

**A.I.D. INTEGRATED LOW
COST HEALTH PROJECTS:
VOLUME II
ANALYSIS**



photo: UNICEF

**A Report Prepared
for the Agency for
International Development**

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

OFFICE OF INTERNATIONAL HEALTH

AID INTEGRATED LOW COST HEALTH PROJECTS

VOLUME II

ANALYSIS

by

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INTRODUCTION

One fourth of the world's population have no access to health care. Another billion have only the most rudimentary and ineffective care. Less than 19 percent of the 80 million children born each year in the world receive immunizations against preventable disease. In several African countries 50 percent of all children die before 5 years of age.

It has been estimated that two-thirds of children in the developing world are still malnourished and half of the deaths among children under 5 years are due to respiratory and diarrheal diseases superimposed on varying degrees of malnutrition, to which these diseases are synergistically related. As many as 0.5 to 1 billion people in the developing world do not receive enough daily calories and/or protein.

All governments taken together spent an estimated \$225 billion on the health of their citizens in 1976 but this amount is not evenly spread between countries. The governments of developing countries, with three-fourths

of the world's population, spent less than 10 percent of this amount while the balance was spent by the developed industrial countries of Europe, Asia and North America.

In developing countries, public spending for health received a low priority. In the time period 1960 to 1976, per capita public expenditures for health care grew only 20 percent in constant dollar amounts. In contrast, military budgets grew 60 percent on a per capita basis, and per capita public expenditures for education doubled.¹

With rising health care costs and rapidly growing populations in the developing world, it is difficult to imagine how the benefits of health care can be extended to all people. Medical and nursing schools are training more health professionals, but the majority of graduates do not go to the already underserved rural areas. In urban areas of developing countries of Africa, Asia and Latin America, the doctor-patient ratio is one physician to 2,600 people. But in rural areas the ratio is higher

¹ Sivard, R.L., World Military and Social Expenditures, 1978 (WMSE Publications: Leesburg, Virginia, 1978), pp. 10-17.

- one physician for 47,000 people.²

Even if physicians could be attracted to live and work in rural areas of developing countries, the cost of training sufficient numbers of physicians to provide accessible health care would be greater than most developing countries can presently afford. Training costs for each physician averaged \$30,000 in five developing countries.³

A solution to the problem of providing health care to rural populations in developing countries which has gained prominent advocates in recent years is primary health care. Accessibility and affordability are key aspects of primary health care. Health auxiliaries, often trained in a limited number of health skills, usually form the mainstay of primary health care. The World

² Cole-King, S., "The Role of Foreign Aid in Meeting Basic Related Needs for Rural Development," paper prepared for The Organization for Economic Co-operation and Development, Paris, April 11, 1978, p. 7.

³ Fendall, N.R.E., Auxiliaries in Health Care, (Baltimore: Johns Hopkins University Press, 1972), p. 314.

Health Organization has identified five principles essential to the success of primary care. Primary care should:⁴

1. relate closely to the life patterns and perceived needs of the community.
2. maximize the use of local resources and promote health self-reliance through education, so health care remains as inexpensive as possible.
3. integrate health services including prevention, treatment, promotion and rehabilitation.
4. undertake health interventions at the most peripheral level practicable by the worker, most simply trained for this activity.
5. redesign other health service echelons to support the peripheral level and furnish technical help, referral facilities, supervision, and supplies.

A large scale primary health care system based on village health auxiliaries requires a change in roles and a re-orientation of all health workers at all levels in a country.⁵ The peripheral village health worker must be

⁴ Primary Health Care, a joint report of World Health Organization and UNICEF for the International Conference on Primary Health Care, Alma-Ata, USSR, September 1978.

⁵ Joseph, S., "The Community Health Worker in Developing Countries: Issues in Administrative Structure, Support and Supervision," paper presented at a symposium on the Community Health Worker, Airlie House, Virginia, October 1977, p. 11.

seen as the pivotal and most important point of service. Progressively central levels of the health system, such as health training, logistic support, administration and referral health services should serve the peripheral health worker rather than vice versa.

Primary health care systems depend more on multipurpose than single purpose health workers. Governments and international agencies have little experience training and utilizing effectively the new cadre of workers who integrate at the local level, nutrition, health, and family planning services.

THE IMPORTANCE OF INTEGRATION OF SERVICES

Integration of health services at the village level is important because of complex relationships between different aspects of poverty and ill health. Interventions which seek to improve only nutrition or health or sanitation or increase child spacing often fail to have the desired result because other aspects of the problem are not addressed.

There is an inter-relation between nutritional status and health and family planning services. It is known that diet, disease and parasites affect nutritional status. Infectious diseases increase the body's need for food or interfere with the utilization of nutrients contained in food consumed. Parasites compete with the host person for nutrients and reduce food utilization. Improving diets without alleviating infectious diseases in high risk children showed no improvement in their nutritional status.⁶ The Narangwal Study showed that increased food for children without improved

⁶ Mata, L.J., "The Children of Santa Maria Cauque: A Prospective Field Study of Health and Growth: (MIT Press: Cambridge, Massachusetts, 1978).

sanitation, deworming programs, and immunization will show little impact.⁷ Mata and the Narangwal researchers present a strong case for combining health programs with feeding programs to improve nutritional status.

Latham, et al,⁸ estimate that round worms (Ascaris) affect about one quarter of the world's population. In a study of round worm infestation among children in two Kenyan villages, 37 percent of the preschool children were infected. Depending on the level of infestation, light or heavy, ingested calories' utilization was decreased from 3% to 25%. Any food intervention in an area where worm infestation is high may need a deworming component.

Perception of improved child survival is probably a key precondition to acceptance of family planning. Parents in India would need to have four children to

⁷ Parker, R.L., et al, "The Narangwal Experiment on Interactions of Nutrition and Infections: Measurement of Services, Costs and their Relation to Outcome," to be published in the India Medical Journal, 1978.

⁸ Latham, L., Latham, M. and Basta, S., The Nutritional and Economic Implications of Ascaris Infection in Kenya, World Bank Working Paper No. 271, Washington, D.C., 1977, pp. i-iii.

ensure a surviving son in their old age.⁹ In Colombia, Wray and Aguirre found that when birth intervals exceed three years, there was a decline in the incidence of malnutrition. The amount spent per person on food declines as the number of living children in a family increases.¹⁰ Child survival affects family planning and influences child nutritional status. There is strong support for considering child health including nutrition as an essential part of family planning programs.

A.I.D. AND INTEGRATED PRIMARY HEALTH CARE PROJECTS

The advent of the basic needs strategy for development assistance in the early 1970's, identified health improvement as a high priority in development aid to the Third World. Less than 5 percent of bilateral development assistance worldwide in 1975 went for health improvement projects. In 1976, the United States Agency

⁹ Ghosh, S., *The Feeding and Care of Infants and Young Children* (New Delhi: Voluntary Health Association of India, 1976), p. 47.

¹⁰ Wray, J.D. and Aguirre, A., "Protein-Calories Malnutrition in Candelaria, Colombia: Prevalence, Social and Demographic Factors," Journal of Tropical Pediatrics, Vol. 15, 1969, pp. 76-98.

for International Development (AID) spent \$54 million for health assistance, a figure which had increased to \$135 million for fiscal year 1979.

The most rapidly growing category of health assistance is the development of integrated health, family planning and nutrition interventions, areas nominally separate in AID, but integrated in these projects. In 1977, integrated primary health care projects accounted for 27 percent of AID health funds. This percentage has grown to 43 percent for fiscal year 1979. AID is now providing technical assistance, financing or training in the development of 45 integrated primary health care projects in 38 developing countries. It should, however, be noted that less than one quarter of these projects are active as yet.

Summaries of 39 of the 45 projects are contained in AID Integrated Low Cost Delivery System Projects, Volume I. The present volume is an analysis of the projects summarized in Volume I. Both the summaries and the analysis are based on information contained in AID Project Identification Documents (PID's) and Project Papers. The authors depended on the Office of Health, AID, to identify low cost integrated health projects.

"Integrated" is defined here as any health delivery project which combines nutrition, health and family planning elements.

Integration of services can take many forms. In AID projects it occurs mainly through:

1. The use of multipurpose village workers.
2. Provision of a mix of service components - health, nutrition and family planning.

The majority of the projects discussed here are in the planning stage or very early in the implementation stage. The oldest projects are in Thailand, Colombia and Ghana. New projects not included in this analysis are projects slated for Chad, Botswana, Kenya, Somalia, Syria and Morocco. Of the 39 integrated primary health care projects examined here, 13 will be in Africa, 16 in Latin America, 7 in Asia and 3 in the Near East. Some countries have two such projects; namely, Liberia, Nicaragua, Bolivia, Thailand, Colombia, the Dominican Republic and the Philippines.

HEALTH BACKGROUND OF THE AID ASSISTED PROJECT COUNTRIES

Table A in the Appendix shows the selected economic, social and health indicators of the 32 countries with integrated primary health care projects analyzed in this volume. Table 1 is a summary of Appendix A showing several of these indicators by region. In addition, for each country, the number of people per physician and the Physical Quality of Life Index (PQLI) are tabulated.¹¹

Table 1 shows that the 12 African countries with AID-assisted primary health care projects, have the highest infant mortality, the largest number of people for each physician, and the lowest PQLI score of the four regions. These African countries (Cameroon, Cape Verde Islands, Central African Empire, Ghana, Lesotho, Liberia,

¹¹ The Physical Quality of Life Index varies from a low of 10 (Guinea-Bissau) to a high of 100 (Sweden). The index is a composite of three indices: (1) infant mortality rate, (2) life expectancy and (3) literacy rate. It is interesting to note that some poor countries have a high PQLI rating. Sri Lanka with a per capita GNP of only \$130 a year has a PQLI of 83, whereas Iran with a per capita GNP of \$1250 has a PQLI of only 38. Source: Overseas Development Council Staff, The United States and World Development: Agenda, 1977 (Praeger: New York, 1977), pp. 147-171.

TABLE 1 - REGIONAL ECONOMIC, SOCIAL AND HEALTH INDICATORS

<u>Region</u>	<u>Median Per Capita G.N.P.</u>	<u>Median Infant Mortality Rate</u>	<u>Median Population Density (persons/sq mi.)</u>	<u>Median Population Per Physician *</u>	<u>Median Physical Quality of Life Index</u>	<u>(with Projects) Number of Countries</u>
Africa	\$220	159	37	22,151	27	12
Near East	\$280	125	91	5,251	44	3
Latin America	\$520	80	61	2,900	65	12
Asia	\$310	81	236	3,894	70	5

Source: John Sewell, et al. The United States and World Development: Agenda 1977. Praeger, New York, 1977, pp. 160-172.

*Ruth Sivard, World Military and Social Expenditures 1978, pp. 21-29.

Mali, Niger, Senegal, Sudan, Tanzania and Zaire) are also the poorest of the 32 countries reviewed. They also have the least population density of the four regions.

In contrast, the Latin American countries have the highest income, the lowest infant mortality rate, and the largest ratio of physicians.

The Latin American countries (Bolivia, Brazil, Colombia, the Dominican Republic, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Nicaragua and Panama) have a fairly high median PQLI for developing countries and have generally sparse populations. In Latin America, Haiti has the lowest PQLI and a high population density of 552 people per square mile.

The five Asian countries included in this review - Korea, Nepal, Pakistan, Philippines and Thailand - are clearly the most densely populated countries of all countries receiving AID assistance in primary health care projects. They also have the highest PQLI rating.

Primary health care is community-based health care. But the communities served in the countries where AID is helping develop integrated primary health care systems vary tremendously from sparsely settled semi-nomadic tribal peoples to densely settled urban groups with many

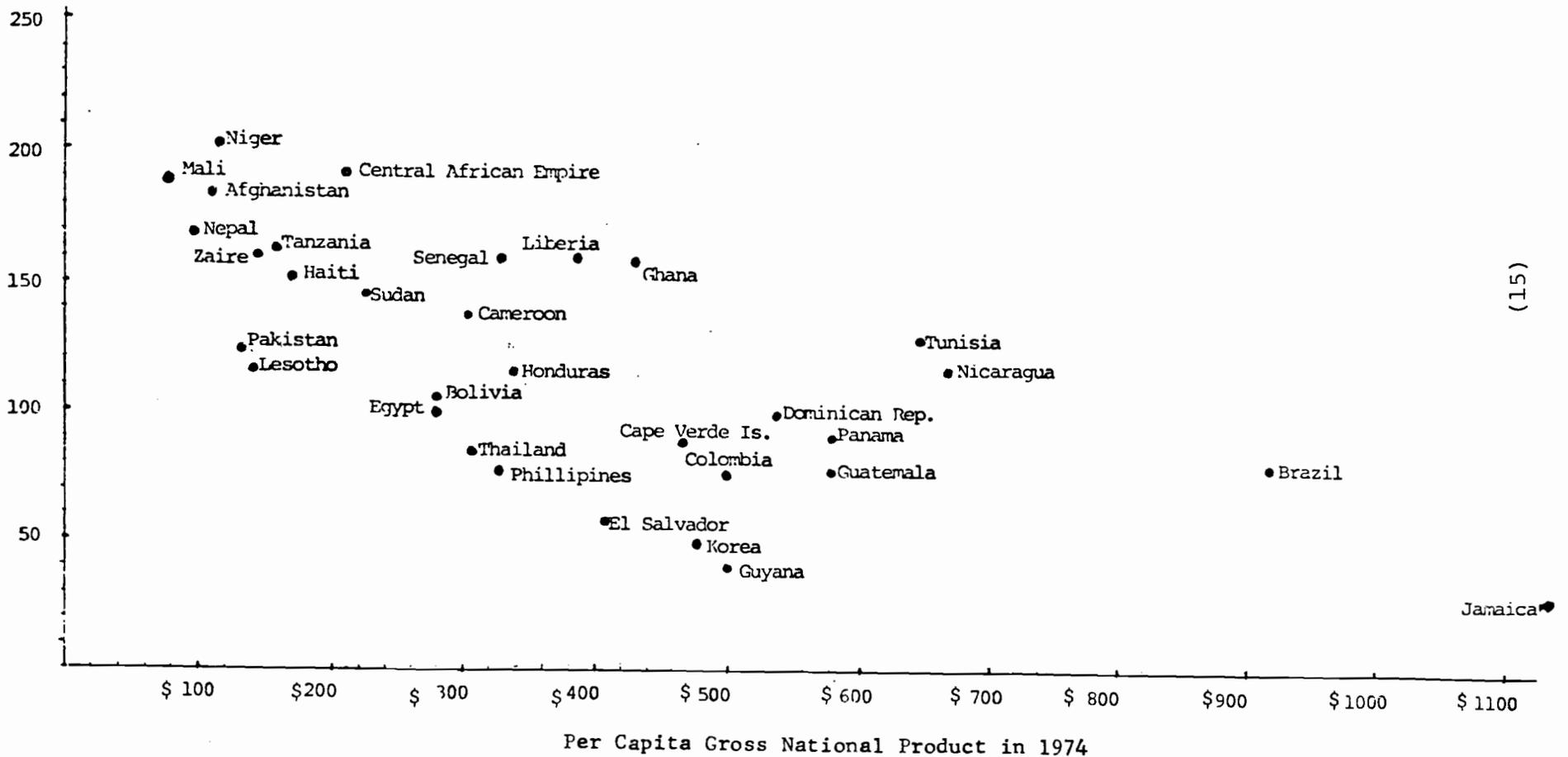
amenities of modern industrial countries. For example, Niger, with a population density of only 9 people per square mile, is a poor country with a per capita GNP of only \$120 a year. Infant mortality is 200 per thousand live births and there is only one physician for every 40,634 people. Niger's PQLI is 14.

At the other end of the spectrum is Jamaica. It is a densely populated area, with 482 persons per square mile and a per capita GNP of \$1190 a year. The infant mortality is low for a developing country (26 deaths per thousand live births) and there is one physician for every 3,636 Jamaicans. Jamaica's PQLI is 84.

Figure 1 shows that there is a linear relationship between per capita GNP and infant mortality. It also illustrates that most of the countries AID will assist in primary health care projects have a per capita gross national product below \$500 per year. Exceptions to the linear relationship between per capita GNP and infant mortality are Tunisia and Nicaragua which both enjoy per capita product over \$600 per year but have high infant mortality rates (128 and 123 deaths per thousand live births, respectively). It should be noted that the per capita product is an average and may be deceptive in masking large numbers in need, if considered alone.

Infant Deaths
per Thousand
Live Births

Figure 1: The Relationship between Per Capita GNP
and Infant Mortality for 32 Countries



(15)

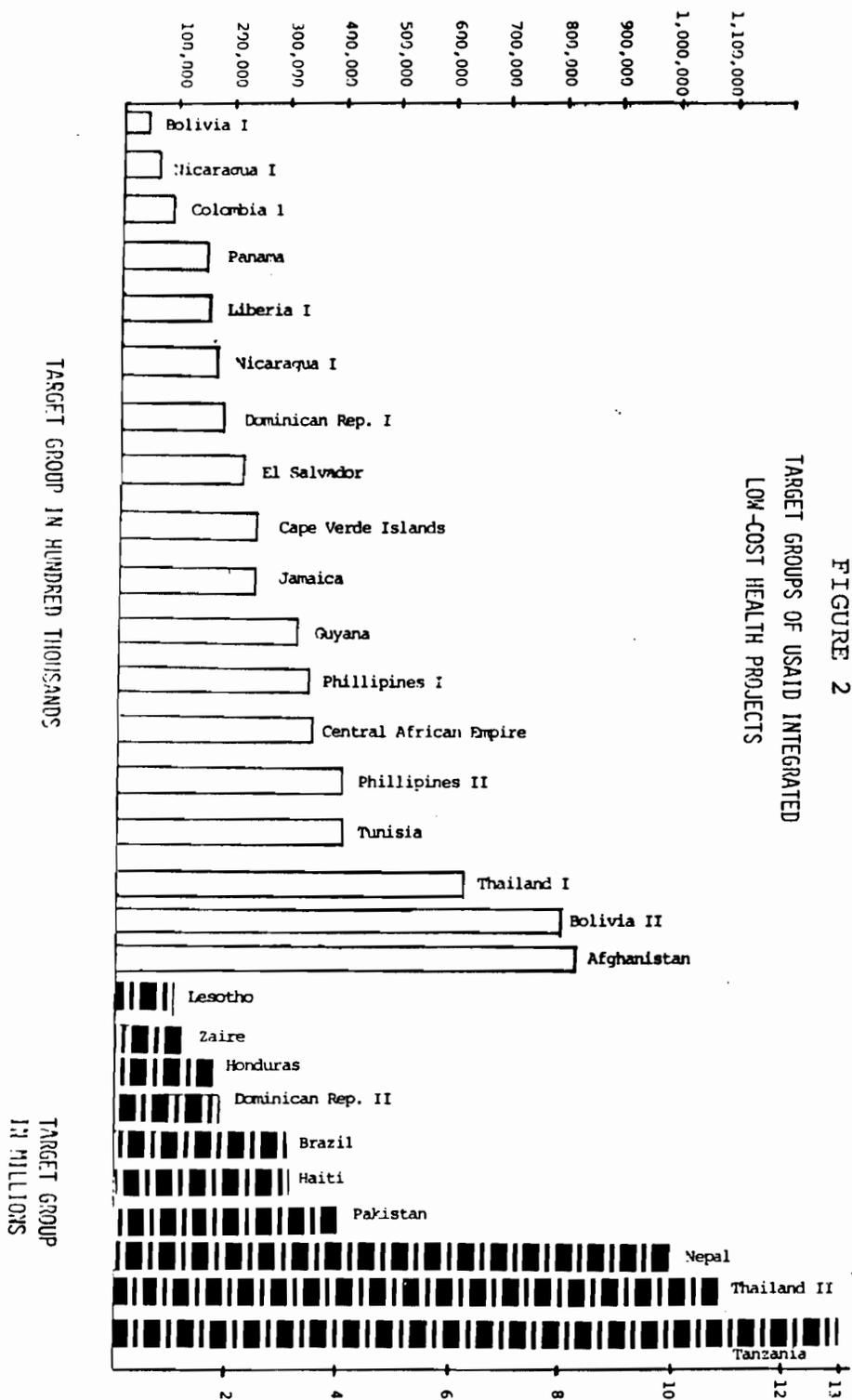
source: The United States and World Development: Agenda 1977, pp.160-171.

TARGET POPULATIONS

Two thirds of the integrated primary health care projects discussed in this volume target the population of a region or sub-region in a developing country. If the value and workability of integrated primary health care can be demonstrated in one part of a country, it is assumed that it will be extended to other regions. The experience of other projects such as Project Poshak, a successful food intervention project delivered through health centers in rural India, calls this assumption into question. Despite the project's success and its low cost, the state of Madhya Pradesh did not expand the program beyond the original 15,000 beneficiaries.¹²

Twenty-eight of the 39 projects examined here specify target populations. The size of these populations is shown in Figure 2. Figure 2 shows that the majority of Latin American programs are targeted at smaller populations, whereas Asian programs are targeted at millions of people. Taken together, the 28

¹² David Pyle, "From Pilot Project to Operational Program," summarized in Nutrition Planning, Vol. 1, February 1978, p. 127.



projects specify a combined target population of approximately 55 million people.

Ten projects are national in scope. In Africa, a region with scarce health resources and the greatest need for basic services, half the projects define no target population. Figure 2 shows that the Zaire, Lesotho, and Tanzania projects all aim to serve large populations. But population density is low in these countries, therefore, transportation and communication problems may be particularly severe in organizing primary health care systems.

AID will have ten projects directed to populations of over a million. There is little experience with such large projects. Most of AID's experience has been in Latin America with much smaller projects as can be seen in Figure 2. It remains to be seen what the actual number of participants in these programs are; and whether those who need services most are being reached.

FUNDING OF PRIMARY HEALTH CARE PROJECTS

Forty of the poorest countries will spend an estimated 18 billion annually on health and medical care, often amounting to only about \$1 per person per year.

In such countries external funding of health programs may constitute a significant proportion of what the country is spending for health. Table 2 shows the AID funding in 34 primary health care projects for which information was available. The balance of the funds provided by the host country or by other donors are shown in Table B in the Appendix.

Table 2 shows that AID will provide a higher proportion of project funds for primary health care projects in Africa than in other countries. Table 3 shows that the African primary health care projects are newer on the average than projects in other regions reflecting AID's increased emphasis on Africa. Table 3

TABLE 2

PROPORTION OF AID FUNDING**
FOR 34 INTEGRATED PRIMARY
HEALTH CARE PROJECTS BY REGION

<u>PROPORTION OF TOTAL FUNDS</u>	<u>AFRICA</u>	<u>ASIA</u>	<u>LATIN AMERICA</u>	<u>NEAR EAST</u>	<u>TOTAL PROJECT</u>
More than 60%	6	1	2	1	10
40% to 59%	3	3	9	0	15
Less than 39%	2	2	4	1	<u>9</u>
					N = 34

**Where data were available.

TABLE 3
First Year of Project of
Integrated Primary
Health Care Projects
by Region

<u>First Year Of Project</u>	<u>Africa</u>	<u>Asia</u>	<u>Latin America</u>	<u>Near East</u>	<u>Total Projects</u>
1976 or earlier	3	3	11	1	18
1977 or later	10	4	5	2	<u>21</u>
					N = 39

also shows that Latin American integrated primary health care projects are, on the average, older than projects in other regions.

Per Capita Funding

In the Appendix Table A estimates of per capita yearly funding on a country basis can be seen. Regional differences have been tabulated below.

AVERAGE PER CAPITA EXPENDITURE* USAID ASSISTED INTEGRATED
HEALTH DELIVERY SYSTEMS BY REGION

Africa	\$2.85
Latin America	\$6.07
Asia	\$4.11
Near East	\$2.86

*Includes research and development costs, as well as host country and other donor funding for projects.

It has been estimated in the Na rangwal studies that basic health care could be provided at approximately \$2 per capita.

Table 3 shows that fewer integrated primary health care projects are being planned for Latin America than in previous years and more for Africa.

YEARLY PER CAPITA COST* OF SELECTED PROJECTS

Ghana (Danfa County)	\$ 6.84
Philippines	\$12.13
Thailand	\$ 6.84
Colombia	\$ 7.03

* This figure would be lower if the research and development costs were not included. As these are experimental projects this expenditure is relatively high.

All these projects are considerably above the \$2 estimate (Narangwal Project, exclusive of research costs) for "low cost" health delivery systems. Initial estimates of "low cost" have been made from small projects serving populations of 15000-25000. In Project Poshak, a feeding project with health interventions, the cost estimate per capita was \$16/year. The expensive items were food supplements and provision of health care personnel.

There is little experience as to the cost effectiveness of very large projects serving millions. It has been suggested that "affordable" for the country is a better term than "low cost."

HEALTH CARE PERSONNEL

Health services are labor intensive. Better manpower planning is a crucial concern in the search for more cost effective delivery systems. Attempts to redefine personnel roles will be of little point unless preceded by a clear picture of health needs and which service activities are most effectively provided by which type of personnel. Other issues include: what is the best kind of training for health auxiliaries and how primary care systems should be organized.

Primary health care systems are typically three tiered, pyramid shaped structures administered by physicians or other health professionals. Mid-level workers and village level health workers are trained to extend scarce professional services by treating simple illnesses and referring more serious cases to central health posts or hospitals.

Many developing countries experience a shortage of professional health personnel. In some AID assisted health delivery projects,

Peace Corps volunteers (in the Sahel) will serve as

mid-level health workers in primary health care systems. In other countries nurses are being trained as physician extenders, leaving a vacuum which has been filled by village level health workers who often receive short training, little pay and many tasks.

In AID assisted projects, the names and types of health workers vary as well as their educational level, duration of training, and salary. Table C in the appendix shows auxiliary training varies from two weeks in the Dominican Republic to three months in Pakistan.

The range of duties of village health workers in eight primary care projects is illustrated in Table 4. Most interesting is the wide variety of tasks and varying work load. Where one worker provides education, another type of village worker (e.g., Dominican Republic health promoter) provides immunizations. The village health worker in Afghanistan provides a wide range of services and has a high task load. In Tunisia the Front Line Worker distributes pills and condoms and gives immunizations. In Senegal the Village First Aid Man is performing tasks that a physician assistant would in the U.S.A. In Mali the Village Health Worker has a very well defined, large number of tasks.

Authorities on international health estimate that

TABLE 4 - DUTIES OF VOLUNTEER AND AUXILIARY
HEALTH WORKERS IN SELECTED LOW COST HEALTH DELIVERY PROJECTS

AFGHANISTAN	TUNISIA	SENEGAL	MALI
Village Health Worker	Front Line Worker	Village First Aid Man	Village Health Worker
<ol style="list-style-type: none"> 1. Detect and prevent malnutrition in children 2. Advise on weaning practices and food storage 3. Advise on hygiene and sanitation 4. Provide family planning service 5. Provide first aid 6. Diagnose, treat and refer: <ol style="list-style-type: none"> a. children's diarrhea b. conjunctivitis, and trachoma c. skin infections d. worms e. bronchitis and pneumonia 	<ol style="list-style-type: none"> 1. Instruction in use of weaning food 2. Distribute pills and condoms 3. Immunization shots 4. Prenatal screening of mothers 5. Treat simple wounds 6. Screen and treat children at risk of malnutrition 7. Diagnose and treat, common skin disorders, conjunctivitis, fever, anemia, burns and wounds 	<ol style="list-style-type: none"> 1. Manage village health unit 2. Diagnosis and treat (with drugs) malaria, conjunctivitis, headaches, cough, anemia worms, scabies 3. Refer more serious cases 4. Keep records and manage payments 5. Treat simple wounds 6. Assist village chief in birth and death registration 7. Assist in vaccination campaigns 	<ol style="list-style-type: none"> 1. Record births, deaths, migration and marriages. 2. Record weights of neonates, infants and children. 3. Promote breastfeeding and weaning foods. 4. Provide iron supplements to pregnant women. 5. Diagnose and treat early malnutrition 6. Refer abnormal pregnancies, serious malnutrition and severe illnesses to health center 7. Provide family planning advice 8. Monitor vaccination status in village 9. Promote hygiene in the home and clean water and sanitation in village 10. Vaccinate pregnant women in 3rd month for tetanus 11. Provide first aid and oral treatment for malaria 12. Distribute appropriate medicines

TABLE 4 - DUTIES OF VOLUNTEER AND AUXILIARY
HEALTH WORKERS IN SELECTED LOW COST HEALTH DELIVERY PROJECTS

BOLIVIA	DOMINICAN REPUBLIC	JAMAICA	PAKISTAN
Health promoter	Health promoter (goal: one for every 400 people)	Community health aids	Community health worker (goal: one per 1000 popu- lation)
1. Use manual to treat ill- nesses and refer more serious cases	1. Record births and deaths	1. Teach simple health facts	1. Visit two houses per day and
2. Give individual and group talks on illness prevention	2. Promote breast- feeding and identify malnourished	2. Explain the value of different foods and promote kitchen gardens	2. Weigh all children 6 months to 3 years old and refer malnourished to (mid level) Basic Health Unit
3. Demonstrate keeping height and weight chart in conjunction with feeding program	3. Visit pregnant women and provide iron tab- lets after 6 months of pregnancy	3. Provide first aid	3. Record births and deaths
4. Demonstrate hygiene and sanitation by, for example, covering a well	4. Immunize children against diptheria, pertusis, tetanus, measles. Also immu- nize women of child bearing years against tetanus	4. Encourage child immunization and attendance at child clinics.	4. Offer family planning services
	5. Rehydration of serious diarrhea cases	5. Encourage attendance at family planning clinics	5. Give DPT and BCG immun- izations
	6. Cooperate with midwives	6. Advise known diabetics and hypertensive cases on health maintenance	6. Check that T.B. patients are taking their medicine
	7. Give aspirin for viral respiratory infections	7. Advise householders on sanitation	7. Discuss with household; child feeding, food storage, child spacing, personal hygiene and sanitation

village level workers can provide adequate service to 200 to 400 families in need, or 1,000 to 2,000 people. Obviously, the severity of health problems as well as numerous tasks would further decrease the effectiveness of these workers to provide adequate care unless the patient load was decreased.

In six projects, the workers' nutrition tasks were not defined. The wide range of variation in nutrition tasks of different health workers can be seen in Appendix D.

In Pakistan there is one community worker per 1,000 population and a few of the tasks this worker has to perform includes giving regular immunizations, as well as BCG and checking TB patients; weighing all children 6 months to 3 yrs., as well as providing family planning services. In Jamaica, the community health aide provides health maintenance advice to diabetics and hypertensives. Curative services often take precedence over promotional services. The extent to which nutrition interventions such as nutrition education are neglected have not been measured.

Special nutrition workers are being trained in several projects, e.g., in the Philippines there are nutrition scholars, in Brazil nutrition auxiliaries, and in Thailand nutrition attendants in order to provide nutrition services. See Appendix D for details.

OVERLOADING THE VILLAGE HEALTH WORKER

The duties for village health workers (Table 4) are substantial, particularly when one considers that the workers may in some countries, e.g., Mali and Niger, be illiterate. When health, nutrition, sanitation or family planning duties are added to present duties, there is a danger of the health worker doing none of the tasks well. Joseph notes a paradoxical tendency to expect the most of the village health worker in precisely those countries which have the weakest health infrastructure to support the worker.¹³ Table 4 shows that the health worker with the most tasks will be in Mali, a very poor country with few health resources. This supports Joseph's hypothesis.

The best known example of extending health care to large groups previously without care is China's use of "barefoot doctors." The quality of the relationship of the village health worker to his or her community is the

¹³ Joseph, S., "The Community Health Worker in Developing Countries: Issues in Administrative Structure, Support, and Supervision," paper presented at a symposium on the Community Health Worker, Airlie House, Virginia, October 1977, p. 11.

key to success of primary health care. In Jamaica one criteria for selection of a community health worker is that he/she must live in the district served.

OVERTRAINING

Smith warns against overtraining village health workers or bringing them to the capital city for training. Either may weaken the health workers' ties to the community and cause the worker to migrate from the community.¹⁴

SELECTION OF VILLAGE LEVEL WORKERS BY THE COMMUNITY

Many of the projects examined here state that the village council or committee will select a villager from among themselves to receive primary health care training.

Instead of passing over this process as one which presented no problems, planners in Senegal, Mali and Niger (evidently with the help of an anthropologist) examined how this process might occur, the motivation of the different groups in the village and the rewards

¹⁴ Smith, R.A., Manpower and Primary Health Care, University Press of Hawaii, Honolulu, 1978.

available to the village health worker once he is selected.

SHIFT OF PRIMARY CARE DUTIES

One-quarter to one-half of the duties of village health workers listed in Table 4 are illness prevention which produce only long-term, rather than immediate, improvement in health in the community. Smith¹⁵ points out that without supervision and support from the primary care system, village health workers often end up concentrating on personal curative or healing activities and neglect illness prevention activities. Often this is motivated by the fact that villagers reward the worker directly for curative activities, but not usually for illness prevention.

RETRAINING INDIGENOUS WORKERS

Several of the projects use traditional or indigenous health workers. One example, the Dais in Afghanistan, after short training periods, provide medical care that includes effective traditional and western services.

¹⁵ Smith, R.A., Manpower and Primary Health Care, University Press of Hawaii, Honolulu, 1978, p. 32.

SERVICE MIX

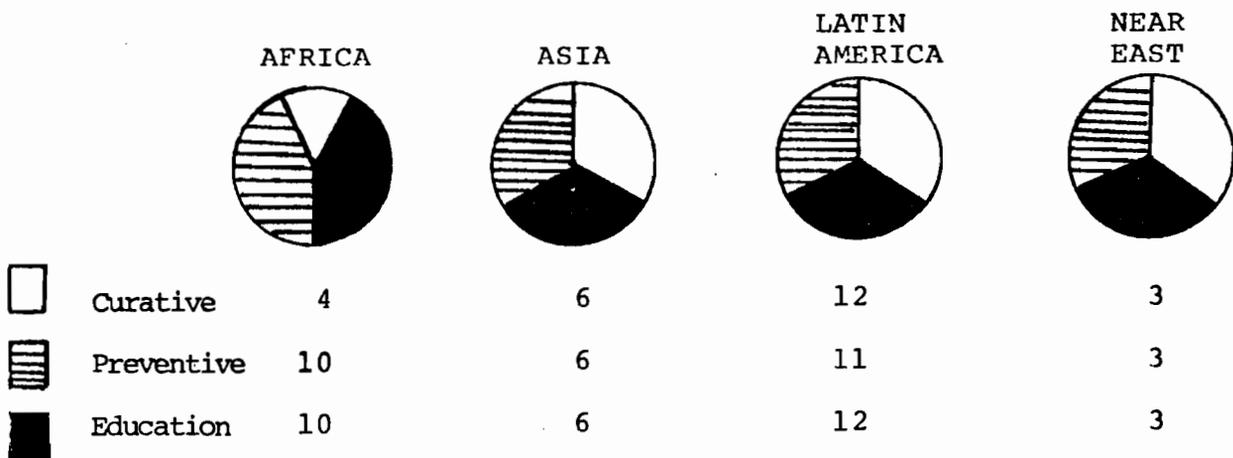
It has been stated that the "critical mass" is the mix of services, infrastructure, planning, community participation and awareness of the communities needs. Obviously many factors need to be considered. There are no simple solutions or instant formulae but there are lessons to be learned from projects that are operating or being developed.

Services provided in projects in order of frequency

1. Education in 79%
2. Preventive care in 77%
3. Curative Services in 64%

- Regional differences in the distribution of services are most marked in Africa where few projects provide curative services.* (Figure 3 below.)

FIGURE 3
TYPE OF REGIONAL SERVICES PROVIDED
 (number of projects)



* Curative Services include referral rehabilitation and MCH clinics.

Education

The most commonly stated intervention among the 39 projects reviewed, education activities are present in 79% of the projects. Nutrition education is the most common topic and hygiene education the least common. Several projects have more than one type of education, as outlined below.

REGIONAL DISTRIBUTION OF
EDUCATION SERVICES
(Number of Projects with Specific Type of Education)

	Nutrition	Health	Family Planning	Hygiene
<u>AFRICA</u> 13 projects	8	7	5	5
<u>ASIA</u> 7 projects	6	4	3	2
<u>LATIN AMERICA</u> 16 projects	8	9	9	4
<u>NEAR EAST</u> 3 projects	3	1	1	1

Preventive Services**

These were the second most frequent interventions occurring in 77% of the projects. More than half of the projects provide immunizations. Programs for the treatment of malaria, and vector control are present in five projects. Evidently these projects are being integrated. In the Pakistan project antituberculosis treatment is also present.

Oral rehydration programs are being planned or operating in a few projects, even though diarrhoea is a major problem

** Preventive Services include disease control, immunization, deworming, water supply and sanitation.

affecting millions of infants and young children. Deworming programs are present in only one project, namely Afghanistan.

Water supply is a concern in 33% of projects and sanitation in 51%.

Curative Services

In this category referral, rehabilitation, and MCH clinics are included. Rehabilitation is the least common intervention. Four out of six Asian projects have rehabilitation services. Dental extractions are planned in three projects, namely Brazil, Cape Verde and Colombia II.

NUTRITION INTERVENTION IN AID SUPPORTED
PRIMARY HEALTH CARE PROJECTS

The borderline between what is, or is not, a nutrition intervention is arbitrary. A new road built near a previously isolated village may have a positive impact on the nutritional status of the villagers. Many economic, social, political factors have impact on nutrition but such factors are usually not viewed as nutrition interventions.

Nutrition activities for primary health care delivery systems have been suggested by WHO.¹⁶ (See Table 5). Using this scheme, basic nutritional activities were present in 18 of the projects. The WHO scheme is used in order to differentiate basic to optimum programs. Activities are classified in five major categories:

¹⁶ Nutrition: A Review of the World Health Program, WHO Chronicle, Vol. 26, No. 4, April 1972, p. 171.

- (1) Nutrition surveillance in 38%
- (2) Nutrition education in 49%
- (3) Control of infectious diseases in 56%
- (4) Nutritional supplements in 23%
- (5) Nutrition recuperation in 13%

Rating Nutrition Components of AID's Primary Health Care Projects

Do the nutrition components of AID's integrated primary health care projects measure up to the World Health Organization's suggested nutrition interventions in Table 5? The answer is yes and no.

AID's primary care projects do involve a broader range of nutrition interventions than listed in the WHO table. These include promotion of breast feeding, use of mass media in nutrition education, development of garden projects, and improving sanitation.

But a number of the primary health care projects have no nutrition component at this time, not even the minimum interventions listed in Table 5.

Table 6 shows the full range of nutrition interventions, broadly defined, which are found in AID's integrated primary health care projects. The definition of each intervention category (as the term is used in the AID program documents) is listed in Table G in the Appendix.

TABLE 5
NUTRITIONAL ACTIVITIES IN
PRIMARY HEALTH SERVICES

INTERVENTION	MINIMUM PROGRAM	MEDIUM PROGRAM	OPTIMUM PROGRAM
NUTRITIONAL SURVEILLANCE	Observe protein-calorie malnutrition (PCM) using weight for age classification (under 5 years). Check for signs of locally most important deficiency (for instance vitamin A).	Collect weight for age serial records, home visits, observe PCM, follow-up. Check for signs of other diseases.	Additional: Periodically screen preschool population weight for age records. Screen mothers and infants for haemoglobin. Screen for xerophthalmia and other deficiency conditions prevalent locally. Examine dietary histories of vulnerable groups.
NUTRITION EDUCATION	Advise mothers on supplementary feeding and weaning, especially quantities and frequencies. Advise on local protein sources and vegetables.	In addition: advise mothers on complementary foods, amounts and preparation.	In addition: advise mothers on principles of child feeding and diets during pregnancy and lactation at clinic and during home visits.
CONTROL OF INFECTIOUS DISEASES	Immunize children at health post whenever possible. Advise on food and fluid intake during infectious events, especially diarrhea. Advise on sanitation in the home, especially for infant food. Check any recent deaths.	Immunize all children who can be reached. Provide simple oral rehydration service in the health post and in the home.	Establish full immunization and home sanitation programs. Establish oral and intragastric rehydration station, with referral possibility for severe cases.
NUTRITIONAL SUPPLEMENTS	Distribute nutritional supplements to pregnant women. Distribute vitamin A to newborns and identified cases of night blindness or xerophthalmia. Distribute available supplementary foods (protein rich) to young children and infants.	Initiate prevention program for iron deficiency anemia in pregnancy. Give vitamin A to newborns and deficiency cases. Give milk powder or supplements to moderate PCM cases with advice on use.	Establish preventive program for iron deficiency anemia. Administer vitamin A periodically to infants and preschool children. Establish supervised supplementary feeding program, with checks on development.
NUTRITIONAL RECUPERATION		Refer moderate cases of PCM to nutritional recuperation and education program, if available. Refer severe cases to health center or hospital.	Develop full nutritional recuperation and education services, with referral and follow-up system.

Source: "Nutrition: a Review of the World Health Program - 1" WHO Chronicle, Vol. 26, No. 4, April 1972, p. 171

NUTRITION COMPONENTS IN USAID
INTEGRATED HEALTH PROJECTS

TABLE 6

	AFRICA														NEAR EAST		
	Mali	Lesotho	Ghana	Liberia I	Sudan	Cape Verde Islands	C.A. Empire	Liberia II	Niger	Senegal	Zaire	Tanzania	Cameroon	Tunisia	Afghanistan	Egypt	
BREAST-FEEDING	X													X			
WEANING		X	X											X	X		
NUTRITION EDUCATION	X	X	X	X	X		X	X	X					X	X	X	
WEIGHT CHARTS	X	X															
MATERNAL SUPPLEMENTATION	Fe													Fe	X		
INFANT SUPPLEMENTS														X			
DEVELOP WEANING FOODS	X	X	X											X			
DIETARY FORTIFICATION																	
FOOD PRODUCTION		G			X		F							X			
IMMUNIZATION	X			X		X		X						X	X		
DISEASE CONTROL	D,W				M									M	D,W		
WATER SUPPLY	X			X			X							X			
SANITATION	X		X	X	X	X	X	X	X	X	X						
FAMILY PLANNING	X	X	X	X					X			X			X		
COMMUNITY PARTICIPATION			X												X		
MASS MEDIA																	

(S) Small Animals
(Fe) Iron

(D) Antidiarrheal

(W) Deworming

(M) Malaria

(G) Family Gardens

(F) Fish Ponds

September 11, 1978

NUTRITION COMPONENTS IN USAID
 INTEGRATED HEALTH PROJECTS
 TABLE 5 (CONTINUED)

	LATIN AMERICA														ASIA								
	Nicaragua I	Panama	Brazil	Columbia II	D. Republic I	Bolivia I	Bolivia II	Honduras	Nicaragua II	D. Republic II	El Salvador	Guatemala	Columbia I	Guyana	Haiti	Jamaica	Philippines I	Thailand II	Korea	Thailand	Philippines II	Pakistan	Nepal
BREAST-FEEDING	X		X		X			X										X					
WEANING					X												X						
NUTRITION EDUCATION	X	X	X		X	X	X	X		X							X	X	X	X		X	X
WEIGHT CHARTS	X		X														X					X	
MATERNAL SUPPLEMENTATION			Fe	X	X															X			
INFANT SUPPLEMENTS			X		X												X	X		X	X		
DEVELOP WEANING FOODS																							
DIETARY FORTIFICATION																				X			
FOOD PRODUCTION	G	S	G					G	G									G		X	G		
IMMUNIZATION	X	X	X	X	X	X	X	X	X	X							X	X	X	X	X		
DISEASE CONTROL	X			X		M	M	D	D						M			D				M	D
WATER SUPPLY	X	X		X				X	X			X					X		X	X			
SANITATION	X	X	X	X		X	X	X	X								X		X	X			X
FAMILY PLANNING	X	X		X	X	X	X	X	X	X	X						X		X	X		X	X
COMMUNITY PARTICIPATION	X									X	X						X		X				X
MASS MEDIA	X			X	X													X			X	X	

(S) Small Animals
 (Fe) Iron

(D) Antidiarrheal

(W) Deworming

(M) Malaria

(G) Family Gardens

(F) Fish Ponds

September 11, 1978

STRENGTHENING NUTRITION ACTIVITIES
IN PRIMARY HEALTH CARE

The many empty squares in Table 6 show that there are gaps in nutrition activities of AID assisted low cost health delivery projects. The following nutrition related activities can be strengthened in these AID projects:

Weight Charts

Table 5, the World Health Organization's suggestions for minimum and maximum activities in primary health care, give the identification of malnourished children a high priority. Regular recording of child weights is an important means of early identification of malnutrition in children, yet less than one quarter of the primary health care projects examined mention recording child weights on weight charts. No projects mentioned purchase of scales in their budgets. Scales would be expensive when a large population is to receive primary health care. Child weighing for identifying malnourished children is a nutrition activity which should receive more emphasis in primary health care projects -- not only as a diagnostic tool but as a means to educate mothers on the importance of nutrition.

Supplemental Food

The nutrition of the mother-infant dyad begins with the mother. In industrialized countries, mothers gain on the average between 22 and 27 pounds during pregnancy. Studies in developing countries among poor mothers show that their weight increase is often limited to between 8 and 15 pounds. A higher proportion of infants born to women in these circumstances are "low birth weight" babies. These infants are more prone¹⁷ to infection, congenital defects and death.

Maternal supplementation in the form of calories may have a significant impact on infant birth weight. Just by increasing caloric intake by 225 calories per day in the last trimester of pregnancy, birth weight can be significantly increased. The Narangwal studies show that iron and folate supplements during pregnancy are the most cost-effective measures of reducing perinatal mortality.¹⁸

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Cameroon, M., Hofvander, Y., Manual on Feeding Infants and Young Children (Second Edition), United Nations, 1976.

18

Parker, R.L., et al. "The Narangwal Experiment on Interactions of Nutrition and Infections: Measurement of Services, Costs and Their Relation to Outcome" to be published in the India Medical Journal, 1978.

It was found that stillbirths were less expensive to prevent than infant deaths, while the latter were one-seventh as expensive to prevent as child deaths. For example, where goitre is endemic, some forms of deaf mutism, dwarfism and mental retardation can be prevented by giving the mother iodine during pregnancy. The cost of iodine is infinitesimal compared with heightened productivity of an individual through his or her lifetime. Maternal dietary supplements play a small role in the primary health care projects discussed here.

Anemia

Maternal child-bearing deaths of one in fifty are not uncommon in the developing world. In many parts of the developing world, 50% of the women have lost three or more children under five years of age. Twenty percent of these deaths result from anemia which is a preventable disease. Among pregnant women, iron and folic acid deficiency are common causes of anemia. Baumslag, et. al. showed that supplementation with folic acid in pregnancy results in increased birth weight in populations with subnormal folic acid intake without altering dietary habits, a much harder change

to bring about.

Women are often ignorant of the correlation between the nutritional needs of pregnancy and the resultant favorable outcome. Iron and folic acid supplements to combat anemia in pregnant women are effective means to reduce maternal childbirth-related deaths, increase birth weights and reduce fetal and infant mortality. Iron and folic acid needs in pregnancy are addressed in few integrated health projects.

In many developing countries iodine, vitamin A and iron fortification programs either exist, or are being developed. In Guatemala, vitamin A-fortified sugar is available, and in Pakistan, iodine in tea and in salt is being tested for goiter regions. In different areas a variety of common food vehicles are being fortified with vitamin A. Distribution of these fortified products can be linked with health delivery systems. When health and nutrition education are planned in areas where deficiency diseases are endemic, the lessons learned may be useless if no resources for correcting these deficiencies are available.

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Baumslag, N., Edelstein, T., and Metz, J., "Reduction of Incidence of Prematurity by Folic Acid Supplementation in Pregnancy," British Medical Journal, Vol. 1, Number 16, 1970.

Breast-Feeding

In the last 60 years an increasing number of mothers in developing, as well as developed, countries have abandoned breast-feeding of infants for bottle feeding. Many experts believe the decline in breast-feeding in developing countries is one cause of high infant death rates.

Infants are very vulnerable to diseases as they have not yet developed antibodies. Breast milk, an ideal food for infants, is sterile and contains antibodies which strengthen an infant's resistance to disease. Furthermore, breast milk is ideally suited for human growth and permits psychological bonding between mother and child. The poor in many developing countries have access only to polluted drinking water, which when mixed with milk powder and fed to infants, can have deadly consequences. The poor often over-dilute the milk powder or use it sparingly because formula is expensive. The illiterate are ill-equipped to deal with instructions printed (sometimes in a foreign language) on the formula can for hygienic use of the product.

As the proportion of mothers who breast feed declines, and the average number of months which infants are breast-fed declines, the protection afforded by sterile, nutritious, and disease resistant breast milk is shortened, which explains why many experts have found that the average age of the onset of malnutrition had dropped from six to eight months, to as early as three months in many developing countries.²⁰

One expert has estimated that if breastfeeding could be reinstated in those developing countries where the practice is declining, 10 million children could be saved from diarrheal disease and marasmus each year.²¹

Successful breast-feeding is based on advice and instruction from more experienced women and requires confidence and assurance. Health personnel, not only in developing countries, but also in industrial countries, are poorly informed about breast-feeding and are often not qualified to help mothers with practical advice. In a survey in Trinidad the main reason mothers gave

²⁰ Puffer, R.T. and Serrano, C.V., Patterns of Mortality in Childhood, Pan American Health Organization, Washington, D.C., 1973.

²¹ Jelliffe, D., in Hearings on Marketing and Promotion of Infant Formula in Developing Countries before the Subcommittee on Health and Scientific Research, U.S. Senate, Washington, D.C., May 23, 1978. p. 42.

for giving up breast-feeding was insufficient milk." This may indicate ignorance of the technique of breast-feeding.²²

If a high priority is to be given to infant health in developing countries, then mothers should be encouraged to breast-feed exclusively until the infant is six months old and to supplement breast milk with weaning food after that time. At the same time a high priority must be given to the mother's nutrition during pregnancy and lactation. Adequate nutrition for the mother who is pregnant and then breast-feeding is the cheapest and most efficient protection for the health of the infant.

The promotion of breast-feeding and the training of health personnel in the techniques of breast-feeding receive a low priority in most low cost health delivery projects. Table 6 shows that less than one fifth of the projects plan such activities. Because breast-feeding is an effective and low cost means to protect infant health, the promotion of breast-feeding

²²Ebrahim, G.J., Breast Feeding: The Biological Option, Macmillan Press, London, 1978.

should play a larger role in these low cost integrated health projects.

Weaning

Infants and small children have a higher need for nutrients relative to their weight than do adults. Children under one year of age need 51 kilocalories per pound per day, compared with 21 kilocalories per pound per day required by moderately active adults. Young children also require increased quantities of special nutrients for growth and development. Children often are the first group in a community to show signs of malnutrition.

Grains such as wheat, rice, sorghum or maize; or root crops such as cassava, form the mainstay of the diet in many developing countries. These foods, when prepared, are bulky and are not concentrated sources for protein or energy. The stomach of infants is small, so they have difficulty eating enough of a starchy staple to meet their daily energy and protein requirements.

Robson estimates that a two year old child would have to eat 3.3 pounds of maize gruel or 3.5 pounds of sorghum cereal each day just to meet his energy requirement.²³ An infant would be filled by the bulky food before his energy and protein requirements could be met. This, together with infection which reduces the child's capacity to absorb needed nutrients, is a direct cause of malnutrition among children in developing countries.

A major strategy in the campaign against malnutrition has been the search for an adequate but inexpensive weaning food for infants. Local customs and taboos regarding food for children, have complicated this search. Weaning foods with the most promise are usually a mixture of locally available foods such as pulses and grains. Mothers must learn and be shown how to prepare local food for better nutrition.

The nutrition intervention category "weaning" in Table 6 refers mainly to education about the nutritional needs of infants and small children. Table 6 shows that less than one-fifth of the AID assisted, integrated

²³Robson, J.R., Malnutrition: Its Causation and Control, Gordon and Branch, New York, 1972.

health projects will give special focus to the weaning of children. Four projects will focus on the production or distribution of weaning foods. Because the weaning period is the most dangerous time in a child's life in many developing countries, nutritional activities related to weaning should be increased in AID assisted low cost health projects.

Immunization

The interaction between infection and malnutrition is well known. For this reason, immunization against contagious diseases is important in nutrition improvement. Measles is a serious problem in developing countries, particularly in Africa. Mortality from this disease among malnourished children is 400 times greater than for healthy children. Infants can lose 10% of their body weight through this disease. Another serious disease affecting nutritional status is tuberculosis, a condition that occurs with poor housing, malnutrition and overcrowding and is still a serious problem in many parts of the world. In areas such as Africa and India, practices such as applying cow dung to the umbilical cord after childbirth make deaths from neonatal tetanus a frequent occurrence.

Table 6 shows that immunizations will play a major role in over half of the low cost integrated health projects. However, few of the projects specified the type of vaccine to be used

Disease Control

In Table 6, the category "disease control" refers to deworming, prevention and oral rehydration of diarrhea cases, as well as malaria eradication. Hookworm and roundworm, malaria and diarrhea reduce the availability of nutrients in those who are marginally nourished. They also affect growth and development as well as morbidity and mortality. Maternal malaria affects maternal iron status, infant birth weight and infant mortality. Treatment of pregnant women in endemic areas may be a cost effective intervention. Lathan, Latham and Basta estimate that roundworms may infect up to one quarter of the world's population. Heavy infestation of roundworms can lead to non-utilization of up to 25%²⁴ of ingested calories.

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Latham, L., Latham, M., and Basta, S., The Nutritional and Economic Implications of Ascaris Infection in Kenya, World Bank Working Paper #271, Washington, D.C.

Few of the AID-assisted integrated health projects focus at the present time on deworming. In areas of high gastrointestinal parasitic infections, child feeding programs should include a deworming component.

Dehydration through diarrhea makes weanling diarrhea a major killer of children in developing countries. Simple techniques of oral rehydration to combat diarrhea are effective and within the means of even the poorest people. Teaching the technique of oral rehydration to mothers and others who care for children, and providing diarrheal treatment to children, is noted in fewer than one-quarter of the AID-assisted integrated low cost health projects. Providing oral rehydration programs is a nutrition-health intervention which is gaining advocates.

Family Planning

Child survival affects motivation for child-spacing. Greater child-spacing leads to better nutritional status of children in the family. Better nutrition improves child survival. This cycle illustrates the intimate connection between family planning and nutritional status. For example, Swenson found in Bangladesh that childhood mortality is higher among children whose birth is followed by another pregnancy in less than 12 months than among children where pregnancy is delayed for more than 12 months.²⁵

Family planning activities are related to nutrition in the broad sense of the word. Table 6 shows that more than half of the AID low cost health delivery projects stress family planning activities. In these projects, family planning educational programs outnumber provision of contraceptives 2 to 1. Judging from Table 6, family planning programs appear underrepresented in Africa. The planning documents made no mention of venereal disease or

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Swenson, I., "Early Childhood Survivorship Related to the Subsequent Interpregnancy Interval and Outcome of the Subsequent Pregnancy" Tropical Pediatrics and Environmental Child Health, June 1978, p. 103.

infertility clinics, either of which might facilitate the provision of family planning information and contraceptives. Infertility is a serious problem in many areas and is related to nutritional status. While not usually considered a family planning activity, breastfeeding has a physiological and cultural impact on child-spacing which one expert estimates to be greater than all family planning programs now in progress in developing countries.

Nutrition Activities in Other Projects

The results of two other studies of relatively low cost integrated health delivery and nutrition projects can be seen in Table 7. These studies, cited below, were based on questionnaires which were mainly sent to small, privately funded projects.

26

Rosa, F., "Breast-Feeding: A Motive for Family Planning," People (Publication of International Planned Parenthood Federation), Vol. 3, No. 1, pp. 10-13, 1976.

27

Karlin, B., The State of the Art of Delivering Low Cost Health Services in Less Developed Countries: A Summary of 180 Health Projects, American Public Health Association, Washington, D.C., 1977. (Most private voluntary small programs.), and

Austin, J.E. et. al., Annotated Directory of Nutrition Programs in the Developing Countries, Harvard Institute for International Development, 1978. (Most private, voluntary small programs N = 201.)

TABLE 7

NUTRITION RELEVANT INTERVENTIONS IN THREE STUDIES
OF INTEGRATED LOW COST HEALTH PROJECTS

Health/Nutrition Interventions	AID Integrated Health Delivery Projects	APHA Survey of Health Projects	HIID Nutrition Programs
Education	79%	79%	62%
Feeding	23%	50%	66%
Immunizations	56%	74%	55%
Deworming	5%	NA	NA
Weight Charts	10%	NA	47%
Oral Rehydration	15%	NA	67%
Family Planning	54%	83%	42%
Primary Care	64%	79%	56%
Sanitary Education	51%	83%	NA
Water	33%	38%	NA
Number of Projects	39	180	201

(53)

In all projects education ranked high as an intervention. Feeding programs were common in the nutrition programs surveyed by the Harvard group. About half of the projects surveyed by the Harvard group used weight charts whereas only a small proportion of the AID assisted health projects will do so.

Nutrition Education

Education is the most common intervention in Table 7 for possibly two reasons: education is cheaper than other interventions and education as a prime intervention supports the basic philosophy of primary health care; i.e. that people possess many of the resources for better health but must be alerted to these resources.

While nutrition education is planned in two-thirds of the AID assisted integrated low cost health projects, AID's programming documents lack detail regarding target groups for educational campaigns, the message to be transmitted, and the means to be used in these efforts.

Water Supply and Sanitation

Clean water and sanitation are important to nutrition because of the downward spiraling interaction between contagious diseases and malnutrition. The Lesotho study found that water supply without hygiene education will result in no improvement of health status.

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Other studies have found that where water must be carried substantial distances, the quantity of water may be more important to health than the quality of water. Over half of the sanitation components of AID assisted health delivery projects consist of hygiene education. Some projects will do more than educate. For example, in the Philippines, sanitary latrines and aqueducts will be constructed.

Community Participation

Community participation is a key element in primary health care systems. This, however, is not easy to generate in male-dominated, traditional societies. Until women receive more education and freedom to participate fully in the local decision-making, community participation may be more hope than reality in primary health care systems. Some AID assisted integrated health projects have mother's clubs, such as in Nicaragua, in an attempt to organize the women and effect self help. In Mali and Niger, literacy will be part of the training which village health workers receive.

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Feachem, R., et.al. Water, Health and Development, Tri-Med Books, Ltd: London, 1978.

Local knowledge is essential in planning primary health care projects, as the motivation, organization and needs of villagers themselves are building blocks in primary health care systems. Local knowledge is also important in the upgrading of nutrition activities in integrating primary health care systems because food practices are so intimately bound up with local cultures.

RECOMMENDATIONS

This paper has shown that the nutrition component in many low cost integrated health delivery projects now planned by AID can be improved. However, the task may be more demanding than simply writing more nutrition activities into future low cost integrated health projects, or replanning present projects. Furthermore, it should be noted that nutrition cannot be viewed in isolation because a large number of cultural, economic, political and health factors impact on nutritional status. Many of these factors vary greatly by locality. Large scale low cost health delivery projects are still largely uncharted territory which demand management, supervision, and training skills often in short supply.

Primary health care is people-centered health care based on the assumption that the people, themselves, possess many of the resources needed for better health. This orientation can be generalized to include nutrition with the acknowledgement that the people in the villages and urban shanty towns of the developing world possess many of the resources for improved nutrition. The key to unlocking these resources is the knowledge, motivation, organizational skills, and communication skills of the personnel who implement these projects.

General Recommendations

To improve low cost health delivery projects - including associated nutrition activities:

1. Poll villagers and urban slum dwellers for perceived health and nutrition needs.
2. Define the target group and assess if they have access to the program and whether the degree of coverage is adequate or appropriate.
3. Wherever possible use indigenous organizations, professionals, students and auxiliaries to implement and research integrated low cost health projects.
4. Think small, build gradually and be prepared to go where successful parts of the program lead. This requires a long-term, open ended commitment to the program.
5. Stress self-reliance because, despite the importance of imported vaccines, deworming medicine, or food supplements, the most important means to better health and nutrition lies in ordinary and simple materials and practices in the village environment.

6. The beneficiaries of integrated low cost health services; that is, villagers and shanty town dwellers, should be polled to determine the acceptance and perceived success of a project.

Specific Recommendations

1. That village health workers who are given nutrition responsibilities be provided with scales for child weights. Birth weights are an indicator of maternal nutritional status and are useful in demarcating at-risk mothers. They also provide a baseline for charting the infant's growth. Child weighing can identify malnourished children and serve as an educational tool in alerting mothers to the importance of nutrition.
2. To protect maternal, fetal and infant health, "feed the mother" is an excellent strategy. Maternal supplements, such as vitamins, iron, iodine or calories tend to be cost-effective nutrition interventions in a wide variety of settings in developing countries.
3. (a) That breast-feeding be promoted in every way possible among those low-income groups where the practice is declining.
(b) That breast-milk be recognized and promoted as a valuable supplement after other foods are introduced to the child.
(c) That breast milk be supplemented by additional food after the infant is six months of age.
4. That child feeding programs consider deworming, immunization and sanitary education in regions where parasites and contagious diseases are prevalent.
5. Apply research findings on the use of radio in the dissemination of simple health and nutrition messages in developing countries. Radio messages should be reinforced through involvement of key villagers such as midwives, local entertainers, primary school teachers, traditional healers and village chiefs.

6. Diarrhea is a leading killer of infants and small children in developing countries. Mothers and other child caretakers should be informed about oral rehydration, a low cost, simple treatment for diarrhea.

Conclusion

While nutrition activities in integrated low cost health delivery projects can be strengthened, there are no ready-packaged programs that will instantly reduce malnutrition. There is no "magic mix" but there are solutions to common problems that can be locally adapted. In some areas new solutions have to be found. The concept of multi-factorial causes of malnutrition should not be used as a cover for ignorance. The challenge is to make available humane care for all people.

APPENDIX

Tables

- A Health Indicators and Per Capita Funding
- B Project Funding and Donors
- C Health Care Personnel Salaries, Training and Title
- D Health Care Personnel - Nutrition Tasks
- E Regional Frequency of Nutrition and Nutrition Related Interventions
- F Summaries of List of 39 AID Integrated Projects
- G Definitions of Nutrition Interventions Used for Data Compilation

TABLE A
USAID INTEGRATED HEALTH PROGRAMS

I AFRICA			USAID's	TOTAL	TARGET	POP.	INFANT
<u>COUNTRY</u>	<u>PQLI</u> *	<u>PER CAPITA</u> <u>GNP, 1974</u>	<u>YEARLY FUNDING</u> <u>PER PERSON**</u>	<u>YEARLY FUNDING</u> <u>PER PERSON***</u>	<u>GROUP</u>	<u>PER</u> <u>SQ. MILE</u>	<u>MORTALITY</u> <u>(per 1000)</u>
Cameroon	28	300	.56	3.73	n.e.	35	137
Cape Verde Islands	46	470	3.13	4.16	240,000	170	91
Central Afr. Empire	18	210	1.62	1.62	350,000	8	190
Ghana	31	430	n.e.	n.e.	n.e.	106	156
Lesotho	50	140	.73	1.11	1.1 mil.	96	114
Liberia(Lofa County)	26	390	4.17	9.03	155,000	40	159
Liberia	26	390	.60	.60	n.e.	40	159
Mali	15	80	n.e.	n.e.	n.e.	12	188
Niger	14	120	n.e.	n.e.	n.e.	9	200
Senegal	22	330	n.e.	n.e.	n.e.	58	159
Sudan	22	230	.27	n.e.	n.e.	13	141
Tanzania	28	160	.09	.77	13 mil.	41	162
Zaire	28	150	1.08	1.74	1.2	27	160
<u>AVERAGES</u>	27	265	1.36	2.85	-	50	143

(61)

TABLE A

II LATIN AMERICA							
<u>COUNTRY</u>	<u>PQLI*</u>	<u>PER CAPITA GNP, 1974</u>	<u>USAID'S YEARLY FUNDING PER PERSON**</u>	<u>TOTAL YEARLY FUNDING PER PERSON***</u>	<u>TARGET GROUP</u>	<u>POP. PER SQ. MILE</u>	<u>INFANT MORTALITY (per 1000)</u>
Bolivia I	45	280	2.86	13.24	35,000	12	108
Bolivia II	45	280	2.46	2.19	800,000	13	108
Brazil	68	920	.63	2.10	3 mil.	32	82
Colombia I	71	500	3.50	7.03	90,000	55	76
Colombia II	41	500	n.e.	n.e.	n.e.	55	76
Dominican Rep. I	64	540	.10	2.15	175,000	246	98
Dominican Rep. II	64	540	.87	4.14	1.8 mil.	246	98
El Salvador	67	410	1.43	6.90	210,000	490	54
Guatemala	53	580	.93	.04	n.e.	137	79
Guyana	84	500	4.16	4.34	312,000	10	40
Haiti	31	170	.14	3.03	3 mil.	552	150
Honduras	50	340	.25	1.33	1.3	67	114
Jamaica	84	1,190	.80	5.94	240,000	482	26
Nicaragua I	53	670	2.17	3.96	61,500	41	123
Nicaragua II	53	670	.61	13.37	163,000	41	123
Panama	81	1,000	12.67	24.26	150,000	56	44
<u>AVERAGES</u>	62	582	2.46	6.07	-	158	85

(62)

TABLE A

<u>COUNTRY</u>	III ASIA	<u>PER CAPITA GNP, 1974</u>	USAID's <u>YEARLY FUNDING PER PERSON**</u>	TOTAL <u>YEARLY FUNDING PER PERSON***</u>	<u>TARGET GROUP</u>	POP. <u>PER SQ. MILE</u>	<u>INFANT MORTALITY (per 1000)</u>
	<u>PQLI*</u>						
Korea	80	480	.03	.04	n.e.	337	47
Nepal	25	100	.05	.93	10 mil.	236	169
Pakistan	37	130	3.75	6.32	4 mil.*	207	124
Phillipines (BICOL)	74	330	3.13	12.13	400,000	361	74
Phillipines (PUSH)	74	330	4.21	4.29	340,000	361	74
Thailand I	70	310	.73	6.84	610,323	210	81
Thailand II	70	310	.16	1.99	11.5 mil.	210	81
<u>AVERAGES</u>	61	244	1.72	4.65	-	275	93
	IV NEAR EAST						
Afghanistan	19	110	1.69	2.58	830,000	76	182
Egypt	46	280	.55	n.e.	n.e.	95	98
Tunisia	44	650	3.33	4.50	400,000	91	128
<u>AVERAGES</u>	36	347	2.51	2.86	-	87	136

*- This project is divided into two phases- the first phase has a target group of 4 mil. and 2nd phase
* has 28 mil. Funding for the first phase (target group of 4 mil.) was used in these calculations.

KEY

- * PQLI- Physical quality of life index is based on an average of index ratings for life expectancy, infant mortality, and literacy in the mid-1970's.

- ** The amounts listed were derived by taking USAID's funding (grant and loan included) for the project life and dividing by the project years and the target population to obtain a yearly per capita expenditure. (If the target population was not given, the total country's population was used when a project was national)

n.e. not estimable

I AFRICA

TABLE B - HOST COUNTRY, AID, OTHER DONORS
PROJECT FUNDING EXPRESSED AS A % OF TOTAL FUNDING

% of Total Funding

COUNTRY	HOST COUNTRY	AID'S	OTHER DONOR(S)
Cameroon	85	15	*WHO, UNDP, UNICEF, CIDA, IDRC IBRD, SIDA, EAC, FED, FRG, SWITZERLAND, BELGIUM, CHINA
Cape Verde Islands	25	75	*Spanish Red Cross, UNICEF
Central African Emp.	21	57	11- Peace Corps
Ghana	43	52	5- UNICEF
Liberia I	na	46	*CARE, UNICEF, Peace corps
Liberia II	0	100	none
Mali	18	81	none
Niger	na	13	*Africaire, Peace Corps, Fed. Rep. of Germany, Belgium, Netherlands, OXFAM, SUCO, SIM, EBM, USSR, CHINA
Senegal	25	66	1- Peace Corps
Sudan	0	100	none
Tanzania	88	12	*UN, UNICEF, Sweden, Denmark, Norway, Finland, Netherlands
Zaire	36	64	*WHO
Lesotho	14	65	18- ADB, WHO, UNCDF, UN, UNICEF, OXFAM, UK, EDF

na= not available

*- An estimate of the contributions as a % of the total funding was not available

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TABLE B - HOST COUNTRY, AID, OTHER DONORS
 II LATIN AMERICA PROJECT FUNDING EXPRESSED AS A % OF TOTAL FUNDING

% of Total Funding

COUNTRY	HOST COUNTRY	AID'S	OTHER DONOR(S)
Bolivia I	37	52	11- Santa Cruz Committee of Public Works, Methodist Church
Bolivia II	29	34	31- within community, WHO, PAHO, UNICEF
Brazil	8	30	63 PAHO, State, Local
Colombia I	5	50	none
Colombia II	na	na	*PAHO, UN, WORLD FOOD PROGRAM, CARE, CRS
Dominican Republic I	60	40	none
Dominican Republic II	50	50	none
El Salvador	78	22	*UNFPA, UK
Guatemala	27	73	none
Guyana	44	56	*IDB
Haiti	37	63	*PAHO, DAS, UNICEF, IDB
Honduras	46	44	17- IDB, PAHO, IFFP
Jamaica	87	13	*IBRD
Panama	47	53	*PAHO, IDB, UNICEF

III ASIA

TABLE B
PROJECT FUNDING

% of Total Funding

COUNTRY	HOST COUNTRY	AID'S	OTHER DONOR(S)
Korea	25	75	*World Bank
Nepal	na	8	*UNICEF, WB, UNDP, WHO, UNICEF
Pakistan	na	59	*WHO
Phillipines I	13	60	na
Phillipines II	49	43	na
Thailand	89	11	none

IV NEAR EAST

TABLE B
PROJECT FUNDING

% of Total Funding

COUNTRY	HOST COUNTRY	AID'S	OTHER DONOR(S)
Afghanistan	16	65	*UNICEF
Egypt	na	74	*UNICEF, HOPE, WHO
Tunisia	74	26	none

TABLE C - ESTIMATED COSTS OF TRAINING AND SUPPORT
FOR VOLUNTEER AND AUXILIARY HEALTH WORKERS
IN SELECTED PRIMARY CARE HEALTH PROJECTS

<u>Country</u>	<u>Title of Worker</u>	<u>Training</u>	<u>Salary</u>
Philippines	Barangay Health Assistant	\$ 400	\$ 320/year
Pakistan	Village Health Worker	\$ 200 (3 months) includes \$15/ month allowance	volunteer
Pakistan	Mid-Level Worker	\$ 940 (18 months)	
Niger	Village Health Worker	\$ 150 (15 days), \$50/yr (5 days)	volunteer
	Environmental Health Worker	\$2000 (1 yr.) afterwards	\$1200/year
	Practical Nurse	\$2000 (1 yr.)	\$1200/year
Jamaica	Community Health Aid		\$1600/year
	Midwives		\$3500/year
Brazil	Health Promoter		\$ 450/year
	Multipurpose Auxiliary	6 months	\$1000/year
	Maternal-Child Health Auxiliary	6 months	\$1000/year
Dominican Republic	Promoter	\$ 56 (2 weeks)	\$ 360/year
	Nurse Auxiliary	\$ 56 (2 weeks)	\$1400/year
Cameroon	Mid-Level Worker	\$3000 (1 year)	
	Village Health Worker	\$ 500 (2 months)	

TABLE D

Health Care Personnel
AID Integrated Low Cost Projects
Nutrition Tasks*

LATIN AMERICA

BRAZIL

Home Visitor

1. Weigh 0-5 yr. olds

Auxiliary Worker

2. Promote Nutrition

3. Treat Anemia and Malnourished

4. Demonstrate food preparation
and production

Nutrition Auxiliaries (60)

1. identify and treat malnourished
infants and children

2. provide nutrition education

3. demonstrate basic food prepa-
ration

BOLIVIA

Auxiliary nurses and
promoters

Detect malnutrition

Outreach workers

Provide nutrition services

COLOMBIA

Health Promotoras

(work 1/2 time in the
Colombia Family Welfare
Institute)

*These tasks have been separated from the other health
and family planning tasks.

TABLE D
(Cont'd)

DOMINICAN REPUBLIC

Health Promotoras

1. Capable of providing nutrition education services
2. Encourage and promote bf
3. Refer malnourished children for treatment

*

* Receive 3 week training one-week in recuperation centre

EL SALVADOR

Rural Health Aides

Capable of health nutrition monitoring

GUYANA

Community Health Worker
(1 per 1000 at health post)

Detect nutritional deficiencies and advise mothers of nutritional standards

HONDURAS

Auxiliary nurse midwife

Demonstrate food handling and preparation

Community health workers
(CHW)

Provide nutrition education for pregnant women and other nutrition services

Only midwife

Receives training in breast feeding

JAMAICA

Community Health Aides
(CHA)

Provide nutrition education advice services

TABLE D
(Cont'd)

NICARAGUA

Nurse Auxiliaries

Organize family vegetable gardens,
school gardens

Organize Club Madres for mothers
in instruction in food handling
and preparation

Health promotoras

Breast feeding stressed

PANAMA

Community Health Assistants
(CHA)

Provide nutrition services

(pregnancy and young children)

Develop community gardens and
small animal projects

Promote agricultural technology

TABLE D
(Cont'd)

PHILIPPINES (Cont'd)

BHW

Will weigh, keep records on
basic nutrition information.
Assist with food production
and distribution.

Conduct feeding programs for
1st and 2nd degree malnutrition.

TABLE D
(Cont'd)

AFRICA

CAMEROON

Middle Level health worker Provide basic nutrition services

CAPE VERDE

Health Educators Initiate nutrition education
(community chosen)

CENTRAL AFRICAN EMPIRE

VLHCA - Village Health MCH and nutrition services
Care Agent

Agricultural Extension Promote nutrition and agricul-
agents, Community ture programs. Fish and poultry.
Development Agents

GHANA

(Danfa) Methods for improved nutritional
status in rural communities.

LESOTHO

VHW

Weigh children
Methods of safe food storage

Nurse clinician

1. Gather baseline data
2. Health education
3. Stress the development of
 - a. kitchen gardens
 - b. proper weaning diets
 - c. use of indigenous foods
 - d. diets for pregnant and lactating mothers and preschool children.

TABLE D
(Cont'd)

MALI

VLHW

Village Level health
worker

1. Birth weight census
2. Weight and arm circumference
3. Diagnose and evaluate feeding
and weaning practices
4. Provide iron supplements in
pregnancy
5. DX and refer malnutrition
cases

NIGER

VHT

Village health team
volunteers

Nutrition education

SENEGAL

VHW

Simple nutrition education
Monthly supervision through a
"itenerant agent"

TANZANIA

MCHAS

Maternal Child health
aides

MCH and nutrition education

TABLE E
Regional Frequency of Nutrition and Nutrition-Related Interventions

	Africa		Asia		Near East		Latin America		Overall	
Education	10	77%	6	86%	3	100%	12	75%	31	79%
Breast-feeding	1	8%	1	14%	1	33%	4	25%	7	18%
Weaning foods	2	15%	3	43%	1	33%	1	6%	7	18%
Nutrition	8	62%	6	86%	3	100%	8	50%	25	64%
Home Storage	3	23%	1	14%	2	67%	1	6%	7	18%
Agriculture Extension	1	8%	1	14%	0	-	1	6%	3	8%
MCH	6	46%	4	57%	1	33%	6	37%	17	44%
Mass Media	-	-	2	15%	0	-	3	18%	5	13%
Group Organization	2	15%	0	-	0	-	1	6%	3	8%
Data Gathering/Case-finding	7	53%	5	71%	3	100%	10	62%	25	64%
Screening	0	-	4	57%	1	33%	4	25%	9	23%
Weight Charts	2	15%	2	29%	0	-	0	0	4	10%
Surveys	0	-	2	29%	0	-	1	6%	3	8%
Surveillance	4	31%	3	43%	0	-	8	50%	15	38%
Baseline Data	4	31%	4	57%	2	67%	3	20%	13	33%
Preventive Measures	10	77%	6	86%	3	100%	11	69%	30	77%
Disease Control	1	8%	2	29%	2	67%	7	44%	12	31%
Immunizations	4	31%	5	71%	2	67%	10	62%	21	54%
De-parasitization	0	0	-	-	1	33%	0	0	1	3%
Water Supply	3	23%	3	43%	1	33%	6	38%	13	33%
Sanitation	10	77%	2	29%	0	0	9	56%	21	59%
Family Planning	5	38%	5	71%	3	100%	8	50%	21	54%
Food Interventions	3	23%	2	29%	1	33%	3	19%	9	23%
Fortification	-	-	-	-	-	-	0	0	-	-
Supplementation	-	-	-	-	1	33%	3	19%	4	10%
Maternal	1	8%	1	14%	2	67%	3	19%	7	18%
Infant	1	8%	4	57%	-	-	2	12%	8	21%
Weaning Foods	1	8%	-	-	-	-	0	-	1	3%
New Foods	0	-	-	-	-	-	1	6%	1	3%
Improved Processing	0	-	-	-	-	-	-	-	-	-

(77)

TABLE E

	Africa (13)		Asia (7)		Near East(3)		Latin America (16)		Overall	
Food Production	2	15%	-	-	-	-	-	-	2	5%
Gardens	1	8%	1	14%	-	-	3	19%	5	13%
Small Animals	1	8%	-	-	-	-	3	19%	4	10%
Fish Ponds	1	8%	-	-	-	-	-	-	-	-
Participation	1	8%	5	71%	2	67%	6	37%	14	36%
Government	1	8%	4	57%	2	67%	5	31%	12	31%
Community	1	8%	3	43%	2	67%	3	19%	9	23%
Curative Services	4	31%	6	86%	3	100%	12	75%	25	64%
Referral	2	15%	5	71%	2	67%	10	62%	19	49%
Rehabilitation	-	-	4	57%	-	-	1	6%	5	13%
MCH Clinic Services	3	23%	6	86%	3	100%	4	25%	16	41%
Evaluation	5	46%	5	-	1	33%	10	62%	21	53%
Infrastructure Development	3	23%	5	71%	3	100%	12	75%	23	59%
Logistics	1	8%	4	57%	2	67%	9	56%	16	41%
Communication	1	8%	1	14%	1	33%	2	12%	5	13%
Supervision	1	8%	4	57%	2	67%	4	25%	11	28%
Management	2	15%	5	71%	3	100%	11	69%	21	54%
Standard Operating Process	1	8%	1	14%	1	33%	2	12%	5	13%
Research	1	8%	2	29%	1	33%	4	25%	8	21%

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TABLE F
SUMMARY TABLES OF PROJECTS IN VOLUME I
AID INTEGRATED LOW COST HEALTH,
NUTRITION AND POPULATION PROJECTS

TABLE F

AFRICA

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
CAMEROON PID MEDCAM	14.9 (grant)	1979-1983	*ne	National	Extension of rural health services through three tiered workers to be trained in two centers (Yaunde & Douala).	Middle level health workers will be trained to provide basic nutrition services.
CAPE VERDE ISLAND BASIC RURAL HEALTH SERVICES	1.5 (grant)	1979-1981	240,000	National	Expand and improve capability to deliver basic health services.	Health Educators in the basic rural health centers initiate, within the community, nutrition education (trained by UNICEF and chosen by the community).
CENTRAL AFRICA AFRICAN EMPIRE: (OUHAM PROVINCE) RURAL HEALTH	1.7 (grant)	1977-1980	350,000	Regional	Health Management and Training Village health education rural sanitation and basic Village Level Health Care Agent (VLICA).	VLICA provides MCH and nutrition services. Agriculture extension agents and community development agents promote nutrition and agriculture programs. PHBO develop fish and poultry programs.

*Not estimatable

These workers are chosen by the village. Prefectural Base Health Office (PHBO) uses data collection and analysis as an evaluation technique for health education.

TABLE F

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
GIANA DANFA Rural Health/ Family Planning	3.03 (grant)	1976-1979	*ne	Regional	Investigate factors associated with health and family planning. Train health workers. Demonstrate cost effectiveness of the health care programs. (integrated family health planning.)	<u>Project III Outputs</u> Methods for improvement of nutritional status in rural communities.
LESOTHO RURAL HEALTH DEVELOPMENT (MEDEX)	3.2 (grant)	1977-1981	1.1 million (rural)	National	To upgrade management competence, planning and administration and set the stage for new health workers. (Medex and Village health workers)	VIW trained in basic MCH tasks such as: <ol style="list-style-type: none"> 1. weighing of children. 2. methods of safe food storage. 3. Nurse clinician will be able to gather base-line nutrition data from community health education duties. 4. Stress the development of: <ul style="list-style-type: none"> Kitchen gardens, proper weaning diets, use of wild foods, diets for pregnant and lactating mothers and preschool children.

TABLE F

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
LIBERIA PID INTEGRATED NATIONAL HEALTH SYSTEMS	4.1 (grant)	1978-1982	*ne	National	Establish a rural integrated national health system assisted by linkage with a US medical center and the John F. Kennedy National Medical Center in Liberia.	Special health manpower training project output did not define nutrition activities.
LIBERIA LOFA COUNTY RURAL HEALTH	1.5 (grant)	1975-1979	155,000	Regional	Develop test and institutionalize a network of health post centers and hospitals through trained para-medical personnel to deliver improved health services.	Not stated. "
MALI RURAL HEALTH SERVICE DEVELOPMENT	4 (grant)	1977-1980	3/6 Regions	*one arrondissement in each of the 3 selected regions	<ol style="list-style-type: none"> 1. Bring health service to village level. Emphasize health promotion and disease prevention. 2. Integrate with agriculture and education. 	<ol style="list-style-type: none"> 1. Birth weight census. 2. Wt. and arm circumference of infants and young children. 3. Diagnose and evaluation of feeding and weaning practices. 4. Iron supplements in pregnancy. 5. Diagnose and referral of malnutrition.

*arrondissement = 20-40 villages.

TABLE F

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEAR)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
NIGER IMPROVEMENT RURAL HEALTH	13.3 (grant)	1978-1982	3,500 villages	Regional	Establish rural health delivery system through volunteer village health team (VHT) with 2 health matrons (midwives) 2 village leaders and an administrative committee. Provide training and institution support.	VHT will do nutrition education.
SENEGAL RURAL HEALTH SERVICE DEVELOPMENT	3.3 (grant)	1977-1980	2,884 (Sine- Saloum Region)	Regional	Create staffed village health posts through a village Hut network. VHT community involvement (major) (emphasis is training).	Simple nutrition education by VHT. Monthly supervision through an "Itinerant Agent".
SUDAN HEALTH SERVICE DELIVERY PID STAGE	21.8 (grant)	1978-1983	N.E.	Rural Nationwide	Improve Rural Health delivery. Provide basic health care. Improve nutritional status of mothers, infants and preschool children.	Not defined.
TANZANIA MANPOWER TRAINING PROGRAM FOR MATERNAL & CHILD HEALTH AIDES	10.8 (grant)	1973-1982	13 million (90% of rural population)	National	Train maternal child health aides (MCHAs) capable of providing comprehensive MCH & spacing services to the rural population.	MCHAs provide MCH services and nutrition education.

TABLE F

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
ZAIRE BASIC FAMILY HEALTH SERVICES	2.6 (grant)	1979-1981	Fertile women and children under 5 years.	1.2 million	Develop basic family health services.	Not defined.

ASIA

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
KOREA Health Demonstration Loan	5.0 (loan)	1976-1981	Not estimable	National	Establish a Korea Health Development Corporation to plan, conduct and evaluate low cost integrated health delivery projects. (Will make use of physician extenders 13-15,000 persons per extender)	Basic services by the auxiliaries will incorporate nutrition and MCH Services.
NEPAL Integrated Health Services Reorganize Basic Health Services	2.2 (grant)	1976-1979	Entire Population 10 million	Nationwide	To assist IMG of Nepal to develop the management control & training capacity for operational Integrated Basic Health Services.	The auxiliary midwife, health assistant and auxiliary health worker provide PCM surveillance services.
PAKISTAN Basic Health Services	15.0 (loan)	1977-1979	phase 1 4 million phase 2 28 million	Phase 1 regional (4 prov- inces)	To develop a functioning system of operational integrated rural health complexes (IRHCs) through use of basic health units, (BHU) and develop mid level health workers as well as community health workers.	Community health workers (CHW) would be concerned with the most severely underweight infants. Home visits 2 hrs/day where she weighs all children 6 mon to 3 yrs to detect early malnutrition as well as other health duties. Will also talk to mothers about infant feeding, food storage and handling. BHU will organize a special care file which will include underweight children.
PHILIPPINES BICOL Integrated Health, Nutrition and Population Project	2.5 (loan)	1979-1981	400,000	Regional (29% of rural population)	<ol style="list-style-type: none"> 1. Create an effective rural social services delivery. 2. Improve sanitary environment and household water supplies. 	<ol style="list-style-type: none"> 1. Expand and equip malnutrition centers. 2. Promote nutrition oriented food production programs e.g. backyard livestock & gardens.

(85)

TABLE F

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
PHILIPPINES BICOL (Cont'd)						<p>3. Identify malnourished cases & refer pregnant women to prenatal care facilities. Assist in educational efforts through use of barangay nutrition scholars at the village level.</p> <p>4. Assist in operation Tim-bang & distribute PL 480 food commodities.</p>
PHILIPPINES Panay Unified Services for Health (PUSH)	5.4 (loan) 0.32 (grant)	1978-1982	340,000	Regional	Strengthen regional health systems to deliver integrated services to the barangay level. Train Barangay health workers (BHW).	<p>BHW, along with other duties, will weigh, keep records, basic nutrient information. Assist with food production and food distribution. Conduct feeding programs for children with 1st & 2nd degree malnutrition and refer to rehabilitation children with 3rd degree malnutrition. Establish Barangay nutrition outreach service centers.</p>
THAILAND Lampang Province Project (DEIDS Sub- Project)	\$1.78 (grant)	1974-1981 (Funds end FY 1978 Phase III)	610,323 persons	Regional	Low cost, integrated health delivery system for fertile women and children under 6 years. Replicability without external assistance will be a key objective.	<p>Health subcenter (SC) to establish a child Nutrition Center (CNC) under aegis of an already established governing structure (such as village council.) Health post worker assists in feeding programs and provides food supplements. Agriculture promotion officer will augment food production techniques in the villages.</p>

TABLE F

4

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
THAILAND Rural Primary Health Care Expansion (Medex)	5.5 (loan)	1978-1981	11.5 (27%)	Regional	Improve primary care delivery through strengthened and innovative training. Nurses -- nurse practitioners.	Train 180 child nutrition attendants for child nutrition centres. VHV (Village Health Volunteer) will provide nutrition education. Auxiliary midwife provides nutrition education and teaches food preparation techniques.

(87)

LATIN AMERICA

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
BRAZIL Integrated Health Delivery Systems	7.6 (loan)	1974-1978	less than 3 million	Regional	Field test multipurpose, low cost services in 3 regions.	Home visitor in Minas model capable of weighing all children 0-5 yrs., and promoting breast feeding, child care, and nutrition. The auxiliary worker provides anemia and malnutrition treatment, infant care promoting nutrition, and food preparation, and production demonstrations. In the other two regions, nutrition auxiliaries (60) identify and treat malnourished infants and children, provide nutrition education, and basic food preparation.
BOLIVIA Rural Health Service Delivery	.2 (grant)	1976-1978	35,000	Four rural communities in Montero	Plan and implement a pilot rural health delivery system (RHDS)	Auxiliary nurses and promoters are trained to detect malnutrition. Outreach workers are capable of providing nutrition services.
BOLIVIA Rural Health Delivery Services (Loan) Project Paper not submitted	4.2 (Loan) 1.7 (Grant)	1978-1981	800,000	Regional	Strengthen planning and administrative capacity of MOH to deliver a rural health delivery system (RHDS)	The district health center hospitals (DHCH) will administer nutrition services. The mobile health units will provide nutrition information and services. Community Garden development will be financed under the project. Mothers clubs will use these for food needs as well as provide nutrition and other types of information.

(88)

TABLE F

2

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
COLOMBIA	942,970 (Grant)	1975-1978	90,000	Regional (5 barrios in Cali)	Establish a low cost integrated health delivery system replicable throughout Colombia.	Epidemiological research to determine the efficiency of the PRIMOPS model for alleviating the incidence and prevalence of malnutrition. No other information.
COLOMBIA Health Sector Loan II	17.3 million	1975-1978	Not Defined	Not defined	Expansion of GOC in the exten- sion of public health services especially MCH sanitation, disease control and eradication.	Health promotoras are assigned half time to the Colombian Family Wel- fare Institute (ICBF) Nutrition program. Role is not defined. Supplemental feeding programs are also proposed.
DOMINICAN REPUBLIC Health Sector Loan II	7 million	1979-1983	175,000	Regional	(1) Provide potable water for 1/4 of the communities served by the program. (2) Expand health services and provide additional training to health promotoras.	Health promoters are capable of providing nutrition education ser- vices.

(89)

TABLE F

	COSTS MILLION \$	PROJECT LIFE (YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
DOMINICAN REPUBLIC Health Sector Loan II	4.7 (Loan)	1976-1979	1.8	Regional	<ol style="list-style-type: none"> (1) Reduce under 5 mortality (2) Improve management and planning of SESPAS (3) Develop Nutrition programs for improving nutritional status of the population. 	<p>Health promoter encourages and promotes breast feeding; instructions in weaning practices; refer malnourished children for treatment. Training of promoter will include a one week (1.3 of training) in a recuperation center for instruction on appropriate child feeding practices.</p> <p>Secretariat of Agriculture will organize an office of Nutrition Coordination (ONC)</p> <ol style="list-style-type: none"> (a) for policy and projects such as research determinants of malnutrition, cost effective programs, food relief, and food beliefs and practices. (b) Also develop nutrition education program through media, professional training and community education seminars. (c) Nutrition recuperation programs (5) for demonstration and training (d) Develop low cost commercial supplements for children zero to 2 yrs. and pregnant & nursing mothers. Feasibility study will be undertaken first.

TABLE F'

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
EL SALVADOR Rural Health Services Delivery	.6 (Grant)	1978-1980	210,000	Regional	Provide technical assistance and support to GOEC and MOH to institutionalize its Rural Health Aide (RHA) training activity	RHA will be capable of health/nutrition monitoring
GUATEMALA	.93 (Grant) or .9 (Grant)	1976-1981	No new services	Nationwide Rural	Evaluation	Methodology and content to be evaluated, not stated.
GUYANA Rural Health Systems	2.6 (Loan)	1979-1981	312,000 (39% of total population)	Regional	(1) Design low cost health delivery system for interior (2) Train minimum of 240 community health workers (CHW) and 154 Medex workers.	CHW will detect nutritional deficiencies and advise mothers of nutritional standards as well as carry out other health duties. ICHWs will have access to 1,000 persons at a health post.
HAITI Rural Health Delivery System	1.7	1978-1982	3 million (56% of total population)	National	(1) To implement an integrated affordable regional, rural health system for 70% of the population. (2) Nationwide malaria program.	Not defined. Nutrition interventions will be developed within the MOH or the department of Agriculture.

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
HONDURAS Integrated Rural/	1.3 million	1976-1980	1.3 million	Not defined	To increase GON capacity to provide effective fertility control, MCH and other basic health services.	Auxiliary nurse, midwife and community health workers will demonstrate food handling and preparation techniques. They will be capable of providing nutrition education for pregnant women and other nutrition services. Only the midwife receives training in breast feeding.
JAMAICA Health Improvement of Young	.4 (Grant)	1976-1978	250,000	Regional	Improve Cornwall county primary health care delivery systems by facilitating and evaluating expansion of clinic base services, and develop a decentralized administrative capacity.	CHA (Community Health Aides) and DMS will be trained to provide nutrition education and advice services.
NICARAGUA Rural Community Health Services	.4 (grant)	1975-1978	61,500	Regional	To provide health education services and simplified medicine to rural isolated areas through low-cost community health workers; to involve the rural population in the leadership of health programs; integrate services of PVO and GON.	Organize family vegetable gardens, school vegetable gardens and clubs de Madres for instruction in food handling and preparation. Breast feeding will be stressed by the health promoters.
NICARAGUA a) Rural Health Institutional Development	5 million (grant and loan)	1976-1981	163,000	Regional	Extend, improve and integrate rural health coverage	Training programs for nurse auxiliaries to include a nutrition component for improving nutrition during pregnancy and infancy and childhood. The rural CHC will support the development of community gardens.
b) Rural Health Services Loan		1976-1981	163,000	Regional		

TABLE F
(Cont'd)

	COSTS MILLION \$	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
PANAMA Rural Health Delivery System	9.5 (Grant)	1976-1981	150,000 (in 225 rural communities)	Regional	Provide preventitive and curative health care and adequate health trained assistants and nurse auxiliaries and environmental sanitation to marginal rural population.	Health assistants will be visited periodically by agronomists, nutritionists, etc. from the health centre or hospital The community health assistants will be trained to provide nutrition services (includes nutrition during pregnancy and for young children.) Develop community gardens and small animal projects to improve nutritional intake of rural populations. Promote agricultural technology.

NEAR EAST

	COSTS MILLION	PROJECT LIFE (FISCAL YEARS)	TARGET GROUP	COVERAGE	PURPOSE	NUTRITION COMPONENT
AFGHANISTAN Basic Health Services	4.2 (Grant)	1976-1979	830,000	50 minor civil divisions	Provide basic health services, especially to women and children through training & improved services	Proposed nutrition outreach programs, nutrition education, and nutrition services (de- worming)
EGYPT Improvement of Rural Health	8.5 (Grant)	1977-1981	No projection	Field test in eight selected districts	Field test models of rural health delivery streamlining managerial and motivational factors.	Not completely defined. Field test subject areas may include nutrition education, routine infant nutrition checks, nutri- tion services. Nutrition training, and research activi- ties have been proposed for The Nutrition Institute.
TUNISIA Rural Community Health	4.0 (Grant)	1977-1980	400,000	Regional	Restructured primary care man- power training; improved facil- ities & equipment; integrated preventive & curative primary health services.	Nutrition and Hygiene Education

APPENDIX G

DEFINITIONS OF NUTRITION INTERVENTIONS

Breast-Feeding means that breast-feeding instruction and motivation is included in the program.

Weaning refers to instruction and motivation about foods (types, preparation, etc.) which should be fed during the first two years of life.

Nutrition Education is any activity which increases knowledge or promotes a more favorable attitude toward good nutrition in the target population.

Weight Charts are used to evaluate childhood growth and are also used as an educational device (includes anthropometric as well as health data).

Maternal Supplements refers to supplements to offset common deficiencies, for example, iron, protein, and/or calories, vitamin A, and, in some areas, iodine, thiamine, niacin, and folic acid, in the pregnant and lactating mothers in vulnerable groups.

Infant Supplements include protein, vitamins, minerals, and total caloric supplements for infants and young children.

Weaning Foods is the development of a desirable weaning food mixture that can be made available to vulnerable groups through the health center as well as commercial means.

Dietary Fortification is the addition of nutrients such as iodine or iron to food staples to be consumed by an entire population. Fortification is most appropriate when the deficiency is wide-spread in the population and the nutrient is not readily available in locally produced and acceptable foods.

Immunization is group-specific (usually six-weeks to two year olds) immunization against common childhood diseases such as measles, whooping cough, diphtheria, tetanus, and poliomyelitis.

Disease Control refers to the control of malaria and other environmentally determined diseases which impact on nutritional status. Includes deworming and anti-diarrheal programs.

DEFINITIONS OF NUTRITION INTERVENTIONS
(continued)

Water Supply is the provision of clean water to the community or household.

Sanitation refers to disposal of human feces before the earth and water supply are polluted.

Family Planning refers to educational activity, referral to family planning clinics and distribution of birth control devices. Broadly defined here as a nutrition intervention because child spacing has a clear impact on child nutrition.

Community Participation refers to community organization or club organized for health purposes. A peer group is important because of possible peer support for new food and health habits.

Mass Media means primarily use of radio for education. Other media include posters, puppet theaters, actor or song troupes, and newspapers.