demonstration based on the recipes in appendix B, so that the mother knew how to implement the new practice. A date was arranged for a follow-up visit approximately three days later.

Second visit:

Field workers returned to the households within 3 days to check if mothers have had any difficulties in implementing the new practices. The objective was to be supportive and encouraging, to note mothers' comments, concerns and any modifications in the recommended practices (see appendix C, Form H-2).

Third visit:

Another follow-up visit was scheduled about 4 days later (i.e. one week after the initial interview) to again check on the mother, encourage her, and note any difficulties or successes that have occurred (see appendix C, Form H-3). In both the second and third visits, the mother was asked whether she continued to follow the recommendations agreed upon.

Final visit:

The field workers returned to each household 14 days after the initial interview. Discussions included a 24-hr recall of the child's intake, the mother's experience with the new practice(s), the child's response, and the mother's willingness to continue the practice in the future. Form H-4 (see appendix C) was completed at this time.

Where necessary, the mother was provided with additional counselling on child nutrition during this final visit.

4. RESULTS OF THE FOCUS GROUP DISCUSSIONS & RECIPE DEMONSTRATIONS

4.1 WEANING FOOD RECIPE DEVELOPMENT

In the focus group discussions, a small group of mothers of children 4 to 7 months of age were asked to develop recipes to enrich pap by adding energy- and protein-rich local foods such as groundnut, beans (cowpea), and/or vegetable oil. This was done in two sessions.

In the first session, mothers were asked to prepare pap the way they would do in their homes. Below is a table of the ingredients used by 4 groups of women from Sintet and Sankuley kunda.

Table 3: Ingredients used in session 1 of recipe trials

INGREDIENT	AMOUNT USED (g)			
	SINTET		SANKULEY KUNDA	
	GROUP 1	GROUP 2	GROUP 1	GROUP 2
millet (fermented)	80	100	100	500
sugar	15	30	30	60
salt	a pinch	a pinch	a pinch	a pinch
milk				60 ml
water	375 ml	500 ml	675 ml	500 ml
size of serving	125	125	125	125

All 4 groups of mothers prepared *ogi* from fermented millet flour, sugar and salt. Mothers were asked to show the amount of pap they would feed to a 4 to 6 month of child, the size of these servings was approximately 125g.

One group from Sankuley kunda added some fresh cow's milk to their *ogi*. According to mothers in this group, milk was added to improve the flavour of the *ogi*.

During this session, mothers always added more water when they felt that the *ogi* was too thick but the consistency of the paps at the end of preparation was thick enough to be fed to a 4 to 6 month old child.

In the second session, mothers were asked to prepare two additional recipes. For the first one, mothers were asked to plan and prepare a thicker or richer pap, depending on the type of pap that is usually prepared, i.e. if the usual pap is thick, mothers were asked to try adding ingredients; if the usual pap is watery, mothers were asked to try making a thick pap. The recipes were based on their choice of the potential ingredients provided. These were millet, fresh milk, sugar, salt, groundnut paste, pounded groundnut, bean (cowpea) flour, and vegetable oil.

Table 4: Ingredients used in session 2 of recipe trials

INGREDIENTS	AMOUNTS USED (g)			
	SINTET		SANKULEY KUNDA	
	GROUP 1	GROUP 2	GROUP 3	GROUP 4
RECIPE 2				
millet flour	60	160	500	125
sugar	30	30	125	90
salt	pinch	pinch	2 pinchs	
milk		50 ml		
groundnut paste			45	
groundnut flour		30		
bean flour	30		80	80
vegetable oil				30 ml
water	375 ml	1500 ml	1800 ml	1000 ml
RECIPE 3				
millet flour	80			
sugar	20			
salt	pinch			
milk	125			
groundnut paste				
groundnut powder				
bean flour	30			
vegetable oil	15			
water	250			

During this session, three groups of mothers added bean flour to their *ogi* mixtures. Vegetable oil, milk, groundnut paste and groundnut powder were used by one group each.

The second group from Sintet added groundnut powder to their millet *ogi*. The groundnut powder was first mixed in water and passed through a sieve. The fluid was then added to the pap and the groundnut grits discarded. Mothers said they would not add the grits to the pap as infants would find them difficult to swallow.

In Sankuley kunda, mothers reported that they often used bean flour in cooking and both groups did so in the second session. The first group of mothers added groundnut paste to the bean and millet flour *ogi*. The groundnut paste was made lighter with water before mixing into the pap. When asked why they did not add oil to the *ogi* they said that they did not know how this was done.

The second group of mothers from Sankuley kunda made a pap from bean flour and oil. When asked why they did not use any of the groundnut products, they said they did not know how these could be incorporated into *ogi*. In addition, oil was considered the same as groundnuts which has a high oil content.

All the paps made in this session were considered suitable for feeding to sick children as long as the pap was not made too thick.

Prior to the household trials, 5 recipes were formulated based on the ingredient combinations mothers tended to use. These combinations were then improved where the nutritional value of a recipe was found to be inadequate. These recipes were to be promoted during the household trials and field staff prepared and tasted them during their training.

The five recipes were millet and milk pap, millet and bean flour pap, millet and groundnut powder pap, millet and groundnut paste pap and millet and vegetable oil pap. (See appendix B for recipes).

The consistency of the paps prepared from these recipes was used as a standard and field workers were asked to grade the consistency of paps given to study children on this standard. Each of the recipes prepared enough pap for approximately two portions and the field staff were to judge the adequacy of the amount of pap given to study children based on these portion sizes.

5. RESULTS OF THE HOUSEHOLD TRIALS OF WEANING FOODS AND EDUCATION MESSAGES

For each age group addressed during the household trials, the following issues will be highlighted:

- Which options are mothers most willing to try?
- Which options are mothers able to follow through and which are more difficult to implement?
- Which constraints are strongest and most resistant to change, and which motivators are most effective in promoting the recommended practices in above three points?
- What is the effect of diarrhoea or malnutrition on the findings for each age group?

5.1 THE 0 TO 3 MONTH AGE GROUP

Seven babies between the age of 0 to 3 months were selected. All of them were healthy and well-nourished. No undernourished infants or infants with diarrhoea were observed from the 3 study villages.

Ideal Feeding Pattern: Early initiation of breastfeeding, including feeding of colostrum. Exclusive breastfeeding with no additional water, pap, or other foods/liquids.

5.1.1 Diet analysis of selected babies

- Breastmilk and hot water with added sugar were the most common components of the diet of infants within this age group.
- Two of them had already been introduced to *ogi* (a thin pap made from fermented millet flour).

Two recommendations from the counselling chart were tested for this age group.

5.1.2 Options mothers are most willing to try

All mothers were advised to breastfeed exclusively up to 4 months of age. This advice was also extended to mothers who had introduced their infants to *ogi*.

Table 3: Results of Household trials in the 0-3 month age group:

RECOMMENDATION	No. who were advised to try	No. who agreed to try	No. who followed recommendation
Exclusive breastfeeding for 4 months	7	5	4
Breastfeed for longer and more frequently if child needs more	0	0	0

All five mothers who were only feeding their babies on breastmilk and hot water at the time of the trials agreed to breastfeed exclusively for the first 4 months of life. This practice was continued during the course of the trials with one exception. One mother from Sintet introduced *ogi* to her 3 month old child on the day of the last visit. She said she would continue to give *ogi* as it made her child strong and healthy.

The two mothers who had introduced *ogi* to their infants were also advised to breastfeed exclusively for four months. This was considered a reasonable advice as both infants were only 2 months of age. At the same time the option to make the *ogi* thicker was also discussed. None of these mothers agreed to breastfeed exclusively and both of them continued to give *ogi* throughout the course of the trials.

5.1.3 Motivations and Constraints to exclusive breastfeeding

The motives given by mothers who agreed to breastfeed on demand were:

- mother does not want child to develop diarrhoea
- exclusive breastfeeding got rid of constipation and frequent stools
- children breastfed exclusively cry less and gain weight.

From the results of the household trials, it appears that the only constraint to exclusive breastfeeding is the introduction of weaning foods.

5.2 THE 4 TO 6 MONTH AGE GROUP

For this age group, seventeen mother-child pairs were selected. Four of these infants were undernourished and none were suffering from diarrhoea at the time of the trials. One mother and child pair left the village before the end of the trials.

Ideal Feeding Pattern: Continued frequent breastfeeding, on demand. Introduction of complementary semi-solid weaning foods such as pap enriched with milk, groundnut, sugar, beans, oil. Pap should be given after breastfeeding, about 3 times a day, and given with a clean cup and spoon.

5.2.1 Diet analysis of selected babies

- All the infants were breastfed and most of them were breastfed on demand. Frequency of breasfeeding was on average greater that 5 times a day.
- Almost all the infants were being given water.
- Seven of them were receiving *ogi* made out of millet and the most common additions to the weaning pap were sugar and milk.
- Five of the infants were only receiving breastmilk and water.
- Most mothers feeding weaning foods at least three times a day and the weaning food was prepared once a day.
- The consistency of the weaning pap was adequate in most cases.

5.2.2 Options mothers are most willing to try

To improve the quality of weaning foods, mothers were given the option of adding more milk, groundnut paste or powder, bean flour or vegetable oil to the weaning food. Twelve mothers out of fourteen (85%) choose to add groundnut paste to weaning paps. The choice of adding vegetable oil or milk were selected by one mother each. The reason for this was that groundnuts were available in almost every household most of the year. A mother from Sankuley kunda agreed to follow the recommendation because both she and her child liked the taste of the groundnut pap. Another mother from Sintet said she liked the colour of the groundnut pap. One mother from Sankuley kunda said that because her daughter had learnt how to prepare groundnut pap, she was willing to continue the recommendation.

However, not all mothers were able to follow the recommendation to feed groundnut pap. A mother from Sarrakunda could not continue to do so because she had no groundnuts available at home and could not afford to buy groundnuts. Another mother changed to adding bean flour instead of groundnuts, because she had beans in her household at the time of the trials.

Table 4: **Results of Household trials in the 4-6 month age group:**

RECOMMENDATION	No. who were advised to try	No. who agreed to try	No. who followed recommendation
Breastfeed before feeding the weaning food	0	0	0
Breastfeed more frequently and on demand	2	2	1
Make pap thicker, increase amount of millet flour	2	1	1
Feed smooth churah gerteh	2	0	0
Add more milk to weaning pap	14	1	1
Add groundnut paste of powder	14	12	8
Add bean flour	14	0	0
Add vegetable oil	14	1	0
Feed one more meal each day	11	5	5
Feed nutritious snacks eg futo kanya, between meals	1	1	1
Increase serving size, encourage the child to eat more	1	1	1
Cook pap at least twice a day (morning and evening)	10	9	9
Leave prepared foods such as futo kanya and pap for feeding throughout the day	0	0	0
Start feeding an enriched pap, given after child has breastfed fully	8	2	2

Adding oil to weaning paps is one of the most effective ways of increasing energy density. As mentioned before, only one mother was willing to try this option but she did not follow it because she could not afford to buy oil.

In Sankuley kunda, a mother prefered to add milk to her child's weaning pap. Another was willing to add oil but could not follow the recommendation because she could not afford to buy oil.

The consistency of the weaning pap was adequate in almost all children investigated and the option of making the pap thicker was only proposed to two women. Only one mother, from Sintet agreed to follow this proposal. She said that she would continue the recommendation because thicker paps stayed longer in a child's stomach than thin paps. So a child eating a thick pap will stay full for a longer while than a child who is fed thin paps.

Another popular option was to cook the weaning pap twice a day inorder to reduce the risk of feeding the child contaminated food. This option was suggested to ten women, and nine (90%) of them choose to follow it. A woman from Sintet said, that because she had learnt that preparing a pap once a day may cause diarrhoea, she would continue to cook her child's pap twice a day.

In two cases, from Sarrakunda and Sankuley kunda, where frequency of feeding was inadequate, the mothers of these children agreed to increase the frequency of feeding by one meal and give their children snack foods, like *futo kanya*[1] between meals. The mother from Sarrakunda said that she would continue the recommendation because she had noticed that her child had put on weight during the course of the trials. The other mother from Sankuley kunda said that extra feeds made a child grow stronger and quicker.

In most cases, the frequency of breastfeeding was sufficient, because mothers breastfed on demand. This was not the case in two child. The mother of one of these children refused to follow the recommendation because she was too busy. This mother also introduced her child ***churah gerteh*** by the end of the trials.

[1] ***Futo kanya*** - this is a traditional snack food made out of steamed millet flour that has been made into small pellets, mixed with groundnut paste and water at a ratio of 3 to 1.5 to 1.

5.2.3 The effect of diarrhoea or malnutrition on the findings for the age group

Four infants followed-up in this group were undernourished. One of these infants from Sankuley Kunda, was being fed on *cerelac*, an imported infant cereal food which she prepared once a day. This mother agreed to add milk to this food and prepare it twice a day. Two other mothers agreed to add groundnut paste to their infants weaning paps. Both mothers, from Sankuley kunda and Sintet respectively, agreed to continue the practice.

The fourth mother, from Sintet, whose child was receiving only breastmilk at the time of the trials, was willing to introduce her child to weaning paps with added groundnuts but discontinued the practice after two days. Her reasons were that the child did not like the pap as a result of which, her husband had advised her not to continue the recommendation.

5.2.4 Motivations and Contraints

The most accepted recommendations for this age group were:

- to cook pap at least twice a day
- add groundut paste to pap
- make pap thicker by adding more cereal flour

The motivations to following these recommendations were:

- child likes pap and eats well
- child continues to gain weight
- chid does not cry as often as before
- child likes taste of groundnut pap

Constraints were reported only for the last two accepted recommendations. These were:

- Mother does not have groundnuts
- child does not like the pap

5.3 THE 7 TO 9 MONTH AGE GROUP

Twenty mother-child pairs were selected within this group. Six of the infants were undernourished and two of them had diarrhoea at the time of the trials. During the course of the trials, there were two drop outs. One was due to death and another to travel.

Ideal Feeding Pattern: As above (for 4-6 months) with increasing variety and amount of food. Semi-solid foods 4 times a day. Inclusion of fruits and green vegetables, groundnuts, beans, fish, etc.

5.3.1 Diet analysis selected infants

- All the children were breastfed but not as frequently as in the 4 to 6 month age group.
- Five children were only receiving breastmilk and no other food.
- Millet pap was the most common weaning food given and a common addition to this pap was sugar.
- The consistency of the millet pap was usually the same for the 4 to 6 month age group and sufficient quantities were not being given.
- Some of the infants were already receiving adult foods but only in small quantities.

5.3.2 Options mothers most willing to try

To improve on the above feeding problems, the following options were most often discussed with mothers:

- breastfeed as frequently as possible
- feed at least one more meal a day
- feed nutritious snacks between meals e.g *futu kanya*,
- make pap thicker and enrich with milk, groundnuts, beans and or oil
- encourage child to eat more adult foods
- feed *churah gerteh* 3 times a day.

Table 5: Results of Household trials in the 7-9 month age group:

RECOMMENDATIONS	No. who were advised to try	No. who agreed to try	No. who followed recommendation
Breastfeed as frequently as possible	5	2	2
Feed at least one more meal each day	6	3	3
Feed nutritious snacks between meals eg futu kanya, fish cakes and pancakes	11	5	2
Enrich pap with groundnuts	11	6	2
Feed churah gerteh	9	4	4
Encourage child to eat more of adult foods, esp fish, vegetables and fruit	10	6	6

Only two mothers out of five (40%) agreed to breastfeed their children more frequently. Six mothers were given the option of feeding at least one more meal a day and half of them agreed to follow the recommendation.

Out of eleven mothers with whom the option of enriching the consistency and quality of weaning paps by adding groundnuts was discussed, six (55%) were willing to follow the recommendation. A mother from Sintet reported that before her child did not like pap made from millet but when she added groundnuts to it, the child ate it happily. Three of the mothers who had agreed to add groundnuts to their infants paps reported that they could not continue the recommendation because they had no groundnuts available at home and could not afford to buy it. Another mother from Sankuley kunda who had agreed to give her child groundnut pap switched to adding dried fish to her infant's pap by the end of the trials. This mother believed that fish was good for children.

Alternatively, 9 mothers were willing to feed their children with ***churah gerteh***, a weaning food which is considered to be more appropriate for this age group. Only 4 of these 9 mothers (44%) agreed to follow the recommendation.

Mothers of children who were already receiving adult foods agreed to give more adult foods. The recommendation was also tried on other mothers whose children were not yet receiving any adult foods.

One mother from Sankuley kunda chose to follow this recommendation instead of enriching her infants pap with beans, groundnuts or oil, ingredients she said she could not afford. She continued to give her child adult foods inspite of opposition from members of her household. She added that her child had suffered from diarrhoea during the course of the trials and because she was giving adult foods, the diarrhoea was not severe and lasted for only a day.

Out of 6 mothers who agreed to feed adult foods to their children, two refused to continue the recommendation. One of these mothers, a woman from Sintet refused to continue because she believed adult foods were too bulky for eight month old infants. The other mother from Sankuley kunda gave as her reason her childs lack of teeth and inability to chew adult foods.

Five children in this age group were only receiving breastmilk at the time of the study. Four of them were undernourished and are discussed below. The remaining child had a normal weight for age. The mother of this child agreed to give her child a weaning pap enriched with groundnuts and introduce adult foods. Both recommendations were followed during the course of the trials.

5.3.3 The effect of diarrhoea or malnutrition on the findings for the age group

Six of the infants in the 7 to 9 month age group were undernourished. The average age of these infants was 8.5 months and four of them (80%) were only receiving breastmilk at the time of the study. Of this four, one passed away before the end of the trials. The mothers of two of these infants agreed to introduce their children to weaning paps enriched with groundnuts but did not adopt the recommendation. One of these mother's, a woman from Sankuley kunda reported that she could not afford groundnuts and the other from Sintet reported that her child did not like weaning paps. The mother from Sintet agreed to give her child more adult foods instead. The fourth mother from Sarrakunda, agreed to give her child ***churah gerteh*** and continued to do so during the course of the trials.

The 24 hour diet recall of the other two undernourished children revealed that one had received breastmilk and ***ogi*** and the other had received breastmilk, ***ogi*** and rice, the day before the initial visit. Both mothers agreed to feed their children thicker paps enriched with groundnuts and were prepared to continue the recommendation. The mother of the child already recieving rice agreed to give her child more rice. This mother, from Sintet, added that rice was a good substitute when ***ogi*** was unavailable.

Two infants suffering from diarrhoea were identified from Sintet and Sarrakunda respectively. Both infants were breastfed on demand and neither had eaten any form of weaning pap the day before the initial visit. Both had eaten adult foods the day before the initial visit.

The mother from Sintet agreed to give her child groundnut pap and the other mother from Sarrakunda agreed to feed her child *churah gerteh* three times a day.

5.3.4 Motivations and Constraints

The most accepted recommendations for this age group were:

- to feed at least one more meal per day
- enrich the weaning pap by adding groundnut paste
- encourage child to eat more adult foods, especially fish, vegetables and fruits
- give snacks eg futu kanya and pancakes
- feed churah gerteh 3 times per day

The motivations to adopting these practices were:

- child gains weight
- child is eating more than usual.

Most of the constraints were encountered with the recommendations to add groundnut paste to pap and to feed adult foods. In the first case, some mothers could not follow the recommendation because they could not afford groundnuts and others reported that their children did not like groundnut pap.

In the second case, mothers were reluctant to adopt the recommendation because they believed children who had no teeth could not eat adult foods.

5.4 THE 10 TO 24 MONTH AGE GROUP

Sixteen mother-child pairs were selected within this age group. Three children had diarrhoea at the time of the survey and 5 were undernourished. There was only one drop-out before the end of the trials.

Ideal Feeding Pattern: Ideal Feeding Pattern: Inclusion of more "family foods", particularly the vegetables, fish, etc. in the sauce. Feeding at least 4-5 times a day, either meals or nutritious snacks, given in adequate amounts (200-300g). Continued breastfeeding.

5.4.1 Diet analysis of selected infants

- Most of the children were breastfed.
- Three children, all of them over 16 months of age, had already been weaned of the breast.
- Most of the children were eating adult foods.
- Most of the children were still receiving weaning paps in the form of *ogi* and *churah gerteh*.

5.4.2 Options mothers most willing to try

For this age group, recommendations for both children aged 7 to 9 months and 10 to 24 months were promoted as applicable. The most often proposed recommendations were:

- to make the weaning pap thicker and enrich it with grounduts
- to feed at least one more meal per day
- to increase amount of serving and make sure child gets a bit of every ingredient in an adult dish
- to feed nutritious snacks eg futu kanya, fruits and pancakes
- to serve child from a seperate bowl
- to introduce feeding adult foods

Eleven of the children investigated had consumed adult foods the day before the previous visit. However, the number of meals in the day was insufficient. On average, children were eating only three to four meals a day. Where the option of increasing the number of meals was coupled with feeding nutritious snacks, mothers tended to prefer to follow the second recommendation.

Table 6: **Results of Household Trials in the 10-24 month age group:**

RECOMMENDATIONS	No. who were advised to try	No. who agreed to try	No. who followed recommendation
Continue breastfeeding until 24 months of age	0	n/a	n/a
Feed at least one more meal per day	3	1	1
Feed nutritious snacks between meals eg. futu kanya, fish cakes, pancakes	0	n/a	n/a
Increase amount of serving and make sure child gets a bit of every ingredient in an adult dish.	3	1	1
Feed nutritious snacks eg. futu kanya, fruits, pancakes, etc.	7	4	4
Put child's food in a separate bowl and encourage child to eat as much as she can. If child is feeding herself, she should be supervised by an older person.	7	7	7
Begin feeding adult foods, mashed or mixed with sauce, with less pepper. Encourage child to eat and become accustomed to adult foods.	3	2	2

n/a = not applicable

It is traditional practice to feed communally, and the recommendation to feed children from a separate bowl was proposed to seven mothers. All of them (100%) accepted to follow the recommendation. In one case, a mother reported that even though she fed her child from a seperate bowl, the child still continued to feed communally with other members of the family. A mother from Sankuley kunda said that she would continue the recommendation because her child was eating well from its own bowl and there was no disturbance from other children. Another mother from the same village said that if a child eats from its own bowl he or she is more likely to eat enough.

Ten children in this group were still receiving weaning foods in the form of *ogi* or *churah gerteh*, especially at breakfast time. The option to improve the nutritional value of the *ogi* by adding groundnuts was discussed with five mothers and three of them (60%) agreed to follow the recommendation. One mother from Sintet said that when she had no groundnuts, she would sometimes added other ingredients such as butter to enrich the weaning pap.

5.4.3 The effect of diarrhoea and malnutrition on the findings for this age group

Five children in this group were malnourished. The diet of the malnourished children did not appear to vary much from that of normal weight children. Four of the underweight children were still breastfeeding and had consumed rice and a stew the day before the initial visit. Four of them had also eaten *ogi* or *churah gerteh* on this same day.

Three mothers of malnourished children, two from Sarra kunda and one from Sintet, agreed to feed nutritious snacks. The same number also agreed to feed adult foods from a seperate bowl. Another three mothers from each of the study villages agreed to feed one more meal a day and one of these mothers, from Sintet was willing to enrich her child's pap with groundnuts. All these mothers reported that their children gained weight and responded well to the recommendations.

In this age group, three children with diarrhoea were identified and followed-up during the household trials. All of came from Sintet. One of these children, a sixteen month old boy, had received only breastmilk the day before the initial visit, this child was also undernourished. It is not certain whether other foods were withdrawn because of the diarrhoea. Another was fed on rice and stew the day before the initial visit and the third had been given *ogi*. Both of these children were also breastfed.

The mother of the child receiving only breastmilk, agreed to introduce adult foods, mashed or mixed with a stew, and feed the child with nutritious snacks. She promised to follow the recommendations because the child responded well to them.

One of the mothers feeding *ogi* to her child agreed to add groundnuts to it and at the end of the trials informed us that she will continue the recommendation because her child had gained weight.

The third mother who was feeding her child both *ogi* and adult foods, agreed to feed an extra meal for one to two weeks after the illness is over and also add groundnuts to her child's *ogi*. Her child responded well to the recommendations and the diarrhoea stopped, during the course of the trials.

5.4.4 Motivations and constraints

For this age group, the recommendations mothers were most willing to try were:

- to feed adult foods twice a day
- to feed child from a seperate bowl
- to feed child with snack foods eg ***futu kanya***

Motivations to accepting the selected recommendations were:

- child is gaining weight
- child eats well to satisfaction
- mother wants child to be healthy

Mothers hardly reported any constraints to adopting these recommendations. Feeding a child from a seperate bowl was noted as a constraint where a child was accustomed to eating with other children and did not want to eat on his/her own.

6. CONCLUSION

The household trials have resulted in the identification of ten feeding recommendations out of over fifty which were specifically formulated to improve feeding practices in children under 24 months. It is envisaged that these recommendations will be appropriate to promote on a wider scale and will have the potential to improve infant and young child health because mothers were willing to try them over the course of the trials and continue them after the end of the trials.

Mothers experienced very few constraints in adopting these recommendations. Most often, constraints were encountered with the addition of certain ingredients to weaning paps, such as groundnuts, oil and bean flour due to lack of availability at certain times of the year and inaffordability where mothers had to buy these ingredients. In a number of cases some types of weaning paps were also rejected because children did not like them.

The strongest motivations were the ability to confer good health and promote weight gain. On the initial visit of the household trials, all the selected children were weighed. It was intende to weigh children on the final visit to assess whether there was any weight change during the course of the trials. On second thoughts, this option was cancelled. The reasons were that 14 days was a short period to expect much weight change and were any weight change was recorded, this could not be attributed totally to the household trials.

When a child responded well to a certain recommendation, for example, eating groundnut pap or adult type foods and eating from a separate bowl, this was also considered to be a motivation.

One of the objectives of the trials was to identify nutritionally adequate early and late weaning food recipes for infants under and over 7 months age respectively. The qualitative research on infant and young child feeding practices identified millet ***ogi*** and ***churah gerteh*** as common early and late weaning foods.

In these trials, millet ***ogi*** enriched with groundnuts and extra millet flour was the most accepted weaning food recipe for infants between 4 and 6 months and 7 and 9 months of age. Mothers of childre in the 7 to 9 month age bracket were also willing to feed their children ***churah gerteh*** but to a less extent groundnut ***ogi***. Probably the main reason why ***churah gerteh*** was not accepted by a greater proportion of mothers was that not all mothers in the 7 to 9 month age group were proposed the option.

It was observed during the recipe and household trials, that weaning paps given to some children were thicker than was previously reported (Rowland & Whitehead, 1979, Samba & Gittelsohn, 1991) and in only two cases was the pap considered to be too thin. There could be three explanations for this: firstly, mothers from these three communities always gave their children thick paps, or secondly, if previously they gave their children light paps, this practice could have been modified as a result of education or the presence of field workers and thirdly, the field worker assessment of thickness during the trials could have been innacurate. Nevertheless, mothers who were found to give their children

One of the major limitations of the trials was in the method used to identify recommendations that mothers were 'willing to try'. In the initial visit, a number of options were discussed with the mother and the one(s) she decided to follow were the noted as those she was 'willing to try'. During the follow-up visits, willingness to follow these recommendations was based on the mother reporting that she continued to follow the recommendations she selected during the initial visit. No observations of actual practice of the recommendations, for example watching a mother prepare and feed groundnut pap, was carried out as this was considered tedious and time consuming.

As with the preceding ethnographic study of infant and young child feeding practices, ethnic variations in willingness to adopt certain recommendations over others was not apparent in this study. In other words, these results are likely to apply to different ethnic groups and different parts of the country.

Future directions for GAFNA will now include:

- Conduct focus group discussions to discuss the findings of the study, with a wider cross-section of rural mothers.

- Convene a meeting of the Child Nutrition Working Group to discuss the findings of the study.

- Refining the Household Trial Counselling Chart, incorporating the motivations and constraints highlighted during the household trials and deleting recommendattions mothers were not willing to try.

- Producing the refined Counselling Chart and distributing it to all Community Health Nurses for use in training of CHNs about and feeding of children under 24 months. The CHNs will also be trained on how to uses the chart to assess current infant and young child feeding practices and counsel mothers to practice recommendations that will improve infant and young child nutrition. A more concise card will be developed for use by CHNs in health education sessions.

- Incorporation of the accepted weaning and education messages into the GAFNA nutrition education programme.

The recommendation to add groundnut paste to pap has already been included in the list of nutrition education messages to be promoted this year as part of the nutrition education programme.

In April, a nursing sister from the UK donated a prototype weaning food demonstration kit to GAFNA. The kit was developed at the Dunn Nutrition Unit field station in Keneba and is to be used at village level to show mothers how to prepare nutritionally balanced weaning foods and promote proper hygiene and feeding practices. GAFNA proposes to build more of these kits to facilitate promotion of the selected weaning food and education messages.

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APPENDICES:

APPENDIX A: WEANING FOOD & EDUCATION MESSAGE TRIALS COUNSELLING CHART

AGE GROUP	FEEDING PROBLEMS	RECOMMENDATIONS	CONSTRAINTS	MOTIVATORS
0 - 3 months	Ideal Feeding Pattern: Early initiation of breastfeeding, including feeding of colostrum. Exclusive breastfeeding with no additional water, pap, or other foods/liquids.			
	1. Water, sugar-water or other liquid is given.	1a. Breastfeed exclusively, do not give water. (Mother should drink more water herself.)	Belief that breast-milk is a food and you need to drink water after eating a food. Belief that b/milk causes thirst.	Giving water can cause diarrhoea. B/milk is a complete meal, containing food and water. When child drinks water, less space for b/milk in stomach and if she sucks less the mother produces less milk.
	2. Thin weaning paps or other foods are given.	2a. Breastfeed longer and more frequently if child needs more. Do not feed anything other than breastmilk before 4 months of age.	Mother feels she does not have enough milk or that the child is not getting satisfied.	Most mothers do enough milk and more frequent sucking produces more milk. Child does not need pap yet, and it interferes with b/milk production.
4 - 6 months	Ideal Feeding Pattern: Continued frequent breastfeeding, on demand. Introduction of complementary semi-solid weaning foods such as pap enriched with milk, groundnut, sugar, beans, oil. Pap should be given after breastfeeding, about 3 times a day, and given with a clean cup and spoon.			
	3. Weaning food is given before the breast. Breastfeeding may reduced and/or not on demand.	3a. Breastfeed before feeding the weaning food. 3b. Breastfeed more frequently and on demand (specify how many more times/day)	Belief that weaning foods should replace rather than supplement breastmilk. Mothers away from home for farming.	Breastmilk is very important for the child's health up to 2 years of age.

4. Pap is very watery.	4a. Make pap thicker, increase amount of millet flour by 4b. Also give churah gerteh (smooth).	Belief that child cannot chew or swallow thick paps. Belief that transition from a liquid to a solid/ semi-solid diet should not be sudden. Mothers unaware of when child's growth begins to falter. Pap is watery so can be drunk from a cup.	A watery pap does not give strength. a child can swallow a thicker pap, or ground food. Growth monitoring can be used to indicate the need for introduction of nutritious weaning foods.
5. Mother rarely adds ingredients other than sugar and/or small amount of milk.	5a. Add more milk (can use milk to thin a thick pap). 5b. Add groundnut paste or powder. 5c. Add bean flour. 5d. Add vegetable oil.	Lack of availability and acceptability of additional foods. Lack of knowledge on method of preparation of weaning mixes. Lack of time for preparing special foods.	A variety of foods is better for children. Foods like milk, groundnuts, beans help the child grow and stay healthy and cause less trouble for the mother. Oil can make pap easier to swallow. Provide recipes and demonstrations to increase knowledge.
6. Infrequent feeding, less than 3 times/day.	6a. Feed at least 1 more meal each day. 6b. Feed nutritious snacks between meals.	Belief that children need the same amount of meals as adults. Mothers busy with farm and household chores.	Children need more meals than adults because they have small stomachs which cannot take much at one time.

	7. Very small amounts are fed.	7a. Increase serving size (specify amount, ie. 2 tbsp). Encourage child to eat more.	Belief that child only needs and is able to eat small amounts. Limited food availability.	Children need more food because they are growing. Children can learn to eat larger servings and be satisfied longer.
	8. Weaning pap is usually cooked only once a day.	8a. Cook pap at least twice a day (morning and evening).	Mother is busy and may have fuel constraints.	If food is not fresh, or fed soon after cooking, it may cause diarrhoea.
	9. Other caretakers not able to prepare proper weaning foods when mother is away.	9a. Leave prepared foods such as futu kanya, and pap for feeding throughout the day (Include other caretakers in demonstrations and training on child feeding.)	Belief that certain snack foods not acceptable for child. Danger of contamination of foods if not freshly prepared. Some caretakers too young for the responsibility.	Need to ensure that child gets good care in mother's absence. Small children need frequent meals, and cannot wait for mother's return.
	10. No complementary foods have been introduced yet and child is not growing well.	10a. Start feeding an enriched pap, given after child has breastfed fully.	Belief that child is not ready for food.	Child is older now and not growing well enough on breastmilk alone so need to add nutritious foods.

7 - 9 months	Ideal Feeding Pattern: As above (for 4-6 months) with increasing variety and amount of food. Semi-solid foods 4 times a day. Inclusion of fruits and green vegetables, groundnuts, beans, fish, etc.			
	11. Breastfeeding is reduced and is not on demand.	11a. Breastfeed as frequently as possible, especially at night if mother absent during day. (specify increase)	Mother busy or absent from home during the day. Belief that weaning foods should replace breastmilk.	Breastmilk helps protect child from disease and makes the child strong. Child needs breastmilk until 2 years.
	12. Infrequent feeding: 3 or fewer times per day.	12a. Feed at least 1 more meal each day. 12b. Feed nutritious snacks between meals eg. futu kanya, fish cakes, pancakes.	Belief that children need the same amount of meals as adults. Mother lacks time for cooking and feeding.	Children need more food to grow strong. Need frequent meals because stomach is small.
	13. Millet-based pap is still a major component of diet.	13a. Make pap thicker and enrich with milk, groundnut, beans, and/or oil. 13b. Feed churah gerteh.	Lack of availability and acceptability. Lack of knowledge and time for preparing special foods.	Children need a variety of foods like milk, groundnuts, beans to grow and stay healthy.
	14. Children start to be given adult foods but only in small amounts. Staple foods are often bulky and sauces/stews are highly spiced.	14a. Encourage child to eat more of adult foods, esp. fish, vegetables and fruits. Mix staple with extra sauce to soften and enrich it. Use less pepper. 14b. Give snacks eg. pancakes, futu kanya etc. between feeds.	Belief that child cannot chew adult foods or that some adult foods may cause stomach problems. Food is too peppery.	Child doesn't need teeth to chew and is old enough to take adult foods. Early introduction to adult foods gets child accustomed to it sooner and mother does not need to spend time preparing weaning foods.

18 - 24 months	Ideal Feeding Pattern: Inclusion of more 'family foods', particularly the vegetables, fish, etc. in the sauce. Feeding at least 4-5 times a day, either meals or nutritious snacks, given in adequate amounts (200-300g). Continued breastfeeding.			
	15. Breastfeeding is reduced or stopped.	15a. Continue breastfeeding until 24 months of age.	Mother absent from home during day. Practice of sudden weaning.	Breastmilk is important for child's health up to 2 years.
	16. Infrequent feeding: 3 or fewer times per day.	16a. Feed at least 1 more meal each day. 16b. Feed nutritious snacks between meals eg. futu kanya.	Constraints on time. Lack of awareness that extra meals are needed.	Child is growing and needs more food. Stomach is small so need frequent meals.
	17. Child consumes inadequate amounts of food, especially the nutritious ingredients.	17a. Increase amount of serving and make sure child gets a bit of every ingredient in an adult dish. 17b.Feed nutritious snacks eg. futu kanya, fruits, pancakes, etc.	Lack of availability of foods or time for preparation. Belief that usual family diet is adequate.	Child needs a variety of foods to stay healthy.
	18. Child eats communally with other family members and receives inadequate (or unknown) amount.	18a. Put child's food in a separate bowl and encourage child to eat as much as she can. If child is feeding herself, she should be supervised by an older person.	Traditionally, people eat communally.	Child eats slower and therefore needs to have her own plate, and mother will have an idea of how much the child is eating. Child needs help in feeding herself.

	19. Adult foods are not included in child's diet.	19a. Begin feeding adult foods, mashed or mixed with sauce, with less pepper. Encourage child to eat and become accustomed to adult foods.	Belief that child is too young or does not want to eat adult foods. Lack of time or food availability.	No need to prepare separate food for child. Child is old enough and "heavy" and needs to learn to take adult or "heavy" foods. Adult foods are good for the child's health.
	20. Feeding is stopped or reduced during diarrhoea or other illness.	20a. Continue breastfeeding. 20b. Continue feeding, giving small amounts frequently and encouraging the child to eat. 20c. Give at least one extra meal a day for 1-2 weeks after the illness is over.	Child is vomiting or lacks appetite. Belief that child should eat less or avoid certain foods during diarrhoea.	Child needs food to fight the illness and replace weight lost. Good feeding will help child recover.
	21. Child is undernourished and not growing well.	21a. See recommendations for appropriate age group. Emphasize increasing food intake, i.e. more frequent feeds, larger amounts, adding oil to weaning foods, etc.	Economic constraints and lack of food are likely to be constraints in families with malnourished children. Frequent illness of child. Lack of appetite.	Small changes in child's diet may not cost much but could make a difference to child's health and survival.

APPENDIX B:

NUTRIENT CONTENT OF WEANING FOOD RECIPES

ALL RECIPES PREPARE ENOUGH PAP FOR APPROXIMATELY 2 SERVINGS

Recipe 1: Millet pap with milk

Ingredient	Amount (g)	Energy (kcal/100g)	Protein (g/100g)	Energy (kcal)	Protein (g)
Millet	90	365	9.0	328.5	8.1
Sugar	25	400	0	100	0
Milk	60	65	3.3	39	1.98
Groundnut		332	15.0	0	0
Beans		340	22.0	0	0
Veg.oil		884	0	0	0
Water	625	0	0		
Total weight:	500			467.5	10.08

Energy density (kcal/100g) = 93.5
Percent of energy from protein = 9

Amounts used:

about 3/4 cup millet flour
2 rounded tbsp sugar
1/4 cup fresh milk
2.5 cup water

Recipe 2: Millet pap with bean flour

Ingredient	Amount (g)	Energy (kcal/100g)	Protein (g/100g)	Energy (kcal)	Protein (g)
Millet	80	365	9.0	292	7.2
Sugar	25	400	0	100	0
Milk	60	65	3.3	0	0
Groundnut		332	15.0	0	0
Beans	15	340	22.0	51	3.3
Veg.oil		884	0	0	0
Water	750	0	0		
Total weight:	500			443	10.5

Energy density (kcal/100g) = 70.88
Percent of Energy from Protein = 9

Amounts Used:

about 2/3 cup millet flour
1/8 cup sugar
1/8 cup bean flour
3 cups water

Recipe 3: Millet and groundnut powder pap

Ingredient	Amount (g)	Energy (kcal/100g)	Protein (g/100g)	Energy (kcal)	Protein (g)
Millet	50	365	9.0	182.5	4.5
Sugar	12	400	0	45	0
Milk		65	3.3	0	0
Groundnut	30	332	15.0	99.6	4.5
Beans		340	22.0	0	0
Veg.oil		884	0	0	0
Water	500	0	0		
Total weight:	500			327.1	9.0

Energy Density (kcal/100g) = 65.42
Percent of Energy from Protein = 11

Amount Used:
3/8 cup milet flour
1 heaped tbsp. sugar (1/16 cup)
(1/8) x 2 cup groundnut powder
2 cups water

Recipe 4: Millet and Groundnut paste pap

Ingredient	Amount (g)	Energy (kcal/100g)	Protein (g/100g)	Energy (kcal)	Protein (g)
Millet	45	365	9.0	.164.25	4.05
Sugar	12	400	0	48	0
Milk		65	3.3	0	0
Groundnut paste	15	623	22.6	93.45	3.39
Beans		340	22.0	0	0
Veg.oil		884	0	0	0
Water	500	0	0		
Total weight:	425			305.7	7.44

Energy Density (kcal/100g) = 71.93
Percent of Energy from Protein = 9.73

Amount Used:
3/8 cup roasted millet flour
1 heaped tbsp sugar
1/8 cup groundnut paste
2.5 cups water

Recipe 5: Millet flour and vegetable oil pap

Ingredient	Amount (g)	Energy (kcal/100g)	Protein (g/100g)	Energy (kcal)	Protein (g)
Millet	80	365	9.0	292.5	7.2
Sugar	25	400	0	100	0
Milk		65	3.3	39	0
Groundnut		332	15.0	0	0
Beans		340	22.0	0	0
Veg.oil	14	884	0	123.76	0
Water	500	0	0		
Total weight:	500			555.26	7.2

Energy Density (kcal/100g) = 111.05
Percent of Energy from Protein = 5.18

Amount used:
2/3 cup millet flour
2 heaped tbsp. sugar
2 tbsp vegetable oil
2 cups water

APPENDIX C
RECIPE TRIAL RECORDING FORMS

RECIPE TRIAL RECORDING FORM FORM RT-1

Location: _____ Date: __ __/__ __/__ __

Names of Participants	Age of Youngest Child (months)	Usual Feeding
1. _____	____	_____
2. _____	____	_____
3. _____	____	_____
4. _____	____	_____
5. _____	____	_____
6. _____	____	_____

Recipe for usual method of preparing pap:

Amount of ingredients:	Amount used (local measure)	Amount used (mls)
Millet (fermented: Y/N)		
Sugar		
Salt		
Milk		
Water		
Sour milk		
Size of serving		

Time began: ___ ___ Time ended: ___ ___
[only record the time taken to prepare the recipe.]

Probes:
Ask why, when, how much and how for ingredients and method, including method of fermentation, sieving, whether the solid or liquid fraction of "ogi" is used, order of adding ingredients. How do other mothers do it differently? Why?

Once pap is cooked, probe on serving size and number of meals, and how other mothers compare it with their usual pap in terms of consistency, taste, response of child, availability of ingredients, amount of time for preparation.

RECIPE TRIAL RECORDING FORM FORM RT-2

Location: _____ Date: __ __/__ __/__ __

Recipe No. ___

Ingredients:	Amount used (local measure*)	Amount used (mls)
Millet (fermented: Y/N)		
Sugar		
Salt		
Milk		
Groundnut paste		
Groundnut powder		
Bean flour		
Vegetable Oil		
Water		

[*specify local measure eg. spoon, plastic cup, tin cup etc.]

Time began: ___ ___ Time ended: ___ ___
[only record the time taken to prepare the recipe.]

Describe method of preparation:

_____
_____
_____
_____
_____
_____
_____

Probe all mothers: why/why not for ingredients, amounts, methods.

Once pap is ready, probe:
How much of this pap could your child consume at one meal?
How many meals in a day?
Could you prepare this at home regularly? Why/why not?
Would you change the recipe? How? Why?

Ask about the taste, thickness, response of the child, ease of feeding, acceptability for a sick child, availability of ingredients, time needed for preparation, willingness to prepare and feed this recipe at home and why/why not?

APPENDIX D
HOUSEHOLD TRIALS RECORDING FORMS

HOUSEHOLD TRIALS: INITIAL VISIT Form H-1

BACKGROUND INFORMATION: Interviewer _____
Village _____ I.D. CODE: ___/___ ___

Date __ __/__ __/__ __

Child's Name: _____ Age (mths):__ __ Sex: ___

Compound: _____ Mother's Name: _____

Weight: __ __.__ kg Wt/age: Normal ___ Underweight ___

Health: Normal __ Diarrhoea __ Other (specify) _____

If diarrhoea, duration (days): _____

DIETARY ASSESSMENT:

Is child breastfed? Y/N Frequency: Day __ __ Night __ __
On demand Day Y/N Night Y/N

24-Hour recall for all other foods and liquids (incl. water) other than breastmilk:

Hour	Food* or Drink	Ingredients	Amount

*If pap, indicate consistency.

Other foods/drinks/snacks that child commonly receives:

Food/Drink	Ingredients	Amount*	Times/wk

* Estimate an average amount the child is usually given.

Analysis of Diet:
[Compare diet to ideal practices on chart and indicate whether the diet is adequate or not, with comments.]

Breastfeeding practices _____

Feeding frequency _____

Amount given _____

Quality/variety _____

Consistency _____

Problems identified _____ _____ _____ _____ _____
(list numbers of problems from Counselling Chart)

Explain your assessment of the child's diet to the mother. [Reinforce positive practices and explain problems.]

RECOMMENDATIONS:

Identify the appropriate recommendations for the mother to try and list below.

1. _____

2. _____

3. _____

4. _____

5. _____

Recommendation #__: _____

Is mother willing to try it? Why or why not? _____

_____

_____

Any other circumstances under which she would try the recommendation? When? What modifications?

_____

_____

Recommendation #__: _____

Is mother willing to try it? Why or why not? _____

_____

_____

Any other circumstances under which she would try the recommendation? When? What modifications?

_____

_____

Recommendation #__: _____

Is mother willing to try it? Why or why not? _____

_____

_____

Any other circumstances under which she would try the recommendation? When? What modifications?

_____

_____

Recommendation #__: _____

Is mother willing to try it? Why or why not? _____

_____

_____

Any other circumstances under which she would try the recommendation? When? What modifications?

_____

_____

Recommendation #__: _____

Is mother willing to try it? Why or why not? _____

_____

_____

Any other circumstances under which she would try the recommendation? When? What modifications?

_____

_____

Summarize what mother has agreed to try:

_____

_____

_____

Ask her to explain the practices to you and make sure she understands. Arrange date for follow-up visit.

Is a cooking demonstration required? ____

Date of cooking demonstration: _____ Recipe: _____

Date set for follow-up visit: _____

DAY 3: HOUSEHOLD TRIALS: FOLLOW-UP VISIT Form H-2

BACKGROUND INFORMATION: Interviewer: _____

Village: _____ I.D. CODE: ___/___ ___

Date __ __/__ __/__ __ Child's Name: _____

Health: Normal __ Diarrhoea __ Other (specify) _____

_____

PRACTICE RECOMMENDATIONS:

How many recommendations was the mother asked to try? ____

Does she remember them? Y/N

Can she repeat them correctly? [list below mother's description]

_____

_____

_____

Recommendation #1:

Has mother tried it? Y/N How many days has she tried it? ____

If no, what are her reasons? _____

_____

If yes, did she like it? _____

What did she like about it? _____

_____

What did she dislike? _____

_____

How does she feel the child responded? _____

_____

Did she modify the recommendation? How? Why?

_____

Did other people say anything about it? Who? What did they say? Why?

_____

Will she continue the recommended practice? Why or why not?

_____

Would she recommend it to others? How would she convince them?

_____

Has she taught it to any other caretaker of her child? Who?

_____

Recommendation #2:

Has mother tried it? Y/N How many days has she tried it? ____

If no, what are her reasons? _____

_____

If yes, did she like it? _____

What did she like about it? _____

_____

What did she dislike? _____

_____

How does she feel the child responded? _____

_____

Did she modify the recommendation? How? Why?

_____

Did other people say anything about it? Who? What did they say? Why?

_____

Will she continue the recommended practice? Why or why not?

_____

Would she recommend it to others? How would she convince them?

_____

Has she taught it to any other caretaker of her child? Who?

_____

Encourage mother to continue practice and provide counselling or information as needed.

If any recommendation has been modified, ask mother to summarize what she has agreed to do now? Describe below.

_____

_____

Arrange follow-up visit.

Date of follow-up visit: _____

DAY 7: HOUSEHOLD TRIALS: FOLLOW-UP VISIT Form H-3

BACKGROUND INFORMATION: Interviewer: _____

Village: _____ I.D. CODE: ___/___ ___

Date __ __/__ __/__ __ Child's Name: _____

Health: Normal __ Diarrhoea __ Other (specify) _____

PRACTICE RECOMMENDATIONS:

How many recommendations was the mother asked to try? ____

Does she remember them? _____ (yes/no)

Can she repeat them?

_____

_____

_____

Recommendation #1:

Has mother continued trying it since the last visit on day 3? Y/N

If no, what are her reasons? _____

_____

If yes, does she still like it? _____

What does she like? _____

Did she modify the recommendation? How?

_____

Did other people say anything about it? Who? What did they say?

_____

_____

Will she continue the recommended practice? Why or why not?

_____

_____

Has she taught it to any other caretaker of her child? Y/N

Who has she taught it to? Have they been helping mother practice the recommendation?

_____

Recommendation #2:

Has mother continued trying it since the last visit on day 3? Y/N

If no, what are her reasons? _____

_____

If yes, does she still like it? _____

What does she like? _____

Did she modify the recommendation? How?

_____

Did other people say anything about it? Who? What did they say?

_____

_____

Will she continue the recommended practice? Why or why not?

_____

_____

Has she taught it to any other caretaker of her child? Y/N

Who has she taught it to? Have they been helping mother practice the recommendation?

_____

Encourage mother to continue practice and provide counselling or information as needed.

Arrange final visit.

Date of final visit: _____

DAY 14. HOUSEHOLD TRIALS: FINAL VISIT Form H-4

BACKGROUND INFORMATION: Interviewer _____

Village _____ I.D. CODE: ___/___ ___

Date __ __/__ __/__ __

Child's Name: _____ Age (mths):__ __ Sex: ___

Health: Normal __ Diarrhoea __ Other (specify) _____

DIETARY ASSESSMENT:

Is child breastfed? Y/N Frequency: Day __ __ Night __ __

On demand Day Y/N Night Y/N

24-Hour recall for all other foods and liquids (incl. water) other than breastmilk:

Hour	Food* or Drink	Ingredients	Amount

*If pap, indicate consistency.

Other foods/drinks/snacks that child commonly receives:

Food/Drink	Ingredients	Amount*	Times/wk

* Estimate an average amount the child is usually given.

PRACTICE RECOMMENDATIONS:

How many recommendations was the mother asked to try? ____

Does she remember them? _____ (yes/no)

Can she repeat them? _____

_____

_____

Recommendation #1:

Has mother continued trying it since the last visit on day 7? Y/N

If no, what are her reasons? _____

_____

Did she modify the recommendation? How?

_____

Will she continue the recommended practice after the end of the study? Why or why not?

_____

_____

What have been the major constraints to practicing the recommendations? _____

_____

_____

What have been the major motivations to practicing the recommendations?

_____

_____

_____

Recommendation #2:

Has mother continued trying it since the last visit on day 7? Y/N

If no, what are her reasons? _____

_____

Did she modify the recommendation? How?

_____

Will she continue the recommended practice after the end of the study? Why or why not?

_____

_____

What have been the major constraints to practicing the recommendations?

_____

_____

_____

What have been the major motivations to practicing the recommendations?

_____

_____

_____

Thank the mother for her participation, give her follow-up counselling if required and ask for any additional questions or comments that she may have.