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CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

26 p.
Report Symbol U 4

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Pilot Nutrition Project - Mafraq CARE/J, PL 480 Title II Program	PL 480 Title II	USAID/Jordan

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 81-1

☐ REGULAR EVALUATION ☒ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent	B. Final Obligation Expected	C. Final Input Delivery		
FY July 1977	FY 1981	FY 1981	A. Total $ N/A	From (month/yr.) July 1977
			B. U.S. $ N/A	To (month/yr.) July 1980
				Date of Evaluation Review July - August 1980

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
See recommendation's pp 11 - 14 and the addenda to the report.		

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☐ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

George Ishaq, Food For Peace Officer

12. Mission/AID/W Office Director Approval

Signature

Typed Name: Edgar C. Harrell

Date: 2.24.8.

JORDAN

PL 480 TITLE II PROGRAM.

COMMENTS AND RECOMMENDATION ON CARE/JORDAN EVALUATION REPORT OF THE MAFRAQ PILOT NUTRITION PROJECT PREPARED BY MR. ROBERT HOLSON.

Carol Adelman

July 30, 1980

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Report
Carol Adelman
July 30, 1980

CARE Pilot Nutrition Project
Comments on the Evaluation and Recommendations

BACKGROUND:

In conjunction with the Department of Social Affairs (now Ministry of Social Development - MSD) in early 1976, CARE/Jordan designed a pilot nutrition project for the Eastern Mafraq region of Jordan.1/ The rationale for the project was twofold: 1) the existing food distribution program should be combined with health and nutrition education activities in order to better impact on nutritional status in the most disadvantaged areas; and, 2) the existing food program had largely met the needs of the areas where they were primarily concentrated, i.e. they believed improved socio-economic conditions coupled with the feeding program had improved health/nutritional status of children in these better off areas. It was believed that nutrition programs would be more beneficial in the lower-income areas of Jordan, such as the Eastern and Southern desert regions. In order to maximize health and nutrition impact on pre-schoolers a new element was to be included - nutrition and health education for mothers. Since information important to the design of a nutrition project was lacking in the more disadvanctaged areas, CARE and MSD decided to proceed with a one-year pilot project which would both test different approaches to food distribution and gather data on food consumption, morbidity and health/nutrition beliefs and practices. An advisory committee consisting of leading professionals in health, nutrition and statistics was set up to provide assistance in all aspects of the design. In addition, preliminary surveys were conducted to ascertain community interest and important operational/demographic variables.

GOALS AND OBJECTIVES:

As a result of these efforts the goal of the project was defined as: "Measuring the cost-effectiveness of programs designed to reduce undernutrition in pre-school children in disadvantaged areas". Other objectives included:

1. Identification of the type and incidence of pre-school nutritional needs;

2. Assessment of causal factors;

3. Ascertain level of community participation and reaction;

4. Determine degree of nutritional benefit from two types of feeding programs (on-site and take home);

5. Determine cost-effectiveness of the two different programs.

The above were accomplished through anthropometric measurements of children before and after the feeding programs and various surveys on beliefs and practices, food consumption and morbidity. All these surveys had been conducted and analyzed in varying degrees by july, 80. USAID/Jordan requested the Near East Nutrition Advisor to visit Jordan to review the survey methodologies and conclusions of the analyses. The purpose of this review is to assist USAID/J and CARE in deciding whether and how the pilot nutrition project should be expanded. Such and expansion, if agreed beneficial, would result in the phase out of supplements from the ongoing CARE pre-school feeding category into food and education programs in the more disadvantaged areas.
The report is organized as follows:

1. Inputs
   - AID Food Supplements.
   - CARE Administrative/operational
   - MSD Administrative/operational
2. Outputs
   - Food supplements - adequacy of ration size, sharing, substitution
   - Nutrition education - classes held, participation rates, quality
   - Overall program participation
   - Baseline and resurvey
3. Effects
   - Nutritional status
   - Income
   - Cost-effectiveness
4. Summary of Program Impact
5. Recommendations

Inputs

Food Supplements - From an internal report, [2/] the food commodities arrived in a timely manner with the exception of one shipment which arrived late and resulted in a month's delay of food distribution in the Mafraq project area.

CARE Administrative/Operational - During the planning stages and implementation of the pilot project, CARE contributed the full-time services of two nutritionists, part-time services of a statistician (85% of time for one year), 10% of time of the CARE Program Director and full time of a CARE Regional Supervisor. In addition,the provision of vehicles, record-keeping, handling

and clearance of food shipments, and office supplies were provided. From discussions with the USAID/FFP Officer, these inputs were delivered effectively and in a timely manner. The reports of the project, the Baseline Survey and Resurvey and summaries of the knowledge, Attitudes and Practices Survey indicate that a conscientious effort was made for all aspects of the project.

MSD Administrative/Operational - The MSD contributed the part-time services of its Undersecretary and Regional Representative in Mafraq. Vehicles, drivers, rent for the nutrition centers, warehouse storage. Port costs and inland transportation for the food commodities was provided by MSD. Additionally on-site center materials (kerosene stoves, food, tables, benches) and salaries of cooks and nutrition educators were provided. The CARE internal report states that there were program start-up irregularities because of delays in center supplies and the hiring of the two nutrition educators. 2/ A problem arose with the provision of center attendance takers so that attendance was monitored only on a sample basis.

With the exception of the delay in hiring nutrition educators which led to a considerable delay in the nutrition education component, project inputs were generally satisfactory. The Advisory Committee was fully used, and they played a major role in the design of the project.

Outputs

Food Supplements - The planned ration size for the on-site program (one feeding per day) was 798 kilocalories and 36.4 grams of protein. This would have provided 50% of daily caloric needs and 100% of protein requirements. Program attendance was variable. A cut off point 60% or better participation over the year was used as definition for " regular participant". While food intake was thus reduced from the planned level, the regular participants still received 40% of their minimum daily requirement (MDR) for calories and 56% for protein MDR.

The planned ration size for the take home program was 823 kilocalories and 26 grams of protein which would have supplied 51% of caloric and 78% of protein requirements respectively. Regular participants (88%) were defined as those receiving more than 50% of the take-home distributions. In an attempt to lessen the effects of family sharing of food, common in take-home food programs, rations were also provided for the whole family (based on a total family of five). In fact, the average family size was 8 people so that the percentage of MDR for calories was reduced to 31% and 63% for protein.

In sum, the planned ration size (57% of MDR calories and 87% of MDR proteins) with regular participation would have provided a relatively substantial increment to daily intake. This translates into approximately 63 kilograms per beneficiary per year which is relatively higher than most P.L. 480 program ration sizes throughout the world. Even the reduced average ration size for regular participants provides a significant % of MDR for calories and protein, which if given as a portion of a child's diet, should help close caloric and protein gaps. There is always the possibility, however, that mothers may substitute the ration for the other foods she should be giving to the child and other family members. It was not clear from the

dietary intake data in the final report whether this was occurring.

Nutrition Education - The major problem with the nutrition education component was its late introduction in both the on-site and take home programs. Because of recruitment delays, the education component was not underway until early 1978 in the on-site villages and late 1978 in the take-home villages. This, coupled with reduced summer participation because of harvests, meant that on-site villages benefited at best from only eight months of education; take-home was even less with only some three months before the Resurvey in January and February of 1979. Seminars were planned for three hours but were actually less than this and only nine of the 13 villages were considered to have had an adequate nutrition education program. Home visits were also made approximately once every three months with priority given to those children with health problems.

Additionally, there was a high turnover among the nutrition educators. Three out of five selected either quit or were reassigned. The education level of the nutrition aides was high school or better and the girls then received on the job training from the CARE nutritionists. Early in the planning phase CARE had argued for the selection of local women from the villages as candidates for training to be nutrition educators, but the MSD preferred women of a higher educational level.

The nutrition/health education content appeared to be adequate for the identified problems in the area. Lessons were based on the KAP survey and WHO messages for the Eastern Mediterranean region. Emphasis on diarrhea treatment and hygiene was not added until later, however. The teaching method was informal using both lecture and question and answer techniques. While there were no visual aides used in the pilot project, some are being developed now.

Overall Program Participation

Overall program participation was less than planned. The final report (draft) indicated that regular participants were approximately 87 percent of those enrolled.[3/] This in turn was based on an overall participation rate of village pre-school children (ages 2-7 years) of 57 percent. Thus, while 100 percent coverage of pre-school children was planned, less than half attended on a regular basis. Even those defined as regular participants had a wide range of participation, i.e., more than 65 percent attendance at the on-site program and 50 percent or more participation in the take-home program. The main reason for low participation was because many families must leave their villages to harvest grain crops (during May through August). Also if water becomes unavailable during the summer months, villagers must relocate. During the cold winter months (mainly January and February) it is sometimes difficult for mothers and children to walk to the centers. The participation problem is compounded by distance with some participants having to walk several kilometers.

Factionalism was a significant problem in several villages. Disagreements on center location and selection of cooks led, at least in one village, to the non-participation of one tribal group. In general, however, the villages accepted the program. Only two of 19 refused to participate. This was no doubt due to the emphasis which CARE and the MSD placed on discussing the

program with village sheiks and mukhtars and enlisting their cooperation and comments on the program.

The harsh environment of this semi-settled region including water, harvest and temperature are factors which will be present for some time to come. Other development activities such as water distribution and supply and range management (now underway on a limited scale) will be necessary to solve the inherent reasons for low participation. Harvests during summer months will always reduce participation so that creative ways of meeting these constraints must be considered if future expansion is undertaken.

Baseline and Resurvey

The survey consisted of three groups - on-site, take-home and control. Selection of villages was not random from the total area of some 60 villages since cost considerations limited the number of centers in the study. Also, sample size required relatively larger pre-school populations in some of the villages. A concerted effort was made, however, to obtain a representative sample matching village population size and areas over the three study groups. Required sample size was determined to be 500 in each group, so a target of 600 was set to account for drop-outs. According to the final report, approximately 500 were resurveyed in each group. (There is a slight discrepancy there according to the computer print-out which I examined for age distribution. This showed only 332 in the take-home . Since I was unable to confirm this with Mr. Holson, I assume that his numbers used in the final report are the accurate ones.)

Careful village population estimates were made using government reports and village leader estimates. At the time of the baseline survey there was a problem with some children being out with flocks or otherwise not attending so that only an average 57 percent of total pre-schoolers in each village were measured. It could be assumed that these children might be at a greater nutritional disadvantage than those who came for initial measurements. Thus, the overall prevalence of malnutrition reported might underestimate somewhat the actual nutritional status.

Because of certain villages being unsuitable for the on-site program, it was not possible to randomly allocate control, take-home and on-site villages to the total of 19 villages selected. Nevertheless, an examination of age distribution and nutritional status of the three groups were fairly similar. (see attached Tables I, II, III).

Standard survey procedures were followed - reliability testing between the two persons conducting anthropometric measurements, pre-testing of the questionnaire, and validation of initial survey results. There was a relatively low attrition (some 8%) between the Baseline (March-April of 1977) and the Resurvey (January-February of 1979). It should be noted that food distribution did not begin until July 1977.

Overall, considering the very difficult logatical + cultural circumstances of the project, the surveys were an ambitious and noteworthy undertaking. From a review of methodology and instructions to surveyors, the surveys were well-organized and carefully planned. The biases and methodology constraints do not appear to invalidate survey results.

Program Effects

The Pilot project attempted to measure two major effects-nutritional impact and cost-effectiveness. I have added a third-income effect-which I calculated from the local cost equivalent of the P.L. 480 Title II food commodities since I believe this is an important one as well as an explanatory variable for identified village preference for the take home program, there effects such as food knowledge and practices of mothers and women's roles were not measured. Jordanian institutionalization of the program was not an objective since this was a short-term pilot project.

Nutritional Status

With respect to nutritional status, the objectives were three fold:

1) to establish the prevalence of malnutrition in the area ;

2) determine if the on-site and take home programs improved nutritional status over the control group, and determine which of these had a greater impact; and

3) analyze casual factors.

Prevalence

Measures of weight, height, arm circumference, and triceps skinfold were taken before and after the nutrition program. I will discuss primarily the height and weight measures since the triceps skinfold is subject to considerably more measurement error and without an average of two measurements is a less useful measure of nutritional status for large-scale population-based studies. It should be noted, however, that triceps skinfolds (a measure of body fat) were statistically significantly lower in the Mafraq Children as compared to U.S. standards. Dr. Hijazi found similar lower triceps skinfolds in his study of Amman pre-school children[4/] and in another study of school-aged children. From discussions with Dr. Hijazi these differences were not great. Thus, the biological significance of lower skinfold may not be that significant. Average arm circumference from the Baseline data did not indicate undernutrition. (15.7 cm).

Turning to the prevalence of stunting or low height for age (shortness of stature), Holsom reports that the difference between the U.S. median height and the Mafraq average is already large at 2 years and increases with age so that by 7 years the average Mafraq child is II centimeters shorter than the U.S. counterpart. There is a problem with this presentation which compares averages to median values. When these averages are converted to U.S. percentiles or percentage of median, they all correspond to percentiles of 3 and higher. This means that the <u>average</u> Mafraq height does not fall into an abnormal range.

A better way of presenting the height data is to look at the percentage of Mafraq children who fall into the internationally used categories of height deficits. The evaluation report did this although there was some misinterpretation on the classifications. Holsom correctly defines height abnormality as that which falls below the 3rd percentile of U.S. children.* He then states that 70 percent of all Mafraq children fell below this cut-off point. Since, raw data was not summarized in the report by number of children and nutritional classification, I examined the computer of all survey children and their wieghts and heights. Table I is a random sample of these children classified by normal, 1st, 2nd and 3rd degree stunting. From this Table (3 groups combined) it can be seen that the 70 percent he refers to is those children falling in the 1st, 2nd and 3rd degree stunting categories. This does not represent all children below the U.S. 3rd percentile as he states in the report. Children below the U.S. 3rd percentile would be those in the 2nd and 3rd degree categories or 28 percent of all Mafraq children. These two lower categories are used to define degree of height deficit. In fact, this average value for the Mafraq area is in line with values reported by Hijazi in his study of lower income Amman children. By international comparisons this is still a high degree of stunting and is in line with results from the nationwide survey in Egypt. (Approximately 27% of stunting).

In addition to stunting, a more important measure of nutritional status from the point of view of public health priorities is that of wasting (thinness or low weight for height). A weight over height squared ratio was used to assess this. This ratio is a less used than the standard weight/height ratio expressed as percentage of median. Thus the data as presented, comparing the Mafraq average ratio to U.S. median is less easy to interpret. Again the problem of comparing averages to a median arises. When I calculated the average as percent of median, the resulting percentages for each age category were all above 95% indicating that the average Mafraq child has a normal weight for height, i.e., is not malnourished.

The same classification problem with height was apparent with height was apparent with the weight for height ratio. Holsom defines "abnormality" or less than the U.S 3rd percentile as 1st, 2nd and 3rd degree malnutrition (see Table II) thus he says that wasting occurs in 17% of the Mafraq children when, in fact, wasting as usually defined occurs in only 1-2% of the children. This lower percentage is in line with Hijazi's data and is similar to the results of the Egypt survey. By developing country standards, this is a relatively low percentage of malnourished or thin

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* He also accurately points out that genetic height differences between the Jordanian and U.S. children can probably be ruled out since average birth weights and growth during the first 6 months of life are similar to U.S. standards.

children. Holsom shows that the percentage of wasted children increases with age. This should be interpreted with caution since the bulk of this increase might actually be in the 1st degree category which is not considered seriously malnourished. Hijazi's data do not support this age trend in wasting either. It would be useful to further analyze this data using the 2nd and 3rd degree classifications to see if there really is increased malnutrition with age.

In sum, the frequent references in the report to "significant" and "severe" malnutrition should be used with caution. There is significant stunting in the area; there is not significant wasting. The importance of this distinction is as follows: 1) relatively low wasting means that it is much harder to target a program on these fewer children; also it is much harder to obtain program impact; 2) while wasted children are known to have higher morbidity and mortality rates, the consequences of stunting or being short in developing countries is less clear. It is generally believed that these children are not at greater morbidity/mortality risk. Studies are presently underway to determine this. An extremely interesting finding in this report was that the severely stunted children had higher morbidity. The program implications for stunting would appear to be more focussed on chronic disease control and possibly food quality (i.e. animal protein).

A cautionary note - this survey measured only 2-7 year olds children generally not considered to be at the greatest nutritional risk. It is entirely possible that the younger children (6-24 mos.) have higher wasting due to factors indetified in the report, high respiratory illness and darrhea and late introduction of supplemental foods to breastmilk. It is in this age group that program efforts in screening and surveillance should be introduced.

Program Impact - Nutritional Status

The bottom line of the survey results is that there was no improvement in nutritional status as a result of either the on-site or take-home program. The data to support this conclusion were not presented in the report - only a histogram illustration of changes in the weight/height ratio and in absolute weight were presented. All three groups (control, on-site, take-home) appear to have similar changes. It would be useful, however, to make comparisons between the groups based on the classification of 2nd and 3rd degree malnourished as previously discussed. It is possible that this might reveal some differences.

Because of the confounding factor of low participation and the effect this would have on diluting any impact results, CARE designed 2 surveys of "regular" participants. This was an excellent idea. Such surveys would help to control for not only low participation rates but also the quantity and quality of nutrition education since by this time the education component was fully established and most likely improved. In fact the results of one of these surveys did show higher percentage improvements in weight for age in the on-site and take-home programs over a 6 months period. While age distribution was fairly similar in the 3 groups, results should be treated with some caution because the period was so short and numbers in each group fairly small (on-site-42, take home-56 and control-32).

Causal Factors

From other surveys conducted during the pilot project, it was possible to analyze causal factors or more precisely significant associations with malnutrition (these surveys were cross-sectional). A brief summary of the main associations of interest is as follows:-

- No relationship between SES and nutritional status (indicating possibly that beliefs and practices may play a more important role).
- Relationship between late introduction of supplemental foods and malnutrition (indicating need for education and possibly improved food quality).
- Relationship between family size and malnutrition (indicating need for family planning.)
- Relationship between number of diseases and malnutrition (need for diarrhea and colds prevention and stepped-up immunizations).

Income Effect

The world Bank estimates the absolute poverty income level in rural Jordan as $100 per capita annual income.6/ Below this, a minimally nutritious adequate diet plus non-food essentials is not affordable. The relative poverty income level for rural areas is $135 per capita per year. (This measure is 1/3 of the per capita personal income of the country). From the CARE food beliefs survey, average annual per capita income of the Mafraq families ranges from $120-$202. 7/ This figure is also confirmed by Dajani. 8/ Thus, average annual per capita income of the area is roughly $150.

In order to determine what degree of income supplement the food commodities provide, I calculated the local cost equivalent of foods similar to the P.L. 480 commodities. For the on-site program this amounted to roughly 11 J.D./year which represents 3-4% of family income per year. (Family income was determined by multiplying average per-capita income $150 by family size of 7). For the take-home program the value of the food amounted to roughly 70 JD/year which represents 17-28% of family income per year. Thus the take-home program provides a substantial income supplement to these families with marginal incomes to begin with.

Cost-Effectiveness

The costs of the on-site and take-home programs were roughly the same:

	COST PER BENEFICIARY PER YEAR				
	CARE/ AID COSTS	MSD COSTS	TOTAL		
On-Site	$ 14.95	$ 14.20	$ 29.15	$ 0.12	per day
Take-Home	$ 21.16	$ 4.82	$ 25.98	$ 0.15	per day

Costs of feeding programs thoughout the world range from $10 per beneficiary/year to as high as $ 42 with average costs very similar to the CARE JOrdan program. The take-home program is considerably less expensive for the MSD than for CARE/AID because of two reasons: 1) CARE/AID are supplying rations for a maximum of five people in the family under the take-home programs (as compared to rations for 1 family member in on-site); and, 2) the MSD has fewer expenses with the take-home program since there are no salaries for cooks, kitchen equipment and supplies.

Summary of Program Impact

In summary, the cost-effectiveness of the two programs was very similar and the income supplement effect for the take-home program was substantial. From the main Baseline and Resurvey efforts, no nutritional impact was found. A brief summary of factors discussed throughout this report may help to illuminate why the nutritional impact results were disappointing:

1. From the outset, a one to one and one half year time period is too short to measure changes in nutritional status especially given:

   - difficulties associated with starting any new program

   - one of poorest, most isolated regions of the country

   - cultural/social barriers in such key things as weighing children and communicating concepts of food/health relationships.

2. The late introduction of nutrition/health education and possible compromise of quality because of high turnover in nutrition educators.

3. Low participant rates for reasons of harvest, tending flocks, factionalism, inclement weather.

4. As a result of low participation rates, there was thus an average less than adequate benefit from food supplement itself.

5. Low degree of wasting to begin with which makes improvements more difficult; improvement in stunting are less responsive to short term interventions. Also, older children are less responsive to nutritional improvement than younger, more vulnerable groups.

Thus, survey results might have shown some nutritional impact if some or all of the above factors could have been improved. Because of the extreme poverty in the area and the real lack of services and programs for many of the same reasons cited above, programs in the Mafraq region are indeed a challenge. Their impacts should not be judged too hastily or stringently at the outset. Despite the apparent absence of significant malnutrition in the 2-7 year old children, there could well be more serious deficits in the younger children. This is supported by high infant and child mortality rates. If stunting does have a significant relationship with higher disease incidence, then food inputs are more apparently in order. Health, sanitation water and family planning inputs are clearly needed. To the extent that the nutrition education program can provide health and family planning information, this would result in significant benefits. To the extent that the program can serve as a

starting point in villages for other community development activities in health, water, sanitation and agriculture, this will also have positive benefit. To the extent that food supplements can provide a sorely needed income supplement, improvements in nutritional status and mortality will ensue.

In conclusion, food supplements as an incentive for mothers' participation in health/nutrition education classes and as a means of beginning other desperately and probably more importantly needed programs have higher relative benefits in an area such as Mafraq. Thus, despite a lack of dramatically low nutritional status, the food and education program has the potential for impacting on the higher morbidity and mortality of the area as well as economic growth. The word potential is used since numerous program modifications should be considered in any future expansion. These are summarized in the next and last section of this report.

Recommendations

Issues Related to the Nature of the Nutritional Problem

1. Put more emphasis on younger children - 6 to 24 months by determining degree of the problem and identifying those at risk.

2. To accomplish the above as well as to more cost-effectively target in on the small percent of wasted children in the older age groups, a screening system would be useful. Such could involve weighing children at the centers and recording weight on growth charts to determine if a child is deteriorating. Additionally, growth charts can serve as an educational tool for mothers as well as a record of disease and immunizations. The age eligibility of children should be limited to less than five years and eventually nutritional status could be used as a selection criterion for those children between 2 and 5 years.

3. Both the problem of wasting (especially if found to be predominant in the younger children) and stunting are best addressed through prevention and control of disease. Thus, sanitation and hygiene education, water projects, oral rehydration (Dr. Hijazi recommends that the oralyte packaged salts be used) and immunizations are important to encourage and facilitate wherever possible. The late introduction of supplemental foods and probably poor quality should be addressed by emphasis on home preparation of weaning foods from locally available foods as well as PL 480 commodities. Finally, efforts should continue to allow family planning information and ultimately contraceptive distribution.

Operational Issues

1. The issue of on-site versus take-home programs is complex. In a short visit I cannot begin to understand all the factors involved Nevertheless, from the nutritional impact and costs analysis there are no significant differences between the programs. Costs under the take home program are considerably less for the MSD, however, while more for CARE/AID under the take-home program, these could be reudced by limiting family rations to three (mother and two pre-school children) as opposed to the present number of five. On balance I believe the take-home program is far preferable. The argument that an on-site program would have greater potential for establishing community activities (child-care services, women's clubs, etc) may be valid but there is nothing to prevent such activities being carried out at a take-home center either. The following list of pros and cons are presented to support this overall view.

	TAKE-HOME	ON-SITE
PROS	- Villages greatly prefer - less expensive to MSD, less administrative/operational work for MSD - greater income effect - conducive to screening system and getting younger children.	- no family sharing, thus more cost-effective use of food
CONS	- higher food costs to AID and CARE	- less effective for infants and toddlers - not conducive to screening system. - villagers do not like - problems with widely dispersed populations. - less incentive for mother to bring child - lower income effect - problems with village factionalism and weak leadership

2. Consideration should be given to selection and training of capable village women as educators. Local cost financing schemes might eventually include mothers paying a token amount each month to cover salaries of teachers and perhaps local rent. The existing nutrition/

health educators would still be essential as trainers and back-up for the local women. Every effort should be made to recruit the MSD nutrition health educators from within or nearly surrounding areas of Mafraq to minimize turnover.

3. Combining the food distribution with the education on the same day would have advantages for the convenience of mothers and the CARE/MSD logistical backup. This would enable nutrition/health educators to do the food distribution and free up the time of the CARE regional who presently does this. More food could be stocked in the centers themselves so as to reduce the number of deliveries he has to make.

4. Food should be continued as an incentive and starting point for other development activities. In the take-home program, the highest number of family recipients allowable should be sought.

5. In order to improve participation, some creative thinking is in order. CARE already has some good ideas on this. Mobile clinics and stepping up home visits (made even more possible if local women were used) would be helpful. The screening and weight chart system might enable a mother to attend another closer center outside her village if she were away for harvest. A survey of mothers needs in this area would be helpful.

Institutionalization

1. While this was not an objective of the pilot project, the institutionalization of the program within the MSD should be considered during any expansion phase. This might include the assigning of an active project manager within the MSD and training in the public health nutrition area for MSD personnel who would eventually be directly involved with the program. A small-scale MSD regional training center for nutrition/health educators (backup and local women) might be considered.

Further Analysis and Studies

1. Additional analysis of the Baseline and Resurvey would be extremely useful. Specifically, weight/height using the standard ratio should be calculated by age/sex. The 2nd and 3rd degree classifications should be used to present wasting and stunting by age and sex. It would also be useful to have a Waterlow classification to better demonstrate public health priorities in nutrition.

2. Further analysis of the Mafraq region KAP survey is in order. There is a wealth of information in this survey which should be presented in more detail.

3. Further analysis of the dietary intake data is extremely important. This data represents virtually the only individual dietary intake data on preschoolers in Jordan. More than the one page summary in the final report is needed. Major deficiencies and any age trends must be better analyzed and presented.

4. An important area for continued study is that of stunting, it is determinants and consequences. The information from the survey indicating the positive association between stunting and moribidity is very interesting. As the major nutritional problem in Jordan this could be studied more thoroughly within the context of the Mafraq project.

5. Because of the high association between malnutrition and use of supplemental weaning foods (late introduction and less than adequate quality), further research in this area is important. The joint proposal by the Faculty of Agriculture and the Dept. of Community Medicine to survey weaning practices and analyse weaning food content would be a high-off activity.

6. Most of the above analyses (1 through 4) are not major undertakings. In discussions with both CARE and Dr. Hijazi it was agreed that Jordanian students would benefit from doing some of these analyses.

7. If an expansion of the program goes ahead, the phase out of the regular pre-school feeding programs would benefit from the survey already suggested by CARE. Eventually CARE's village classification index could be used for this. The MCH regular category should continue in disadvantaged areas since it covers infants/toddlers.

Table I

Ht/Age as % of Reference Median, All Ages, Male & Female 1977 Baseline Villages (Random Sample of Survey Children)

	Normal >95%		1st° 90-95		1982 2nd° 85-90		3rd° <85		TOTAL	
	#	%	#	%	#	%	#	%	#	%
CONTROL	30	32	35	37	21	22	9	9	95	100
			64%				31%			
TAKE HOME	11	30	17	46	6	16	3	8	37	100
			76%				24%			
ON-SITE	14	26	26	48	14	26	0	0	54	100
			74%				26%			
3 groups combined	55	30%	78	42%	41	22%	12	6%	186	
			72%				28%			

Table II Wt/Ht² as % of Reference Median, All Ages, Male + Female, 1977 Baseline Villages (Random Sample of Survey Children), 1980

Normal ≥ 90%		1st° 80-90		mod° 70-80		3rd° <70%		Total	
#	%	#	%	#	%	#	%	#	%
75	79	19	20	1	1	0	0	95	100
		99%				1%			
31	84	5	14	1	2	0	0	37	100
		98%				2%			
49	91	5	9	0	0	0	0	54	100
		100%				0%			
155	83%	29	16%	2	1%	0		186	100
		99%				1%			

TABLE III

Age Distribution of Villages (Both Sexes)

	2-3		3-4		4-5		5-6		6-7		Total
	#	%	#	%	#	%	#	%	#	%	
CONTROL	195	23	195	23	154	18	183	21	136	16	863
NEAR-HOME	84	25	70	21	68	20	73	22	37	11	332
ON-SITE	116	23	89	18	112	23	82	17	96	19	495
TOTAL	395		354		334		338		269		1690

TABLE IV

REFERENCES

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7. Personal Communication, CARE Director, July 1980.

8. Dajani, Jarir S., "Assessing Basic 'Human' Needs in Rural Jordan," USAID Contract No. AID-278-322, September, 1978.

9. Vemury, Merlyn, "Beliefs and Practices Affecting Food Habits in Rural Jordan, "CARE under AID Grant No. Ta-G-1470, February, 1980.

January 23, 1981

TO: USAID/J

FROM: Carol Adelman NE/TECH/HPN

SUBJECT: Comments on USAID/J and CARE letters re Draft Report on Mafraq Pilot Nutrition Project, dtd July 30,1980

These comments will address CARE's communications to USAID/J # 5615 (10/7/80) and # 5621 (10/14/80) as well as the USAID/J letter to me (Ishaq/Adelman 11/10/80) concerning my evaluation of the CARE pilot nutrition project in Mafraq. (July30,1980)

CARE Reference # 5615 (10/7/80)

I agree with virtually all of Ralph's comments in this letter. His additions are useful for a full understanding of the project. There are two areas of technical difference which remain between Ralph's letter and my report:

1) Prevalence of malnutrition - My recommendation to use 2nd and 3rd degree categories to indicate undernutrition is not a matter of how I feel; it is standard procedure. For stunting (low height for age) the Center for Disease Control (CDC) considers less than 90% of the median as the cut off point. This corresponds to 2nd and 3rd degree. It is important here to realize that any height for age above 90 % of the median falls within the normal area of the U.S. reference population, i.e. roughly 97% of all U.S. children are above 90% of the median; these children are not considered stunted or borderline but simply at the lower end of a normal curve.

With respect to wasting (low weight for height) the usual cut off point has been less than 80% of the median. This includes 2nd and 3rd degree (70-80% and less than 70% respectively by the CARE data set) but not 1st degree (80-90% by CARE data set). Again, first degree wasted children fall roughly within a normal distribution of U.S. children. CDC has more recently used 85 % of the median as a cut off point which would mean that some of the 1st degree Mafraq children would be considered borderline malnourished or moderately malnourished Since numbers for less than 85 % were not available from the CARE data, we don't know what the percentage wasted is by this standard. We do know that it would not be as high as the 17% which the CARE report refers to.

The point in my report was not to raise a detailed discussion about where the cut off point should be, but rather, to get a percentage figure which could be compared to Dr. Hijazi's and other countries data so that we could make a relative statement about malnutrition in the Mafraq area. That statement still holds, since compared to other developing countries, rates of 1-2 % wasting are low. There will be some borderline malnourished in addition to this (in the Mafraq area) who would warrant attention. I agree with this but the percent of severe wasting is relatively low. Frequent references to "significant" and "severe" malnutrition as characterizing Mafraq should be avoided.

2) Combining food distribution with nutrition education (doing them at the same time) - Both USAID/J and CARE believe that this recommendation is not feasible because a) mothers come to the centers at different times and thus some would have to wait around for others, and b) most centers are too small for the education classes.

I recommended this as a means of assuring more regular program attendance and assuring that mothers receive nutrition education and have their children weighted regularly. Making weighing and nutrition education a precondition for receiving food has been successful in the Morocco program and others aa well. In the Morocco program mothers from one area are broken down into classes of 25 each with each class coming to the center on a different day of the month. The mothers know which day they come each month and the time is always the same. It doesn't matter how it's done but in order to assure weighing on a monthly basis and that mothers receive the essential health/nutrition education, some system of incentives will be necessary. This is simply one way to do it that has worked in other places.

One serious question arises from Ralph's comment that the centers are not large enough to conduct the nutrition edcuation lessons. If this is true, where are the mothers presently gathering to receive nutrition education since this is supposed to be underway now? Some kind of provision has to be made for this, whether it is adding on to the smaller centers, using one of the homes in the area, marketplace or whatever.

CARE Reference # 5621 (10/14/80)

The USAID/J letter states that there may have been some misunderstandings and differences because I had not received CARE's intermediate and final goal statements (which were outside of the project paper goals and objectives). In reading these, there is nothing in them that would alter any of the conlusions in my repo Nor do I see any misunderstanding/differences between myself and the CARE/USAID positions resulting from not having seen these goal statements. Any difference in objectives seems to be in CARE's durrent thinking (from this letter) that their "original phase-over concept is unrealistic." Now instead of planning to phase out regular child feeding programs into the pilot project model and areas (Eastern and Southern Jordan), they want to continue the regular child feeding program and use it as a springboard to new activities benefitting mother and young children.

Whether this is done or not is a decision among the GOJ, CARE and USAID, i.e. whether a nutritional or other developmental goal is set in the regular child feeding program. If nutrition is included as a goal, however, then the regular program should be examined in the same way the Mafraq pilot project was, e.g. does it reach the malnourished, is the age group most vulnerable, is health/nutrit

education provided so that maximum benefit from the food can be realized, etc. My understanding is that most of the regular program reaches older pre-schoolers. The real people in need are probably in the MCH category (pregnant women and children under two years old). My own inclination (I have not studied it thoroughly) would be to see how the regular program could be better targetted - through identification of children at risk, focus on the MCH group, outreach, etc.

If the goal of the regular program is to be what Ralph suggests - less a focus on Jordan's most disadvantaged areas and most nutritionally vulnerable but a way of developing other aactivities to help mothers/young children (assume he's talking about day care, literacy, skill training) then the approach would be very different. In this case selection criteria might be based on some socio-economic indicators and impacts measured in terms of services provided, increase in literacy, employment, increase in income or whatever. It is important for you to decide what your development goal is with the Title II foods in the regular program. I personally think with auch a small program, it might make more sense to focus the food resource in one program like the Mafraq model and go for the poorest areas. There are all kinds of questions that need to be raised to make this decision, i.e. What does the MSD want to do, would the MOH agree to letting the food supplements go through the MCH system, can the MSD deal with young children (less than 2 years) or is this group reserved for the MOH , etc. etc.

USAID/J Letter (Ishaq/Adelman 11/10/1980)

My previous comments in this addendum have dealt with the issue of combining food distribution with nutrition education. The other outstanding issue in your letter concerns my recommendation to proceed with a take home feeding program rather than the on-site type. The Mission disagreed with this preferring the on-site model. The following briefly addresses the arguments presented for the on-site model:

1. Better controls and assurance that food is properly prepared and eaten by the target group. This is generally true. However, substitution of a supplementary ration for a child's other meals at home can and does also occur with on-site feeding programs so that net daily consumption can even be lowered with an on-site feeding program. There is some evidence to suggest (not prove) that size of ration and the number of people receiving the ration in one family increases consumption and thereby nutritional status. In the Mafraq take home areas rations were given to 5 people in the family. This may to some degree offset sharing and substitution in the take home program. Without intake data from the two types of program, we can't say one way or the other which assures better food consumption.

2. Measurements and weights can be taken regularly and on a timely basis in an on-site program but not in a take home program. EVen in the take-home program the mother has to come to the center to get the food and attend the education lesson. She can bring her child then for weighing and recording. Weight measures need only be taken once a month so there is no advantage in having children othere on a daily basis for this.

One of the the more important disadavantages with the on-site program concerns the age of children to be reached in the program. If the program does try to get younger children in, it seems unlikely that mothers would have the time to bring their child every day. Whereas older children are more likely to walk by themselves or be entrusted to an older sibling, mothers would be more likely to bring infants/ toddlers themselves.

I thought CARE was going to revise the costs estimates (take-home vs. on-site) since we discovered an error in the computation. Until this is done, nothing can be said about total comparative costs, although we do know that costs to the MSD are less with the take home than on-site. When Ralph revises these, it would be useful to compare not only per beneficiary costs but per family as well since the take-home assumes more than one person receiving the ration.

Again, the bottom line is that this is a CARE, GOJ and Mission decision. I would agree with Ralph's conclusion that "Small, geographi cally concentrated villages with good leadership and community organization should, in our view, be given the option to try the on-site method."

PD-AAH-713-C1 NEAR EAST EVALUATION ABSTRACT 2782813 (2)

PROJECT TITLE(S) AND NUMBER(S)	MISSION/AID/W OFFICE
Pilot Nutrition Project - Mafraq CARE/J, PL 480 Title II Program	USAID/Jordan

PROJECT DESCRIPTION

The CARE/Jordan pilot project tested and compared the effectiveness of on-site and take-home nutrition programs for preschool children. The pilot activities, which were located in a poor rural area, utilized PL 480 commodities and included health and nutrition education.

AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT	PES NUMBER PES DATE	PES TYPE
		☐ Regular ☐ Other (Specify) ☐ Special ☐ Terminal
ABSTRACT PREPARED BY, DATE Richard Rhoda, NE/DP/PAE May 11, 1981 PR	ABSTRACT CLEARED BY, DATE ✓ Carol Adelman, NE/TECH/HPN June 1981	

The project studied the impact and cost effectiveness of on-site versus take-home feeding programs by surveying three different groups of preschoolers: (1) those in the on-site program, (2) those in the take-home program, and (3) control group. The on-site program included one feeding per day per child while the take-home program provided five food rations per family per day; both programs included health and nutrition education. The control group received neither food rations nor education. Approximately 500 preschoolers from each group were surveyed prior to project initiation and then resurveyed a year and a half later. The initial survey revealed 27% "stunting" (height to age ratio less than the 3rd percentile of U.S. children) but essentially no "wasting" (low weight to height ratio). The survey measured only 2 to 7 year olds; it is possible that malnutrition is a more serious problem among younger children.

The preliminary results after a 1½ year time period indicate that there were no nutritional differences between the on-site, take-home, and control groups. However, the evaluation argues that this result is not necessarily conclusive for several reasons: (1) 1½ year time period is too short to measure nutritional changes, (2) the result used a broader definition of malnutrition than is normally used, (3) the survey included children and families whose participation in the program was irregular, (4) late introduction of health and nutrition education and high turnover of trainers, (5) younger (6 to 24 months) children were not included in the survey. The surveys also revealed no relationship between socioeconomic status and nutritional status; and positive correlations between malnutrition and family size, number of diseases, and late introduction of supplemental foods.

Though the on-site and take-home programs were roughly equal in terms of cost and nutritional impact, the evaluation favors the take-home program for several reasons: villagers greatly prefer it; it provides a 17%-28% supplement to family income (compared to only 3%-4% for the on-site program); more food is distributed; staff is not needed to prepare, serve and clean up at feeding centers; and it can reach younger children.

Lessons Learned

1. Proper evaluation of nutrition projects requires careful collection and analysis of pre and post project data.
2. Nutrition activities should be targeted toward most vulnerable groups, usually those 6 to 24 months old.
3. Nutrition projects must be given sufficient time to indicate effect.
4. Evaluation of nutrition projects should be based upon consistent and constant standards, definitions, and measures.