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A.I.D. Project Impact Evaluation Report No. 8

Morocco: Food Aid and Nutrition Education



August 1980

Agency for International Development

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MOROCCO: FOOD AID AND NUTRITION EDUCATION

PROJECT IMPACT EVALUATION NO. 8

by

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The views and interpretations expressed in this report are those of the authors and should not be attributed to the Agency for International Development.

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EXECUTIVE SUMMARY

Although Morocco has a high per capita GNP relative to most developing countries, its income distribution pattern is skewed, and its health and nutrition status is deficient. Forty percent of Moroccan households are considered poor by U.N. standards, with incomes below \$260 per capita. Infant mortality rates are up to 170 per thousand in rural areas, and over five percent of preschool children are severely malnourished. The existing health system reaches only a small percentage of the poor and malnourished while other efforts in this area have been insufficient and uncoordinated.

In 1975, AID approved a \$450,000 grant to Catholic Relief Services (CRS), a private and voluntary organization, to introduce nutrition education into its 250 social education centers which were distributing PL 480 Title II food. As a result of the grant, a nutrition institute was established in Marrakech to train a cadre of supervisors and teachers for the provincial and local levels. Four Moroccans attended a three-year degree program at the Tunisian National Nutrition Institute in order to assume the teaching responsibilities at Marrakech. A curriculum was developed which combined practical lessons in nutrition, sanitation, personal hygiene and the treatment of childhood diseases.

The impact evaluation took place in February 1980, fourteen months after the termination of the grant in December 1978. The team found a well organized and high quality system which had expanded to 300 centers since the program's transfer to the Ministry of Social Affairs in early 1979. The Government of Morocco contributed some \$4.7 million last year for the operation of the program. The local costs of the centers and the teachers' wages were financed by the mothers themselves. The total annual recurrent cost per beneficiary was \$34.47, which is roughly comparable to other feeding programs throughout the world.

On the basis of an existing survey and our own studies, the team concluded that the social education centers had positively influenced the nutritional levels of Moroccan children. Children in the program were less malnourished; those children who were better off on entering the program maintained or improved their nutritional status. According to one analysis, the program resulted in a 69 percent reduction in moderate and severe malnutrition. Other data and our own small study of mothers' nutrition knowledge and practices showed that the education component contributed substantially to the reduction of malnutrition. This impact could be even more powerful if the program were more efficiently targeted on severely malnourished children and if collaboration with the Ministry of Health were further improved. The quantity of food distributed was also an important consideration: the relatively large ration size in the Moroccan program - 45 kilograms per recipient per year and three rations per family - may have helped to compensate for the inevitable sharing of commodities within families.

The food served as an important income subsidy of \$73 annually for each Moroccan family participating in the program, or as much as 24 percent of the per capita incomes of these families. The mothers we visited were all

at poverty level with limited education and minimal earning capacity. Our informal study of 25 of these mothers indicated that there was a meaningful difference in the nutrition and health knowledge and practices of mothers attending the program for more than one year compared with those who were newly enrolled. These findings corroborated CRS' more extensive survey data. The qualifications of the teachers, the organization of the nutrition education classes, and the diffusion effects of the centers accounted for the results. The program was a key factor in providing an opportunity for women to share in the benefits of a broader community life.

Food acts as an incentive for mothers to come to the center as well as a nutritional and income supplement. The program cannot escape this reliance on PL 480 Title II food commodities over the short term. Given current financial commitments and its balance of payments problems, Morocco can barely import enough food for its own consumption needs, let alone food donation programs. Nor is it possible to shift to local foods at the present time due to declining per capita domestic cereal production. Even if local foods were available, the costs are 54 percent higher than the U.S. acquisition price for PL 480 Title II commodities plus ocean freight. In the longer term, a reallocation of resources towards the dryland farming sector, higher producer prices and more widespread access to credit could encourage greater local production, thus reducing dependence on PL 480 food. In the absence of local substitutes or foreign exchange to finance increased imports, a critical question is whether and how food aid can be phased out and still preserve the same impressive accomplishments.

The CRS project is an example of how development assistance, in this case nutrition education, can be combined with food aid in creative and cost-effective ways. It has demonstrated that PL 480 Title II programs can be documented and shown to have a substantial impact on development. Other factors of success include the delicate balance of strong central management and local initiative, the requirement that mothers pay for their participation in the program, and the continuity of on-the-scene leadership.

Lessons Learned:

- In order to avoid dependency on PL 480 Title II foods over the long term, the phase-out of these commodities should be planned in conjunction with local food availabilities from the earliest stages of the project design. This would include a review of the country's economic and agricultural policies which relate to food production or foreign exchange earnings.
- Project designers should actively consider new ways of integrating development assistance activities, such as nutrition education, with PL 480 Title II programs. For a very small amount of money, it is possible to add key components which are crucial to achieving project results.
- A unified and centralized record keeping and management system should be instituted in feeding programs so that progress can be properly monitored and impact fully documented. The additional resources and effort required are well worth it.

- To encourage local participation and initiative, teachers in the food distribution centers should be recruited from the same community and from a similar socio-economic background as the program attendees.

- To improve targeting on the most vulnerable groups, it is essential that scarce food resources be allocated on the basis of nutritional status as well as income level. The ration size must be large enough to compensate for the effects of family sharing, which seems to be inevitable among the poor. Food supplements should be accompanied by education and other health and sanitation improvements to maximize nutritional impact on preschool children.

- In those instances where an independent organization is to be set up to administer PL 480 maternal/child health programs, difficulties will arise unless cooperative relationships are established with other relevant ministries. Coordination with the Ministry of Health is especially important to ensure that the existing health infrastructure is adequately utilized.

PROJECT DATA SHEET

Operational Program Grant to Catholic Relief Services (AID/NESA-G-1169)

Began: April 1975
Terminated: December 1978
Amount: \$453,000
Government sponsor: Ministry of Social Affairs
A.I.D. project numbers: 608-0123, 608-0141

Beneficiaries

Mothers: 150,000
Children: 300,000 (0-5 years of age)
Total: 450,000

Social Education Centers

Total number of centers: 300
Mothers per center: 500
Monitrices per center: 3
Provincial supervisors: 26

Food Distribution (take-home feeding program)

Monthly ration: 3.75 kilograms composed of 2.3 kilograms of soy-fortified flour, 450 grams of soybean oil, and 1 kilogram of wheat soy blend
Total ration: 45 kilograms annually per recipient
Rations per family: 3
Frequency of distribution: monthly
Total kilocalories in individual daily ration: 526
Total protein in individual daily ration: 16 grams

Nutrition Education

Frequency of classes: monthly
Content of classes: nutrition, health, sanitation, hygiene, food demonstrations
Training of monitrices: one month per year at Marrakech

Costs

Mother's fees: 2 Dirhams (\$.54) monthly
Ministry of Social Affairs' contribution: \$4.7 million yearly
Total value of PL 480 Title II food: \$8,431,020 annually (December, 1979, prices)
Total cost per beneficiary: \$34.47 per year



ACKNOWLEDGMENTS

The impact evaluation team gratefully acknowledges the generous support of USAID/Morocco, especially Harold Fleming, Mission Director; Eric Griffel, Assistant Mission Director; Mark Ward, Program Officer; and Al Ford, Evaluation Officer. Special thanks go to Sue Gibson, Health and Nutrition Officer, for her unfailing support and advice; to Tom Eighmy and Ursula Nadolny, who significantly contributed to our statistical analyses; to the Food for Peace and USAID administrative staff, all of whom were continually responsive to our needs; and to Mary Ann Anderson, nutritionist in AID/Washington, for her technical input.

We would like to express our appreciation to the Ministry of Social Affairs, the Ministry of Health, and the Ministry of Youth and Sports for their generous cooperation. The Minister, the Secretary General, and their colleagues in the Ministry of Social Affairs were most supportive of the team's efforts. Our personal debt of gratitude goes to Abdeljalil Cherkaoui, the Ministry's Chief of Nutrition Programs, whose camaraderie and unstinting collaboration facilitated our rapid understanding of the program. We are grateful, as well, to Mekki Bentahar and Malika Belkziz of the University of Rabat, who assisted us in interpreting Moroccan languages and customs.

To the staff of Catholic Relief Services (CRS)/Morocco and the Nutrition Institute at Marrakech, we are indebted for their patience and assistance in providing historical information and records. Lee and Conchita Sanborn, CRS Director and Assistant Director, provided invaluable insights about the evolution of the program, as did Elsa Haglund, CRS Regional Nutrition Advisor. Kathy Walsh of AID's Private and Development Cooperation Bureau deserves particular recognition for her support of our efforts throughout the typing of this report.

Finally, this study would not have been possible without the warm welcome extended to our team by the mothers, teachers and supervisors in the program.

Introduction

Poor people spend too much of their time making ends meet. We are always looking for something to eat and to learn - that's how I found the center. The center has given us food and knowledge - the possibility to better our lot.

- Salem Rabha, Midelt

The first food shipments from the U.S. Government arrived in Morocco in 1957. But attempts to link these commodities to the most malnourished began some 15 years later, after Congressional policies on food allocation mandated that priority be placed on feeding poor mothers and their young children. Further, to maximize the nutritional impact of food aid on this group, it was decided that PL 480 Title II commodities should be combined with nutrition education. In 1975, CRS/Morocco and Entraide Nationale, the Moroccan counterpart institution, responded by designing an AID Operational Program Grant which would integrate their ongoing food distribution efforts with a new nutrition and health education program. By 1978, when the Ministry of Social Affairs took over the program, it had been replicated on a nationwide scale.

The authors visited Morocco in February 1980 as an AID impact evaluation team. We had two major questions to answer: was the food plus nutrition education program dating from 1975 still functioning two years after the termination of AID funding and, if so, at what level of quality; and did the program have any impact on children's nutritional status and on mothers' practices and knowledge? We collected nutritional status and behavioral data, conducted in-depth interviews with program personnel and mothers, and visited 15 of the program's "social education centers." We concluded that nutrition education in conjunction with food assistance has had a measurable and positive impact on the 450,000 mothers and children participating in the program.

Nutrition and Health Setting

Saida Marroud, "monitrice" or teacher at Agdz, was married at 15 and had three children by 24. She had been working with our team all day, going over registers, answering our questions in addition to her other work. Finally, a woman brought out a 4-month old baby from the back room and handed him to Saida. She had been unable to feed him because of all the work that day. As she breastfed, she pointed to her baby's stomach: "The mothers used to say meat is too strong for the stomach of a young child. They never gave meat to children under two years. Now they will always try to give a little, even though it is expensive."

Morocco has a high per capita GNP relative to most developing countries, qualifying it as a "middle-income" country.¹ Yet, its health and nutrition status falls short, with infant mortality up to 170 per thousand in rural areas and severe (third degree) malnutrition in some five percent

¹Footnotes on pages 17, 18.

of preschool children--that is they weigh under 60 percent of what an average American child weighs at their age.² These data are on a par with the most malnourished countries of Latin America and are greater than the median for Asian and African countries.³ According to a 1971 survey, some 40 percent of children under five years old are moderately malnourished. While the poorest Moroccan children weigh the same as U.S. children at birth, by three or four months detectable differences develop. The differences widen so that a Moroccan child between 10 and 22 months of age stands the gravest risk of dying from malnutrition and disease, the one compounding the other.

Although the typical diets of low income families provide sufficient calories, they are deficient in protein, fats and several other key nutrients. Poor families eat meat and other animal protein at best once a week and may feed their infants only bread and sweet tea as supplements to breastmilk. Supplementary foods are commonly introduced late and even then are not adequate in quantity or quality to meet the demands of infants. Since Morocco has a high population growth rate (3 percent) this means less food for the less fortunate. In fact, by 1970 population growth had nearly eliminated per capita agricultural increases over the prior decade. To aggravate the already serious situation, per capita domestic grain production continued to decline, moving Morocco in 1974 from a position of net exporter to net importer. Although government subsidies helped stabilize food prices for the urban consumer, low-income families were still eating both less and poorer quality food.

The government and outside donors tried to respond through the existing health system but were able to reach, according to the most optimistic estimate, only 5 to 10 percent of the poor population. Some elementary nutrition and homemaking instruction was available in women's centers throughout the country. In primary schools children were taught the basics of good nutrition through the fictional characters of Ahmed, who has a balanced diet, and Rachid, who doesn't know how to eat properly. Popular radio programs, "Madame Leila" and "The Doctor," touched generally upon nutrition and health issues. But these efforts were insufficient and uncoordinated. As some signs of poverty worsened, awareness quickened, and the main participants - the Moroccans themselves to the U.S. Government and outside relief groups - realized that much more needed to be done. It was in this setting that the AID/CRS nutrition education project began in 1975.

The Project

On twenty days of every month, eleven months each year, a different group of 25 mothers arrive at the social education center -- 500 a month. They have their certification of "indigence" and many have malnourished children. They usually come from within one to ten kilometers to as far away as 45 kilometers in the north, on donkey or foot, often

with a cluster of their neighbors. They attend the 20 to 50-minute class, register the weight of their child, pay their 2 Dirham (about \$.54) fee and receive their monthly ration of food.

These activities began in April 1975 when AID approved a grant of \$282,000 for Catholic Relief Services, a private and voluntary agency headquartered in New York, to introduce nutrition education courses in its 250 food distribution centers. Later, funds were increased to \$453,000 and the project extended until November 30, 1978. Food commodities were provided under PL 480 Title II, \$8,431,020 worth in 1980, approximately 45 kilograms annually for each enrolled child under five years of age and three rations per family. Only those families certified to be below the poverty level were eligible to receive the monthly food donations.

To launch the new education component, a nutrition institute at Marrakech was established. This institute was to train a cadre of competent, motivated Moroccan women at the provincial and local levels. Some 500 women from villages with social education centers were recruited to be trained as teachers or "monitrices." Many of these women had been previously with the program, distributing food to mothers and weighing children at the centers. But they worked as administrators and not as educators. They lacked training, and they were frequently uncomfortable even in carrying out their limited cooking demonstrations. To back them up and provide a means of communicating with the monitrices in their small and often isolated centers, a group of 30 "mid-level" supervisors was also trained. These were women with more education, chosen through a much publicized national contest, and sent to the Tunisian National Institute for an intensive three-month training course in basic nutrition and health. Four Moroccans were selected, at the same time, for a three-year degree program in Tunisia so that afterwards they could assume the teaching responsibilities at Marrakech.

Right from the start, CRS and Entraide Nationale placed greatest emphasis upon making the program relevant to poor mothers' problems. They geared the teaching instructions to a level understandable by the mothers and used foodstuffs and materials commonly found in their villages. The curriculum they developed was a practical combination of crucial lessons in nutrition, sanitation, personal hygiene and the treatment of childhood diseases. Thus, the Marrakech Institute, the program-wide training, and the mothers' curriculum provided the foundation for the program as it had evolved at the time of our evaluation visit.

Nutritional Impact

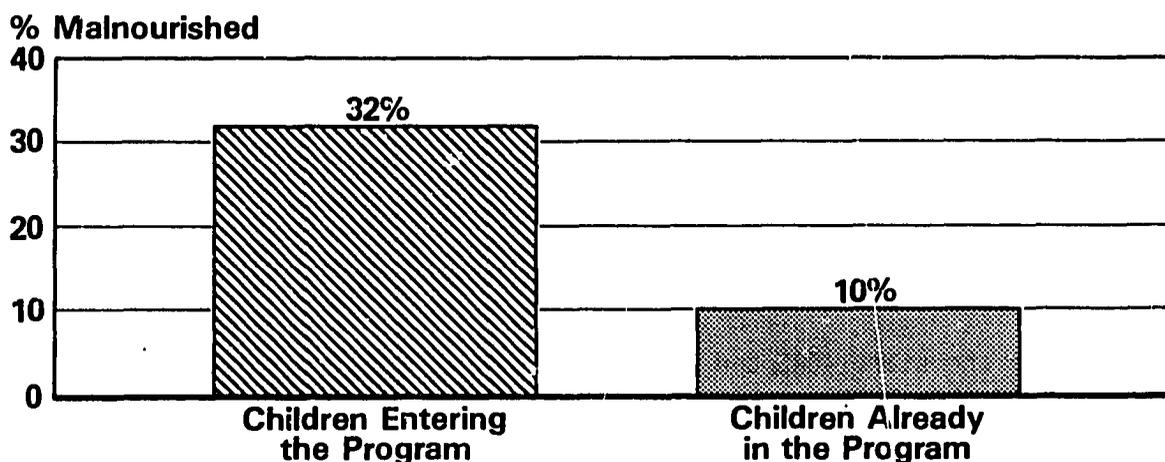
The T.V. cameras were rolling as we entered and shook hands with the Minister of Social Affairs, Abdella Gharnit. We were to give him a "debriefing" before we departed from Morocco. Obviously very used to outside "teams" of foreigners, he relaxed in his chair and somewhat mechanically asked us

for a "petit resume" of our trip. We positioned our flip chart, diagrams and graphs on the table in front of him. The Minister looked around at his coterie of some 15 advisors and remarked, "This looks serious." Now the cameras were gone and we could relax. As we leaned over the table to begin going over charts, he asked, "But did this really make a difference?"

Had the system of 300 social education centers made a difference in the nutritional status of Moroccan children? To answer this question, our team analyzed an existing survey and, more importantly, conducted our own studies. We concluded that children in the program were less malnourished, and impressively so, because of the program. Even those children who were better off on entering the program maintained or improved their nutritional status. Lastly, we were convinced that the education component itself and not just the food commodities contributed vigorously to the success of the program.

The results of the program in general, taken from 1978 weight data, can be seen below (see Appendix B for more detailed analysis):

MALNOURISHED (<80% Expected Weight/Age-Children 0 to 5 Years)



The difference between program children and those just entering the program is dramatic: the program resulted in a 69 percent reduction in moderate and severe malnutrition, equal to or higher than that found in most feeding programs throughout the world.⁵

The relatively large ration size in Morocco could explain some of these effects. It is greater than in most countries--45 kilograms per recipient per year--and the number of rations per family is also higher. Each mother receives three rations: one for herself, one for her child enrolled in the program, and one for a younger sibling not in the program. Thus each child is provided with approximately 40 percent of caloric, 70 percent of protein, and 73 percent of iron needs, which along with other foods from the family, is more than enough to promote normal growth.⁶ But the food is usually shared

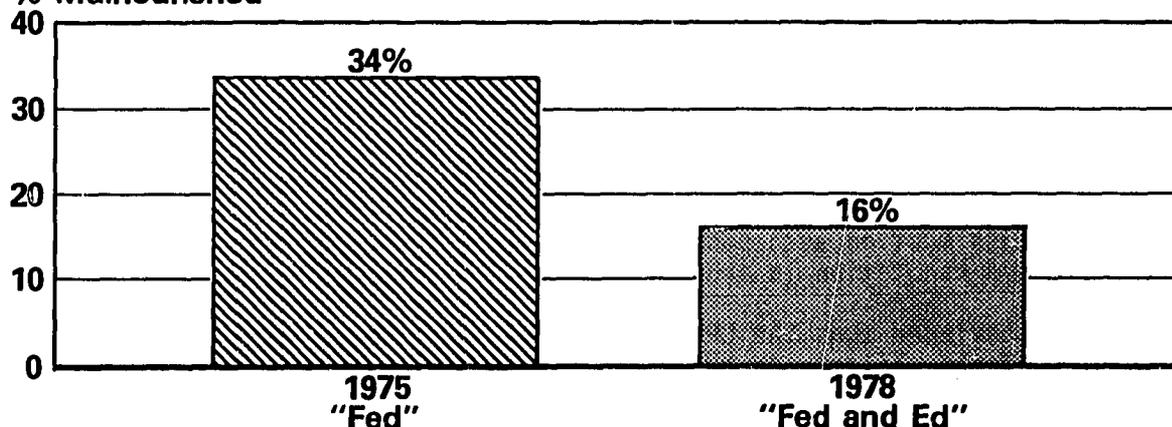
among other family members, thereby reducing its impact. More than half the mothers we spoke with in the program admitted that older children or relatives consumed some of the rations. Others implied that sharing occurred by telling how they used up the food in less than the usual month's time. The size of the ration may have helped to offset the magnitude of family sharing, thereby contributing to the powerful nutritional impact reported above.

We then examined the independent role of nutrition education in bringing about this impact. To our knowledge the impact of nutrition education on overall nutritional status has not been documented in any other study. Some nutritionists dismiss education programs. They contend that even poor mothers know what and how to feed their children and lack only the food and income, not the know-how. Other nutritionists disagree. They claim that certain feeding practices should be changed, even within the constraints of a poverty environment.

The argument has proceeded without much scientific foundation on either side. It has been difficult to document behavior changes following nutrition education and harder still to show the direct link to improved nutritional status of children. Yet we found a means of adding some validity to one side of the argument. In Morocco, CRS conducted a study comparing children who received food alone with those receiving both food and nutrition education. This was possible since CRS ran a feeding program from 1972 through 1975 without an education component, which was introduced only in 1975. The study went as follows: the weights of 728 program children in 1978 were contrasted with those of brothers and sisters of the same age who had been in the program in 1975. The 728 program children in 1978 experienced the complete food plus nutrition education program; their brothers and sisters in 1975, of course, only had food. In essence, the study looked at the 1975 "Fed" children and the 1978 "Fed and Ed" ones and found a staggering difference as shown here:

MALNOURISHED (<80% Expected Weight/Age-Children 2½ to 5 Years)

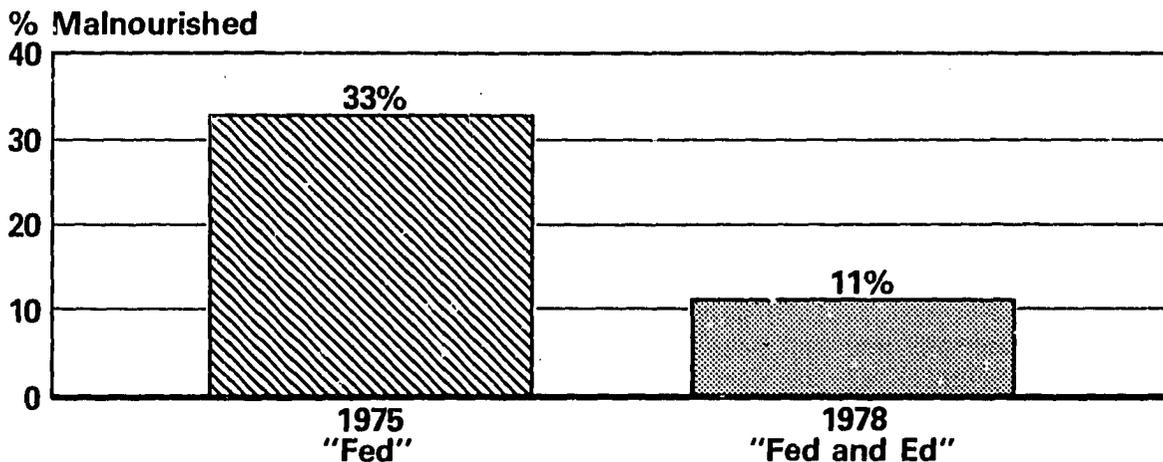
% Malnourished



In 1975, 34 percent of the "Fed" children were moderately and severely malnourished. In 1978, after the addition of nutrition education, only 16 percent of the "Fed and Ed" children were in this category.⁸ Severe malnutrition was virtually eliminated. All the while, the program maintained the nutritional status of those who were relatively better off to begin with.

We wanted to replicate the Catholic Relief Services' conclusions with our own study because the children weighed in 1978 may have received food for a longer period than the comparison group measured in 1975. We contrasted 1978 children benefiting from food plus education ("Fed and Ed") with comparable 1975 "Fed" children--both groups having received food for approximately the same length of time.⁹ The results shown argue persuasively that an impressive nutritional impact was achieved with the addition of the education program:

MALNOURISHED (<80% Expected Weight/Age-Children 0 to 5 Years)



Thirty-three percent of children who received only food were moderately and severely malnourished compared to 11 percent of those benefiting from both food and education. These conclusions are supported by our own small study of mothers' nutrition knowledge and practices described below.

An interesting finding, contrary to what we would expect, was that CRS children who had been receiving only food for one or two years in 1975 appear to be slightly more malnourished (33 percent) than children just entering the program in 1978 (32 percent). When we examined these new entrants for the same months as the CRS survey, however, they were slightly more malnourished (39 percent). This minimal effect of food by itself on nutritional status supports the conclusion of other evaluators of feeding programs--that food supplements must be accompanied by education and other improvements in health and sanitation in order to maximize nutritional impact.

We are convinced that the CRS program has had a major impact on the nutritional status of the children in the social education centers. But has it affected the nutritional levels of a significant number of preschool children in Morocco as a whole? Our data indicate that about 32 percent of the children

entering the centers were malnourished at the outset. More than one quarter (28 percent) were moderately and 4 percent severely malnourished. The centers as a whole cover only six percent of all malnourished children under five. Clearly, the program could do a better job if nutritional status were given more emphasis as a selection criterion. Yet it is also true that too rigid a screening procedure would endanger the program's positive preventive role of keeping borderline children from sliding into serious malnutrition. The Government of Morocco needs to fine tune its selection criteria in order to improve program efficiency.

Income Effect

"Hygiene is for rich people," according to Khadija Brahim, recently enlisted in the Taakit center program. She was washing the vegetables for her family's dinner as we walked in. The Koran teaches that it is necessary to wash for prayers but the public baths cost too much. Khadija can barely afford the 5 Dirhams (\$1.35) per week for herself, her husband and four children to go. Her husband works at odd jobs and during the leanest seasons must beg for food. The center is helping her learn how to keep clean within her own harsh environment; the food assistance, by increasing her purchasing power, will enable her to go to the baths more frequently.

Like this woman, the 25 mothers we interviewed in their homes all came from among the poor of Moroccan society. Only four had any formal schooling, and two others had limited training in hairdressing and embroidery. The majority of husbands were seasonal laborers or unemployed. Those with some technical skills--one as a blacksmith, one as a mason and two in farming--worked part-time or sporadically. Two soldiers (one retired) with fixed salaries were the exceptions. Our Moroccan colleagues, including a sociologist and a nutritionist, confirmed that these families were at poverty level with minimal earning capacity.

Forty percent of Moroccan families are considered poor, below \$260 per capita income, by UN standards. The social education center program reaches 11 percent of these families - a respectable showing for a single program just beginning.¹⁰

In this context, it is clear that food aid relieves some degree of financial stress on a poor family. The local retail value of the U.S.-donated food is almost \$11 million.¹¹ This translates into approximately \$73 worth of food annually for each Moroccan family participating in the program, an income supplement ranging from 4 to 24 percent of the \$50 to \$260 per capita incomes of these poorest families.

Changes in Knowledge/Behavior of Mothers

It was dark before we finally arrived at Rabhan Nbari's house, several miles from the center at Agdz, a poor town in the

southern province of Ouarzazate. As we talked about the center, Fatima, her five-year-old daughter, was putting Khadija, the two-year old to "bed," a rough mat in the corner. Rabhan pointed to the circle of children surrounding her. "The monitrices taught me what to do when my children are sick. Before I just waited for them to get better. If they didn't, I felt helpless. I didn't know what to do. Now I take them to the center or the dispensary."

In order to assess the project's impact on mothers' knowledge and behavior, we set up our own informal study. At each of the centers, we randomly selected mothers who had been in the program for more than one year. Mothers enrolled in the program for less than 3 months or, in a few cases, not at all made up a comparison group. We wanted to see if there were real differences in knowledge and practices that might emerge between the 13 program and the 12 comparison mothers. We looked at eight indicators, each important for good health and nutrition:

- During infant feeding, did the mothers supplement their breast milk with additional food at six months or less?
- Did they wean their babies from the breast abruptly or gradually?
- Could they describe the appropriate diet during pregnancy and nursing?
- How did they treat infant diarrhea?
- Could they name the disease treated by vaccinations?
- Did they know the animal or vegetable substitutes to use when there was no money to buy meat?

The mothers responded along the lines predicted. In all of the areas probed, except for animal protein substitutes not stressed in the class curriculum, the program mothers demonstrated more knowledge of nutrition and health.

<u>Indicator</u>	<u>Number of Mothers Responding Correctly</u>	
	<u>Program Mothers</u> (N = 13)	<u>Comparison Mothers</u> (N = 12)
Supplementation at 6 months or less	13	8
Gradual weaning	13	5
Pregnancy diet	10	0
Nursing diet	10	3
Diarrhea treatment.	10	5
Diseases treated by vaccination	2.1*	1.2*
Animal protein sources	8	8
Vegetable protein sources	11	5

*Mean number named per mother

Program mothers in general were aware of the importance of a balanced diet and were preparing meat or fish for their families at least once or twice a week if they could afford it. Comparison mothers, on the other hand, were less systematic about their families' food consumption, stating that they eat "what is around" or "what God provides." In addition, all the program mothers knew how to read and discuss the program weight charts, demonstrating an understanding of the relationship between food and growth.

Catholic Relief Services' own dietary survey carried out in 1975 and again in 1978 confirmed that participating mothers altered their weaning practices dramatically as a result of their three years of instruction.¹² In 1975, 91 percent of the 845 mothers questioned weaned abruptly as compared to 15 percent of the 692 mothers in 1978. The survey also showed statistically significant increases in the consumption of protein foods, fruits and milk products by their two to five-year olds. Our conclusions, supported by CRS' own survey, indicate that there is a meaningful difference in the level of knowledge between program and comparison mothers. Further, the program has been surprisingly effective in changing child feeding practices and more general attitudes towards nutrition.

When we reflected on the likelihood of such change resulting from only a dozen classes a year, it became evident to us that the social education center probably functioned also as a source of diffusion and informal reinforcement of good practices. Each center seemed to generate an elaborate network of influence which reaches mothers who are not participating in the program. In one instance where the comparison mother was well informed, we discovered that she had learned everything she knew from her sister-in-law, a long-standing program participant.

We were continually confronted with evidence of diffusion of impact from the center. Whenever we went for an interview in a mother's home, almost always a friend or two and their children would listen in. The monitrices who conduct home visits claim that neighbors join in on most occasions. Several monitrices were asked if mothers not inscribed in the program ever sit in on the educational sessions; answers ranged from 15 mothers a week to up to seven a day. Every center where we inquired had a list of from 10 to 150 mothers wanting to join. At Zagora, 1000 women from a single mountain village requested the opening of a new center nearer their home. In Ouarzazate province, teaching materials gathered from the center were being considered as a model for a new primary school booklet on nutrition and health.

Evolution of Women's Roles

As we left Ksar es Souk, a celebration was taking place. The men were outside dancing and playing musical instruments; the women were inside closed from view, making their plaintive sound which filtered through the walls. We recalled the words of Dr. Belmahi, Governor of Errachadia, as he described to us how

things were changing for some women in Morocco. "It is very interesting to see mothers come out in this society, mothers ready for education to know new things for themselves. When a mother stays in the home, she cannot participate in society. When she joins the center, this stimulates her development."

In some communities in the early 1970's when the feeding program was just beginning, women did not venture out of their homes, even to pick up food commodities from the local centers. Men persisted in bringing their children despite the urging of monitrices to let the mothers come. According to Mohamed Barbach, Director of the Agricultural Center in Beni Boufrah, "The husbands would not let their wives go out. They had the key." By 1974, this pattern was already changing.

We became convinced that part of the power of the centers had to do with the evolving status and role of women in Moroccan society. In fact the impact of the center on the role of women may be greater than the impact on other practices which we have discussed--and more difficult to document with summary statistics. Several women simply told us that before the center they went out of their home only for food, water, and fuel--and to visit with an occasional neighbor. This also seemed to be a truism among the community leaders we interviewed. The centers appeared to be--and were certainly perceived to be--a key factor in providing an opportunity for women to share in the benefits of a broader community life.

The monitrices encourage access to a wide range of social services, such as vaccinations, hospitals, child care facilities, schools and women's associations. The social education center itself is usually part of a larger Ministry of Social Affairs complex, sometimes shared with an activity of the Ministry of Youth and Sports or the Ministry of Agriculture. It is often located near a Ministry of Health dispensary. Mothers feel more comfortable with these medical services after having been to the center and have reported receiving more prompt treatment because of the center's intervention. More women are now giving birth in hospitals, particularly when a first child is involved or prenatal difficulties are foreseen. Some credit the centers with influencing women to have their children enrolled in child care centers or primary schools.

Before the creation of the centers, parents let their kids run wild. Now they want to place them in nurseries. They understand the importance of education.

- Fatima Lyas, Director of Women's Centers, Taakit

Others noted that mothers from the centers were more receptive to changing their health practices:

There is a difference between mothers from the center and the others (who come to my dispensary). They are more educated; they follow the treatment better; they come to the dispensary sooner than the others. For vaccinations, I have to go out

and chase in the others, but the mothers from the center come in on their own.

- Alharrak Najib, M.D., Beni Boufrah

At some centers, up to 35 mothers a week return on a non-class day to discuss their problems with the monitrice. Many of these women are asking for counseling services or more education to fulfill their personal aspirations.

The monitrices and provincial directrices have found the CRS program to be a means of upward mobility. These women from lower class families and limited educational backgrounds would normally stay at home or at best enter low paying or volunteer social work. Most provincial directrices interviewed were recruited directly out of secondary school; about half the monitrices we met had been involved in social service activities while the others stayed at home or in housework-related jobs. After joining the program these women acquired a new stature in their community. They had steady jobs with fixed salaries. Some had ambitions for the future:

In five years I want to teach 1000 mothers in a beautiful center and find work for my husband.

- Saida Marroud, Monitrice at Agdz

Institutional Strength and Growth

We met Mr. Ouhadou just after leaving the center at Zagora, the small town in southern Morocco which borders the rich date and fig valley to the north and the beginning of the endless Saharan sands to the south. Mr. Ouhadou is Vice President of the Community Council of Zagora, and we were anxious to find out what he thought about these centers. "Help is needed for education and food. I'm happy with the work and organization of the centers. It's a very serious system - the quality of the monitrice and the business of the centers - they're well conducted, well run."

Notwithstanding the completion of this project in December 1978, we found a solid, well-organized system which had expanded since the program's transfer to the Ministry of Social Affairs in early 1979. Since then, 50 new centers have been created, 100 new monitrices trained, and a new curriculum developed for a fourth year of training. In addition to port and warehousing and inland transportation costs of food shipments which they have always paid, since 1979 the Government of Morocco has taken over all administrative expenses of the project. This includes the costs of continued CRS assistance, the training school at Marrakech, all administrative personnel, and the salaries and travel of the provincial directrices. The Government contributes some \$4.7 million annually for the successful operation of this program. In addition, the local costs of the centers and the monitrices' wages are financed by the mothers themselves. The mothers' monthly payment was recently doubled to 2 Dirhams (\$.54) in order to improve the salaries of the monitrices.¹³

From on-the-spot observations in 15 centers (11 randomly selected), we noted consistently good operational procedures:

- Delays in food deliveries were the exception not the rule;
- Each center maintained excellent and uniformly kept records;
- Monitrices interacted actively with mothers, creating an excellent teaching and learning atmosphere;
- Infant weighing procedures were being followed and an improved system of referrals to health care facilities had been introduced;
- Monitrices conducted weekly home visits to follow absent or sick mothers;
- Provincial Directrices were visiting each center on a monthly basis as scheduled.

During our tour of the field sites, we observed several classes and were impressed with the dynamism of the monitrices. They followed the lesson plan printed on their plastic class outline guides and seemed to be well trained in the use of demonstration materials and posters. But what transpired was not a rote repetition of an exercise learned at Marrakech; an extraordinary level of interaction between the monitrice and mothers took place. To capture something of this process, we tabulated the number of comments, questions, answers, or stories contributed by each mother or by the entire group. For classes at four different centers, there was an average of 3.4 responses per minute, with 79 percent of the mothers making individual comments. This high level of interaction indicated an opportunity for learning far superior to more static lecture or rote response styles witnessed by team members in other countries and in other settings in Morocco.

With such successful operations, it is tempting for the Ministry of Social Affairs to yield to the many demands for new centers throughout the country. The program is well organized enough to handle a gradual phasing-in of additional centers and teachers. Food aid is the major constraint.

Cost-Effectiveness and Project Continuation

We arrived late at the tiny center in Midelt, a medium-sized town in the high mountainous region of Morocco. Saida Bekir, one of the oldest monitrices in the program had been working there since 1975. We watched intently as her assistant weighed the children and called off the weights to Saida. Using 3 different colored pens, she deftly jotted down all the information --attendance, payment, weight--in the tiny ledger. In less than an hour's time, twenty children were weighed and their weight recorded; each mother received some twenty-five pounds of food, poured into old PL 480 sacks that the mothers bring each week. Saida told us that they use the same sacks over and over to eliminate the costs of packaging.

The Morocco feeding program cost of \$34.47 per person per year is roughly comparable to other feeding/education programs throughout the world.¹⁴ Costs of similar programs range from \$10 in Kenya to \$32 in Colombia.¹⁵ These are below the Moroccan figure mainly because the calculations were made over four years ago when food prices were lower. Also, few if any of these programs had full-scale nutrition education components. And these expenses,

including the Marrakech training school, explain the somewhat higher cost per beneficiary in the Moroccan program. Considering the nutritional and other impacts of this program, it is extremely cost-effective in comparison with the majority of feeding programs which have shown little or no nutritional impact.

In most feeding programs, including Morocco, food accounts for just over half of the total annual cost per beneficiary. The Ministry of Social Affairs and the mothers themselves cover the other half. They would be hard strapped to take on all the expenses given poverty levels, current financial commitments, and Morocco's continued balance of payments problems. Nor is it possible to shift to local foods at the present time due to declining per capita domestic cereal production and climbing wheat imports. Even if local foods were available in sufficient quantities to substitute for PL 480 commodities, their costs are 54 percent more than the U.S. acquisition price plus ocean freight. Specifically, the 1980 value of PL 480 Title II food for the social education centers, is \$9,591,020 including international transportation, as compared to \$14,787,418 for the equivalent local commodities.¹⁶ As a result the costs to the Government of maintaining the centers' current program would jump overnight by more than 300 percent in the absence of PL 480 food.

Food functions as a sorely needed income and nutritional supplement. Since the beginning of the program, approximately 133,500 metric tons of food have been provided to Morocco in its support. In 1980 alone, 20,250 metric tons of flour, vegetable oil, and Wheat Soy Blend (WSB) will reach the centers. Food also serves as an incentive for mothers to travel, often long distances, to the center, and it helps convince husbands to let their wives out of the home. Without food, it is generally believed that women would not attend the nutrition education courses. The program cannot, as a result, escape this reliance on outside resources over the short term.

Limited food supply is a genuine constraint to the future expansion of the program. Any immediate phase-out of PL 480 Title II assistance would jeopardize its substantial accomplishments. Alternate solutions will take time. Locally produced oranges and dates, for instance, could be introduced at the appropriate seasons to supplement existing food commodities. The development of a low-cost and more acceptable weaning food than the available Actamine 5 is another possibility. Such a mixture might eventually be distributed in the centers as a modest replacement for U.S. food. The Government of Morocco has asked UNICEF and USAID to help them reduce the high cost of production so that a local weaning food will be more accessible. In the longer term, changes in the Government of Morocco's economic and agricultural policies could encourage greater local production, thereby reducing dependence on PL 480 food. A reallocation of resources towards the dryland farming sector, higher producer support prices and more widespread access to credit have been recommended by the World Bank to raise production of cereals and oilseeds.¹ The government appears to be looking more seriously at the rainfed agricultural sector as a means of increasing food self-sufficiency. This approach is in line with USAID's projects in support of dryland farming and domestic grain production.

Success Factors

Sitting in the 3rd floor CRS offices above the busy Avenue Allal Ben Abdallah, Conchita Sanborn was telling us about how she and her husband, Lee, had tried out some new ideas with nutrition education in the Philippines. She leaned forward as she said, "We're open to evaluation - it will always bring us good. When you experiment, you learn a lot." We could see that this "experiment" was based on years of experience of dedicated CRS and Moroccan officials.

Several factors converged to make the program a success. First, the Title II program was becoming an increasingly visible part of the AID/Morocco portfolio - the linchpin for developing a "new directions" strategy in Morocco. Second and simultaneously, AID/Washington pushed to achieve more nutritional impact with Title II food. Third, Food for Peace was able to furnish enough food aid to permit three rations per family. Fourth was the critical element of on-the-scene leadership. The Sanborns, who became directors of CRS in Morocco, used their 12 years of experience in the Philippines to design and launch the Morocco program. Here they lacked a Catholic Church infrastructure to act as a food distribution network, but found an experienced host country institution, Entraide Nationale, to do the job. Continuity followed commitment since the Sanborns have now been in Morocco for over a decade, and Entraide Nationale has had the same ranking official for over a year and a half. And finally, with this CRS collaboration, Entraide Nationale developed a quality program with a highly structured management and training system. When Entraide Nationale became a full-fledged Ministry of its own in late 1977, it was in a strong position to assume direct responsibility for activities under the AID grant, which ended in December 1978.

Lessons Learned

1. In Morocco, we found that nutrition education contributed significantly to the impact of the program. This education component had been successfully grafted onto an existing feeding program through an Operational Program Grant to CRS, a very small investment in comparison with AID's bilateral projects. The grant focused on several critical activities: establishing the Marrakech Nutrition Institute and training supervisory personnel; curriculum development; and ongoing data collection and analysis. It is illustrative of how development funds can be combined with food assistance in creative and cost-effective ways.
2. The size of the food ration appeared to be a contributory factor in producing nutritional impact. A large enough ration compensated for the effects of family sharing and assured that a minimum level of supplemental protein and calories - essential to normal growth - was present. Food by itself, however, in the absence of education and other health and sanitation improvements, cannot be expected to achieve a maximum impact on the nutritional status of preschool children.
3. The Morocco program demonstrated that PL 480 Title II programs can gather and use data for project design and evaluation purposes. At times data

collection and reporting can interfere with operational responsibilities, but this was generally not the case here. On the contrary, we suspect that the self-monitoring procedures helped motivate a high level of performance. This program has shown that with adequate funding, technical knowledge and guidance, Title II programs can be documented and proven to have an impact on development.

4. The delicate balance of strong central management and standardization of procedures with local variation and "bottom up" communication was vital to the success of this program. It accounted for much of the competence of the monitrices in relating to the mothers. Local initiative evolved from: the self-financing of the centers; the feedback and supervisory functions of the provincial directrices; and the recruitment of local women as monitrices.

5. The fact that mothers, no matter how poor, were required to pay for the food and nutrition education program, was significant for two reasons. The mothers' contributions ensured that the individual centers were operationally self-sustaining. Yet, even more importantly, by paying, the mothers developed a sense of responsibility for the food donations and education. This attitude may also have explained some of the other impacts described in this report.

Issues

Dependency on food: The program's reliance on food aid is an inherent problem. This dependency inhibits its potential for expansion and possibly endangers its continuation, given any uncertainty of PL 480 food deliveries. It is questionable whether Morocco can import enough food for its own consumption needs, let alone food donation programs. And substituting local foods for PL 480 Title II commodities would require a major reorientation of agricultural and economic policies designed to boost domestic production. It is, therefore, imperative to begin to resolve whether and how donated food can be phased out without diminishing the program's impact. One approach might be to design a study to determine the minimum amount of food that would attract mothers to the centers. At the same time, attempts should be made to link nutrition education with other skills training and income-producing activities.

Cooperation with other institutions: Morocco is a case in point of the potential rewards and possible risks in building up an organizational infrastructure around PL 480 commodities. The Ministry of Social Affairs has established a coherent, well-functioning system of nutrition education services, but one that is relatively independent of other national efforts. Attempts have been made recently to bring about better cooperation, particularly with the Ministry of Health. Last year the program introduced a health book to expedite the referral process between the social education centers and the health dispensaries. At the provincial level, the Ministry of Social Affairs' directrices are working more effectively with their health counterparts, and the Ministry of Health's medical directors will be collaborating with the centers to strengthen education and immunization efforts. Despite these advances, closer communication could enhance the performance of both ministries, for example in the areas of home visits, training in basic health care, and sharing of data. With improved targeting on the most malnourished children, the assistance of the Ministry of Health is even more essential to reducing the debilitating effects of infection.

Program Outreach: The program currently reaches 11 percent of poor families in Morocco and 6 percent of all malnourished children under five. These relatively small numbers raise two questions: (1) how can attendance at the centers be increased without diminishing impact and efficiency and (2) how can the food and nutrition education be extended to those disadvantaged families in more isolated rural or mountain areas. Improved selection procedures aimed specifically at malnourished children would help some. It might also be possible to spread the benefits thinner, for example, by diminishing the ration size or reducing the time allowed in the program, but these actions could negatively affect nutritional status and learning. And they will not guarantee that people living in more distant areas would be able to participate. Logistic considerations and food constraints make expansion difficult; it may be unrealistic to expect the program to have such a comprehensive outreach. Because of these uncertainties, a more thorough study of alternatives is necessary before specific measures can be implemented.

Conclusion

The Moroccan example highlights what is possible to achieve--in a reasonably cost-effective manner--when nutrition education is combined with PL 480 title II food distribution. This progress has taken place in a country which although classified as middle income, has a skewed pattern of income distribution and relatively high rates of infant mortality and third degree malnutrition. It is difficult to say with precision whether food or nutrition education was the determining element. This report contains data which suggest that nutrition education contributes significantly to nutritional improvement. On the other hand, in order for nutrition education to work, it appears that a minimum amount of food may be necessary to counteract the effects of family sharing and, at the same time, provide a fairly substantial income supplement to poor families. What seems clear is that few of these impacts would have occurred with a feeding program alone. In addition to improvements in nutritional status, the center mothers and their families experienced other benefits, described in this report, which may make them less dependent over the long term on the food input.

The critical question for the Morocco program is whether and how food can be phased out over time and still preserve the same impressive impact. A related concern is whether domestic grain production or foreign exchange earnings can be increased enough to supply local or imported substitutes for PL 480 food. In Morocco, food was a very necessary but not sufficient condition for the results observed. AID's grant to CRS, which added a nutrition education component to an existing food program, was a decisive factor in bringing about these accomplishments.

FOOTNOTES

- 1 Catherine Pierce, "Morocco: The Health Situation," 1979 World Bank paper, Population and Human Resources Division.
- 2 E.M. De Moeyer, "Protein Energy Malnutrition," Nutrition in Preventive Medicine, eds. G.H. Beaton and J.M. Bengoa, World Health Organization, Geneva, 1976, p. 27.
- 3 The last nutrition survey was carried out in 1971. This is the only available source of information, outside of CRS data, on prevalence of malnutrition. A combined nutrition and consumption survey is planned for 1981.
- 4 A discussion of information sources, methodology and corrections to the CRS data set can be found in Appendix B.
- 5 J.E. Austin et al., "Supplementary Feeding," Nutrition Intervention in Developing Countries, Boston: T.K. Hull, 1980 in press.
- 6 The calculations of percentage caloric, protein and iron requirements met by the rations provided are based on: 1) Food and Nutrition Board, National Academy of Sciences - National Research Council, "Recommended Daily Dietary Allowances, Revised 1974;" 2) Title II Commodities Reference Guide, March 1, 1978; and 3) USDA "Composition of Foods," Government Printing Office, Washington, D.C. 1963.
- 7 For a more complete discussion on size of ration and its importance to feeding program impact see Chapter III in CARE Preschool Nutrition Project: Phase II Report, by Mary Ann Anderson, CARE, New York, 1977 and "Issues Raised in Connection with the Evaluation of Title II Programs," a paper prepared by Father Capone, Catholic Relief Services, October 30, 1979.
- 8 The highest percentage reduction of malnutrition was found in the older children, 4-5 years of age, with lower but significant reductions in the younger age groups.
- 9 Of the 26 centers included in the CRS survey all, with the possible exception of two, were centers which had been in operation for over a year, with the majority at least two years. While some of the children surveyed might have been new children, we are assuming that this proportion ranged from 4 to 23 percent (average 13 percent), the percentage of new children we found in the 10 randomly selected centers we visited. Thus, the vast majority of children surveyed in 1975 had been "Fed" for one to two years with individual and family ration sizes similar to those in 1976 and 1977, the two years before the 1978 follow-on survey.

- 10 This figure of 11 percent may underestimate program coverage since there is an average turnover rate of 13 percent which has not been included.
- 11 This figure represents our best estimate of the local market value of PL 480 commodity equivalents. The prices of wheat flour and vegetable oil are subsidized in Morocco. For WSB, we substituted local foods (chick peas, lentils, semolina, sugar and cow's milk) with the equivalent nutritional content and in the same relative proportion as in Actamine 5, the locally produced commercial weaning food. Retail prices for these ingredients were used, except in the case of sugar and milk which are controlled. Instead of non-fat dry milk, 15 percent of the Actamine 5 mixture, we substituted processed cow's milk which is locally available and much less costly.
- 12 Catholic Relief Services, "Nutrition Education Program (AID NESA-G-1169)," Appendix 8, Baseline Survey.
- 13 Information on total program costs was obtained through USAID and CRS reports and other records.
- 14 To determine cost per beneficiary, we used the methodology developed by Checci and Company in "Evaluation of Eight Country Programs," Food for Peace: An Evaluation of PL 480 Title II, Vol. II, Washington, D.C., July 1972. See Appendix C for cost breakdown. We used the 1980 program costs, despite higher food costs. During this year food rations were similar in quantity to 1976 and 1977, the first 2 years of the nutrition education project (45 kilograms per recipient per year). In 1978 and 1979 rations were increased to 69 kilograms per recipient per year because of availability of rice and milk as add-ons to the regular program. Since these two years of higher rations were atypical of past and future levels, we have not used them as a basis for calculating cost per beneficiary.
- 15 For comparison costs per beneficiary see report by Checci and Company cited above and CARE Preschool Nutrition Project: Phase II Report, by Mary Ann Anderson, CARE, New York, 1977.
- 16 The dollar value of the PL 480 Title II commodities in 1980 is based on USDA estimated prices as of December 11, 1979. We used current wholesale prices for local cost equivalents except for wheat flour and vegetable oil which are sold at fixed subsidized prices and non-fat dry milk which is available only at retail value. If we substituted either processed cow's milk or fat milk powder for the non-fat milk, the local cost equivalent would be considerably lower. Due to storage problems, however, we do not believe that these easily perishable commodities could be used in a nationwide food distribution program.
- 17 See World Bank, "Memorandum on Morocco's Agricultural Sector," Report No. 2667-Mor.

APPENDIX A
EVALUATION METHODOLOGY

EVALUATION METHODOLOGY

The evaluation team consisted of four members, all AID/Washington staff: the team leader, an evaluation officer from the Bureau of Private and Development Cooperation; a public health nutritionist and a public health physician from the Near East Bureau; and a communication researcher from the Office of Education, Development Support Bureau. This team was supplemented for specific in-country tasks by a Moroccan sociologist and research assistant, a representative of the Ministry of Social Affairs, and an economist and two health/nutrition officers from USAID/Rabat.

The team had two major research questions: (1) did the nutrition education and food supplementation program have an impact on the intended beneficiaries' nutritional status, practices, and knowledge; and (2) what role did the 1975 Operational Program Grant to Catholic Relief Services play in producing these results?

Information related to the nutritional status of children in the program was obtained from a previous Catholic Relief Services' study and from program records at Marrakech and at the social education centers visited. Methods of data collection and analysis for the nutrition status studies are reported in Appendix B.

The same Catholic Relief Services' study and the 25 interviews conducted by the evaluation team in mothers' homes provided the information for assessing changes in mothers' knowledge and practices. In addition, interviews with a variety of community leaders (list included in Appendix D) as well as the interviews with program personnel contributed to understanding the nature of program impact on knowledge and practices.

The nature of the program's operation and quality was gleaned from a series of in-depth interviews with program personnel at all levels (list included in Appendix D), program documentation, a site visit to the Nutrition Institute at Marrakech, and site visits to 15 social education centers. Mothers' classes, the weighing of infants, and food distribution procedures were observed at the centers.

Provinces for the site visits were selected by team, USAID, and Ministry consensus to include a wide range of geographic and economic conditions and to develop a feasible itinerary. Provinces in the north, south, west and center of Morocco were visited. Eleven centers were chosen randomly from within provinces; four additional centers were visited because of their convenience of access or for interview schedule pre-testing. The function of random selection in this study was to minimize selection bias and not to obtain a representative sample of the program.

The evaluation team as well as the Moroccan sociologist, research assistant, and ministry representative travelled throughout Morocco as a unit in two vehicles, dividing within provinces, so that each center was visited by at least one team member (usually two) and one or more Moroccan associates.

Before travelling to Morocco, the team reviewed major project papers and evaluations, Catholic Relief Services' studies, and Ministry of Social Affairs' reports and spoke to individuals who were involved with a variety of development activities in Morocco. A draft protocol for conducting in-depth interviews with program personnel and a tentative interview schedule for use with mothers were devised. Documentation review continued during the three-week period in Morocco. The protocol for program personnel evolved throughout the trip, changing according to interviewee role, setting, and team interview experience. The mothers' interview schedule was revised and pretested at Rabat; revised, pretested and revised again at Marrakech before being used at the study center locations. Its form remained relatively stable to allow for comparative analysis. The team felt that the interview instruments were adequate for the case study orientation of the data collection; for another study requiring more refined instruments, the two-week site visit itself would have constituted a pretest.

Two kinds of mothers were interviewed: mothers in the program for more than one year ("program" mothers) and mothers in the program for less than three months or with no exposure to the program ("comparison" mothers). Program mothers were selected randomly from the roster of registered mothers scheduled to attend the center on the day of the team visit; comparison mothers were those in the same group or another group with least experience (always less than three months) in the program. On three occasions a comparison mother was selected from outside the program. Two to four mothers from each randomly selected center were interviewed for a total of 25.

The team wanted to obtain first-hand impressions of the background of the women attending the centers and to learn their views on how the program functioned and its importance to them. It was also hoped that a trend differentiating program and comparison mothers would emerge regarding knowledge and professed practices related to health and nutritional well-being. The team would thus have case study confirmation of the CRS behavioral indicators suggesting that mothers attending centers significantly changed their behavior. Since the CRS study had not been conducted at randomly selected centers, this verification was felt to be important. The large CRS study and our study would represent a convergence of indicators, each limited by a different set of methodological constraints.

Interviews were conducted in the home in Arabic or Berber by a Moroccan professional, usually with one evaluation team member, a center representative, and a relative or neighbor in attendance. Responses were written in French by the interviewer or evaluation team member; both initiated probes for further information. Mothers were open and hospitable. No discernable problem was caused by the number or sex of the visitors, although all interview teams included at least one woman. The interview appeared to be perceived as a welcome social event. Interview results were coded and tabulated by team members.

During initial visits to the center classes, the dynamic style of instruction positively impressed team members. A method of systematic observation was devised and applied to mothers' classes at four centers to characterize more precisely this interaction. One team member kept track of every question or response from a mother by numbering the comments sequentially and recording the number on a sociogram at the mother's position in the classroom. Group responses were also tabulated. The results are shown in the following table:

CLASSROOM INTERACTIONS

<u>No. mothers in class</u>	<u>Mother comment</u>	<u>Group responses</u>	<u>Time of class</u>	<u>Interactions per minute</u> ¹	<u>No. mothers commenting</u> ²
25	112	not counted	40 min.	2.8	21
18*	59	34	35 min.	2.7	13
18*	56	56	25 min.	4.4	16
22*	54	20	20 min.	3.7	15

¹Mean interactions per minute: 3.4

²Overall percent of mothers commenting: 79%

*Several of the remaining members of the group of 25 were occupied with other aspects of our visit and did not attend class.

Early in our trip it became clear that centers were always in an urban or village center setting, usually within a short walk of other civic and service facilities. No center was, as it were, an isolated outpost servicing only the most scattered poor. The team, therefore, felt it important to obtain some data on how far people travelled to come to the centers. At each of six centers, six of the 20 groups of mothers were randomly selected. The address for each mother in the selected groups was reviewed by a team member and a monitrice in order to estimate distance from the center, as shown below:

DISTANCE TRAVELLED TO CENTERS

<u>Center</u>	<u><5 km</u>	<u>5-15 km</u>	<u>>15 km</u>
Izammauren/Had Rouadi (<u>n</u> = 148)	28%	57%	15%*
Beni Boufrah (<u>n</u> = 150)	73%	27%	-
Ain Leuh (<u>n</u> = 152)	89%	9%	2%
Sidi Slimane (<u>n</u> = 147)	95%	3%	2%
Taakit (<u>n</u> = 138)	88%	12%	-
Azrou (<u>n</u> = 150)	98%	2%	-

*13 mothers came from between 16-25 km; 9 came from between 30-45 km.

At each site, we discussed the center and its reputation with several community leaders. Their statements, often made in a formal setting, would not have been very reliable regarding whether the center was "good" or "bad" as such; rather, the kinds of things they selected to say about the center--their particular emphases--provided insight into how the center is perceived by the community. In general, the leaders we selected were individuals in some role of responsibility dealing with mothers and children in health, formal education, and diverse non-formal education activities. Contact was made with professionals at a primary school, mosque school, pre-school religious school, orphanage, health center, dispensary, hospital, women's center, sewing class, weaving class, women's cooperative and other sources for a variety of professional and community-based impressions about the social education centers.

After returning to Rabat, the team devoted three days to reviewing data and formulating descriptive summaries and conclusions. Briefings were given to the Ministry of Social Affairs, Catholic Relief Services, and USAID/Rabat. The team also appeared on the February 29, 11:00 p.m. national news with the Minister of Social Affairs.

APPENDIX B
NUTRITIONAL IMPACT

NUTRITIONAL IMPACT

Introduction

With the assistance of an extremely well-organized system of recording and summarizing monthly weights of children in the Morocco food and nutrition education program, the A.I.D. evaluation team undertook two surveys during its three-week trip to Morocco. These surveys used existing weight for age data from the Ministry of Social Affairs/Catholic Relief Services record system. No original data was collected. In addition to these surveys, the team conducted a secondary analysis of two CRS surveys which measured weights and heights of children before and after the nutrition education program. In the first section of this Appendix the results of these surveys are presented and compared in order to assess the nutritional impact of the program. Sections II, III and IV are more detailed discussions of results and methodologies in each of the surveys. It is hoped that these methodologies will be useful for evaluations of similar nutrition programs.

I. Results - Survey Comparisons

Table I presents summary findings from the four surveys.

Survey Number 1 is a random sample composed of social education centers (excluding the Rabat area), including children aged 0-5 years for January through December 1978. These children had benefited from food supplements and nutrition education for an average of approximately 2½ years. No age breakdown was possible with these data.

Survey Number 2 is a sample of weights at the first month of admittance to the program for all new children, January through December 1978. These children came from the ten centers randomly selected by the A.I.D. team. Since they had received neither food nor education, they serve as a type of control group. Age-specific data are available for these children but for comparative purposes ages 0-5 years are reported in Table I.

Surveys 3 and 4 consist of a sample of 26 social education centers selected to represent different economic regions of Morocco. Survey 3 measured weights and heights of program children and their younger siblings, both of whom had benefited from food supplements for approximately two years prior to the survey in 1975. The age group 2½-5 years in 1975 is shown here since this group served as a type of control for the younger siblings who were measured again in 1978 after benefiting from food and education (Survey 4).

In Survey 1, 10 percent of children already in the program were underweight for age as compared to 32 percent in the control group of children for the same year. Using a χ^2 test of significance this difference is statistically significant at the $p < .001$ level. Over half the control group represented children under 2½ years old. This is interesting because, in theory, the program is supposed to admit only 2-5 year olds. We have no reason to believe that program children were, on the average, older or younger than the control children. They could have been slightly older

TABLE I

Number of Children Surveyed and Percent Malnourished
(less than 80 Percent of Reference Median Weight for Age/Boston Standards)
in Four Surveys Conducted by A.I.D. and CRS

Survey	Total Number of Children/Entries	Percent < 80% Reference Weight for Age
1. Program Children - Ages 0-5 years Receiving Food & Education (A.I.D. Team Survey-1978 Records)	198,215	10
2. New Entrants - Ages 0-5 years Receiving neither Food nor Education (A.I.D. Team Survey-1978 Records)	657	32
3. Program Children - Ages 2½-5 years Receiving Food Only (CRS Baseline Survey-1975)	694	34
4. Program Children - Ages 2½-5 years Receiving Food & Education (CRS Follow-Up Survey-1978)	728	16

since the 2½-5 year old age restriction may have been more strictly enforced at the beginning of the program than it was for new children entering in 1978. From conversations with A.I.D., CRS and Moroccan officials, however, we understand that this was not the case. There was virtually no difference in malnutrition between the 0-2½ year olds and the 2½-5 year olds from the sample of new entrants. (See Table III, Section III.) Thus, even if new entrants were overrepresented by younger children, this should not bias the comparison.

It could also be argued that the selection criterion of malnutrition may have improved over time and thus the control children might be more malnourished. To test for this we compared the rates of malnutrition between the 0-5 year old new entrants in Survey 2 in 1978 and the 0-5 year olds in the CRS Survey in 1975. We compared control children for the same months as the CRS survey. This comparison showed a small difference of 33 percent malnourished in the CRS survey children versus 39 percent in the control children. This difference may reflect the fact that CRS children in 1975 had been receiving food for several years before the nutrition education program began. The results indicate that control children in 1978 were not significantly more malnourished than those in the program in 1975. Thus, a selection criterion bias was not substantiated.

We would have expected the 1975 CRS Baseline Survey children to be less malnourished than the 1978 control group (Survey 2). In fact, we found only a small difference (6 percent) when 1978 children from the same months were compared. Possible explanations could be that less malnourished children were being selected in 1978 or that in the early years of the program (1973-1975) irregularities in food distribution associated with program start-up might have resulted in lower actual food intake. From our impressions and discussions with CRS and Moroccan officials, we do not believe this to be the case. It is also possible that, when food supplements began in 1973, CRS program children were significantly more malnourished than when measured in 1975. There were no baseline data on CRS children in 1973, but the 1971 National Nutrition Survey indicated that roughly 45 percent of preschoolers were less than 80 percent of the reference median. If we apply this rate to the CRS children in 1973, then there would appear to be a difference of 12 percent (45-33 percent) in the average rate of malnutrition which may be attributed to the effect of food supplements alone. From the available data it is not possible to state with certainty the proportionate effect of food supplements on reducing malnutrition. What emerges more clearly from the data, supported by results of the worldwide CARE evaluation, is that in the absence of education and other health/sanitation improvements, food by itself cannot be expected to maximize impact on nutritional status.

When CRS Surveys 3 and 4 are compared, only 16 percent of children having benefited from the complete program of food and nutrition education in 1978 were underweight for age in contrast to 34 percent of children in 1975 prior to the nutrition education program. Using a χ^2 test, this difference is statistically significant at the $p < .001$ level.

From the CRS data we were unable to assess whether there had been an additive effect of nutrition education since the length of feeding was not the same for their program and control groups. We, therefore, tried to get at this effect by using another comparison based on our own survey of program centers in

1978 (Survey 1) and the Baseline CRS Survey in 1975 (Survey 3). This comparison, in effect, controls for length of feeding since the average length of time in the program (receiving both food and education) in our 1978 random sample was approximately 2½ years and approximately 2 years of feeding at the time of the 1975 CRS Baseline Survey. These results are shown in Table II.

Table II shows that, of the children who had been receiving food, some 33 percent were malnourished. Among children who had the benefit of both food and nutrition education, only 11 percent were malnourished. The only problem with this comparison is one of secular trends or the possibility that other improvements between 1975 and 1978 may have accounted for this difference. Discussions with health and nutrition officials throughout the country did not support this possibility. The large and significant differences ($p < .001$) also argues against secular trends. From these data, supported by the CRS survey and our own smaller one on changes in mothers' nutrition knowledge and practices, we concluded that the nutrition/health education component of the program made a significant contribution to the nutritional impact observed in this program.

II. A.I.D. Team Survey (Number 1) - Program Centers

The purpose of this survey was threefold: (1) to obtain a large sample of children who had benefited from the CRS program, including both food supplements and nutrition education; (2) to obtain information on a monthly basis to determine if there were seasonal differences in malnutrition in order to verify the CRS Survey results; and (3) to determine whether the centers used in the CRS Survey were representative of other centers in the program. The monthly provincial monitrice reports, compiled for each of the centers, provide a data source covering the entire country. The summary data include the total number of children weighed (X) and the total number of children falling into one of three categories: greater than 100 percent of the reference median (P); between 80 and 100 percent (N); and less than 80 percent (S). These three categories correspond to above, between and below the two lines on the Moroccan growth chart. The system provides a simplified method of transferring nutritional status information from growth charts to ledgers and monthly reports. It is an efficient way of analyzing large numbers and should be of interest to those designing national surveillance systems.

From the reports for the year 1978 we selected 46 centers. These represented a 20 percent sample of all provinces except Rabat whose monthly reports were unavailable in Marrakech. We randomly selected the first center in the first province and then systematically selected every fifth center. If a CRS baseline center was selected, we substituted the next center below this on the list.

For each center we recorded the X, N, P, and S values by month (January through December of 1978). These data covered all children in the program in 1978 aged 0 to 5 years. Since the monthly summaries did not provide an age breakdown and the center records which had age information were located throughout the country, we were unable to obtain ages in this survey. Information on 198,215 entries was obtained of which 10 percent fell into the S or malnourished category.

TABLE II

Number of Children Aged 0-5 Years and Percent Malnourished
(less than 80 Percent of the Reference Median Weight for Age/Boston Standards)
in the A.I.D. Survey of Program Centers (1978-July, Aug., Oct., Nov.)
and CRS Baseline Survey (1975-July, Aug., Oct., Nov.)

Survey	Total Number of Children/Entries	Percent 80% Reference Weight for Age
Program Children Ages 0-5 years Receiving Food & Education (A.I.D. Team Survey-1978 Records)	65,767	11 ^{1/}
Program Children Ages 0-5 years Receiving Food Only (CRS Baseline Survey-1975)	1,626	33 ^{2/}

^{1/}This figure differs from the 10% reported in Table I because in the 11% figure only the months of July, August, October and November were used.

^{2/}This figure differs from the 34% reported in Table I because in the 33% figure ages 0-5 years were used.

It should be noted that the 198,215 entries also include new children entering into the program. In a subsequent analysis we determined that new entrants averaged 13 percent of total program children in 1978. Thus, we can assume that approximately 13 percent of the 198,215 entries are new children. Since new children were found to be more malnourished, the figure of 10 percent malnourished program children may well be slightly lower.

III. A.I.D. Team Survey (Number 2) Newly Enrolled Children

The purpose of this survey was twofold: (1) to obtain a type of control group for purposes of assessing program impact; and (2) to obtain information on important program characteristics, such as age breakdown of children, regional variation and program turnover rates. The selection of these centers has been described in Appendix A, Evaluation Methodology.

The ledgers kept in each center provide information on children's birth dates, weight for each month of attendance, verification of food distribution to the mother and whether payment was made. From the ten center ledgers for 1978, we selected all new children entering the program during that year. We recorded their sex, birth date (month and year), weight for the month of entry into the program, and the month they entered the program. From this information we calculated by hand the child's age and percentage of a reference median (Boston weight for age standards) for that age. We used these standards and the Jelliffe classification so that these data could be compared with the CRS Survey which was also classified in this manner.^{1/} We chose 1978 so that we could compare these children to both the CRS survey children and the children for whom weight data were collected in our own random sample of program centers (Survey 1). During the data collection we worked closely with the center monitrices to assure that the children's weights we were recording were indeed new entrants to the program and not simply second children of mothers who had already been in the program.

The information on new children represents the best control data available, i.e. mothers and children who have received neither food nor education. They are not a perfect control group which would consist of a random sample of non-participating families from the same areas of the CRS centers. Our control group is composed of newly registered mothers and children, hence any self-selection characteristics they bring with them.

We collected information on 657 new children. Table III presents the age-specific data which was summarized in Section I. For comparative purposes we used a cut-off point of less than 80 percent of the reference median to represent malnourished children (Categories III, IV and V). We did so because results in the larger random sample (Survey 1) were reported only by S, not by actual weights or more precise percentages of standard. We recognize

^{1/}Jelliffe, D.B., The Assessment of the Nutritional Status of the Community, World Health Organization, Geneva, 1966.

TABLE III

Weight for Age as a Percentage of the Reference Median
(Boston Standards/Jelliffe Classification) for New Children Entering the Program
in Ten Centers-1978 Center Ledgers

		Jelliffe Classification Percentage of Reference Median		Ages 0-2½ Years		Ages 2½-5 Years		Total Number
				Number	Percent	Number	Percent	
N and P in Moroccan System	I 90-100 - normal and above			180	37	58	33	238
	II 80-89 - normal			149	31	58	33	207
S in Moroccan System	III 70-79 - moderately malnourished			92	19	35	20	127
	IV 60-69 - moderately malnourished			45	9 → 32%	12	7 → 34%	57
	V <60 - severely malnourished			15	3	13	7	28
TOTAL				481	99	176	100	657

that 80 percent of the standard is slightly higher than the usual cut off of 75 percent which is the upper limit of second degree malnutrition. It is entirely possible that some of the children falling between 60 and 80 percent of the standard have adequate weight for height. Thus, their low weight for age may reflect a stunting or shortness of stature. While stunting is indicative of a longer-term chronic malnutrition, its public health significance has a lower priority than wasting (low weight for height). Since heights are not measured in the centers, we were unable to determine if this was the case. Despite this limitation of weight for age as an indicator of nutritional status and particularly the use of 80 percent as a cut-off point, we believe it is adequate for the comparative purposes of this study. Where possible we have also used 70 percent as a cut-off point in comparisons with the CRS data.

The percentage of malnourished children for both age groups combined is 32 percent. Seventy-three percent of new children are less than 2½ years old, and there is only a slight difference between the two age groups with younger children slightly less malnourished (32 percent versus 34 percent in the older children). When we examined the male/female sex ratio we discovered an equal representation of 50 percent of each sex. Among the ten centers malnutrition varied from 16 percent to 59 percent with an average of 32 percent. Only two of the ten centers were substantially below the average of 32 percent and none of the centers had a rate of malnutrition as low as that found in Survey 1 (10 percent). Among the ten centers the percentage of new children entering the program ranged from 4-23 percent, with an average of 13 percent.

IV. CRS Survey - 1975 Baseline and 1978 Follow-Up Surveys (Numbers 3 and 4)

CRS initiated a baseline and follow-up survey in 1975 and 1978 respectively. The purpose of the survey was to assess the nutritional impact of the nutrition education program which began in most centers by the spring of 1976. Twenty-six centers, representing approximately a 10 percent sample of all centers, were selected from the seven socio-economic regions of Morocco. At least three centers per region were chosen to reflect variation within the region (level of development and geography). More than three were selected if regions were more culturally heterogenous or if they generally had less access to water and food resources. In addition to these criteria, centers were also selected for their accessibility (time, transportation and personnel) and for their reliability of recordkeeping in order to assure the validity of survey results.

A total of 1,626 children aged 0-5 years were weighed and measured for height in July, August, October and November of 1975. Approximately 2½ years later in April and May of 1978, the younger siblings, now aged 2½-5 years, were measured for weight and height. The study design is interesting because it tracks the nutritional progress of the same children through approximately 2½ years of nutrition education and feeding and because it uses a new approach for obtaining a type of control group - siblings of the same age in a different phase of the program. A more detailed account of the total survey methodology and results can be found in the CRS evaluation report, "Nutrition Education Program," AID/NESA-G-1169. Prior to 1975 the

centers were only distributing food with limited advice to mothers on its preparation. The vast majority of the 26 centers had been operating for approximately 1½ to 2 years prior to 1975. Thus, the study design would appear to allow for the testing of the contributory effect of nutrition education. (Limitations to this design will be discussed later.)

The results of the CRS survey which were summarized in Section i are presented in Table IV by age groupings and Jelliffe classification. The discussion of results is limited to weight for age data since height for age and weight for height ratios were not summarized.

A comparison of the 2½ to 5 year old children in 1978 (exposed to the full program of food and education) to their older siblings in 1975 (exposed to food only) shows that the percentage of malnourished (Categories III, IV and V) is only 16 percent in the program children in contrast to 34 percent in the control group (2½-5 year olds in 1975). Using a χ^2 test this difference is significant at the $p < .001$ level. If we look at categories IV and V which represent less than 70 percent of the reference median, the percentages are 3.4 percent in the program children versus 8.4 percent in the control group. Thus, children benefiting from the full program were significantly less malnourished than those who had benefited from only the food supplement. Severe malnutrition was virtually eliminated with only one child falling in Category V or less than 60 percent of the reference median. Although not shown here, CRS presented the results by six-month age intervals. From this we determined that the reduction in malnutrition was more dramatic in the older age groups of children in 1978. While the effect was more pronounced in these 4 to 5 year olds, there were still important differences in the 2½-4 year old groups so that the overall nutritional impact is not entirely explained by these older children.

In addition to reducing malnutrition, the program appears to have improved and maintained the nutritional status of those well off to begin with. In Category I the percent of younger children in 1975, who experienced the program and were then measured again in 1978, stayed the same (43.3 percent compared to 43.5 percent). In Category II, the percentage of children increased from 24.2 to 40.1 percent.

Various methodological problems are apparent in the design. These will be discussed below with a brief description of how we corrected for these problems in order to use the CRS survey data for measuring nutritional impact.

Deaths and Other Attrition

Two hundred and four of the 0-2½ year olds were lost to the study between 1975 and 1978. Twenty-four died and 180 either moved away or did not return for the 1978 measurements. These 204 represent 22 percent of the 0-2½ age group. Although this is a relatively low attrition rate for such an extensive survey, we were concerned that these children might have been more malnourished than the rest of the group, thereby biasing the 1978 data in favor of less malnutrition and thus a seemingly better program impact than

TABLE IV

Weight for Age as Percentage of the Reference Median
(Boston Standards/Jelliffe Classification) for 1975 CRS Baseline
and 1978 Follow-Up Surveys

	Jelliffe Classification Percentage of Reference Median	1975 Baseline				1978 Follow-Up	
		Ages 0-2½ Years Number	Percent	Ages 2½-5 Years Number	Percent	Ages 2½-5 Years Number	Percent
N and P in Moroccan System	I 90-100+ - normal and above	404	43.3	198	28.5	317	43.5
	II 80-89 - normal	226	24.2	263	37.9	292	40.1
S in Moroccan System	III 70-79 - moderately malnourished	186	20.0	175	25.2	94	12.9
	IV 60-69 - moderately malnourished	88	9.4	50	7.2-34%	24	3.3-16%
	V < 60 - severely malnourished	28	3.0	8	1.2	1	.1
TOTAL		932	99.9	694	100	728	99.9

actually was the case. Because the survey was so well-organized, we were able to retrieve papers filled out by local authorities on all children who died and on the majority of others who left the study. We then pulled the weights of these children from the Baseline Survey (1975) and distributed them according to the Jelliffe classification. In this way we could compare whether these children, at least at the time of their first weighing in 1975, were at more or less nutritional risk than the rest of the group.

When these percentages were compared to those of children falling in different Jelliffe categories in the 1975 CRS Survey (minus deaths and attrition), there was a higher percentage of children who died or otherwise dropped out of the study in the normal and greater than normal categories. We concluded that the higher percent of better off children offset a higher percent in the most malnourished category. Thus, we do not believe that deaths and attrition unduly bias the CRS results. This correction procedure has its limitations, however, since it uses only the weights of children in 1975. It is entirely possible, since these children died or left the study at different times over a 2½ year period, that their weights could have decreased after the 1975 weighing immediately preceding their death or leaving the study. Even if this were the case, the low percent of deaths and attrition makes this a less important factor.

Seasonality

The 1975 CRS Baseline Survey was conducted in July, August, October and November, generally thought to be a period of higher disease (diarrhea) incidence. The 1978 follow-up survey was conducted in April and May, generally thought to be a period of less disease. Studies in various parts of the world have documented seasonal variation in malnutrition, with highest diarrhea occurrence corresponding to lower nutritional status. If this phenomenon were true for Morocco, we were concerned that the first survey conducted during the months of higher diarrhea compared to the later survey conducted during months of lower disease would bias the overall results to show a greater program impact than was actually the case.

Based on data collected by month for 1978 in our random sample (Survey 1), we were able to determine the variance in nutritional status by month from the average level of malnutrition for the whole year. A trend line of regression of malnourished on the 12 months of the year was plotted. We then looked at whether and how much the percentage of malnourished deviated from this yearly average. In July, August and October there was a slightly higher percentage of malnourished than the average. From the monthly deviations we developed a seasonality correction factor which enabled us to adjust numbers of children in 1975 to reflect rates of malnutrition in April/May of 1978. Because of the slightness of the seasonality effect, the required net adjustment was to move only four children from subnormal categories into normal categories. We concluded that this small number did not affect the CRS survey results.

Secular Trends

Another criticism that could be made of the CRS Survey is that secular trends (other general improvements in health, agriculture, etc.) between 1975 and 1978, quite apart from program effect, could have accounted for the improved nutritional status of the program children. There was no ideal control group to test for this possibility. As discussed before, Moroccan health and nutrition professionals were generally agreed that nutritional/health conditions had remained fairly constant during this period

Length of Feeding

All of the 0-2½ year olds in 1975 had been eligible and approximately half had likely received a food ration for some 1½-2 years prior to 1975. Thus, in 1978 when they were 2½-5 years old they may have been receiving food for some 3½-4 years compared to the experimental group of 2½-5 year olds in 1975 who had received food for only 1½-2 years. This confounds the interpretation of the additive effect of nutrition education in bringing about the reported reductions in malnutrition. These younger children had been receiving food for a longer period and at a younger age when supplemental food could be expected to have a more important nutritional effect. Thus, the length of feeding may have been the significant factor in improved nutritional status rather than the addition of nutrition/health education to the program. We were unable to make corrections for this phenomenon and thus could not use the CRS data for assessing any additive effect of nutrition education. As already discussed, however, we were able to demonstrate an additive effect by comparing our own survey results with the 1975 CRS children who had been fed for approximately the same length of time.

APPENDIX C
COST PER BENEFICIARY

COST PER BENEFICIARY

Morocco Number Recipients	Annual KG Per Recipient	Costs Per Kilogram							Annual Recurrent Cost Per Recipient ^{5/}
		School	Food	Int'l ^{1/}	Nat'l ^{2/}	Dep't ^{3/}	Local ^{4/}	Total	
FY 80 450,000	45	0.0078	0.4163	0.0572	0.1264	0.0857	0.0721	0.7655	\$34.47

^{1/} Ocean Freight

^{2/} Government of Morocco administrative costs

^{3/} Government of Morocco contribution to GRS, inland transportation, port and warehousing

^{4/} Mothers' payments: provincial transportation, rent and utilities

^{5/} Capital costs are minimal and have not been included

APPENDIX D
INDIVIDUALS CONTACTED AND CENTERS VISITED

INDIVIDUALS CONTACTED AND CENTERS VISITED

Individuals Contacted:

AID/Morocco

Harold Fleming, Mission Director
Eric Griffel, Assistant Mission Director
Mark Ward, Program Officer
P. Sue Gibson, Health and Nutrition Officer
Tom Eighmy, Economist
Ursula Nadolny, Nutrition IDI
Al Ford, Assistant Program Officer and Evaluation Officer
George Wood, Food For Peace Officer
M. Mellul, Assistant Food For Peace Officer

Ministry of Social Affairs

Abdella Gharnit, Minister
Aziz Houari, Secretary General
Mohamed Boulasri, Director of Social Affairs
Omar Oudghiri, Director of Entraide Nationale
Abdeljalil Cherkaoui, Chief of Nutritional Program

Provincial Delegates

Abdelaziz Fahsi, Province of Errachadia
Ahmed Kabboy, Province of Ouarzazate
Moubarik Razik, Province of Khenifra
Mohamed Haj Dib, Province of Meknes
Abderraham Fassi, Province of Kenitra
Moubarik Adelhak, Chief of the Economic and Social Division, Azrou
Mohamed El Khayari, Al Hoceima

Ministry of Plan

Ahmed Benrida, Chief, Human Resources Division

Ministry of Youth and Sports

Najat M'Rabet, Head of Women's Affairs

Ministry of Health

Abjelhaq Jouhari, Head of Population Division
Hadj Mimoun Boukhrissi, Head of Family Planning and Health Education

Mechbals, Director of Infrastructure
Mohamed Oakrim, Head of Statistics and Information
Belhaj, Chief of Nutrition and Mother and Child Health Section

Catholic Relief Services

Lee Sanborn, Director
Conchita Sanborn, Assistant Director
Elsa Haglund, Regional Nutrition Adviser
Lahcen Maiza, Inspector
Ahmed Chadouki, Inspector
Mohamed Diour, Inspector

School of Nutrition, Marrakech

Latifa Semmate, Directrice
Ghita Majbar, Home Economist
Amina Kamri, Nutritionist
Fatima Belaouchi, Nutritionist
Najiba Beljelti, Nutritionist

Provincial Directrices

Halima Abd, Province of Marrakech
Fatima Rammani, Province of Ouarzazate
Malika Armna, Province of Errachadia
Aziza Ben Jilali, Province of Meknes
Hafida Bounnit, Province of Kenitra
Fatima Khlafa, Province of Tetouan
Rabia Boughaba, Province of Al Hoceima

Monitrices

Malika Haraz, Ksour, Province of Marrakech
Rahia Skaba, Ait Ourir, Province of Marrakech
Fatima Abdennour, Zagora, Province of Ouarzazate
Saida Marroud, Agdz, Province of Ouarzazate
Kahia Antar, Agdz, Province of Ouarzazate
Hachouma Hafidi, M'Deghra, Province of Errachadia
Fatima Bakadir, M'Deghra, Province of Errachadia
Izza Nait Lcaid, Taakit, Province of Khenifra
Saida Bekir, Midelt, Province of Khenifra
Hadda Ait Abbou, Taakit, Province of Khenifra
Aziza Krimi, Azrou, Province of Meknes
Fatima Zizi, Ain Leuh, Province of Meknes
Hejjon Blal, Ain Leuh, Province of Meknes

Fatima Maatoui, Ain Leuh, Province of Meknes
 Amina El Hilali, Sidi Kacem, Province of Kenitra
 Hafid Belfegous, Sidi Kacem, Province of Kenitra
 Aitifiss Kaltoum, Sidi Slimane, Province of Kenitra
 Malika El Aurani, Beni Boufrah, Province of Al Hoceima
 Malika Baounoudi, Izammauren and Had Rouadi, Province of Al Hoceima

Community Leaders

Hihi, Health Educator, Province of Marrakech
 Mohamed Zarrouf, Medical Director, Province of Marrakech
 Jelul Ghouli, Director, Moslem Welfare Society, Ait Ourir
 Bakal Bahim, Chief of Health Center, Ait Ourir
 Habiba El Bujouz, Health Center, Ait Ourir
 Malika Ezouhri, Health Center, Ait Ourir
 Seghrir Jilali, Secretary General, Province of Ouarzazate
 Idrissi, Medical Director, Province of Ouarzazate
 Mohamed Sif, Primary School Inspector, Zagora
 Mohamed Ouhadou, Vice President of Community Council, Zagora
 Mohamed Belmahi, Governor, Province of Errachadia
 Mohamed Oumalich, Chief, Midelt
 Mohamed Cheddadi, Mayor, Midelt
 Omau Mauly Mehcli, Mosque School Teacher, Midelt
 Fatima Hajjaji, Director, Women's Center, Midelt
 Ali Laaz, Nurse at Health Center, Taakit
 Mohamed Dujjilali, Nurse at Health Center, Taakit
 Mohamed Bouchtaoui, Nurse at Health Center, Taakit
 Ersillia Mantovani, Sister at Kasbah Miriam, Taakit
 Govanna Rachiti, Sister at Kasbah Miriam, Taakit
 Fatima Lyas, Child Care Center Monitrice, Taakit
 Mohammed Bennouna, Secretary General, Province of Khenifra
 Lahcen Bouhaddioui, Chief, Ain Leuh
 Mohamed Zahid, Elected Official, Ain Leuh
 Mohamed Hadj Atmein, Elected Official, Ain Leuh
 Ahmed M'Ghaoui, Director, Moslem Welfare Society, Ain Leuh
 Najib Elharrak, Chief of Health Center, Beni Boufrah
 Mohamed Khalfi, Community Council Member, Beni Boufrah
 Mohamed Barbach, Director of Agricultural Center, Beni Boufrah
 Bouhay El Houssim, Chief of Water and Forest Program, Beni Boufrah
 Fatima Mernissi, Sociology Professor, Mohamed V University
 Mohamed Majdi, Anthropologist

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Miriam Labbok, Population Office, Development Support Bureau, AID
 Kevin Cleaver, Agricultural Economist, IBRD
 Nadia Youssef, Director of Research, International Center for Research
 on Women
 Joel Teitelbaum, Food and Nutrition Service, USDA
 Barbara Turner, Health Officer, Near East Bureau, AID
 Mary Ann Anderson, Nutrition Office, Development Support Bureau, AID
 David Dunlop, Health Office, Development Support Bureau, AID

Centers Visited:

<u>Province</u>	<u>Centèr</u>
Rabat	Ain Aouda Bidonville de Temara
Marrakech	Ksour* Ait Ourir*
Ouarzazate	Agdz* Zagora*
Errachadia	M'Deghra
Khenifra	Midelt* Taakit*
Ifrane	Azrou*
Meknes	Ain Leuh*
Kenitra	Sidi Kacem Sidi Slimane*
Al Hoceima	Beni Boufrah* Izammauren (Had Rouadi)*

*Study Centers

APPENDIX E
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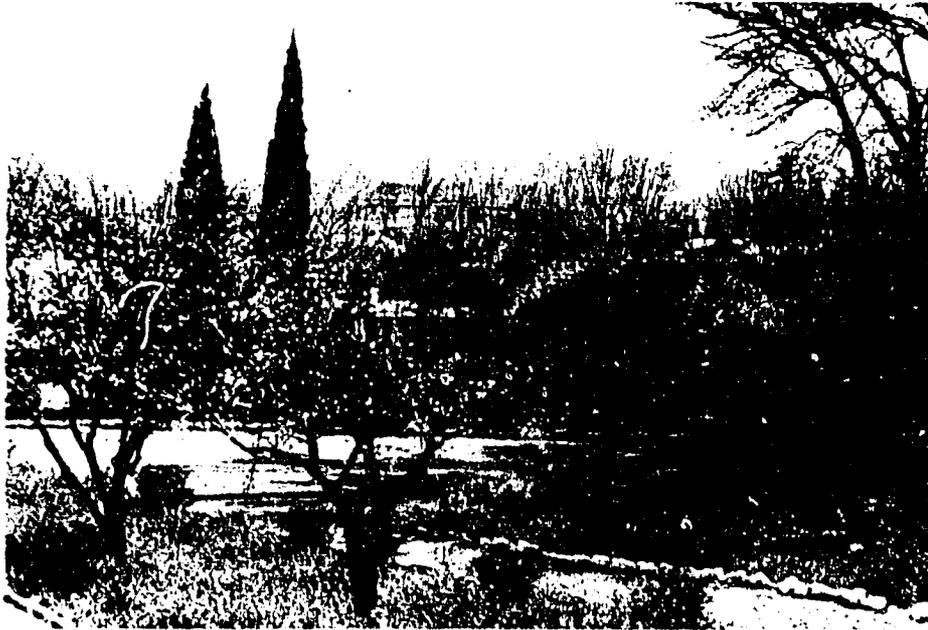
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APPENDIX F
PHOTOGRAPHS

**This Report is
Dedicated to . . .**



**. . . the Mothers
and Children
of Morocco**



The Setting

**At Midelt – Almond & Cypress trees
under the snowcapped peaks of the Moyen Atlas.**



In the mountains of Mischlieffen.

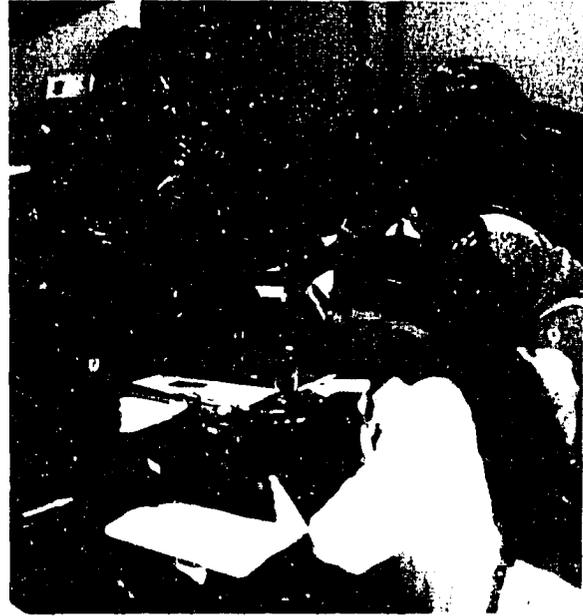


**Sweet mint tea,
the national Moroccan drink.**

The People Who Make it Possible



**Ursula and Madame Majbar taking
a break from statistics.**



**Discussions with staff
at the training institute.**



Conchita and Mel plotting our trip.



**Lee and Conchita Sanborn,
CRS Directors.**

**Marrakech
Nutrition Training Institute**



**The teaching materials A.I.D. donated
to the school.**



**Tony and Mekki
interviewing some Monitrices.**



**Nutrition professors trained
in Tunis.**



A class at the training institute.

**The Centers
and Staff:**



**Saïda Bekir,
"Veteran" Monitrice
of four years**



**Ain Aouda where
women travel by donkey.**



**Judy and Carol talking with Monitricés
at Sidi Slimane, a typical center.**

**The System
in Operation . . .**



**A demonstration of how to prepare
a weaning food from locally
available products.**

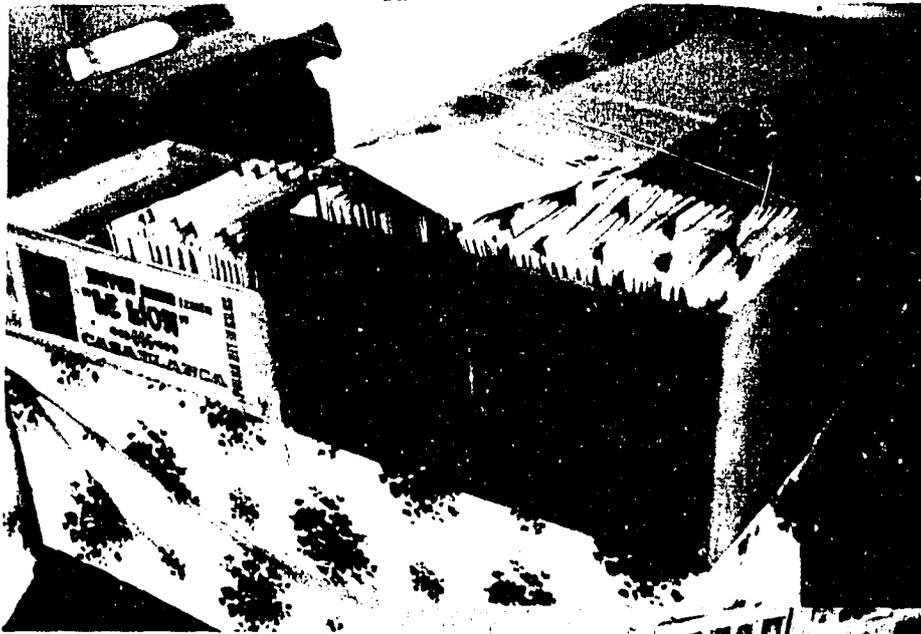


A class at Sidi Slimane.

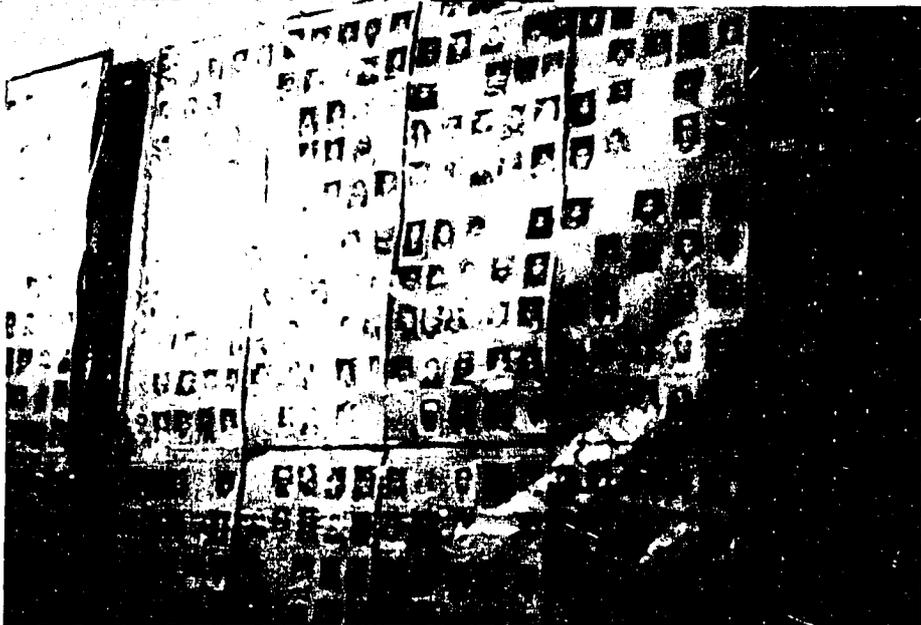
**. . . and
How it
Works**



**Weighing and
recording.**



**The uniform record
system kept in all
the centers.**



**Identification pictures
of mothers.**



Child being weighed.

**Monitrice explains
weight chart to
a mother.**



**Food for a
mother's class.**