Community Impact

of PVO Child Survival Efforts: 1985 – 1994

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Conference Proceedings

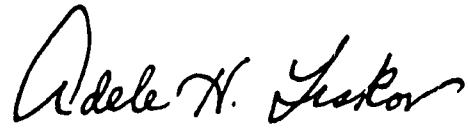
Preface

The 1994 Worldwide Impact Conference was convened by USAID in order to demonstrate the impact of the Child Survival grant program for PVOs since its initiation in 1985. The conference was devoted to discussing impact, in terms of changes, in disease cases and deaths; mothers' protective child health practices; immunization and vitamin A coverage; and costs of sustaining child survival interventions.

Conference presentations documented that PVOs, through their diversity of background and experience, are providing innovative cutting-edge inputs into improving the health, child survival, and quality of life of vulnerable populations. Their strength emanates from a decentralized, community-oriented approach and from their underlying commitment to address the issues of equity through their diversity of focus, size, human resources, and operational strategies.

Assuming an average project size of 30,000, the PVO Child Survival Grants Program has directly affected an estimated 6 million people during the past decade. Considering the underlying mortality risks averaging 160 deaths per 1,000 births, average project life of six years, and the well-documented ability of PVOs to increase coverage, add interventions, and increase quality, it is estimated that the 200 projects' efforts have halved under-5 mortality in target populations and prevented 135,000 under-5 deaths. Indirect benefits in terms of sustainability and replicability would further increase that number.

The strong conclusion of this conference is that PVOs now have the capacity to absorb more USAID funding for programs that promote community participation, partnership, and empowerment.



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PART ONE

Impact on Mortality, Morbidity, and Nutritional Status

Estimating the Infant/Child Mortality Impact of a Bolivia Child Survival Program

Abstract

This paper describes the impact of Andean Rural Health Care's (ARHC) Bolivia Child Survival program on the rates of infant and childhood mortality. Four years of mortality data (1990-1993) from three Child Survival programs were pooled and compared with data from two geographically adjacent (control) service areas and, separately, with available Bolivian mortality data. Analyses suggest that the infant mortality rate has been lowered by 36 percent when contrasted with the control areas. Among children less than 5 years of age, the mortality rate has been reduced by almost one-half (49 percent) when contrasted with the control areas, and by 35 percent when compared with similar areas in Bolivia (available in published reports). These latter two results are statistically significant.

The child survival interventions which contributed to these reduced mortality rates are discussed in light of the results. The strengths and limitations of the analyses and interpretations also are presented. Taken as a whole, these data provide highly suggestive evidence that child survival has been improved through ARHC's application of its census-based, home visitation Child Survival programs.

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Introduction

The assessment of the impact of health programs on the well-being of participants is a crucial step to ensure the delivery of cost-effective programs, whether in industrially developed nations, or in the developing world. The desired outcomes of the alleviation of suffering, improved health, sense of well-being, and improved economic productivity are goals of all health care interventions. Most often, program managers perceive the measurement of health outcomes unnecessary because of their implicit faith in the efficacy of services being provided, or because they perceive the necessary studies as beyond the resources of their programs. In the latter case, program managers may resort to measures of "process" (for example, number and quality of services delivered, or number of patients treated) as acceptable proximate measures of program effectiveness. Even when it is possible to collect and analyze more conclusive "impact" data, we must recognize that these data are, too, proximate in nature. The averting of death is certainly one such measure, which at best, must be described as a crude measure for improved health, well-being, and productivity of the individual or community. Nevertheless, such measures are essential to demonstrate the efficacy and cost-effectiveness of individual programs.

The methodology of Andean Rural Health Care (ARHC), a private, nonprofit organization working in Bolivia, South America, integrates the collection and analysis of process and outcome data in its health programs as a crucial component of a community-based approach to health care. Such data help to target scarce resources to the principal preventable causes of illness and death, and also ensure program accountability. Program staff and leadership know that they are able to demonstrate the efficacy of the work, both to service participants and to agency donors. These data are used on an ongoing basis to review program progress and, more importantly, identify problems or weaknesses which need to be resolved.

Because of the difficulties inherent in the study of mortality, relatively few United States Agency for International Development (USAID) funded Child Survival programs have collected mortality data, and fewer have reported results. Such difficulties include a general lack of high quality vital events data for defined populations, a lack of comparison or control group data, and insufficient numbers of deaths within relatively small service areas to permit adequate statistical tests of differences. Often, when mortality data are collected, a retrospective survey approach is taken, leading inevitably to underestimates of mortality, due to the inherent limitations of this methodology.

Within the USAID Child Survival (CS) Program, a minimal amount of data have been reported. In the evaluation of the Northern Pakistan Primary Health Care Program managed by the Aga Khan Health Service, infant mortality data for one local service area reflected a striking drop, from 155 per 1,000 live births in 1986 to 47 in 1990.[1] The authors report that the baseline rate may be suspiciously high, and the small number of deaths precluded tests of statistical significance. Save the Children and World

Vision both are reported to have collected mortality data, but these authors have not seen reports describing them.[12]

In the USAID-funded CCCD project (Combating Childhood Communicable Diseases), a multi-year project conducted in several African nations during the mid-1980s, mortality rate impact was reported for country initiatives in Liberia and Zaire.[13,14] The proportion of children (<5 years of age) dying declined by 17 percent in Zaire and by 32 percent in Liberia.[13] Severe methodological problems were reported in the collection of the mortality data, which utilized a retrospective survey approach.[14]

Reports of longitudinal field programs assessing overall child mortality impact are surprisingly few.[15] The Matlab, Bangladesh, Program of the International Centre for Diarrhoeal Disease Research reported an approximately 10 percent reduction between 1981 and 1987 as a result of controlled maternal and child health interventions.[8,9] In the Jamkhed, India Comprehensive Rural Health Care Project, the infant mortality rate has apparently been gradually reduced over more than a decade, from 120 per 1,000 live births to the low 20s, through simple preventive and curative services provided mostly by low-caste and illiterate women selected by the villages.[10,11]

Several programs in Africa have reported substantial declines in child mortality rates following the introduction of relatively comprehensive primary care and child survival services. In Mlomp, Senegal, the percentage of children dying before the age of 5 fell from 37 percent to 8 percent over a 15 year period following the introduction of basic health services.[12] In four villages in the West-Kiang district of The Gambia the percentage of children dying before the age of 5 fell from 49 percent to 11 percent over several decades as a result of primary care and child survival activities.[13] In Niakar, Senegal, the percentage of children dying before the age of 5 fell from 50 percent to 16 percent following the introduction of child survival and primary care services.[14] It is important to note that all of these programs demonstrating improvements in child survival provided relatively comprehensive primary care services along with specific child survival interventions.

During the 1970s and 1980s, several field studies were published demonstrating impacts on infant and childhood mortality as a result of selected, targeted low-cost child survival interventions.[15-18] There also have been a number of community field trials assessing the impact on child mortality of vitamin A supplementation[19-22] and antibiotic treatment of acute respiratory infection.[23-30] While most (although not all) report favorable mortality outcomes, one must remember that these studies report the results of clinical field trials of closely supervised and monitored single interventions. They are therefore not representative of more routine program implementation. There is a clear need to strengthen the assessment of the impact of Child Survival programs as they operate in the real world, evaluating the overall impact and cost-effectiveness of the entire primary health care program.

There are a number of methodological issues which must be considered before a study of mortality is feasible. Clearly, in order to calculate mortality rates, one must have accurate data on the population of a program area by age and sex. Furthermore, one must have an accurate count of the deaths by age and sex. In developing countries, this is a very difficult task. Population data in such settings usually do not exist. If they do, more often than not, they are based on national censuses which are outdated or inaccurate. Furthermore, the overwhelming majority of deaths take place in the home without any formal and direct contact with the existing health system.

Those with extensive field experience believe that retrospective household surveys do not provide a satisfactory degree of accuracy, particularly during the neonatal period.[31] Ideally, the classic randomized, controlled study methodology would serve best. Yet, in the world of program operations, this is not only difficult, it is, practically speaking, impossible. A more realistic approach is found in the quasi-experimental design literature.[32] In this vein, Chen[6] (pages S76,S80) suggests that "the ideal design for evaluating an intervention would include an estimate of the long-term trends occurring previously in the same population, a documentation of the changes in mortality during and immediately after the intervention over a period of say five years, a control group, and perhaps data on causes of death that were targeted by the intervention. All these conditions are rarely met, and conclusions are usually based on partial information .... Even this method is subject to a host of limitations as control and intervention areas can never be fully matched for all confounders."

In the developing world, the rarely attainable "gold standard" for the measurement of mortality rates is the prospective identification of all residents in a defined geographic area, and the registration of vital events (births, deaths, and migrations).[7] This is best achieved by means of ongoing visitation of all homes in the given area by persons who are known and trusted by household members. All other approaches, such as retrospective household surveys carried out by people not previously known to household members, and indirect approaches such as the previous birth technique developed by Brass and McRae, are potentially biased and appear to yield consistent underestimates of mortality rates because of under or inaccurate reporting of deaths by family members.[7,31]

In most areas of the developing world, infant and childhood mortality rates are slowly improving in the absence of specific program interventions, as a result of improved standard of living. This complicates the interpretation of the underlying causes for changes in death rates, especially in a local program evaluation context. Bolivia is no exception to this rule. During the past 40 years, infant mortality rates have dropped from 151.2 per 1,000 live births (1950) to 90.7 (1990).[33] During the same time period, under-5 mortality rates decreased from 252.5 (1950) to 126.9 per 1,000 children (1990). More recently, the National Demographic and Health Survey reported the following:

Selected Bolivian infant and child mortality rates, Demographic and Health Surveys, 1987, 1989, and 1992

Mortality rates	1988	1989	1992
Infant	98	89[1]	75
Infant, urban		69	
Infant, rural		106	
Child(<5 years)	150	131[1]	116
Child, urban		114	
Child, rural		168	
Child, parent speaking a native language		186	
Child, mother's education <6 years		162	
Child, father's occupation agricultural		177	

1987, 1992, Preliminary Report, DHS, 1994
1989, Sommerfelt, et al., 1991

[1] *These figures are based on the previous five years of survey data, 1984-88. The remaining figures are based on the previous 10 years 1979-88.*

These data are based on a nationally representative sample of 7,923 women 15-49 years of age who were interviewed in Bolivia between February and July 1989. The information is based on the retrospective reporting of all live births during the preceding 10 years. Of particular note to this report are the significant differences in mortality rates based upon selected socio-economic factors such as education, language spoken in the home, and urbanicity. In a recent study by Kees De Meer, et al., determinants of child mortality were assessed in areas geographically close to ARHC's altiplano service areas.[3] Among other findings, they report differential rates of perinatal and neonatal mortality across Quechua and Aymara communities which may be accounted for, at least in part it is suggested, by different cultural perceptions and practices regarding infanticide. He also mentions the difficulty of data collection in these populations due to a natural suspicion of outsiders.

Of course, we know that a host of other socioeconomic factors may directly influence infant and under-5 mortality rates, such as inadequate nutrition, poor hygiene and sanitation, inadequate water supply, altitude, and size of community, among others. Maternal factors also are important and may include age, parity, gestational age, and pre-pregnancy weight.

ARHC program intervention

ARHC health program activities in Bolivia began in 1983, and have grown incrementally during the past decade. At the present time, ARHC is working in five distinct service areas: two rural service areas are located on the Bolivian high plains ("altiplano"), two rural service areas are located in the mountain valleys, and one is located in a peri-urban slum of a rapidly growing city in the lowlands (Amazon basin) of Bolivia. Both altiplano areas are populated by Aymara Native American populations who maintain a subsistence life style based on agriculture and limited domestic livestock production. The mountain valley service populations are almost all Quechua Native American, who also depend upon agricultural and livestock production for their livelihood. The urban population of the ARHC lowlands program area also are primarily Quechua who have migrated from the high mountain valleys in search of more favorable economic opportunities.

Current ARHC health services include primary health care available to all individuals in the five service areas, basic maternal health and child survival services, and selected health-related development projects, particularly in water and sanitation. Current basic maternal health and child survival services include reproductive health education and services; prenatal health care; assistance during child birth; immunizations; growth monitoring; education about health, nutrition, hygiene, and sanitation; nutrition rehabilitation for malnourished children; treatment for infectious diseases, such as acute respiratory infections and diarrhea; acute curative services; and referral for more specialized care when necessary.

Program services are provided primarily during home visits made by full-time, paid auxiliary nurses and/or part-time community health volunteers. These staff members are supported by physicians and mid-level health professionals located in project health clinics or small hospitals. All homes in ARHC service areas are visited at least once annually, the frequency of additional visits dependent upon the risk profile of individual households. Households with children under 2 years of age are scheduled to be visited at least every two months, and households with children aged 3 to 5 years are scheduled for home visits at least every four months. Households with women of child-bearing age are scheduled to be visited at least every four months. Families with sick individuals are visited more frequently, based on need.

It is during these home visits that the vast majority of the above described services are provided. Mothers and children also are reached through "group concentrations" (scheduled community group education activities primarily for mothers) and through participant visits to central clinics or small hospitals located in each of ARHC's service areas. Cases which require more specialized services are referred or transported to urban hospitals with whom ARHC maintains written agreements.

The ARHC health care model may be described as "census-based, impact oriented." For each service area where ARHC maintains a presence, a written agreement is signed with the Bolivian Ministry of Health (MOH) to be the primary provider of health and child survival services. MOH staff and materials are incorporated in ARHC programs to minimize duplication or potential overlap of services. Censuses are conducted, area maps prepared, and houses numbered. During the census process, basic socioeconomic data are collected on each household, and vital events registries are begun. Thereafter, vital events are recorded on an ongoing basis. Community perceived priorities for health care services are ascertained. These, together with the epidemiological data, provide the basis for establishing program priorities. Capable and interested persons living in the project areas are identified early on and trained, usually in MOH-sponsored programs. These individuals then become the primary providers of health services at the household and community level. Thus, ARHC involves local community members from project inception, enhancing community acceptance of, and participation in, project activities.

ARHC staff are trained to collect data and analyze them. A health information system designed on site is used to record basic information for project reporting and evaluation purposes. Monthly reports are completed on site, field staff meetings to discuss analyses are frequent, and annual evaluations are fully participatory. On an annual basis, project priorities are reassessed, and new project work plans are established which reflect these new priorities. The participatory, community-focused process of the provision of basic health services (including ongoing data collection and evaluation) through home visitation ensures high levels of coverage, equity of service delivery, community trust, staff awareness of community health issues, staff willingness to openly and critically discuss local project strengths and weaknesses, and community participation. Over 10 years of experience in the field have now convinced ARHC leaders and staff that responsiveness to local community health priorities through a comprehensive primary health care program is the only feasible way to ensure lasting health benefits and sustainability (both in long-term institutional and financial terms) while at the same time including the community in the process.

Methodology

Exhibit 1 graphically summarizes the introduction and expansion of health services for each of ARHC's five service areas. Additionally, the years for which mortality data are available are indicated. As may be seen, reliable mortality data became available in 1990, after several years of initial service in ARHC's "established" sites of Carabuco, Mallco Rancho, and Montero. ARHC's "new" sites of Ancoraimes and Sipe-Sipe began activities during 1992, and it is during this first year that mortality data were collected prospectively. For the reported analyses here, these latter two sites serve as "controls," while the former three serve as established intervention sites.

Ancoraimes is geographically adjacent to Carabuco on the altiplano, and is similar to Carabuco culturally, economically, and climatically. Sipe-Sipe is located adjacent to the Mallco Rancho service area, and also is similar culturally, economically and climatically to its neighbor. In both cases, health services offered by the MOH prior to entrance of ARHC were sporadic, extremely limited in number, and were largely clinically based.

For the three established areas, data are available for a four year post-intervention period (1990-1993) but not for an initial baseline. In the adjacent control service areas, however, in which activities began recently (1992), it was possible to start with home visitation, vital events registration, and community censuses in some of the communities. These control area data reflect mortality for an area geographically proximate to ARHC's intervention sites and socioeconomically similar. Thus, the analysis reported here uses quasi-experimental, post-test only design with non-equivalent control group pre-test.

In addition to the control site data, we reviewed existing data available from public sources, most notably the Household Demographic and Health Surveys (DHS) of 1987, 1989, and 1992.[15,16]

A 95 percent confidence interval (CI) was calculated for the odds ratios of mortality rates estimated for: 1)the three established intervention sites; 2) the two control sites; and, 3) a composite mortality rate based on the 1989 Bolivian Demographic and Health Survey data.

Generally, confidence intervals are based on sampling theory. In the cases of the intervention and control sites, we are not dealing with samples, but rather with total service popula-

EXHIBIT 1
Duration of ARHC program services, and years for which mortality data are available

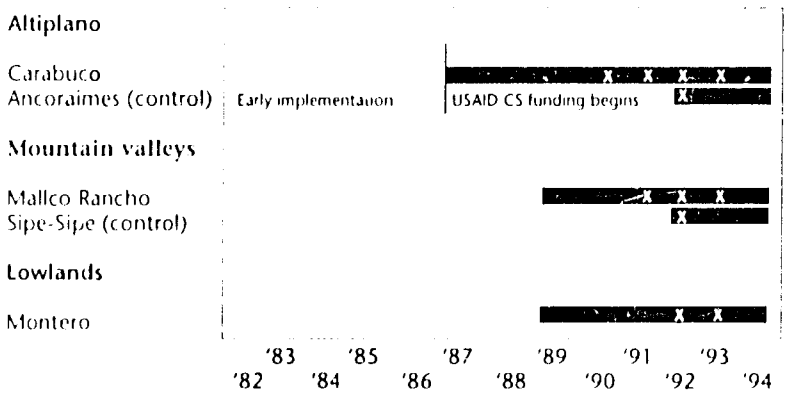


EXHIBIT 2
Death and population data for ARHC's three established program sites

Rates by age category	Carabuco '90	'91	'92	'93	Mallco Rancho '91	'92	'93[1]	Montero '92	'93	Total	Pooled mortality rates
0-11 months											
# deaths	13	25	19	16	13	9	8/10.7	9	8	122.7	74.7
# births	194	228	215	171	164	194	111/159	142	185	1643	
population	219	211	210	197	150[2]	150	150	135	125	1547	
12-23 months											
# deaths	4	0	3	0	7	6	1/1.3	9	4	34.3	18.6
population	236	255	228	193	212	187	194	139	202	1846	
24-59 months											
# deaths	5	2	3	4	4	1	1/1.3	2	1	23.3	4.2
population	765	808	694	687	488	542	709	398	424	5515	
0-59 months											
# deaths	22	27	25	20	24	16	13.3	20	13	180.3	
population	1220	1274	1132	1077	850	879	1053	672	751	8908	

Source: Annual censuses, birth and death registers
[1] January - September 1993 mortality data, second rate by pair is annualized estimate
[2] Estimate for 1991 census

EXHIBIT 3

Death and population data from ARHC's two "control" program sites

Age rates by category	Ancoraimes 4/92 – 3/93	Sipe-Sipe 4/92 – 3/93	Total	Mortality rates
0 – 11 months				
No. deaths	9	5	14	116.7
No. births	73	47	120	
Population	60	51	111	
12 – 23 months				
No. deaths	3	4	7	57.9
Population	52	69	121	
24 – 59 months				
No. deaths	2	2	4	11.0
Population	183	181	374	
0 – 59 months				
No. deaths	14	11	25	
Population	295	301	596	

Source: Annual census and death registries, Ancoraimes and Sipe-Sipe.

EXHIBIT 4

Estimates of the probability of death before age 5 years in ARHC's three established intervention sites

Cohort method

Age group	Mortality rate	Number of deaths expected in cohort of 1,000 live births	Cohort size at end of age period
0 – 11 months	74.7	74.7	925.3
12 – 23 months	18.6	17.2	908.1
24 – 59 months	12.6 [1]	11.4	896.7
Number of deaths expected in the five year period		103.3	

[1] *The annual 24-59 month mortality rate (4.2) was multiplied by three since this age period covers three years of life.*

Divided by 1,000 live births = 0.103
= Probability of death for an individual between birth and 5 years

95% CI for estimated probability of death
= 0.103 ± (0.103 x 0.1 0.15)
= 0.103 ± .015
= 0.088 to 0.118

Under-5 mortality rate method

Number of deaths observed 180.3
Under-5 population 8,908

Annual probability of death = 180.3 ÷ 8908
= 0.020
Five year probability of death (0.020 x 5) = 0.100

95% CI for the estimated probability of death
= 0.100 ± (0.100 x 0.15)
= 0.100 ± 0.015
= 0.085 to 0.115

Source: Birth and death registries, and annual censuses, for Carabuco, Mallco Rancho, and Montero.

tions and, additionally, with populations having a small number of deaths. These small numbers fluctuate from year to year, leading to sizable variations in observed annual mortality rates. In order to overcome this natural variation in mortality rates of small populations, we pooled mortality data for the three intervention sites over a four year period, resulting in composite rates of infant and child mortality for this same period. This is shown in Exhibit 2. Exhibit 3 displays the mortality data and rates for ARHC's two control sites.

Using a methodology to calculate confidence intervals for mortality rates based on defined populations described in the monograph, *Health Communities 2000: Model Standards*, we calculated confidence intervals by multiplying the estimated mortality rate by the specified fraction, which in turn, is estimated based on the number of events (deaths) reported for the population being studied.[37] Necessarily, that fraction grows smaller as the number of events reported for the population increases.

Confidence intervals and confidence limits were calculated based on two different methods for estimating mortality for each of the two sets of project data. One method is a cohort approach in which a hypothetical cohort of births is subjected to the mortality rates calculated for the population in question over a five year period, and the percentage of the cohort which would die at these rates is determined. A second method is to simply calculate for the population of children the overall death rate per 1,000 children per year and multiply this by five.

EXHIBIT 5

Estimates of the probability of death before age 5 years in ARHC's two control sites

Cohort method

Age group	Mortality rate	Number of deaths expected in cohort of 1,000 live births	Cohort size at end of age period
0 – 11 months	116.7	116.7	883.3
12 – 23 months	57.9	51.1	832.2
24 – 59 months	33.0[1]	27.5	804.7
Number of deaths expected in the five year period		195.3	

[1] *The annual 24-59 month mortality rate (11.0) was multiplied by three since this age period covers three years of life.*

Divided by 1,000 live births = 0.195 = Probability of death for an individual between birth and 5 years

95% CI for estimated probability of death
= 0.195 ± (0.195 x 0.38)
= 0.195 ± 0.074
= 0.121 to 0.269

Under-5 mortality rate method

Numbers of deaths 25
Observed under-5 population 596
Annual probability of death 25 ÷ 596 = 0.042
Five year probability of death 0.210 ± (0.210 x 0.38)
Probability of death = 0.210 ± 0.080
=0.130 to 0.290

Source: Ancoraimes and Sipe-Sipe birth and death registries and annual census.

EXHIBIT 6
Demographic and Health Survey estimates of the probability of death before age 5 years in Bolivia, 1979-88

Subgroup of children	Probability of death[1]
Living in rural areas	0.168
Living in the altiplano area	0.142
Living in the valley area	0.159
Living in the lowlands	0.120
Speaking a native Indian language	0.186
Mother's education less than six years	0.162
Father's occupation agricultural	0.177
Overall average	0.159

[1] *Based on a cohort method identical to that shown in Exhibits 4 and 5. See text for description of methodology.*

Estimate of the 95% CI for the calculated probability of death
= 0.159 ± (0.159 x 0.10)
= 0.159 ± 0.016
= 0.143 to 0.175

Source: Sommerfelt, et al, 1991, p 8.

Both of these two methods are applied to the intervention and control sites data, and are displayed in Exhibits 4 and 5, respectively.

Since the DHS summary provides only under-5 mortality rates (rather than rates by infant and child age categories), the second method (which employs the use of the overall mortality rate) was used exclusively. The DHS data did not report the actual number of deaths occurring in the sample of 7,923 women, nor confidence intervals for their rates. We assigned a 95 percent confidence interval of ± 0.02 to the above, assuming that the actual number of deaths on which these rates are based is around 400, a conservative estimate. This is summarized in Exhibit 6.

Results

Infant mortality rates for the three established intervention sites were 36 percent lower than those reported to the similar two control sites, although the small numbers of control site deaths preclude statistical tests of significance. Childhood mortality rates also were much lower in the Child Survival project areas: 49 percent lower when compared to the control sites, and 35 percent lower when compared to the Bolivian DHS data. These results are statistically significant ($p<0.05$) and are summarized in Exhibits 7, 8, and 9.

The results reported above should be interpreted in light of the probable biases of the different data sets. For the established intervention sites, there were no pre-intervention measures of mortality, primarily because the ARHC census-based methodology had not been fully developed during the early stages of project implementation. This lack of pre-intervention data limits the interpretability of possible changes over time in rates of infant and childhood mortality. For example, it is theoretically possible that mortality rates for these areas were, in fact, low to begin with. Only by measuring mortality rates initially would we be able to exclude this alternative explanation. Another aspect of these data are that the

EXHIBIT 7
Probability of death before age 5 years in ARHC's program areas compared to that for control areas and for similar areas in Bolivia

Population	Estimated probability of death before age 5	95% confidence interval	95% confidence limits
ARHC's established program areas (Carabuco 1990-93: Mallco Rancho 1991-93: and Montero, 1992-93)			
Method 1	0.103	±0.015	0.088 to 0.118
Method 2	0.100	±0.015	0.085 to 0.115
ARHC's control areas (Ancoraimes and Sipe-Sipe, 1992)			
Method 1	0.195	±.074	0.121 to 0.269
Method 2	0.210	±.080	0.130 to 0.290
Similar areas elsewhere in Bolivia (1979-1988)			
Method 1	0.159	±0.016	0.143 to .175

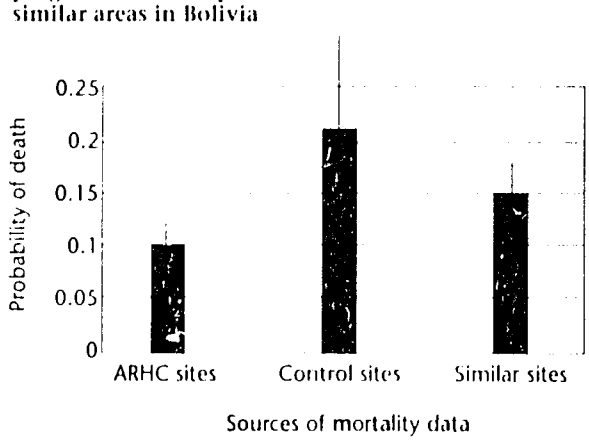
Method 1: Based on the cohort method described in text.
Method 2: Based on overall under-5 mortality rate described in text.

EXHIBIT 8
Improvements in child survival estimated for ARHC's program areas

Population	Estimated probability of death before age 5 years	Improvement in child survival relative to comparison groups
ARHC program areas	0.103	
ARHC control areas	0.202[1]	49% (0.202-0.103) x 100 / 0.202
Similar areas in Bolivia	0.159	35% (0.159 - 0.103) x 100 / 0.159

[1] *This is the average of the rate calculated with the cohort method (0.195) and with the under-5 mortality rate method (0.210).*

EXHIBIT 9
Probability of death for children less than 5 years in ARHC's program areas compared to that for control areas and for similar areas in Bolivia



number of deaths is small on an annual basis, increasing the variability of rates, and making measures of impact for any given year difficult if not impossible. Only by pooling data over years and over project sites, as we do here, is it possible to begin to tease out possible trends in mortality rates.

For the two control sites reported here, we again face the prospect of small numbers of deaths, with the resultant difficulty of discerning real differences which may be tested statistically. It is also likely that not all deaths were captured at this early point in the development of these two new projects, due to the possible reluctance to report all deaths on the part of the respondents.

Finally, regarding the national data collected through the Demographic and Health Surveys, one must be aware of several inherent limitations of the data. First, and most importantly, it is likely that the limitations of retrospective data collection mentioned previously (for example, faulty memory, or distrust of survey interviewers by respondents) resulted in the systematic underestimate of the real mortality rates. Secondly, mortality rate bias also may vary based on the underlying socioeconomic factors of the population. That is, individuals with less education, living in poorer communities, and speaking indigenous languages may be more likely to underreport deaths compared to better educated urban-based, Spanish speaking respondents.

Another concern with these data are that they reflect rates estimated for the 10 year period ending in 1988. Ideally, we would utilize the 1992 data set (a 10 year period of data, ending in 1991) which would better reflect more current trends. However, only overall national rates are available for that period, and these seriously underestimate mortality rates for the populations of concern to us: impoverished, primarily rural, Native American populations with little education, depending largely on subsistence agriculture as a livelihood. More detailed analyses and reports of the 1992 data set may be forthcoming in the next several years, making such analyses possible. Given these limitations of the data, and based on our observation that mortality rates differ considerably within the Bolivian population based on key socio-demographic variables, we would expect that mortality rates reported from the control sites would be highest, rates estimated from the DHS data would be somewhat high (but not as high as the control site rates due to the underreporting bias), and that the intervention sites would report the lowest rates. This, in fact, is exactly what we find, providing some indirect validity for our approach. Further, for the under-5 child mortality rates, these differences are statistically significant ($p<0.05$).

There are natural limitations to the utility of these mortality data. While it is possible to assess the impact of a given project over a three to five year period, in all likelihood, it will not be possible to assess the impact of individual interventions (for example, immunizations, or growth monitoring) or the effect of the program on specific causes of death (for example, malnutrition, diarrhea, or acute respiratory infection). That is because the number of deaths attributable to a single cause is small, precluding statistically significant differences. A second reason is that there may be significant interaction between causes of death. A number of researchers have demonstrated that when an intervention addresses a particular cause of death, mortality rates for other causes of death may also be affected, and not always in predictable directions.[5] A third reason is that the identification of cause of death may be unreliable, especially when causes of death are infrequently encountered, and pre-death evaluation is frequently impossible.

Conclusions

Based on the results of this study, it is possible to significantly reduce child mortality in selected developing countries within a three to six year period, using a mix of child survival strategies promoted by the USAID Child Survival Program. Further studies are needed to confirm these findings, and to establish the effectiveness of other child survival strategies and programs. These results necessarily add credibility and political support to an already successful USAID Initiative.

The mortality data obtained for ARHC's program areas are based on routine systematic home visitation carried out by health personnel who are known to the families and who are part of a stable health program working in the area for several years. This method is a "gold standard" for mortality assessment in developing countries and represents as accurate assessment of mortality rates as can be obtained under the circumstances. The census-based, home visitation approach to community health care, which includes ongoing data collection and analysis, assures high rates of participant coverage, equity of service, program accountability and strengthening, and the trust, support, and participation of the community.

Based on the experience of ARHC, assessing vital events and mortality should be central to ongoing Child Survival and Health program operations. The ARHC methodology is consistent with recommendations made by a number of international health agencies, including a recent report from a panel of the National Academy of Sciences (14, page 150), which states "there is a desperate need for more research on the effectiveness of integrated [Child Survival and Health] programs and individual interventions in a wider range of environments."

Comparison data are essential to the interpretation of program mortality data. These may be in the form of baseline mortality rates of the same service areas, or estimates generated from control areas, or from other data sets such as the DHS used in this report. Ideally, more than one set of comparison data will be used in order to strengthen interpretability and to compensate for almost unavoidable limitations of any single comparison group or study design.

Future mortality analysis within the ARHC Bolivia program will be broadened to include the analysis of mortality in the two control sites as they introduce and expand coverage of child survival and health services; the addition of new control area data as new project areas are undertaken; the

standardization of basic socioeconomic data collection and analysis across intervention and control sites to monitor comparability; and, the comparison of these data sets with not-yet-released DHS data.

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Reduction in Diarrheal Mortality Due to Vitamin A Supplementation in Chikwawa District, Malawi

Abstract

Using data from family registers, we sought to compare diarrhea specific mortality rates for two groups of children under 6 years of age; those who received vitamin A within the last six months and those who did not. Vitamin A coverage district-wide was less than 14 percent at the beginning of the project in early 1992. Coverage in 1993 was estimated at over 50 percent from family registers. Data were gathered by project field staff from family registers in over 230 communities. These registers record child vaccination coverage, vitamin A supplementation, ORS distribution, and child deaths due to diarrhea. An analysis of May 1993 family register data using a case-control methodology showed that only 47 percent of children who died had received vitamin A as compared to 72 percent of children who were alive. Similarly, data from December 1993 revealed that only 59 percent of children who died had received vitamin A as compared to 82 percent of children who were alive. Children who were alive were significantly more likely to have received vitamin A than children who had died (5/93 data: Chi square = 68.6, $p < 0.001$, O.R. 0.35, 95% CI = (0.27, 0.45); 12/93 data: Chi square = 9.48, $p < 0.0021$, O.R. = 0.33, 95% CI = 0.15, 0.74). Our results show that IEF vitamin A supplementation efforts are associated with reduced child mortality due to diarrheal diseases in Chikwawa District. Our method demonstrates a simple methodology for analysis of results from population-based family registers.

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International Eye Foundation / Malawi

International Eye Foundation has been working in Malawi since the late 1970's, mainly in the area of primary eye care, blindness prevention and vitamin A deficiency. In 1989, IEF entered the world of child survival, with a pilot project in 45 villages in Chikwawa and Nsanje Districts. In 1991, IEF received another three year grant to expand to all of Chikwawa District, Nsanje District now being covered by ADRA. Because of a no-cost extension to the previous project this project formally began on the first of January 1992. Funding for this project finished on 31 August 1994, but we have received a final three-year grant to complete the project and turn it over to the Ministry of Health.

Chikwawa District is part of what is known in Malawi as the Lower Shire Valley. It is part of the Great Rift Valley and is characterized by high temperatures, low rainfall, and short growing season. Consequently, vitamin A deficiency is a significant problem, more so than in any other area in Malawi. Lack of water also leads to a number of other health problems as well, most significantly diarrhea.

IEF's project in Chikwawa District is carried out by about 20 health surveillance assistants (HSAs) employed by the project. They are trained for six to eight weeks in basic primary health care. Each HSA is responsible for 10 to 30 villages with one to four village health volunteers (VHVs) in each village. In all, the project currently involves about 480 villages and over 650 volunteers. VHVs assist the HSAs in distribution of commodities such as vitamin A, oral rehydration solution (ORS), and condoms. VHVs also assist in educating women concerning the following: nutrition, diarrhea disease control, sanitation, exclusive breastfeeding, AIDS, family planning, and primary eye care.

Each volunteer is asked to maintain a family register. This register assists her in enumerating the villagers she is responsible for, so that she can follow up children who are in need of immunizations or vitamin A supplementation. For each family with a child under the age of 6, the register includes the name of the father, mother, and children; birth dates for each; EPI coverage; vitamin A capsules received; and ORS. There is space for up to two years' worth of data. If the family moves, a line is drawn through the page and a note is added indicating where the family moved to. If a member of the family dies, a line is drawn through that member's record and the date and cause of death indicated.

In order to recover information from these registers for monitoring purposes, approximately every six months the HSAs are asked to go to each volunteer and collect some information from the registers. This information includes, among other things, proportion of children receiving vitamin A within the last six months, number of deaths due to diarrhea in the last three months, and ORS usage among children that died.

In addition, there were a number of villages which were brought into the project in early 1992 which had completed two years' worth of information by early 1994. For about 100 of these villages the complete information from the register was entered into the computer. Analysis of these records is still ongoing but some

information is available to supplement the biannual abstracts.

The first abstract of data was done in May 1993. Reports were received from 230 volunteers, accounting for over 13,000 children. In all, 72 percent of children had received a vitamin A capsule in the last six months. A total of 231 children died of diarrhea in the last three months and of these, only 47 percent received vitamin A in the six months prior to death. This results in a highly significant association between vitamin A supplementation and protection against diarrhea mortality.

Results from the second abstract of data, done in December 1993, were very similar. Reports were received from 225 volunteers, accounting for over 13,000 children. Vitamin A coverage overall increased to 82 percent, and among 29 deaths due to diarrhea, 59 percent had received vitamin A prior to death. Again, a highly significant association.

While this analysis does not break any new ground regarding the impact of vitamin A on mortality, it does show how a family register system can be used to document impact of Child Survival projects on mortality. These registers are being used by women who are barely literate, and have been designed to be easy to use and abstract data.

However, if I were to stop here I would not be telling you the whole story. We recently did another abstract of data, and the results were a bit different. Vitamin A coverage overall had increased to 84 percent, but vitamin A supplementation among those who died had also increased to 79 percent, virtually wiping out the association seen previously.

What factors contributed to this phenomenon? I have a few ideas and maybe you have others. To start with there are some basic biases operating that may, or may not have contributed to this.

In May 1993, 230 reports were received out of a maximum possible of 274 (84 percent). However, by December 1993, four new areas had started operations, but there were only 225 reports received out of a possible 492 (46 percent). In June 1994, we limited the abstracts to four areas and tried to get all reports from each area. Despite the effort, 173 reports were received out of a possible 234 (74 percent). This fluctuation in reporting, while it does not correlate with the fluctuation in the relationship between vitamin A and mortality, still gives cause to question the validity of the data.

A second consideration regards the seasonal variations in disease morbidity and mortality. In May 1993, the death rate among children under 6, due to diarrhea, was 17.6 per 1000. By December 1993, the death rate was 2.3 per 1000, and remained low in June 1994 at 2.8 per 1000. Diarrhea is most prevalent during the rainy season which goes from November to April, peaking in February. Thus, some of the anomalies we are seeing could be due to seasonal fluctuations, although again the seasonal variation does not correspond with the change in the relationship between vitamin A and mortality.

In an attempt to further characterize the seasonal fluctuations, family registers were analyzed from 100 villages for which data are available for two years. All deaths were ascertained and plotted by month. Clearly, all diseases are more prevalent during the rainy season of 1993, not just diarrhea. This picture, however, raises more questions than it solves, because it leads one to wonder whether this is a seasonal variation after all, a statistical artifact, or due to some other factor.

In two areas the family registers were given out in April 1992. Since the VHVs were instructed to register only live children, any deaths occurring in the first three months of 1992 would have been ignored. Thus the data for the rainy season of 1992 are incomplete. Also, since the family registers cover two years, they were collected in March 1994, potentially causing missing data on deaths that may not yet have been recorded. Thus, we are left to guess whether the data for 1992 and 1994 are similar or not to the data for 1993. Perhaps we will know the true story when we analyze family registers from other areas where data collection is ongoing.

There are two other possibilities. 1992 was a year of tremendous drought in Malawi. One likely scenario is that in early 1993, just before the harvest that ended the famine, there was an abnormally high level of mortality due to malnutrition and related diseases. In addition there was considerable migration within the area during the drought as people went around to look for food. This could have hampered adequate data recording during 1992. These two factors combined with the usual high disease load during the rainy season could have made 1993 an unusually bad year.

The final possibility that is apparent has to do with project interventions. Perhaps we are too modest in putting this one last. It is indeed possible that due to both

Results at three time periods

May 1993

Received vitamin A	
Alive	72%
Died	47%
OR	= 0.35
95% CI	= (0.27, 0.45)
p	< 0.001

December 1993

Received vitamin A	
Alive	82%
Died	59%
OR	= 0.33
95% CI	= (0.15, 0.74)
p	< 0.001

June 1994

Received vitamin A	
Alive	84%
Died	79%
OR	= 0.71
95% CI	= (0.28, 1.95)
p	= 0.46

Limitations

Incomplete data

May 1993:	230/274 (84%) VHVs reported
Dec 1993:	225/492 (46%) VHVs reported
June 1994:	173/234 (74%) VHVs reported

Seasonal trends

May 1993:	Death rate = 17.6/1000
Dec 1993:	Death rate = 2.3/1000
June 1994:	Death rate = 2.8/1000

vitamin A supplementation and availability of ORS in the village that mortality due to diarrhea has indeed decreased, independent of seasonal factors, over the course of the project period. There have been anecdotal reports in the villages of reductions in diarrhea mortality, and health centers report reductions in cases of severe diarrhea.

So then, what is the likely explanation for the lack of association between vitamin A and the recent (June 1994) survey? Perhaps, because of both vitamin A and ORS, the deaths due to diarrhea are those core cases that would have happened in any event, so that the vitamin A had no impact on these cases.

What can we learn from these data? Certainly these data tell us there is an association between vitamin A and decreased mortality. It is also encouraging to see the potential of family registers for documenting this relationship. However, it also serves to caution us, so that we examine other possible causes of associations before drawing conclusions. It also points to the need for careful planning to avoid missing out on seasonal trends due to poor planning of data collection activities.

I hope that in addition to presenting some positive results from our project, that this "airing of dirty laundry" is in the spirit of this conference and will help us to design better projects in the future.

PART TWO

Impact on Immunization Coverage, Mothers' Health Practices and Knowledge

Community Impact of PVO Child Survival Project in Bolivian Altiplano

Abstract

Purpose – To present the community impact of Food for the Hungry's Child Survival project after four years of working with mothers' centers in three remote high altitude areas of Bolivia.

Design of data collection – This paper presents the results from three separate systems of data collection: (1) the project's health information system using EPI-INFO to analyze data routinely collected from all mothers' centers; (2) the final evaluation results reported from 35 focus groups and 115 key informant interviews by two external evaluators; and (3) the rapid knowledge-practice-coverage (KPC) survey of 284 women reported by a Bolivian consultant of the Johns Hopkins PVO Child Survival Support Program.

Summary of results and conclusions – This Child Survival (CS) project covered some of the poorest and most isolated zones in Bolivia. The project sought to improve the quality of the life of families in 134 communities with 32,500 people, through health and nutrition interventions among mothers and children under 2 years.

The project exceeded most of its targets – established 148 mothers' centers instead of 134. • trained 469 health promoters instead of 268. • completely immunized 87 percent (vs. 80 percent) of the children, 12-23 months, and • immunized 93 percent (vs. 60 percent) of women of child bearing age (CBA) with TT2-5. • The use of oral rehydration therapy (ORT) increased to 97.8 percent vs. a target of 75 percent. • Focus group discussions showed good understanding of key CS messages, acceptance of new ideas, and increased capacity to find solutions to problems. • The KPC survey showed widespread knowledge and practice of growth monitoring and use of the child health card (82 percent) plus marked improvement in child feeding practices. • Some mothers' centers initiated income generating projects, worked voluntarily, or contributed cash to support their centers' activities. • The Ministry of Health (MOH) participated in annual evaluations and in the training of 187 community health workers (CHWs), and signed formal contracts to continue supervision and training activities. • The project's innovative educational materials have been adopted by other PVOs.

Allan Robbins
Food for the Hungry International / Bolivia

Introduction

If your experience has been as mine, idealism seems to decrease in direct proportion to one's proximity to the problems. That is why it is exciting when a project's actual outcome results far exceed those projected at the onset. In almost all regards, this project is just such a case. In four years, the project established 148 mothers' centers instead of 134; trained 469 health promoters instead of 268; completely immunized 87 percent (versus 80 percent) of the children, 12-23 months; and immunized 93 percent (versus 60 percent) of women of child bearing age with TT2-5.

The use of oral rehydration therapy (ORT) increased to 97.8 percent versus a target of 75 percent. Focus group discussions showed good understanding of key child survival messages, acceptance of new ideas, and increased capacity to find solutions to their problems. The rapid knowledge- practice-coverage (KPC) survey showed widespread knowledge and practice of growth monitoring and use of the child health card (82 percent) plus marked improvement in child feeding practices. Some mothers' centers initiated income generating projects, worked voluntarily or contributed cash to support their centers' activities. The Ministry of Health (MOH) participated in annual evaluations and in the training of 187 community health workers (CHWs), and signed formal contracts to continue supervision and training activities. The project's innovative educational materials have been adopted by other PVOs.

Background

Founded in 1971, Food for the Hungry International (FHI), the recipient PVO, is an organization of Christian motivation, committed to working with poor people to overcome hunger and poverty through relief and integrated self-development. FHI's strategy is to meet both physical and spiritual needs in a symbiotic or integrated manner.

The FHI/Bolivia Child Survival project was carried out in three of the poorest and most isolated regions of Bolivia. The project sought to improve the quality of life for families in 134 communities with a population of 32,500, through health and nutrition interventions and among mothers and children under 2 years. Project communities were located among steep rugged mountains and high arid plains at altitudes from 13,000 to 15,000 feet. Access was difficult to project communities, many of which had no roads and could only be reached by foot after a many hours' walk. These communities, where temperatures often fall to 13 °C, are often totally lacking health services.

The FHI/Bolivia Child Survival project began in 1989 by seeking to encourage female community organization by promoting "mothers' centers" in each of the 134 target communities. PL-480 food was used to supplement the diet of undernourished children and mothers, and as a motivation for mothers' center membership. Through these mothers' centers, FHI/Bolivia was able to develop mechanisms of training which were ultimately community-based. The mothers' centers coordinated with the Bolivian MOH to extend access to EPI, ORT, micronutrients such as iodized salt and vitamin A capsules, nutritional surveillance, and ultimately continued education for the CHWs.

Structurally, the Child Survival project utilized a national director, three regional supervisors (one in each work area), 16 employed CHW-trainers, 135 volunteer CHWs, over 470 volunteer community health promoters, and 7,614 additional mothers trained in child survival interventions from 134 communities. This in a population of 32,500.

Mothers' centers were the proposed basic unit of the work, but a real catalyst for the project's success was organizing the mothers of each center into three to four health-related committees. Everyone was involved in small committees, each with its own leader and one to two assistant leaders, charged with planning, teaching, and assessing progress on their specialty: nutrition, diarrheal management, health-immunizations, hygiene, and sometimes, home gardening.

Methods of measuring project impact

Data sources

The project goal employed three methods to assess progress in meeting project goals. First, a health information system which monitored project indicators over time. Second, annual evaluations which employed qualitative focus groups and key informant interviews (35 focus groups and 155 key informant interviews during the final evaluation). And third, a final rapid 30-cluster KPC survey which could measure knowledge, practice, and coverage of project indicators with relatively high validity over the entire project population.

Health information system: Assessed change over time

The project's health information system utilized the computer software EPI-INFO at the national and regional level to track progress on a regular bi- or trimonthly basis. This allowed the regional management admirable vigilance of diverse project activities and opportunity for adjustment. At the local level, health promoter trainers, community health workers, and community health promoters were involved in setting their own work objectives and then in tracking their progress in reaching them. By linking the monitoring and evaluation system to individual staff objectives, the health information system was converted from something that the central office required into a tool for feedback on one's own progress. Motivation increased automatically. Also, solutions could be started before the central office even knew that problems existed. Monitoring at the national level every three months proved sufficiently frequent for the project supervision, but community workers often insisted on gathering additional information at more frequent intervals so they could fine-tune their activities.

Focus group and key informant interviews: Assessed attitudes

During the two weeks of the final evaluation, we conducted 35 focus groups with mothers and 115 key informant interviews with community health workers and the leaders of the mothers' center committees. Focus group discussions are helpful in assessing the attitudes of participants which often do not surface in more quantitative methods. Our purpose was to not only assess their attitudes toward project interventions, but to evaluate their motivation to continue child survival activities after project funding ceased. These discussions were recorded and transcribed, and representative quotes were then used to illustrate or underscore the more quantitative findings and to provide an indication to the intensity of feeling that participants had about an issue. They also brought out several unlooked for areas of impact. For example, a mother shared, "Our households are cleaner now and our husbands love us more!" (There was laughter from the others and comments like "Yes, that's right!") Then very seriously, she added, "When our children died, our husbands hated us.... Now we are an example to our husbands and they show us more affection." One just does not get that kind of insight on family dynamics from surveys.

Rapid 30 cluster KPC survey: Assessed knowledge, practice, and coverage

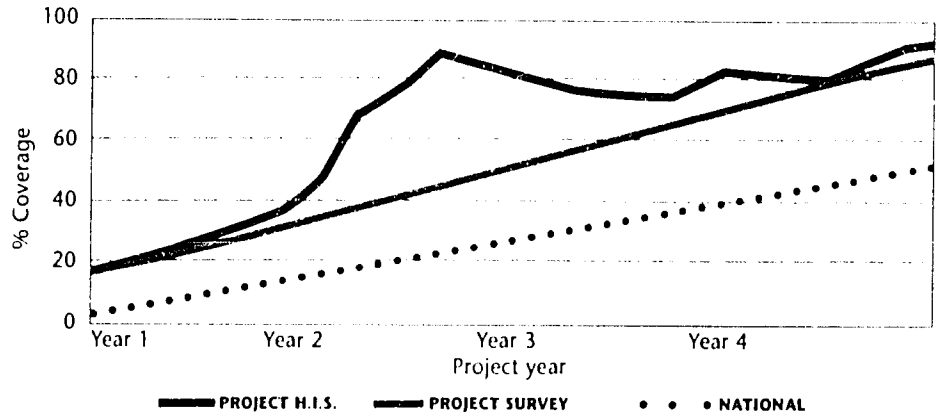
The 30-cluster methodology allows change and possibly impact to be assessed by comparing project indicators, from the baseline and final evaluation, with national child survival statistics and noting the change against national averages. If the change is sufficient, results from the final KPC survey can be compared with a similar baseline survey to show

significant improvement or deterioration. In Bolivia, 32 questions were selected from the standardized questionnaire, translated from Spanish to the Aymara and Quechua dialects, and field tested. Field teams of trained interviewers and supervisors, randomly selected 30 communities/conglomerates from the three project work areas and, in a near random fashion, interviewed 300 mothers with children less than 2 years of age. Since the majority of communities selected for the study were widely dispersed internally, this means, very often, having to travel several kilometers from one household to the next. This characteristic of rural Bolivia significantly delayed the process of collecting information.

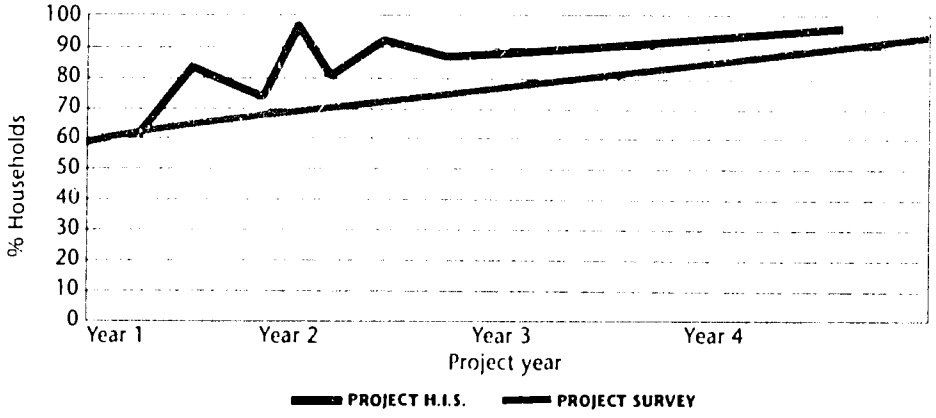
Project impact

While none of these methods were adequate in themselves to measure project impact, particularly causality, a review of the combined findings of the three may give us strong indications as to the nature of the changes in knowledge, practice, and coverage and attitudes to their probable source.

Women of childbearing age with 2+ doses TT, national and project data
FHI/Bolivia Child Survival project 1989-1993



Households using iodized salt, by source of data
FHI/Bolivia Child Survival project 1989-1993



Infant feeding

The final KPC survey showed that 91.9 percent of the mothers had first breastfed their child during the first eight hours following delivery. Ninety-one percent of children 0-3 months were exclusively breastfed or only received water and breastmilk versus 59 percent nationally. The KPC survey showed that 88 percent of mothers were still breastfeeding their children through their 20th month versus 73 percent nationally. The KPC survey showed that only 9 percent of children had mashed foods introduced in the first three months, but by the fourth to sixth month, 82.1 percent had begun receiving appropriate supplemental mashed foods, and by the seventh to ninth month, 97.5 percent versus 57 percent nationally.

Management of diarrheal diseases

The final KPC survey found that of mothers of children under 2 with diarrhea in the past two weeks, 77.5 percent had given the same amount of or more breastmilk to their children during the illness, 82.8 percent had given their children the same amount of or more fluids other than breastmilk, and 75.8 percent had given their children the same amount of or more food.

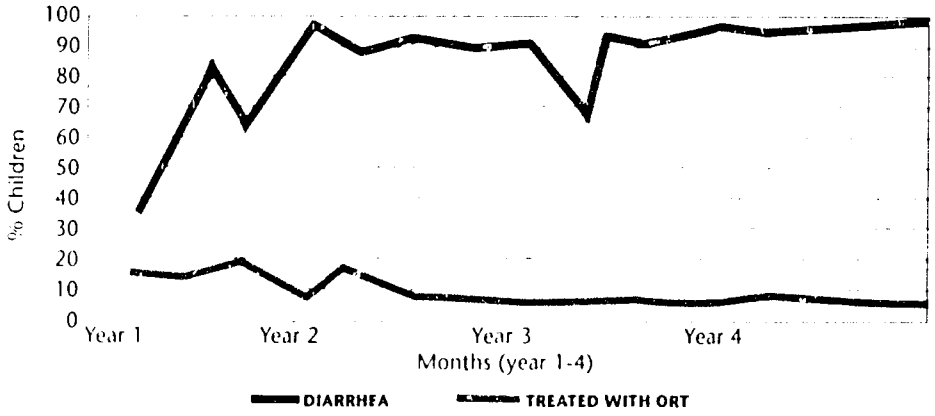
The incidence of children under 5 with diarrhea reported in the past two weeks was down to 4.4 percent, surpassing the targeted 10 percent; impressively of these, 97.8 percent were treated with ORT, well past the projected 75 percent target. This included ORT packets, home mixes, staple-based liquids, and herbal teas as sugar was often unavailable. This widespread understanding of the importance of increasing fluids during diarrhea has had an impact on the severity of diarrheal episodes in the project areas.

Vaccination coverage (card)

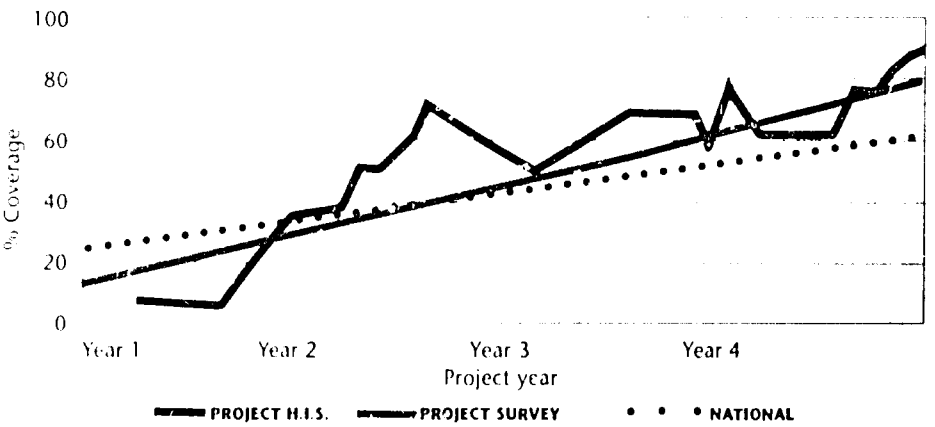
In the project's final year, the health information system (HIS) showed that access to vaccinations, measured by the percent of children 12-23 months who received DPT1, was on average 92 percent. Coverage, measured by the percent of children 12-23 months who received OPV3, was on average 89 percent; and measles coverage for this group stood at 89 percent, 115 percent of the project's target level. The drop-out rate, measured by the percent change between DPT1 and DPT3 for children 12-23 months, was found to be 3.2 percent by the HIS and 5.0 percent by the final KPC survey. The final KPC survey also found that of mothers with children less than 24 months, 82.4 percent had a child health card and 93 percent had received at least two doses of tetanus toxoid, 156 percent of the project's target.

The percent of completely immunized children, 12-23 months, had risen sharply to 87 percent, surpassing the targeted 80 percent, BCG 95 percent, DPT3 89 percent, Polio3 89 percent, measles 92 percent, all surpassing the targeted 80 percent

Proportion of children less than 6 years with diarrhea in the past two weeks, and proportion treated with ORT, FHI/Bolivia Child Survival project 1989-1993



Proportion of children 12-23 months old fully immunized, project and national data FHI/Bolivia Child Survival project 1989-1993



fourth year targets. Where once there was fear of vaccinations, there is now widespread appreciation for their efficacy. As one mother related in a focus group, "Our children no longer die of measles." The percent of women of child bearing age with TT2-5 was 93 percent, surpassing a targeted 60 percent.

Nutrition

The percent of families using commercial iodized salt was 90 percent vs. a target of 80 percent. This represented a remarkable change of attitude and practice as local salt deposits have long made un-iodized salt freely available

Child malnutrition rates in the project did not improve. Modest gains were reversed in the project's final year. An ongoing drought and other macro-economic and food production factors are strongly implicated as the cause. The final KPC survey conducted in September of 1993, attempted to evaluate the impact of child survival interventions on family practices. It found widespread knowledge and practice of growth monitoring utilizing the child health card (82 percent) and a marked improvement in good infant and child feeding practices among families along the lines promoted by the training in the mothers' centers.

However, the most important achievement and the one which will have the most lasting impact, has been the apparent establishment of a lasting "institutional" health organization, the mothers' center or community health center, in each of the project communities which will continue the majority of child survival activities and act as a community catalyst to address community health problems. The Child Survival project mothers' centers have enjoyed increasing support and participation of husbands and other men. The child survival training has been effective. Not only do all project communities have a trained RPS, often two; and at least three trained health promoters who lead the various committees in the mothers' center, but in field evaluations the mothers themselves have demonstrated a surprisingly good understanding of key child survival messages. The mothers expressed widespread consensus to continue their activities after the project funding ended. Whether the activities are sustained remains to be seen and will depend to a great extent on the ability and commitment of the MOH in each region. However, time and again we heard the comment from mothers, "Now that we have come this far, we won't go back."

This was a project that had *impact.*

Impact of PVO Child Survival Interventions on the Health of Mother and Child in 54 Tribal Villages of India

Abstract

Purpose – This paper will discuss how the project has impacted the health and nutritional status of mothers and children 0-59 months in 54 tribal villages with an estimated population of 52,568 in West India. Most of the objectives over the last four years have been achieved; for example, full immunization coverage of infants before their first birthday has increased from 31 percent to 88 percent; TT2 in women delivered in the last year from 3.3 percent to 62.2 percent; ORT usage in diarrheal diseases from 52 percent to 78.7 percent; and semiannual vitamin A coverage among children 12-59 months up to 99.8 percent.

Methods – Knowledge and practice survey, meeting with community leaders.

Analysis of major findings – The organization of current groups such as the mahila mandals, formed as part of the development efforts, provided easy access to the women who were mothers of the children most in need of opportunities for training and education. More important was the fact that the child care and development components pertained to each other. The trust gained because of one activity made people more receptive to others, and improvements in the family circumstances certainly improved the well-being of mothers and children.

Lalita Edwards, World Vision/India

Background

I consider it a great privilege to present the impact of child survival interventions on the lives of women and children in the tribal area of Maharashtra. I stand here as a representative of women whose lives have been changed. I realize the power of women to influence the society and bring about development in the community.

The Integrated Child Survival project (ICSP), Navapur, is situated in one of the most backward and underdeveloped blocks of Dhule District of northwestern Maharashtra. The three main ethnic tribes of the area are the Mauchi, Vasave, and Kukno. Navapur block consists of 113 villages on a hilly terrain with very low rainfall. Only 5 percent of farmers are above the poverty line. Sixty-nine percent of farmers have less than five acres of land. Most farmers harvest only one crop. The rainfall is erratic and during the rains, mud roads make all the villages unapproachable. Even state transportation stops plying at this time. The literacy rate is as low as 34 percent. Superstitions are very high; traditional healers and quacks rule the life style of the community. Local brewing of alcohol from a flower called mahua is a major occupation in which the whole family is involved. Alcohol consumption starts at birth. As soon as the child is born, a few drops of strong smelling, highly intoxicating poison called "horo" are given to the child and a cupful to the mother. After delivery the infant is covered with only a thin cloth. The mother is kept in a dark room and the food she gets three times a day is only gruel.

Most of the population migrate to Gujurat during the dry season for better paying jobs. At such time they leave the families or just the children with relatives or neighbors.

The Integrated Child Survival project

World Vision initiated the project in September 1989 and started work in 1990. The commitment was for 50 villages but the project happily adopted 54 villages. In just three years the impact of the child survival interventions was phenomenal.

The 1989 baseline statistics were alarming. EPI coverage was only 34 percent with card and history, even though the Ministry of Health (MOH) promoted EPI in a big way, and one government auxiliary nurse midwife was supposed to cater to just three villages. Children were dying of vaccine preventable diseases, but at the end of the project, the picture changed completely: achievement was 88 percent (card only), as against the target of 75 percent.

Children were breastfed for 24 to 30 months, but they were undernourished due to lack of weaning food and because mothers themselves did not get nutritious food. More than 72 percent of the women work at farms or away from home to support the family.

Diarrhea was one of the major killers. Most villages had no access to safe drinking water and were using open wells or river water (where all the animals graze and where the community takes baths and washes clothes).

With the child survival interventions, two major changes came into being: 1) The superstition that drinking water from the wells and rivers pleased gods changed, and many hand pumps were installed for safe drinking water, and 2) knowledge and

use of the oral rehydration solution increased, saving precious lives. It is worth mentioning that the knowledge and practice gap of ORT was only 6 percent at final evaluation.

It is most amazing that the block development officer of the Navapur block supplied 14 hand pumps to the project area in 1993, and wanted the project to install another 20 in villages outside the target area.

During the 1992 diarrheal disease epidemic, the village schools had to be converted into temporary hospitals to provide intravenous fluids to dehydrated patients. The project staff worked very closely with the MOH, and a massive education campaign was launched by the project. In 1993, only two deaths from diarrheal disease were reported.

The baseline for TT2 was only 3.3 percent. At final evaluation, this number increased to 62 percent (card only), the target being 60 percent.

High risk pregnancy was another story. The impact area registers approximately 20 abortions a month. Almost every other pregnant woman has had one or more abortions. Premature deliveries and low birth weight babies were common, and maternal mortality was very high as going to the hospital for delivery was uncommon.

At the end of three years, high risk pregnancy referrals or treatments were 99 percent. Women willingly attended antenatal clinics conducted by the project staff or MOH. Anemia was reduced as women accepted and consumed iron ferrosulfate tablets.

Pregnant women would start preparing delivery kits some time before delivery. These kits included a washed and sun-dried cloth to spread on the ground, clean clothes for the infant and mother, a new blade, clean boiled thread to tie the cord, and a small piece of soap. The traditional birth attendants were then trained to use the kit.

No baseline statistics were available for vitamin A capsules administered to children at an appropriate age. Vitamin A supplementation of post-partum mothers within two weeks of delivery was unheard of. At the end of the project, 99.8 percent of children had received appropriate doses of vitamin A, and 99.5 percent of women had received vitamin A within two weeks of delivery.

Children were commonly left without clothes on, and they would develop pneumonia very easily. With the regular administration of vitamin A, it was observed that the resistance of the children improved and they were not prone to colds and coughs. Another improvement was that children had some clothes on even if only on the upper part of the body.

The project achieved all this in such a short period by recruiting couples. They were trained together on all issues, and the resulting benefits were:

1. All the staff knew what to do and when to do it, e.g. how to detect high risk pregnancies or how to raise buffaloes.

2. Training in the farmer's clubs and the mahila mandals became easier. The village development workers (male workers) taught the farmers while the female workers taught the women's groups.

3. Each staff member had a target to fulfill, and the couples had an advantage as they were able to share the duties.

4. Couples were better able to cover all the interventions without inhibitions.

5. When a community health worker was pregnant, she ate nutritious food during the pregnancy and after childbirth, had regular checkups and completed the child's immunization schedule on time. This set a good example for the other couples in the same tribal group.

6. The couple began sharing domestic duties, a practice which is not carried out in the villages. This set another good example for the community.

Next, farmer's clubs and the mahila mandals were formed and strengthened. They played a vital role in collaborating with the project staff and adding to their efforts. Health camps were set up in the villages to provide free gynecological examinations to the women. The mahila mandals took it on themselves to motivate the women in the village. They would visit the apprehensive ones and assure them. They would visit them after EPI sessions, especially if there were problems at home. The farmer's club members were responsible for informing the men. Husbands and in-laws were motivated and asked to be a part of the immunization team. The members were especially helpful towards the handling of the drunk men.

Mahila mandals were trained extensively in the identification of high risk mothers. Those who had been beneficiaries were used as change agents. The members were able to identify the high risk group and inform the village or community health worker, or the mobile team staff. Pregnant women in their first trimester were also identified. Sometimes, the members accompanied the pregnant women for their referrals and stayed with them at the hospital as needed. The men would contribute by providing transport services.

After a training session, the women would conduct a mini-session for those who were unable to attend. This was very important as it helped to change the community's attitudes and practices. Some of the training and educational sessions provided are as follows.

- Simple but informative training was conducted in all mahila mandals and farmer's club meetings. The project sought to change attitudes using knowledge that the trainees already had. In farmer's club meetings, examples relating to soils, fertilizers, and harvest were used.

- Film strips, slides, skits, and puppet shows were conducted to impart health and development education.

- School health sessions included clipping nails, washing faces, combing hair, etc. Health related songs and messages were taught, and children were encouraged to educate their mothers and neighbors. Mothers were invited to be observers.

- Home-based demonstration of hygienically prepared nutritious food was given at regular intervals. Women were taught the cost effectiveness of home made snacks versus those purchased from the market. This activity was particularly popular with farmers as their wives were being trained to save money.

- Mothers were taught to make simple clothes for their children.

- Although hand pumps were installed,

the community was still using water from wells and rivers. Superstitions that drinking water from hand pumps would incur the wrath of gods were dispelled by a demonstration from project staff and mahila mandals.

- Willing post-partum mothers were provided with a full nutritious diet so that the community could see that neither mother nor child would be harmed.
- Community members were given opportunities to visit other development projects. This gave them a chance to travel out of their villages, and learn from others on a firsthand basis.
- Special training was provided to buffalo beneficiary couples at a dairy farming center in Vyara Gujurat. This activity has been the most successful scheme, and was adopted by the local branch of the State Bank of India. The result of this scheme is decreased incidence of wife beating and alcoholism. It has also helped to promote small savings.
- Vegetable farming demonstrations were given on the project demonstration plot. Mahila Mandals then used the damp area near hand pumps to grow vegetables.
- Health education camps were organized regularly for women and adolescents.
- Sports such as volleyball and cricket were introduced in youth groups and clubs to keep them from horo in the evenings.
- In collaboration with the National Service Society, HIV/AIDS education was given to students of a local college. They were motivated to educate their own village community on the subject.

Some of the observations made by the final evaluators were:

"The level of community participation is commendable considering that a few years ago, there were no organized groups and no trained local health workers."

"More women are actively involved in Child Survival activities and are joining literacy classes."

"Gradually, selected child survival activities are being phased over to the village health workers, mahila mandals, and farmer's clubs, which free up time for staff's administrative and supervisory activities."

The evaluators talked to the leaders and the following were some of the responses received:

"Because of the advice and care given to the pregnant mothers, these mothers have better newborns."

"Children used to suffer from colds, coughs and diarrhea; now they don't fall sick so often. They are healthier."

"Before the project came, mothers and children used to die. Now death rates among children are down; childbirth related deaths among mothers are also down."

"Children stay clean; they eat better; they like to go to school."

This is surely a *changed life*.

Acknowledgments

On behalf of the community of the Integrated Child Survival project, Navapur, the author of this report wishes to thank:

The authorities of the USAID PVO Child Survival Grants Program, for the grants for the child survival activities which changed many lives. If only they could visit and meet with the women they would appreciate the benefits their grants have brought to many people.

The Johns Hopkins University, PVO Child Survival Support Program for organizing workshops and conferences which enlightened the staff and helped in improved input.

Dr. Milton Amayun, Dr. Fe Garcia, Sandra Jenkins, Pamela Kerr, and many others of World Vision for their untiring efforts, encouragement and support.

The evaluators who went into detail about the process of project activities and assessed the impact on the lives of the Tribals.

The regional health advisor, Dr. Sri Chander, for all the education sessions, the innovative ideas, latest statistical data and constant encouragement.

Mr. S. Rallia Ram, the acting executive director, Mr. L.R. Joshi, associate director, West Zone, and others of World Vision/India for their encouragement and help in all matters from administration to personnel.

Various government officials who took special interest in the project activities and extended their help when required.

Each and everyone of the ICSP staff who worked hard and put in their best to make an impact on the lives of the tribal community.

To the community itself for accepting the project staff; for their cooperation and assistance in helping themselves and each other towards attaining a *new and changed life*.

Impact of the Thies CSP on the Health Knowledge and Practices of Mothers Living in the Sub-district of Niakhene (Thies region)

Abstract

Purpose – In August 1994, World Vision/Senegal carried out a final evaluation of the ongoing Child Survival project (CSP) implemented in the rural subdistrict of Niakhene, since October 1, 1991.

A major objective of this evaluation was to measure changes in knowledge and practices of mothers regarding the various interventions of the CSP and to measure the impact of the project on immunization and maternal health care service coverage.

Methodology – A standardized survey methodology to carry out a rapid knowledge practice and coverage (KPC) cross sectional survey was used. Data collected in the same area in the January 1992 baseline survey, using the same methodology was used for comparison. The following information was collected: demographic data; weaning practices and knowledge; knowledge and practices regarding management of malaria and diarrhea cases; vaccination knowledge and coverage; and hygiene and sanitation practices. The questionnaire was administered to mothers 15-49 years with children under 24 months of age.

Summary of the final evaluation – Compared to the baseline survey results, an impact has been made in the following areas: 80 percent of children aged 12-23 months fully vaccinated against 32 percent at the time of baseline; 50 percent of mothers used oral rehydration therapy (ORT) to rehydrate their children against 13 percent in January 1992; 81 percent of pregnant women received at least two prenatal checkups before delivering against 20 percent in January 1992; the percentage of infants less than 4 months of age being exclusively breastfed increased from 67 percent to 90 percent; 66 percent of mothers interviewed during the final evaluation used chloroquine to protect their children against malaria versus only 5 percent at the baseline.

Conclusions – The Thies CSP has achieved the results at the estimated cost per beneficiary of $2.85 per year using the following approaches :

- Transfer of knowledge to mothers through the training of village health workers, promoters, and TBAs. These trained women leaders were responsible for the diffusion and promotion of health education activities.
- Involvement of the population, particularly women, in the planning, monitoring, and evaluation of all the project interventions.
- Support for community initiated income generating activities, such as community gardens, milling machines, etc., as a means of promoting project sustainability.
- Implementation of a cost recovery program based on user fees and revolving drug fund as a means of sharing project recurrent costs, such as refresher training, renewal of essential drugs, construction of health huts and latrines, and village workers' compensation.
- Integration of the CSP with all the components of World Vision/Senegal integrated rural development programs.

LAMINE THIAM
WORLD VISION/SENEGAL

Program background

Country overview

The region of Thies, located 100 kilometers north of Dakar, is the second most densely populated region of Senegal. It has a total population of 941,151 distributed within three administrative departments, and a population density of 143 inhabitants per square kilometer.

The Child Survival project (CSP) is located in one of these three departments in the arrondissements of Niakhene, Merina Dakhar, and Meouane. The arrondissement of Niakhene was chosen for the purpose of this presentation because it was earmarked as a pilot zone and has 36 months of project execution as compared with eight months in Merina Dakhar and Meouane arrondissements.

The Niakhene arrondissement pilot project area is made up of four rural communities composed of 248 dispersed and isolated villages with a total population of 49,000 including 9,300 children 0-5 years of age and 10,700 women of child bearing age.

The area of Niakhene is classified as needy with a very low rate of project intervention and a weak network of health infrastructure. There is a health post located in each of the four rural communities in the project area run by a ministry of health (MOH) nurse. There is also a health center at the district level.

The annual population growth rate is estimated at 3 percent. The population is composed mainly (90 percent) of the Wolof ethnic group and virtually 100 percent of the total population is Muslim.

The principal economic activity is grainfed agriculture supplemented by sedentary animal husbandry of small livestock. The staple crops include millet, peanuts, and cowpeas.

Major project objectives

World Vision has eight years' experience in programming CSP activities in both Louga (northern Senegal) and Thies regions.

The Thies CSP started in FY 1992 as the health component of the integrated development program of World Vision/Senegal (WV/S). Agriculture, potable water, women in development, and literacy training are the other components.

The principal project objectives were to ensure the following results by September 1994 :

1. 85 percent of children 12-23 months will have been fully immunized by their first birthday.

2. 80 percent of pregnant women will have at least two antenatal visits prior to the birth of their child.

3. 70 percent of pregnant women will receive at least two doses of tetanus toxoid vaccine.

4. 6 percent of mothers with children under 2 years of age who want no more children during the next two years will use modern contraceptives.

5. 50 percent of infants/children (less than 24 months) with diarrhea in the past two weeks will be treated with ORT.

6. 70 percent of children 0-36 months will be weighed at least once a quarter.

7. 50 percent of children 6-36 months and pregnant women will receive weekly malaria chemoprophylaxy (chloroquine) from July to December of each year.

Survey methods

Purpose

At the beginning, a baseline survey was conducted in the project area. In August 1994, WV/S carried out a final evaluation of the ongoing CSP. The major objective of the evaluation was to measure changes in knowledge and practices of mothers regarding the various interventions and to measure the impact of the project on immunization and maternal health services coverage. Information on the following was provided by the baseline and final surveys :

- Mothers' knowledge about the management of diarrheal episodes, immunization, weaning, and birth spacing.
- Coverage rate of children 12-23 months with BCG, DTOP, measles, and yellow fever vaccines. (Verified by looking at the immunization cards or other papers which can testify to immunization).
- Local events were used to correctly identify the exact age of children.
- Mothers' practice in the following interventions: nutrition, diarrheal management, malaria prevention, maternal care including family planning.
- Coverage rate for tetanus toxoid for mothers (verified by looking at the maternal health card or other papers which can testify to immunization).
- ORT and modern contraceptives use rate.
- Access to latrines and sanitation facilities.

Methodology

A standardized survey (KPC) methodology designed in collaboration with the PVO Child Survival Support Program at Johns Hopkins University for use during the baseline survey in January 1992 was again used by the project and local MOH staff during the cross sectional survey carried out in the arrondissement of Niakhene in August 1994. Data collected in the baseline survey were used as a basis for comparison.

Questionnaire

The same questionnaire used during the baseline survey was used again during the final survey with few changes. Administered to mothers aged 15-49 years with children under 24 months of age, the questionnaire contained 43 questions:

- Questions 1-2: Demographic data.
- Questions 3-7: Nutrition, weaning knowledge and practices.
- Questions 8-9: Growth monitoring.
- Question 10: Malaria practice.
- Questions 11-20: Knowledge and practice regarding management of diarrheal diseases.
- Questions 21-28: Vaccination knowledge and coverage.
- Questions 29-40: TT immunizations; practice of family planning and delivery assistance.
- Questions 41-43: Water and sanitation.

Determination of sample size

Thirty village clusters were selected from the Niakhene arrondissement according to the WHO methodology for assessing EPI coverage. For the determination of the sample size, the following formula was used:

$$n = z^2 pq/d^2$$

Where n = the sample size;
z = statistical certainly chosen;
p = estimated coverage rate, level of knowledge;
q = 1 - p;
d = degree of precision

The degree of precision was set at 0.1 and p at 0.5. The resulting minimum sample size was 96. This sample was doubled to compensate for the potential bias of the cluster method. The sample was finally set at 240 to compensate for possible nonrespondents.

Eight mothers were interviewed in each of the 30 clusters. During each of the baseline and the final surveys, 237 mothers were interviewed.

Survey activities

The key survey activities included the following :

- Social preparation of the villages chosen for the study
- Training of supervisors and interviewers
- Pilot test of the questionnaire
- Data collection, entry, and analysis
- Feedback to project, health district staff, and villagers.

Data collection was conducted for five days using four teams of four interviewers each. Each team was led by a supervisor from the project and/or local MOH staff. The interviewers were MOH and WV nurses and midwives.

The data entry was carried out by WV and MOH staff under the supervision of the project manager. This lasted four days. The entry program of Epi Info 5.01 was used to enter data. The check program was used to validate data entry and the analysis program to analyze data entered.

Results

EPI

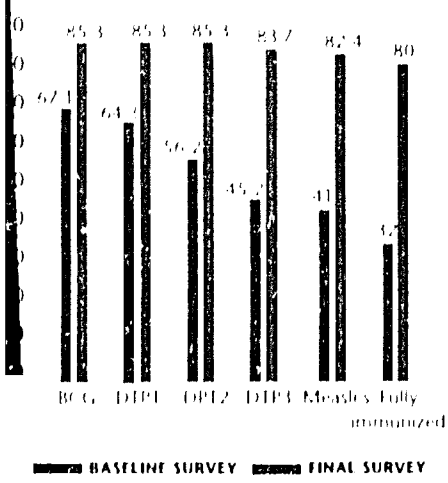
Through the social mobilization and health education activities led by the 82 trained female village health promoters and 41 traditional birth attendants (TBAs), mothers' knowledge related to EPI issues has been positively changed : the percentage of mothers who know that a child needs four or five contacts to be fully immunized increased from 29 percent (baseline survey) to 50 percent (final survey).

As a result of the mothers' knowledge changes, the coverage has significantly increased as shown in figure 1.

A total of 85.3 percent of children 12-23 months had received BCG (final evaluation) against 67.1 percent during the baseline survey. Similarly, 85.3 percent of children of the same age group had received DPT1 against 64.3 percent measured by the baseline survey. Almost all, 85.7 percent, of children 12-23 months had received DPT3 as compared with 45.2 percent measured by the baseline survey. The measles vaccination rate for children 12-23 months also increased from 41.1 percent during the baseline survey to 82.4 percent during the final survey.

The most significant achievement relates to the percentage of children 12-23 months who were fully immunized, which increased from 32 percent during the baseline survey to 80 percent during the final survey. Of these, 53 percent were correctly immunized according to the MOH schedule against 17.8 percent.

FIGURE 1
Immunization coverage (card) among children 12-23 months



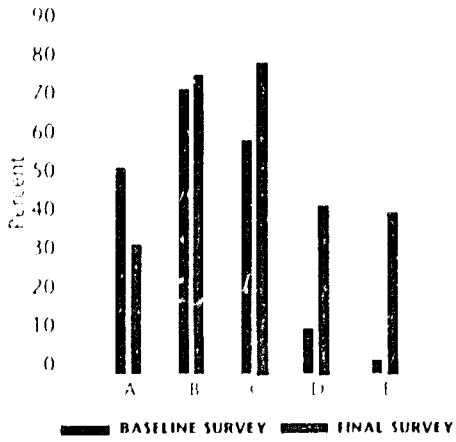
Diarrheal diseases

The project has succeeded in modifying significantly the practices of mothers relative to the treatment of diarrheal diseases as shown in Figure 2.

Fifty percent of infants/children 0-23 months with diarrhea in the past two weeks were treated with ORT (ORS, sugar/salt solution) against 13.3 percent during the baseline survey.

The project has also contributed to a minor increase in the percentage of children breastfed during diarrheal episodes. The percentage of infants/children with diarrhea during the past two weeks who were given the same amount or more breastmilk has been increased from 69.7 percent (baseline) to 74 percent (final evaluation).

FIGURE 2
Diarrhea disease control program achievements



A. Frequency of diarrhea among children 0-23 months

B. % of children 0-23 months with diarrhea who received the same amount or more of breastmilk

C. % of children 0-23 months with diarrhea who received the same amount or more of fluids.

D. % of households who have access to latrines.

E : % of mothers who seek treatment from VHWs for their children with diarrhea.

A similar change has been noticed in the rate of administering fluids to children during diarrheal episodes. The final survey indicated that 78.9 percent of infants/children with diarrhea were given the same amount or more fluids against 57.9 percent (baseline survey).

As a consequence of the creation of a village network of trained TBAs and village health workers (VHWs), the number of mothers who seek treatment from VHWs for their children with diarrhea has increased from 2.2 percent to 40.2 percent.

Also, there has been a significant increase in the percentage of the households with access to pit latrines (from 10.1 percent to 43.1 percent) due to the training of local craftsmen to build latrines, and through sensitization activities led by the village sanitation committees members.

Another positive impact realized as a result of the training of the rural populations and the drilling of 71 boreholes, is the decrease in the percentage of children 0-23 months who had diarrhea during the past two weeks from 50.2 percent to 31.2 percent.

Malaria control

There has been a significant change in mothers' practices related to malaria prevention. Sixty-six percent of mothers used chloroquine chemoprophylaxis against 5 percent during the baseline survey. The percentage of children 6-36 months and pregnant women who received weekly malaria chemoprophylaxy reached approximately 70 percent in August 1994.

Nutrition improvement

During the three years of the project, there has been a significant increase in the growth monitoring program coverage, as measured by growth monitoring cards. Eighty-four percent of children had growth cards against 27.5 percent. Fifty nine percent were weighed at least once during the last three months against 21.5 percent.

The project measured changes in the feeding practices of infants 0-11 months :

- Ninety percent of infants 0-3 months have been exclusively breasted

against 67 percent. The final survey showed that there were no mothers who used bottle milk to feed their infants 0-3 months of age.

• One hundred percent of infants 0-11 months are still breastfeeding against 88.5 percent for the 12-23 months age group. There has been an increase in the number of mothers who introduced semi-solid weaning foods (millet porridge) between 4 and 6 months: 51.2 percent against 22.6 percent, baseline. (Fig. 3, 4, 5,).

Similarly, there has been a significant increase in the introduction of vitamin A rich foods and fruits between 4-6 months and 7-11 months.

Maternal protection

There has been a significant increase in the use of maternal health care services as indicated in Figure 6. Eighty-one percent of pregnant mothers received at least two prenatal visits against 20 percent (baseline). Tetanus toxoid coverage has been increased by approximately the same magnitude, 81 percent against 58 percent (baseline). The following changes in knowledge and practices were also registered. Seventy-three percent of mothers knew the reason why pregnant women should be vaccinated against TT, up from 29.8 percent (baseline). Eighty percent of mothers knew that pregnant women should consult a health professional within the first trimester of pregnancy against 72 percent (baseline). Both the baseline and final survey indicated a low contraceptive prevalence rate in Niakhene.

Discussion

EPI

In each of the 41 village clusters, a vaccination center has been created to improve the EPI efficiency. To significantly increase the number of children 12-23 months fully immunized before their first birthday, the project has placed special emphasis on social mobilization activities undertaken by trained village health workers and TBAs to encourage mothers on the importance of vaccination.

Village outreach workers such as TBAs, community health workers, and village health committee members were trained to provide health education messages and to follow up children who missed vaccination opportunities. Consequently, DPT dropout rate (DPT1 -DPT3)/DPT1) has been decreased from 32 percent to 5 percent (Figure 7).

UNICEF has complemented the efforts of the project by providing EPI supplies and equipment (cold chain etc). The project has reinforced the MOH monitoring system through periodic feedback meetings to evaluate the success of the EPI, as measured by accessibility, utilization, and effective coverage indicators.

Diarrheal diseases

Emphasis was placed on social mobilization to raise the level of community awareness to diarrheal diseases, to

FIGURE 3
Percentage of infants who are being given semi-solid foods by age group

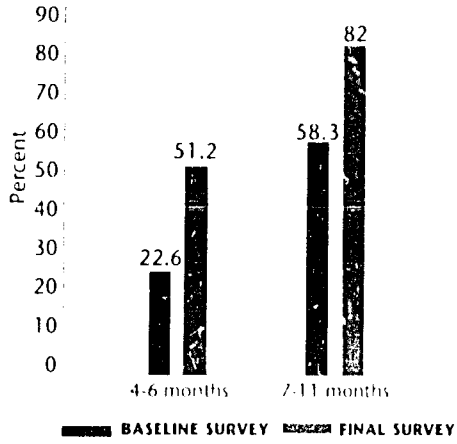


FIGURE 4
Percentage of infants who are being given fruit by age group

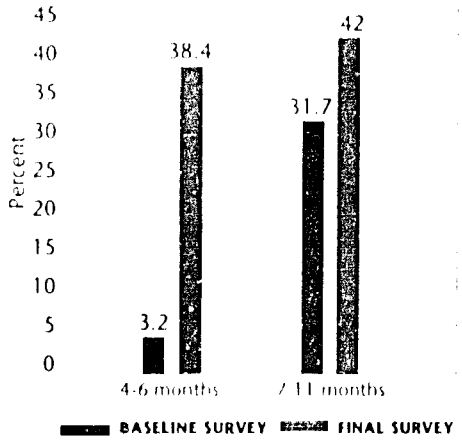


FIGURE 5
Percentage of infants who are being given vitamin A by age group

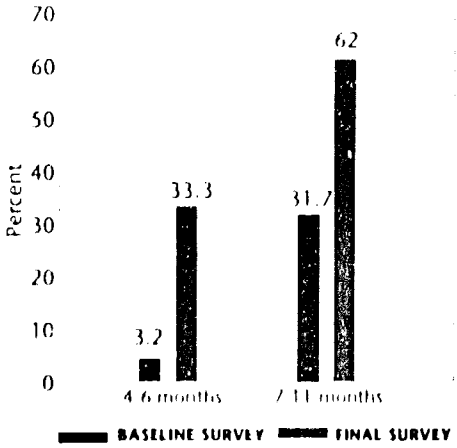


FIGURE 6
Percentage of pregnant women who received at least two tetanus toxoid vaccine and at least two antenatal visits prior to the birth of their child

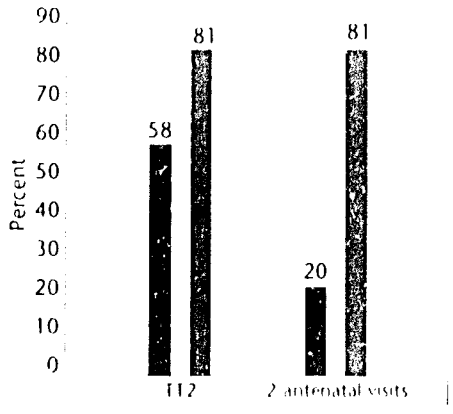
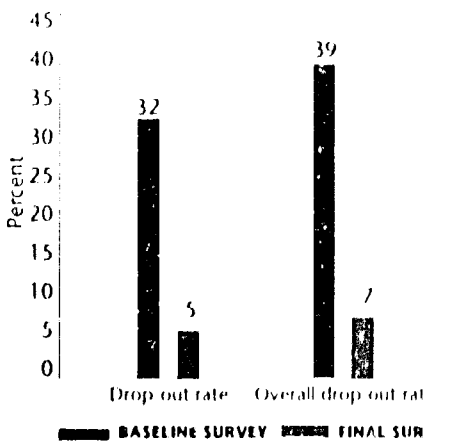


FIGURE 7
EPI drop-out rate ((DPT1-DPT3) /DTPT) and overall drop-out rate ((BCG-Measles) / BCG)



enable mothers to identify when treatment is required, and to promote appropriate sanitation, feeding, and use of homemade solutions.

In order to increase the benefits of the diarrheal disease control interventions, World Vision has drilled 71 bore-holes in the pilot area. Also local craftsmen have been trained to build 481 latrines and 124 jars with faucets to better improve the management of potable water at the household level.

Malaria prevention

The project has increased the chemoprophylaxis program (chloroquine) coverage which targets children under 3 years and pregnant women, through training of outreach workers, such as TBAs, health promoters, and village health committee members on the methods of prevention, including personal protection methods, and vector control (environmental management).

A pilot project with impregnated mosquito nets is being conducted in two villages. The project expects to use lessons learned to expand this into other villages.

Nutrition

Nutrition was emphasized through training of outreach workers to train mothers on breastfeeding and infant/child feeding practices. The promotion of growth monitoring was emphasized as a tool to strengthen nutrition education activities.

Another strategy involved the integration of community garden activities with the promotion of health activities.

Maternal protection

Antenatal care services led jointly by the TBAs and health post chiefs were used to decentralize the health care delivery system around the 41 village huts built by the villagers themselves. Husbands were also encouraged to attend social mobilization sessions. Consequently, 50 percent of mothers have their maternal cards.

Training and equipping of TBAs were carried out with a focus on high risk births and live delivery skills and the reinforcement of the referral system between TBAs and health post chiefs.

The low contraceptive prevalence rate, in this predominantly Muslim community, is particularly due to religious and cultural taboos and barriers. Also, the MOH family planning program over the past 10 years has been centralized in the urban areas. It was only recently that new initiatives have been made to decentralize this program into rural areas.

Sustainability strategies and community participation

The following approaches were used to enable communities to increase their ability to effectively sustain the CSP activities:

- Emphasis on social mobilization activities to increase community involvement in all phases of the project implementation including the organization of quarterly feedback meetings with the community health workers.
- Reinforcement of the community health system through the training of women leaders to become village health promoters, TBAs, and village committee members.
- Strengthening of intersectorial collaboration with the other WV integrated development activities.
- Strengthening the collaboration with the health post chief in planning and delivery of child survival interventions.
- Use of indigenous resources to build health huts and latrines.
- Initiation of income generation activities.
- Collection of user fees of 50 CFA (local currency) per vaccinated child, 100 CFA per prenatal visit, 200 CFA per maternal card, and 1000 CFA per childbirth assisted by TBAs. The health committees set the fees for health services and manage their own financial contributions.
- Use of proceeds obtained from the revolving drug fund through the chemoprophylaxis (chloroquine) program. (Each of the 75 village centers received a first stock of chloroquine cans of 1000 tablets each for sale at five CFA per tablet. The proceeds of the sale are used to regularly renew the initial drug stock during the rainy season. This is in addition to the government's essential drug program through the Bamako initiative.)

Cost data

The Thies CSP has achieved these results at an estimated cost per beneficiary of $2.85 per year. The nutrition intervention represents 20 percent of the total direct cost. Diarrheal diseases control represents 20 percent of the total direct cost. Immunization represents 20 percent of the total direct cost. Maternal care represents 20 percent of the total direct cost. Malaria control represents 10 percent of the total direct cost. Social mobilization represents 10 percent of the total direct cost.

Conclusions and lessons learned

World Vision/ Senegal, over the past eight years, has brought many valuable lessons which have positively affected the sustainability of its CSPs, in both Louga (northern Senegal) and Thies regions.

- WV/S approached and treated the community as an equal partner in all steps of the CSP's design, implementation, and evaluation. CSPs were presented as an integral part of the community development activities, addressing the basic needs of the community such as water, food, income generating activities, etc.
- WV/S emphasized building community support and capacities through the training of strong village structures (women associations, health committees) to assure that the CSP's achievements will be sustained after the projects themselves have been completed. Also, community health education initiatives have been strongly integrated into the agenda of the village women's associations.
- The selection, training, and empowerment of the village women leaders as health promoters or TBAs were essential for program effectiveness, and guaranteed the project sustainability.

• WV/S has trained village health committees to implement and manage a successful cost recovery mechanism, which includes revolving drug funds, collection of user fees as a means of sharing certain recurrent costs, such as renewal of essential drugs, construction of health huts, etc.

The success of the cost recovery activities was based on an intense activity of social mobilization carried out by the WV integrated team. This enabled WV/S to establish a relationship with the villagers based on partnership and mutual respect. Villagers demonstrated a degree of pride to be the owners of the health projects in their respective villages.

Nevertheless, the recent devaluation of the CFA by 50 percent announced by the government in January 1994, and the chronic food production deficit, constitute two major constraints which may limit the willingness and ability of the community members to continue to ensure financial viability of their own health program activities in the future.

• Where the illiteracy rate is highly significant, it is important to integrate the CSP program into a literacy training program to ensure a more effective impact on behavioral change.

• While it is possible to increase the knowledge of mothers in the CSP area within a three year implementation period, it is nonetheless evident that a longer project implementation period is required to achieve significant behavioral changes.

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Innovations for Increasing Immunization Coverage

Abstract

From 1991 to 1993, the Province of the Moluccas in eastern Indonesia had the lowest immunization coverage in Indonesia. Project Concern International carried out a USAID-funded Child Survival program in this island province with the primary objective of increasing immunization coverage of the target population.

PCI's child survival activities in this vast expanse of a thousand isolated islands required the development of some innovative approaches. These included: 1) establishing an immunization cold-chain management database and computerized monitoring scheme; 2) enlisting support from outside the health sector by involvement of local government officials in monitoring the local immunization clinic implementation; 3) initiating a peer-training program for health center immunizers; 4) developing computer software for streamlining the nationally used health information system (HIS) for monitoring and reporting local immunization coverage; 5) establishing the usage of a Tetanus Toxoid Life-time Immunization card; 6) initiating policies to increase access to TT through an accelerated school immunization program; 7) establishing community-based neonatal tetanus surveillance; and 8) conducting a social marketing program including radio quiz shows, newspaper crossword puzzles, and a school-based child-to-mother health education program to promote immunization program awareness.

By the end of the project, population-based survey data revealed the immunization coverage of children 12-23 months old had risen from 45 percent to 60 percent, while mid-1994 MOH monitoring figures showed an increase to 85 percent for children under 1 year.

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Background

Geographic

The Province of Maluku (or The Moluccas) is located in eastern Indonesia and consists of more than 1,000 islands. Located between the large island of Sulawesi and the western end of Irian Jaya (formerly Dutch New Guinea), extending from 3 degrees north latitude to 9 degrees south latitude, it consists of four kabupatens (districts) and one kotamadya (municipality) divided into 56 kecamatans (subdistricts) with 1,518 villages and hamlets. Maluku covers an earth surface area of 851,000 square kilometers (equal to the area of Pakistan) with a land mass of only 10 percent of this area. Maluku is comprised of mostly hilly and mountainous land (57 percent) with a very low percentage of lowland (15 percent) and undulated land (28 percent). The area is mostly of volcanic and coral origin with several active volcanoes and mountains ranging up to 3,000 meters in height.

The total population of Maluku is 1,904,000 (projected from 1990 National Census) of whom 40 percent are under the age of 15 years and 14 percent are under the age of 5 years. The population density of Maluku is extremely low averaging about 17 persons/km^2, not including the capital city of Ambon which has a population of about 275,000. In Maluku the number of families per village averages about 200. Like much of Indonesia, most of the population (81 percent) of Maluku live in rural areas. About 70 percent of the villages are located more than 10 km away from the nearest puskesmas (community health center); and 65 percent cannot be reached by wheeled vehicles.

There are 133 indigenous languages spoken in Maluku. Unlike the rest of Indonesia between 50-60 percent of the people are Christian, the rest being Moslem or animistic. The major products are fish, timber, pearls, and spices (cloves, nutmeg, and cinnamon).

Problems

From 1991 to 1993 the Moluccas had the lowest immunization coverage in Indonesia. One-quarter of the population endured a measles coverage of less than 10 percent. Only 49 percent of children under 2 were found to have Road-to-Health cards, and only 16 percent of women had proof of complete tetanus toxoid coverage in their last pregnancy. These deficiencies were primarily due to the difficulties encountered by the Ministry of Health (MOH) in providing services to a geographically isolated populace spread over an area equal to 10 percent of the surface area of all of Indonesia.

Immunization coverage at time of baseline (PCI coverage surveys, 1991-92)

	Maluku	National (1991)
BCG	66%	94%
DPT1	67%	97%
Polio3	57%	89%
Measles	57%	85%
TT2	16%	53%
Drop-out	15%	8%

Most immunizations are given by mobile teams at monthly village integrated health posts (posyandu[1]).

[1] *The posyandu is a community-supported monthly clinic that provides immunizations, growth monitoring, nutrition education, vitamin A, antenatal care, family planning, and diarrheal disease control (ORS packets) for pregnant mothers and children under 5. It is organized by the community and served by community volunteers (kader) with the provision of technical assistance from local health center (Puskesmas) staff.*

However, due to geographic remoteness, almost one-quarter of the population was only served quarterly or, at best, annually by posyandu. Moreover, of those villages that were readily accessible, only 71 percent are active monthly.

Strategies

Cold-chain survey

A survey of all 101 health centers that conducted immunization activities throughout Maluku was conducted in early 1992. The survey included information on staff, transportation, cold-chain and immunization equipment, vaccine stock, immunizer training and knowledge about contraindications for vaccine, plus village posyandu implemented. The information was used to create an immunization program management and cold-chain database. The baseline survey revealed several problems that were amenable to improvement:

1. There was a clear maldistribution of physicians.
2. Only 63 percent of the facilities were storing vaccine at the proper temperature.
3. Only 43 percent of the facilities were monitoring the temperature daily as recommended by the Ministry of Health and the World Health Organization (WHO).
4. There was a maldistribution of transport vehicles.
5. Most immunizers were not vaccinating children who had fever, diarrhea, or even a cold, resulting in an extraordinary number of potential missed opportunities.
6. Expired vaccine was not being discarded.
7. Vaccine stock books were not being used.

Thus, although the presumption had been that most cold-chain problems were due to the difficult geographic situation, it became evident from this survey that many of the problems were due to lack of equipment and staff, and deficiencies in vaccine management and immunizer knowledge. These latter could be corrected.

The results of the survey were reviewed at meetings of doctors and immunizers in all five districts. Letters of instruction were issued by the provincial MOH clarifying contraindications for vaccine and the policies for vaccine storage and management. A copy of the database was established at the provincial MOH using PFS (professional file system). With the establishment of semi-annual updating of the database, a regular pattern of supervisory visits by the district EPI officers was established. Over the ensuing two years the updated database was reviewed and presented to MOH at semi-annual meetings.

By the spring of 1994, the latest data revealed that 82 percent of the health centers had correct refrigerator temperatures with 78 percent conducting regular temperature recording and monitoring. Expired vaccine had almost disappeared. Immunizers demonstrated a marked improvement in their knowledge of contraindications and by qualitative survey were less likely to withhold immunizing mildly sick children.

From this work a simplified supervisory checklist has been developed using the model proposed by EPI/Jakarta. In this program, health centers are scored on 20 criteria related to the cold-chain and immunization program management. The checklist has been computerized using PFS for easy entry and ranking of health centers. The program will be installed on all the district computers as part of Child Survival X (CSX) activities.

Immunizer peer management training

The above surveys brought us to the realization that poor management skills were often the cause for poor immunization results. Good management is not taught in a course—it is a behavior pattern in an individual. If you did not learn to organize yourself as a young person, it is not likely you can learn to change this pattern by attending a course. Many old habits and behavior patterns have to be changed. This is not always possible. Management skills must be learned on the job if they can be learned at all. And we have learned that the best person to assist with this is another immunizer—one who already has a good management style. Thus, an immunizer-to-immunizer training program was developed wherein a successful immunizer is rewarded with a 10-14 day trip to another area where the immunization program is running poorly. Here the successful immunizer works side-by-side with the "poor" immunizer passing on points and demonstrating techniques for more effective management of the program.

The program has been very successful. All 10 health centers that received an immunizer "consultant" visit have subsequently demonstrated significant improvement in coverage. The cost of the program is nominal at about $50 per 10-day visit. The MOH in Maluku has agreed to continue this program with their own funds beginning in 1994.

Intersectoral cooperation

In Maluku, PCI has worked with the MOH to increase the number of posyandu which are implemented each month through the formation of multisectoral, provincial, district, subdistrict (kecamatan), and village posyandu management teams (PMTs) which are responsible for monitoring monthly indicators of posyandu function. It has been found that involving local government in posyandu implementation and immunization program advocacy has been an effective means for increasing resource mobilization. This same strategy was used in achieving support for Indonesia's highly successful family planning program. The health information system (HIS) developed within the framework of this PMT program provides the local government leaders with information each month on where posyandu implementation is lacking in order to better target resources. It has been seen that the MOH alone cannot implement and, at the same time, promote the immunization program. Thus these multisectoral teams have proven to be an effective way of improving multisectoral and local government support for child survival activities.

The posyandu monitoring data compiled by the head of village development for each kecamatan use three indicators from the immunization local area monitoring (LAM) and one for posyandu attendance. From the raw data, a score is calculated for

each village and a ranking performed. The four lowest-ranked villages are reported to the kecamatan governor who then is supposed to take action to ameliorate the situation of poor posyandu implementation in those villages. The kecamatan data is sent on to the district level where it is compiled by the head of village development, scored and the kecamatan ranked. This delineates which kecamatan are having the greatest problems realizing posyandu implementation.

Appropriate measures are then taken. This usually requires a visit to the poorly performing area. Before this HIS was developed, the local government had no definite data on which areas needed attention, much less what steps to take.

The local provincial and district governments have ensured the sustainability of the posyandu management team scheme by officially decreeing its implementation by law. Budgetary provisions have already been realized in the province and three districts for the fiscal years of 1994-95. The remaining districts will follow.

Computerized local area monitoring

Indonesia uses a LAM scheme as a management tool in the immunization program. Based on the number of doses of vaccine given, health centers each month produce a series of bar graphs depicting in rank order the percentage of the annual target achieved by each village in their area. Thus sub-standard villages are graphically identified providing an opportunity for decision-making and targeting resources. At the next level, district EPI managers re-draw the same graphs according to health center performance. This data moves further up to the province and then eventually is reported to the national EPI office.

A complete report requires that separate graphs be produced for DPT-1, Polio-3, Measles, TTI, TT2 and drop-out for DPT1-Polio3, and TTI-2. These seven graphs are all drawn by hand. Although the procedure is a helpful management exercise, the process is time-consuming and often suffers from mathematical errors. At the district level the monthly task consumes several days. Once the graphs are drawn they must be photocopied and sent on to the province by mail.

PCI has computerized the LAM reporting with a program called MANISE (managemen imunisasi setempat, or local immunization management) that facilitates data entry, calculations, and printing of the graphs. The usual two-day chore at the district level takes less than one hour on the computer, and graphs can be reproduced on the printer in minutes to provide extra copies for feedback to the field. Data is sent on a diskette to the province where another MANISE program compiles the data for a national EPI report. The program is written with Foxpro in Indonesian with pull-down help menus. PCI has helped to install it in three districts and the province, and has recently received a UNICEF grant to expand it to five more provinces, plus write the national program.

The program in itself is a money-saver for the MOH. What normally takes two whole days for the compilation of data and the drawing of graphs by hand is now accomplished in 40 minutes with the software. The added advantage is that the results are more accurate and they can be quickly relayed to the next level on the network by sending a diskette only. There is no further need to mail bulky hard copies that require expensive postage.

At the request of the EPI/Jakarta to pilot this program in other areas and develop a viable computer network for reporting, UNICEF in Indonesia has recently agreed to provide funding support to install MANISE in the districts of five additional provinces. This will be undertaken during CSX.

Elimination of neonatal tetanus

Indonesia has recently launched a campaign to eliminate neonatal tetanus on Java and Bali by 1995 and the rest of Indonesia by the year 2000. The current national TT-2 coverage for pregnant women is only 65 percent. Indonesia has had a policy of only allowing pregnant women to be immunized with TT and more recently elementary school children in two grades. In order to accelerate improved TT coverage, PCI in 1993 requested and obtained permission from EPI/National to undertake a program of immunizing all women of childbearing age who attended the posyandu (regardless of pregnancy status). This increased the target population of women eligible for TT immunization from 3 percent to about 25 percent (an eight-fold increase). As expected, over the ensuing year, the number of doses of TT delivered jumped four to five times the usual number.

In addition, an accelerated school immunization program was devised. School girls receive five doses of dT/TT between the first and ninth grades of elementary school (ages 5 to 15). Adding the school program further expanded the target population to 70 percent of females (5 to 40 years of age). Projections show that 95 percent of this target group will all have received three TT immunizations by 1999, and 74 percent will have received a full five doses by that time.

The new campaign emphasizes that women of childbearing age need five tetanus toxoid shots to attain lifetime immunity. In order to monitor the program, PCI designed and printed 100,000 TT Lifetime cards for distribution and recording. Currently with the support of UNICEF and WHO, and based on the PCI field trials of the new card, the central MOH is considering modifying national EPI policy. A policy meeting on this issue will be conducted in mid-September. The use of the Lifetime card will obviate the further use of immunization cards for marriage candidates and pregnant women.

Elimination of neonatal tetanus, however, requires a surveillance program. Currently most cases of neonatal tetanus reported come from hospitals. The majority of cases are not reported since villagers expect, almost routinely, that a certain proportion of newborns will expire each year. PCI has developed a community-based surveillance system using trained traditional birth attendants (TBAs). The TBAs report births and deaths with a simple pictorial reporting form. Newborns who die in the first month of life are reported to the health center

where the midwife is obliged to make a village visit to actively trace the cause of death through interviews. If a case is found, the health center authorities will summon all the village women to attend two mass TT immunization sessions. The TBA reporting form and scheme have been endorsed by the provincial MOH for all future TBA training and development. The reporting form costs less than 90 cents per hundred.

Social marketing strategies

PCI has also supported the formation of social marketing committees within the posyandu management teams to promote the development of a social marketing program for posyandu attendance and immunizations. The social marketing program includes the following components:

1. Mass media—monthly radio quiz show, newspaper quizzes, banners, and "bumper stickers" for bicycle rickshaws.

2. Development of health education messages delivered weekly in 600 churches and 110 mosques.

3. TBAs distribute Road-to-Health cards and TT cards to promote immunizations.

4. School posyandu program utilizing elementary school students to instruct their mothers and neighbors on the importance of attending the posyandu.

Based on two pilot projects in Maluku and Sumatra, it has been found that elementary school students can be used as advocates for the posyandu. PCI in partnership with the Ministry of Education has developed a curriculum and trained fourth and fifth grade physical education teachers to use it in remote villages where multi-media campaigns cannot reach. The 16 week curriculum requires students to complete homework assignments with their mothers in specially designed workbooks. Homework also includes the completion of four "mini-surveys" in the neighborhood covering posyandu attendance, immunization coverage, breastfeeding, and diarrhea management. This provides a previously untapped conduit for maternal health education. The incorporation of a contest format with points awarded for attendance of registered children at the posyandu provides substantial incentive for student participation in the program.

Evaluation with pre- and post-testing of randomly selected mothers and examination of health center records have demonstrated dramatic increases in the proportion of children with Road-to-Health cards, posyandu attendance, and immunization coverage in 10 pilot villages in Maluku. Attendance at the posyandu and the proportion of children with Road-to-Health cards doubled resulting in a two-fold increase in children completely immunized.

The program will be conducted in 625 schools over the next three years directly reaching more than 50,000 mothers. The Ministry of Education in Maluku has sanctioned the inclusion of this program into the formal fourth grade teaching curriculum. Participating teachers will receive "credit points" toward professional advancement and future promotions. Prizes (soap, toothpaste, shampoo, margarine) for the contest format have been provided as a promotion by Unilever. The major recurrent costs will be the provision of the workbooks which are about 50 cents each. UNICEF is currently promoting the school posyandu program with the National Ministry of Education in an effort to realize expansion of this program to other provinces.

Results of immunization innovations

By the final quarter of the project (June 1994) a survey revealed that the proportion of children with Road-to-Health cards had risen from 49 percent to 67 percent. Average monthly attendance at posyandu increased from 30 percent to 48 percent.

With this increase in accessibility to immunizations, it was not surprising to see that a repeat immunization coverage survey revealed that all the immunizations for children 12-23 months old had increased from the baseline. Those completely immunized increased from 51 percent to 64 percent while the proportion completely immunized before their first birthday rose from 45 percent to 60 percent. Since, by convention, only 12-23 month old children are assessed, there is always a lag of one year in realizing the effects of immunization interventions. The MOH monitoring system found that enough doses of measles were given to children under 1 in the past year (1993-1994) to achieve 85 percent coverage.

Documented (with cards or clinic registers) tetanus toxoid coverage increased in pregnant women with TT-2 rising from 11 percent to 23 percent.

The Impact of a Child Survival Project on the Health and Nutrition of Mothers and Children in a Rural Nigerian Local Government Area

Abstract

This paper presents the impact a Child Survival project has had on the health and nutrition of mothers and children under 5 years living in the Ogo Oluwa area of Western Nigeria. The project served a target population of 8,053 women (15-45 years) and 8,644 children (0-59 months). The project, jointly funded by USAID and World Vision Relief and Development, Inc., received an initial four-year grant (FY 88-92), but has since been granted an extension and expansion for another three years (FY 93-95).

In improving the health of the target populations, the project worked in collaboration with the community, local government, local mission hospital, the Oyo State Agricultural Development Program, and the International Institute of Tropical Agriculture. The project successfully introduced the cultivation and use of soybeans, and trained community members as village health workers, traditional midwives, and nutrition promoters among other strategies. The results of the midterm and final evaluations conducted in 1990 and 1992, respectively, were analyzed. Improvements ranging between 21.9 percent and 296.7 percent were recorded in 14 out of 17 indicators monitoring the five main interventions, including nutrition and child spacing. Details of these positive impacts are presented in the paper.

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Background

The Ogbomoso South Child Survival project (OSCSP) which is funded by the United States Agency for International Development (USAID) and World Vision Relief and Development, Inc. began activities during FY1989 for an initial four year period. The project was initially confined to Ogo Oluwa local government area of Oyo State, Nigeria, but has since been expanded to an adjacent local government area. The project area is completely rural. The total population in the project area was estimated at 37,041, with 8,644 children under 5 years and 8,053 women of childbearing age as target populations [1]. Over 70 percent of the adult population farm as the main occupation, on a subsistence level. Sixty-three percent of the women had no formal schooling, while the average schooling for those that had primary and some post-primary education was 2.5 years [2]. The average family size was 8.5 persons. Health facilities were few and far between. This paper presents the impact the project had on the health and nutrition of mothers and children in the area.

Project design

In implementing this project, the staff worked in collaboration with many groups. The communities selected volunteers who were trained as village health workers (VHWs), traditional midwives (TMs), and nutrition promoters (NPs). The cost of the initial training of these community based workers was jointly born by the community, the local government, and the project. The communities, through the community development committees (CDCs), provide accommodation used as the health posts. These posts serve as centers for immunization, training of mothers in child survival activities, treatment of minor ailments, and other health promotion activities. The project staff also worked in collaboration with the health staff of the local government.

The Baptist Medical Center (BMC) Ogbomoso is the project's primary partner. It serves as a referral center for cases referred by the VHWs and traditional midwives. The family planning unit of the center provides modern contraception services that are not available at the community level. The Kersey Children's Home is a nutrition rehabilitation center run by the BMC. All severely malnourished children who cannot be successfully rehabilitated at home are referred to this center.

The project also liaised with the International Institute of Tropical Agriculture (IITA) and Oyo State Agricultural Development Program (OYSADEP). A team from IITA demonstrated the various uses of soybeans to the project staff and VHWs. The soybean seeds that were given to the farmers by the project for planting were obtained from IITA and OYSADEP. The staff of OYSADEP conducted training for the farmers on cultivation of soybeans under the sponsorship of the project. These agricultural extension workers also provided technical support to the farmers. The experiment was so successful that the number of soybean seeds recipients rose from 88 in 1991 to 1,430 in 1992. The project staff, VHWs and NPs train mothers on how to enrich the family diet using soybeans.

Results

The results of the midterm and final evaluations conducted in 1990 and 1992, respectively [3][4], are presented in the table below. Both evaluations were conducted using the World Health Organization/Expanded Program on Immunization 30 cluster methodology.

Discussion

The table shows some of the trends that occurred between the two evaluations. Almost all of the parameters showed positive movements.

Control of malaria

Malaria is a major problem among the population served. In a survey conducted in 1991, 58 percent of children under 5 years and 20.8 percent of pregnant women in their third trimester were found to have malaria parasites when their blood was examined[1]. The positivity was evenly spread among the different age groups in the children whereas primigravidae were the most affected among pregnant women. With an average of four episodes per child per year and loss of appetite for four to five days per episode, as many as 20 days of deficient intake per annum could be attributed to malaria alone. As a result of project activities through the numerous health posts manned by VHWs trained under this project, the number of children who received prompt treatment for malaria almost doubled. Also, the number of pregnant women who received malaria chemoprophylaxis was raised by one-third. The number of women who could have suffered from anemia and premature labor and babies who could have suffered from growth retardation or even death in utero due to malaria was thus reduced.

Child spacing

There is no organized social security for aged people. For this reason, many people rely on the benevolence of their children in their old age when they can no longer provide for their needs. Since infant mortality is high, there is the tendency to bear many children with the hope that some will survive to adulthood. Any open talk about modern contraception was frowned on initially in the project area. However, social marketing coupled with health education has increased the awareness of benefits and needs for child spacing and other child survival activities, and there has been a great increase in the use of modern contraception. Within two years, the rate has risen from 5 percent to 42 percent—an increase of 740 percent! The morbidity and mortality associated with frequent childbearing to both mothers and children are thus reduced.

Immunization

Many people in the project area believe in the efficacy of injections. The project staff capitalized on this belief to promote immunization. The proportion of children who were fully immunized rose by 76 percent with a concurrent reduction of dropout rate by 45.1 percent. Measles, which had reached epidemic proportions in the past, is no longer common. The greatest impact of immunization was among mothers, among whom the coverage rate for two doses of tetanus toxoid rose by 296.7 percent. Within a short time the project is sure to eliminate neonatal tetanus from the community.

The mothers have demonstrated their willingness to pay for immunizations for themselves and their children, especially when available close to their homes. For this reason, if the government system fails to deliver vaccines, private practitioners can fill the gap. This ensures sustainability of this service.

Health indicators among children under 2 years and their mothers at midterm and final (1990-1992)

Children	% Midterm 1990	% Final 1992	% Change
Immunization coverage:			
BCG	55.6	**83.3**	49.8
OPV/DPT3	43.5	**72.5**	66.7
Measles	53.9	**65.7**	21.9
Fully immunized children	36.2	**63.7**	76.0
Drop-out rate	23.5	**12.9**	45.1
Nutrition:			
Appropriate weight for age	63.0	**77.0**	22.2
Control of diarrheal diseases:			
Fluids during diarrhea:			
More	18.1	**35.0**	93.4
Less	52.0	**41.7**	53.5
Same amount	29.9	**23.3**	22.1
ORT usage rate	49.0	**58.1**	18.6
Solid foods during diarrhea:			
More	13.3	**21.0**	57.9
Less	53.3	**65.0**	22.0*
Same amount	33.4	**14.0**	58.1
Malaria control:			
Chloroquine use	41.3+	**81.0+**	96.1
Maternal care and family planning:			
TT2	12.1	**48.0**	296.7
Malaria chemoprophylaxis	54.3+	**71.0+**	30.8
Modern contraceptive use	5.0	**42.0**	740.0

+ figure based on 1991 survey

Control of diarrheal diseases

There was an increase in the number of mothers who gave more fluids to their babies with diarrhea. Concurrently, fewer mothers gave less or the same amount of liquid thus reducing the risk of dehydration. With more mothers giving more fluid, mortality due to diarrhea was reduced. However 65 percent of mothers gave less food to their babies during a diarrhea episode. This practice was 22 percent more prevalent than that observed two years earlier. This is particularly worrisome since an earlier study which looked at important causes of malnutrition in the area implicated persistent diarrhea as either a primary or a secondary cause of death[5]. This practice, therefore, may decrease some of the gains of nutrition intervention. The challenge for the project is to continue to 1) increase the knowledge and practice of continued feeding during the acute phase and increased feeding during convalescence, and 2) improve water supply and sanitation, both important factors for diarrheal disease prevention.

Child and maternal nutrition

There was only a 22.2 percent increase in the number of children who attained appropriate weight for age. This is so because, more than any other interventions considered in this paper, the outcome of nutritional interventions are affected by many other health factors. While a well-nourished child is able to resist disease, in most cases, each disease episode in a child leaves him worse off nutritionally. In addition to persistent diarrhea, other factors that are known to affect nutritional status in the project area include seasonal variation of food availability, mode of feeding, restriction in availability of farm input, presence of malnutrition among other siblings, death of other siblings and polygamy[2,3]. The linkage that the project had established with IITA and OYSADEP on the one hand, and the community on the other, addressed some of these issues but considerably more efforts must be made to address these underlying issues.

Moreover, erroneous beliefs bout causes of malnutrition have een corrected by the dramatic hanges that were observed by moth-rs of severely malnourished children ho were fed a soybean enriched diet. n addition, the farmers produced ore soybeans than the family could t. The excess grains were sold ereby improving the economy of the mily. Some of the women have ken to selling soy products as an come generating activity. These tors are having positive impacts on e health and nutrition of the women d children.

nclusion

its short span, the Ogbomoso South ild Survival project has brought ut positive impact in the health l nutrition of women and children ts area of operation. The challenge sustain the impact and to con-ue to make further improvements, ticularly in the nutritional status of dren. The project staff have always t this in focus.

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Child Survival Intervention among a Nomadic Community in Kenya

Abstract

Purpose – To improve the health status of mothers and children among the nomadic Maasai community of Loitokitok in Kajiado District of Kenya.

Methods – mobile clinics • review of Loitokitok Child Survival project documents • midterm evaluation focusing on qualitative and quantitative assessment of the CSP operations and achievements. Specific methods included questionnaires, focus group discussions, in-depth interviews, observations, and examination of records: target groups, mothers, children, and community leaders.

Results – Full immunization coverage of under-5s has increased from 38 percent (project baseline, 1987) to 71.5 percent (1993). • reduction in poor nutrition from 38.3 percent (1987) to 7.7 percent (1993). • ORS awareness has increased from 47 percent (1987) to 91.3 percent (1993). • modern contraceptive use increased from 5 percent to 25.1 percent. • five Ministry of Health (MOH) dispensaries have been renovated and are being equipped with cold-chain capacity • a major drop in prevalence levels for all childhood diseases in the division. • a total of 328 community volunteer workers at all levels, and 18 MOH and health sector agencies staff have trained in community-based health care and TOT knowledge and skills, while 7,578 mothers have had health education talks.

Conclusion – Effective community mobilization, improved health knowledge, and the willingness of community members to use child survival services were key to the success of the project.

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Loitokitok Child Survival project staff, World Vision/Kenya

Introduction

In 1984-85, devastating droughts hit East Africa. World Vision/Kenya provided emergency relief during the ensuing famine years. In 1988 USAID granted World Vision funding to provide child survival interventions to a community of about 300 Maasai families who had been rendered destitute by the loss of their livestock and had settled at Namelok Village in the Loitokitok Division, Kajiado District, in the Rift Valley Province of Kenya. The Loitokitok Child Survival project (CSP) achieved improvements in immunization coverage, nutritional status of children, knowledge and use of oral rehydration therapy (ORT), and knowledge of methods of prevention and control of communicable diseases. The project also contributed to local capacity for health service delivery by training cadres of community health resource persons, and by institutionalizing maternal and child health and family planning (MCH/FP) services of the Ministry of Health (MOH) through enhancement of the MOH dispensaries' cold-chain capacity. The USAID Mission in Kenya granted the project funding for a second (sustainability) phase, implemented from 1992 to 1994, to continue capacity building activities to enable the communities to assume greater responsibilities for health care, and to enable the district MOH to consolidate CSP mobile services and integrate them into community-based, static services.

These achievements were made despite numerous constraints, including the migratory lifestyle of the nomadic Maasai, high illiteracy rates among the local population, and lack of institutionalized systems for planning and review of community-based primary health care programs by the MOH, NGOs, or communities. Behavioral changes were also hindered by cultural practices and taboos among the Maasai, including early marriage and restricted social interaction between men and women, female circumcision, restricted feeding of primigravidas, strong faith in traditional healers and belief in the power of witchcraft associated with illness and sudden death. Finally, the harsh climate, difficult terrain, and lack of roads caused logistical problems which limit service delivery, particularly mobile clinics.

Community participation and involvement were the foundations on which the project was activated. The project design, key activities, and interventions were based on those health needs reported by the community as major concerns: malaria, prenatal and postnatal care, and measles. Strong commitment from t community and the MOH, a formal system of ongoing and widespread community involvement in project planning, monitoring and implemer tation, and World Vision's emphasis collaborating with local NGOs and o utilizing locally available financial a human resources contributed to the positive changes achieved through t Loitokitok CSP.

The project continued to prov a range of child survival services an

build local capacity throughout the second phase of the project. A comparison of data gathered during mid-term evaluations of both phases of the project (1990 and 1993) suggests that the child survival and capacity building interventions continued, and had a positive impact on health status in the Loitokitok Division communities after USAID central funding ended.

Project area and local population

The project area covers Loitokitok Division, a 22,106 sq. km. area 250 km. south of Nairobi. A large portion of this semi-arid land is occupied by Amboseli National Park and West Chyulu Game Reserve.

In 1988, this division had an estimated population of 84,000 people. Its population density of 12 persons per km^2 is one of the lowest in the country. Although the area historically has been the home of pastoral Maasai, at present, as a result of a recent influx of mainly Kikuyu and Kamba migrants, it has a comparatively mixed population.

The Maasai are traditionally nomadic, keeping herds of cattle, goats, and sheep. Their families tend to be polygamous, extended, and relatively conservative in retaining their traditional way of life. Pastoralism, as a basic means of production, is at the center of Maasai social and economic life. Water, pastures, settlements, and families are organized around livestock. The residential pattern is based on the enkang (enclosure occupied by up to 10 families). Four or five of these enclosures (enkangitie) are grouped into a cluster (emurua) representing 25 to 30 households which usually share resources such as water, salt, pasture, as well as sharing rituals, celebrations, and security.

Rationale for the community-based Child Survival project

Historical and cultural factors played a role in the development of this community-based CSP. The primarily nomadic local population living in dispersed settlements necessitated a highly decentralized approach to health care delivery. The CSP placed great emphasis on health volunteers, while providing logistical support to enable technical staff to reach the maximum population. Considering the strong influence cultural norms have on health-related behavior in conservative Maasai communities, maximum utilization of local health care delivery agents (motivators with a deep understanding of the cultural context of attitudes and practices) was more appropriate than the use of paid technical professionals from other communities.

The community itself had exhibited interest and initiative that suggested prospects for positive, sustainable impact. In 1985 the Loitokitok community, through the local Namelok village leaders, approached World Vision/Kenya with a request for assistance in meeting priority health needs. Through dialogue with the community and informal look-listen-learn surveys, World Vision/Kenya staff gathered information indicating that malaria, antenatal and postnatal care, and measles prevention were major concerns of the community. The increasing openness of the Maasai to new influences and behavioral changes, as evidenced by Namelok community's transition from nomadic pastoralism to settled agricultural activity in the face of an ecological disaster, provided a unique opportunity to attempt to influence behavioral changes in other areas, especially those relating to family health. Finally, the community's willingness to undertake fund-raising for a static health facility at Namelok was a further indication that addressing these health needs was a top priority. The demonstrated willingness by the community to raise funds, and in other ways support health related activities, provided a basis for further self-help activities.

The project also benefited from the willingness of MOH officials to collaborate with World Vision/Kenya during project planning, so that the project activities would complement Ministry goals for health service delivery and meet some of the MOH's perceived needs. The high interest level of Kenya-based PVOs in community based health care delivery and in the methodology of community based training and general development work opened many possibilities for collaboration and sharing of knowledge.

Community involvement in project implementation

The Child Survival project was designed to ensure maximum involvement and participation of the community through representation at various levels of the organizational structure. The central management committee works with project staff at the planning and management level to oversee day-to-day management and administrative activities of the project. The committee also conducts annual project performance reviews, and develops the plan of action and budget for the subsequent year.

Twelve village health committees link the community with the central management committee, channeling the community's health and development needs to the committee. They also represent the community during the design, management, and evaluation of the project, nominate community members for training, and supervise trained health volunteers. The committees actively support the monthly mobile clinic visits by ensuring that a suitable site in the community (usually under a tree, in a school or church building) has been identified, cleared and a temporary motor route prepared by the community for the convenience of the mobile team.

Health volunteers chosen by the community are trained to support project technical staff, promote health activities at the village level, and mobilize community participation. Committee members, community health workers, and TBAs participate directly in health interventions by giving health talks, referring patients, and making follow-up home visits to EPI defaulters and mothers of malnourished children. It must be noted that this CSP's marked success is attributed in large part to the fact that mothers faithfully and regularly brought their infants and children in for immunizations. Community, religious, ranching and women's group leaders, school

teachers, and students are also key resource persons.

Interventions have been successfully implemented through 20-25 mobile clinic centers identified by the beneficiary community throughout the division. At each mobile clinic visit, a battery of health care delivery services are provided to reduce cost per unit service delivery per beneficiary. The Namelok dispensary, built with community-raised funds, has provided the necessary management and logistical operations base for implementation of Child Survival interventions, providing cold-chain facility for the mobile immunization clinics and referrals for curative services and antenatal care.

In addition to the active involvement of community members, the local population donated land, funds, labor, and materials for construction of a dispensary, project offices and staff housing, a tree nursery, demonstration garden, protective fencing, and water pipes. They also provided monthly wages for the water pump attendants.

Methods of study

In the various evaluation surveys carried out during pre-project, midterm and final evaluations, a combination of cross-sectional survey and study methods were used to acquire information about the impact of Loitokitok CSP. Project monitoring, records, and reports were used to validate findings.

Institutional and community capacity building

The CSP renovated five MOH dispensaries, now returned to MOH control. Four of these have been equipped with cold-chain capacity and currently deliver immunization, growth monitoring, health education, antenatal and postnatal clinics, and curative services to community members. Dispensary management committees have been established and function in seven dispensaries in the Loitokitok Division. These committees have mobilized the beneficiary communities to provide resources for maintaining the cold-chain facility through levying minimal cost sharing fees for services. In addition, the committees, community motivators and MOH staff nurses at the health centers and dispensaries hold quarterly information exchange, management review, and planning meetings. An NGO liaison committee has been formed to coordinate health activities in the division through regular forums for awareness creation and training for management of community-based health care services and activities.

During USAID funding, the MOH and clinic staff, along with traditional birth attendants and community volunteer workers at all levels, were provided with skills and training on a variety of topics including immunization, child spacing and family planning, safe delivery, training of trainers and teaching adult learners, the participatory evaluation process, and participatory rapid appraisal techniques. Health awareness education and management training contributed to a positive change of attitude, enhanced project ownership, and empowered the community to manage its development through mobilizing its own resources. Training opportunities are continuing in the communities.

TABLE 1
Morbidity trends among children 0-23 months and 0-5 years, 1989-1993

Disease	MTE Phase I Sept 1989	Final Eval Phase I Sept 1990	MTE Phase II 1993
Skin diseases in children 0-23 mos.	17.7%	7.9%	1.0%
Diarrheal and vomiting diseases among children 0-23 months	29.3	32.7	18.8
Malnutrition rate among children 0 - 5 years	15	10.9	
Malaria in children 0-5 years	47.1	41.3	9.7
Eye diseases	63.5		6.7

Impact on morbidity

A comparison of data collected during midterm and final evaluations of the first, centrally USAID funded phase of the CSP, and data collected for the midterm evaluation of the second, locally USAID funded phase, shows a reduction in infant, child and maternal morbidity, (Table 1). This would suggest that positive changes in health service delivery and health behavior were maintained after the initial project ended.

Project interventions also appear to have contributed to positive changes in health knowledge in the community. The ability of women of childbearing age in the Loitokitok communities to prepare and administer home-made ORT increased from 62 percent in 1992 to 92.3 percent in 1994.

Improvement on environmental health management is one of the most effective ways of improving overall health status of the people in any community. There have been gradual positive achievements in environmental health in terms of increasing the percentage of the population practicing improved environmental health practices. The following are some of the changes that have occurred since the project's inception: new pit latrines have been constructed and a being used by more than 20 percent households, 25 percent of household now use rubbish pits, 16 percent use dish racks, and 30 percent use clothe lines. Improvements have also been made in access to safe water sources and potable water; for example, 20 percent of households now have acc to irrigation canals, and over 30 percent have access to piped water (Nolturesh pipeline).

Discussion and conclusions

Our aim here is to provide facts bas on our field experience. A commun based program can make sustainabl improvements in health status and immunization coverage in the com nity, given an appropriate commur entry process and planning. The Loitokitok CSP experience suggests

that it is possible to raise immunization coverage to more than 80 percent (Table 2) in rural communities such as those of the Maasai, with effective community mobilization and participation in the program. The success of this project can be attributed to the fact that priority was given to training and creating appropriate awareness of the need and importance of immunization. Given that the illiteracy rates in Maasai land were high, it was a difficult task. However, with the help of the local leadership, the elected health committees and recruited community motivators, the community was effectively mobilized and their positive attitude toward the program was maintained.

Community demand for an ncrease in the number of health enters in the project area, and a trong outreach program also contributed to the project's success. Instead f waiting for individuals to come to he centers, staff visited families in heir Manyattas ("homesteads") once a onth, ensuring continuation of egular project activities including mmunization, growth monitoring, ntenatal services, and health and utrition education. Drop-out rates e generally higher in such populations, but due to follow-up of defaulters by the community motivators and the community health workers, the drop-out rate was only 8 percent as compared to the national average of 17 percent. The mothers' commitment to protecting their children against preventable diseases has been the strongest foundation for the success of the project. The mothers had basic knowledge of the reasons behind health and disease even before the introduction of the project. The project provided them with an understanding of how to control and prevent diseases in the community.

BLE 2
mmunization coverage, 1990-1993

ccine	Final Eval Phase I 1990	MTE Phase II 1993
G	**93.7%**	98.7%
T 1	**92.3**	98.3
2	**85.9**	94.0
3	**79,0**	83.6
io		
h dose	**92.6**	79.5
1	**86.2**	93.6
2	**79,6**	90.2
3	**75.3**	83.2
asles	**83.3**	73.5
immunization[1]	**74.3**	71.5
overage ong women 49 years)	**10**	81.9

lly immunized" is defined as having ved all of the correct doses at the correct s/ages.

Lesson learned and recommendations

- For collaboration, there must be mutual written agreement by all parties, spelling out clear roles, responsibilities, and resources to be shared, in a memorandum of understanding document signed by the concerned parties. In the absence of this, collaborating parties may dishonor commitments and obligations.

- Delay in the completion of the renovations and equipment of the five MOH dispensaries with cold-chain capacity, resulting from weakness in supervising the contractor, led to missed opportunities to reorient, reorganize, and experiment with the proposed integrated health delivery strategies.

- To strengthen the management of health services at the renovated dispensary level, interagency dispensary management committees comprised of the community representatives, MOH and health NGOs have been established and are functional.

- The service coverage showed remarkable improvement within the first phase but showed reduction in some indicators during phase II, associated with a drop in the number of trained community health workers, mainly due to lack of, or inappropriate, incentives and unmet expectations of the CHWs. Total volunteerism does not work.

- There were no deliberate attempts to tap input resources (cash) for recurrent costs by the community. There was no gradual phaseout of external funding.

- Collaboration, networking, and cooperation between MOH, NGOs, and PVOs hold the key to future sustainability and project success.

- Involvement of the community and community leadership in the design, planning, implementation, and evaluation of the CSP was key to the success.

- Effective community mobilization, awareness creation, solidarity building, and the willingness by the community members to use child survival services were also key.

- Community volunteerism works when it is built upon already existing community social structures and human resources (e.g. TBAs), due to the existence of incentive mechanisms.

- Due to the remarkable achievement of the Loitokitok CSP, the program hosted several representatives from both national and international institutions for learning and experience exchange purposes.

- It is important to balance the pace of development activities implementation with that of the community's pace of change.

- Collaborative and networking initiatives should aim at exchange of information, experience, and resource sharing rather than competition and duplication of efforts and resources.

Impact of a Child Survival Project in the Peri-urban Areas of Tegucigalpa

Abstract

The project's target area includes 44 communities of the peri-urban slums of the capital, Tegucigalpa. The purpose of the project is to sustain and replicate successful strategies that increase mothers' knowledge and practice related to child survival interventions, by providing training, technical assistance, and support to community members, groups, and Ministry of Health (MOH) community health center staff. Indicators are monitored through the project's health information system and KPC surveys. The most recent survey (10/93) demonstrates a very significant impact of project activities on mothers' knowledge and practices: 68 percent of children < 2 years with diarrheal episodes received ORT (23 percent in 1988); immunization coverage in children < 2 years, 83 percent (26 percent 1988); TT2 coverage in women of fertile age, 53 percent (29 percent 1991); 77 percent of mothers identify signs and symptoms of pneumonia in children; use of modern contraceptives, 46 percent (33 percent 1991). Other accomplishments: 450 CHVs trained and active; MOH staff trained in project's implementation strategies and child survival interventions, in which their knowledge increased from 51 percent to 94 percent; increase of community organization: four community feeding centers; 28 village health banks.

Conclusion Mothers' and children's health improves by mobilizing community members and MOH community staff to promote and provide child survival interventions.

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Project HOPE/Honduras

Honduras is a Latin America country with a total population of 5.1 million, an annual population growth of 3 percent and a population distribution of 44 percent urban and 56 percent rural, with an infant mortality rate of 63/1000 live births. (UNDP/91).

Project HOPE/Honduras received USAID funding for Child Survival projects for two funding cycles: Sept. 1988 through Feb.1992 and Sept. 1991 through August 1994.

The CSIV project was implemented Oct. 1988 in 20 peri-urban communities of the capital of Honduras, Tegucigalpa, which is the largest city in the country, with an estimated population of 1 million and surrounded by slum areas. The goal of this project was to contribute to reducing infant and child morbidity and mortality in the high risk group of children under 5 years old (focusing on children under 2). This was achieved by means of developing a comprehensive community based outreach system of basic services which allows for monitoring of health status and rapid attention in the home and/or referral to the appropriate Ministry of Health (MOH) service site.

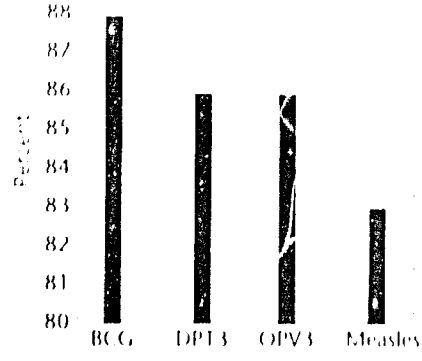
In Sept. 1991 the CSVII project extended activities in 20 CSIV communities and expanded to 24 new communities with a total population of 100,000 and a target population of 19,700 children under 5 years old and 28,547 women of fertile age. The goal of this project is to sustain and replicate successful strategies that increase mothers' knowledge and improve practices related to child survival interventions, by strengthening the technical and administrative capabilities of community health center (CHC) staff to train and supervise community health volunteers (CHVs), and by mobilizing community organization an resources to further the health of mothers and children.

To achieve this goal, Project HOPE in coordination with MOH health cent staff selected and trained CHVS and organized community groups to promote and provide key educational messages and services at the community level through the implementation of th following strategies/activities for each intervention:

Immunization

- Home visits to provide educational messages, identify children with incor plete immunization coverage, and referrals to the corresponding service site.
- Promote and conduct immunizatio campaigns conducted bimonthly at established community sites.
- Support national immunization campaigns.

EPI coverage – percent of children 12 to 23 months who received BCG, DPT 3 OPV 3, and measles vaccine



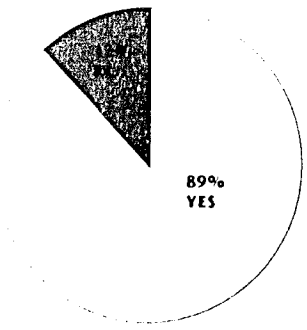
CDD

- Home visits to provide educational messages with emphasis on ORT during diarrheal episodes; nutritional management of the child with diarrhea and preventive measures; identification of children with diarrhea; distribution of ORS; and referral of cases to the corresponding health services.
- Community clean up campaigns.
- Chlorination of water for family use.

ARI

Home visits to provide educational messages; identify children with ARI danger signs (pneumonia); referral to health services; and training of mothers on management of ARI in the home.

Pneumonia control: medical treatment = percent of mothers who sought medical treatment for infant/child (less than 24 months) with cough and rapid, difficult breathing in the past two weeks

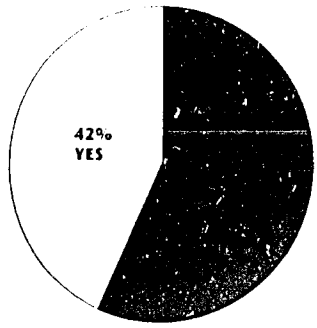


Project objective: 70%

Nutrition

- Growth monitoring through home visits and group meetings.
- Promotion of home and community gardens.
- Implementation of supplementary feeding centers in coordination with other PVOs and government institutions, for children under 5 years of age diagnosed with malnutrition.
- Organization of mothers' groups for management of feeding centers and promotion of child survival interventions.
- Vitamin A supplementation and promotion of locally available vitamin rich foods.

Exclusive breastfeeding: Percent of infants under 4 months who are being given only breastmilk



Project objective: increase to 30%

- Educational messages through home visits and group meetings emphasizing exclusive breastfeeding; weaning foods; and nutritional management of the malnourished, sick and recuperating child.

Family planning and maternal health

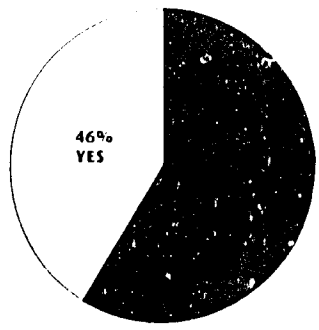
- Promotion of modern contraceptive methods.
- Distribution of condoms through CHVs.
- Educational messages on prenatal and postnatal care and reproductive risk.
- Identification and referral to health services for prenatal and postnatal care of women with reproductive risk and/or incomplete TT coverage.
- TT immunization of women of fertile age during bimonthly community-level campaigns.

In addition, in July 1993 Project HOPE implemented an income generation project under a USAID matching grant cooperative agreement in selected communities of the CSVH catchment area. This project develops village health banks to assist women in increasing family income and improving health status through participation in member-managed revolving credit funds. Activities include health education and promotion, specific health interventions, and sale or distribution of products that improve community nutrition and health. Peer pressure is used to ensure mothers internalize and practice appropriate child survival behaviors and participate in health activities.

Currently the project has implemented 26 village health banks, which benefit 655 women and their families.

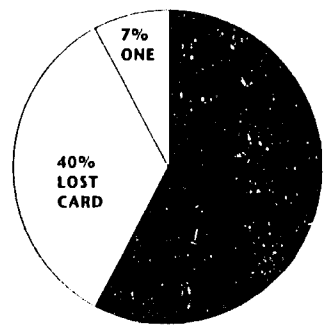
The organization and participation of community groups fostered by the project has been a key to its success. According to the external midterm evaluation conducted in August 1993, Project HOPE has made important contributions to child survival in Tegucigalpa. The project has: 1) increased the service orientation of CHC staff toward the community and strengthened their ability to recruit and train CHVs; 2) developed multidisciplinary CHC teams responsible for the training and supervision of all CHVs in their catchment area; 3) successfully promoted multi-institutional coordination/collaboration; 4) assured that 44 communities have skilled CHVs; and 5) trained and provided support to additional CHVs

Modern contraceptive usage = percent of mothers who desire no more children in the next 2 years, or are not sure, who are using a modern contraceptive method



Project objective: 38%

Tetanus toxoid coverage: percent of mothers who received two doses of TT vaccine



Project objective: increase to 35%

in catchment areas of other local and international PVOs.

Progress towards CSVII project objectives is monitored through community, project, and CHC monthly reports and KPC surveys. Since 1988, four KPC surveys have been conducted for midterm evaluations and to provide staff with data that will permit timely and appropriate decision-making.

The most recent survey conducted in October 1993, presented the following results for CS indicators:

Project achievements

- Accomplishment of the proposed objectives.
- Substantial increase of MCH staff capabilities to develop community outreach activities, and their knowledge of child survival interventions (from 51 percent to 94 percent pre- and post-test scores).
- Increase in community organization: 36 village health banks (26 funded by Project HOPE), four community feeding centers, five mothers clubs, two youth clubs, and 44 health committees formed.
- 450 CHVs trained and active in the promotion of child survival interventions at the community level.
- Strong integration of child survival interventions with an income generation project to test the long term sustainability of community based health and economic activities.

Conclusion

The above project achievements have and, we hope, will continue to contribute to improving the health status of mothers and children in the project area. The MOH community health centers' most recent annual evaluation results show a significant decrease in child mortality caused by diarrheal disease and pneumonia, which they attribute in a great manner to the effective community outreach system implemented by Project HOPE.

PART THREE

Effect on Community Organizations that Promote Health and Development

Community Ownership of Mothers' and Children's Health Needs

Abstract

From the beginning (1987), the Dhaka Urban Integrated Child Survival Project has been designed to ensure sustainability through the development of an urban-based child survial delivery system comprised of neighborhood health committees (NHCs) and community volunteers (CVs) drawn from local residents. The community participates in the design of project activities as well as issues of implementation and coordination. The community elects the members of the NHC with one NHC for approximately every 250-300 families in their neighborhood, and each CV serves approximately 100-150 families. The NHCs select CVs and mediate any problems that arise between the CVs and the target families. Income-generating activities are being implemented to provide incentives to CVs.

The project carried out a study to assess the NHCs' and CVs' level of commitment. A descriptive cross-sectional study was done among 46 (13 percent) NHC members and 29 (12 percent) CVs through systematic random sampling. The information was collected using a structured closed-ended questionnaire. The study revealed very high commitment of NHCs and CVs, in spite of the lack of extensive incentives. The attrition rate is 10 percent; most volunteers demonstrate a very strong commitment to their work and the community. Ninety-three percent of NHC members attend the monthly meeting to review the progress of CVs' work and discuss problems that arise between CVs and the community. Seventy-seven and 70 percent of the NHC and CVs, respectively, are well aware of their roles and are involved whenever health problems arise.

Prodosh Kumar Roy, World Vision/Bangladesh

Background

Bangladesh has one of the highest growth rates of urbanization in Asia (6-7 percent per year UNICEF estimate). The urban population of Bangladesh is currently about 22 million and is expected to grow to 37 million by the year 2000 AD.

Dhaka, the capital of Bangladesh, is a rapidly growing city and now has a population of more than seven million people, many of them recent immigrants from rural areas. This rapid increase of population has strained the local governments' capability to provide basic health services to the populace. Greatly affected are the slum areas where there are inadequate or no basic services and the situation of children and women remains a matter of serious concern.

World Vision took on a real challenge in working with the Dhaka City Corporation to cover wards (administrative units) 12, 13, 14 & 51 with an estimated population of 200,000. The Dhaka Urban Integrated Child Survival Project (DUICSP) was initiated in October 1988 with USAID funding to World Vision Relief and Development, Inc., to provide immunization, ORT, nutrition (including vitamin A), and birth spacing interventions.

Introduction of the study

From the beginning (1987) the DUICSP was designed to sustain its interventions through extensive partnering and networking linkages between key private and public sector players and institutional strengthening of ward consortia (the conveners of neighborhood health committe Major emphasis has been given equipping the consortium mem with managerial, technical and raising skills in preparation for phase over. The project helped facilitate the formation of comm infrastructure directed by the w consortia and acts as a partner, moting community ownership sustain the child survival interv tions. The project area is divide 35 compartments having appro mately 1100-1400 families in ea compartment with an average f size of 5.5. The average number members of NHCs in each comp ment ranges between five to sev There are 343 NHC members in NHCs. The CVs total 240, avera seven in each compartment.

The community elected th members of their NHC with on serving approximately every 25(families in the neighborhood ar CV serving approximately 100-1 families. The NHC selected CVs coordinated interactions betwee and target families in terms of C interventions.

In the beginning, it was di to achieve active community pa tion. After an initial communit preparation phase focusing on e sive interpersonal communicati social mobilization efforts durin first phase of the project (three community infrastructure buildi (NHCs/CVs) became easier. The four and a half years of continu efforts to institutionalize the co nity participation through NHC CVs, the project management fe need to assess the level of comm

of these groups to facilitate the evolving project's future direction. Also, assumptions were made that the ownership of mothers' and children's health needs will depend on the level of commitment.

Findings

The project carried out a study to assess the NHCs' and CVs' level of commitment. A descriptive cross-sectional study was done among 46 (13 percent) NHC members and 29 (12 percent) CVs through systematic random sampling. The information was collected using a structured closed-ended questionnaire. The study revealed very high commitment of NHCs and CVs, in spite of the lack of extensive incentives. The attrition rate is 10 percent; most volunteers demonstrate a very strong commitment to their work and the community. Ninety-three percent of NHC members attend the monthly meeting to review the progress of CVs' work and discuss problems that arise between CVs and the community. Seventy-seven and 70 percent of the NHC and CVs, respectively, are well aware of their roles and are involved whenever health problems arise.

Limitations

In addition to a cross-sectional study by questionnaire, focus group discussions could be used for more effective collection of qualitative data.

The study did not measure separately the level of commitment between male and female and older or younger groups of NHCs and CVs.

The study did not compare:
a) the performance (roles and responsibilities) of NHC members or;
b) CVs who were aware of their roles and responsibilities and those who were not.

The study did not measure the present level of knowledge and skills it would be required to continue child survival services for the community after the project phases over.

Discussion and conclusions

To facilitate the active participation of the community in the management of a Child Survival Project, interested community representatives could be organized into groups at the neighborhood level. Through these neighborhood groups, the community can articulate their concerns and discuss issues concerning the community, especially those related to women and children. With committed and motivated project staff and strong interpersonal relationship and networking, commitment from the community groups can be achieved. Once the community groups are organized, positive leadership will emerge from within the groups giving shape to a community level organization.

This community level organization or consortium can represent the community in negotiating with agencies for the basic health concerns of the community. More importantly, they will be responsible for the planning, implementation, monitoring, and evaluation of the project activities.

From the findings it appears that the community people, NHCs/CVs, have undertaken some work in relation to child survival interventions. Though they need more training, supervision, better coordination in their joint efforts, they are beginning to articulate their ideas to give a shape to the ward consortium which in turn will direct the NHCs/CVs to achieve ownership of the Child Survival program.

Lessons learned

1. Urban communities usually have more economic and cultural diversity than those in rural areas, making community organization difficult. However, project efforts in community organization can be successful if interpersonal communications and local networks are effectively mobilized.

2. Staff dedication and commitment to community participation are crucial factors to ensure success of a project.

3. Community ownership is important for sustainability. An operational definition of "community ownership" is helpful for tracking its progress.

4. Sustainability must be addressed from the inception of the project, and decisions about what can or should be sustained should be determined cooperatively between PVO staff, host country institutions and the participant community.

5. Community volunteers, neighborhood health committees, focus group mothers, and traditional birth attendants may not have sufficient commitment to their tasks unless some consideration is given to some kind of incentive (monetary or non-monetary) and recognition.

6. Commitment of the community, especially by the leaders and elites, reinforces changes of health behavior.

7. Technical and managerial sustainability is possible to a certain extent, but financial sustainability is still difficult for mothers from the poorest socio-economic class.

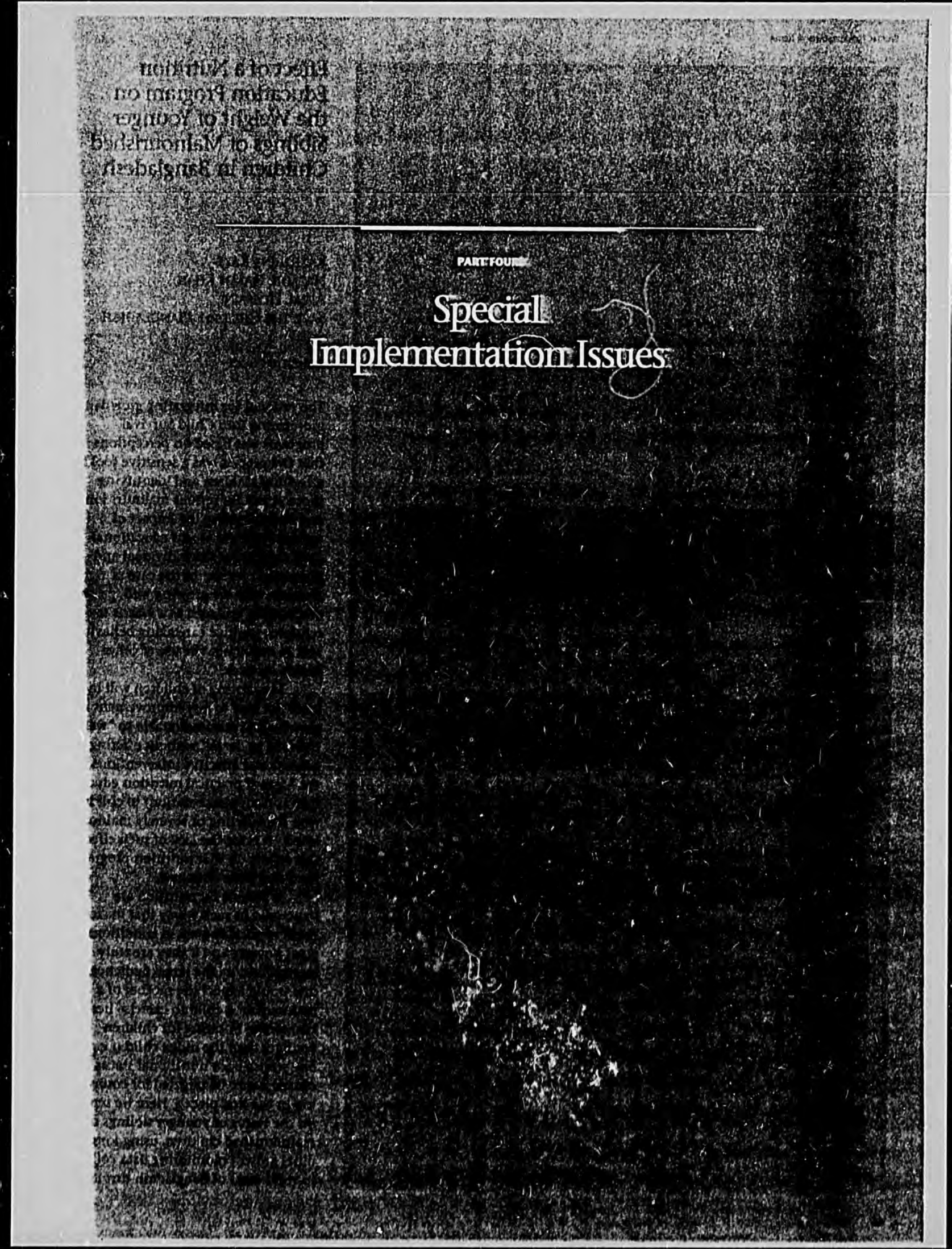
8. Projects designed in response to the community's needs have a greater chance of success.

9. Less monitoring and supervision of community volunteers' activity makes their monthly reporting irregular.

10. To sustain the level of commitment/participation by community people in any Child Survival program, income generation initiatives should be incorporated with the program for sustenance of neighborhood health committees and community volunteers.

PART FOUR

Special Implementation Issues



Effect of a Nutrition Education Program or the Weight of Younge Siblings of Malnourisl Children in Banglades

Abstract

If lessons on nutrition are applicable even in conditions of great poverty and are truly internalized by mothers, they should affect the care of siblings younger than the index children (i.e., those whose poor nutritional status caused mothers to be targeted for nutrition counseling in the first place). We report here on the status of younger siblings of index children, using longitudinal growth monitoring data collected in a community-based health information system on all children ever weighed between January 1, 1987, and September 30, 1992, in four rural areas of Bangladesh.

During the period of this study, all children aged 6 to 36 months were eligible to participate in a growth monitoring and promotion program. "At risk" children (severely malnourished or growth faltering) were followed closely, and their mothers were invited to participate in nutrition training sessions. We then compared weights of severely malnourished "index" children (whose mothers were likely to have participated in the nutrition education sessions) to those of their next younger siblings. At corresponding ages, the younger siblings weighed significantly more in terms of percentage of median weight-for-age (PMWA) than did the index children: the PMWA of younger siblings was about 5 percent greater than that of index children. When normally nourished children (whose mothers did not participate in the sessions) were compared to their next younger siblings, we found the opposite pattern. Differences in birth intervals between older and younger siblings were probably not large enough to account for these patterns. Although the prevalence of severe malnutrition did not change greatly during the study period, the improved nutritional status of younger siblings of severely malnourished children may have contributed to the overall decline in child mortality observed in the project area.

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Afzal Hossain
Save the Children/Bangladesh

Introduction

The rational for integrating grov monitoring into Child Survival programs was based on percepti that the process was a sensitive screening children and identify those at risk for serious malnutr and for evaluating the impact o various nutritional and educatic interventions at the individual population levels. In the case o children who are growing well, monitoring was seen as a mean reinforce positive caretaking bel and to encourage the use of oth health services.

Monitoring of children wi itself not lead to any improvem growth: it is unconscionable to children to death" without offe prompt and effective interventi the form of practical nutrition tion and supplementation) to c who are faltering or severely ma ished. It is for the lack of such tive follow-up that nutrition pr have also been criticized.

If lessons on nutrition are structured in such a way that m them applicable even in conditi great poverty and if they are tru internalized by the target audie one would expect the mother o malnourished child to exercise knowledge in caring for childre younger than the index child (i one whose poor nutritional stat caused her to be targeted for co ing in the first place). Here we on the status of younger sibling malnourished children, using l dinal growth monitoring data c in rural areas of Bangladesh thr

community-based health information system.

Materials and methods

Study area, health information system and growth monitoring program

The data presented here are from health programs implemented by Save the Children's Bangladesh Field Office (BFO) in four rural areas of Bangladesh: Nasirnagar, Rangunia, Ghior, and Tirzapur. Health and nutritional indices are worse in Nasirnagar than in the other areas, reflecting the region's greater poverty, isolation, and cultural conservatism.

During the period included in this study (January 1, 1987, to September 30, 1992), the total population covered by Save the Children's program at all four sites increased from 49,406 to 75,706. Program expansion occurred during consecutive USAID Child Survival grants.

Data presented here are drawn from Save the Children's health information system which is based on registration of all community residents and ongoing follow-up. The demographic base captured in the registration process is updated monthly, as village health workers report on vital events (births, deaths, in/out migrations); during the period of this study, village health workers received stipends for their work. Based on information collected in registration forms, rosters are created to assist village health workers with service delivery (for example, child spacing, immunization, and preparation of ORT); health data collected in these registers are updated monthly. Since 1986, HIS data have been computerized in a program management information system (PMIS).

Growth monitoring and promotional activities were implemented in all four areas, until the completion of the CS7 grant in September 1992. All children aged 6 to 36 months were eligible to participate in growth monitoring sessions. Sessions were conducted by village health workers under supervision of Save the Children's field coordinators and medical assistants) and were usually held at a designated home. In cases where houses were separated by large distances, however, children were weighed within their homes. All children younger than one year and all "at risk" children were weighed once every month; children aged between 12 and 36 months were weighed bimonthly. "At risk" children were defined as those who were a) severely malnourished (in the "red" zone on weight-for-age cards); b) were younger than one year and either did not gain or lost weight during a one month interval; or c) were aged 12 to 36 months and either did not gain or lost weight during a two month interval.

"At risk" children received medical check-ups; their mothers were invited to participate in nutrition training sessions. Three groups of "at risk" children were eligible to receive food supplements: all severely malnourished children, all growth faltering children younger than 1 year who had lost their mothers, and all children from the lowest socioeconomic classes (C, D) where scarcity of food was thought to contribute to malnutrition.

Food supplements were distributed through community centers. Mothers received rations for seven to 10 days at a time, with the understanding that rations would only be used for the targeted child. Children receiving supplements were visited at home every two days by village health workers. Children older than 6 months received chatu, a powdered mixture of roasted rice and dal (one unit of which consisted of 100 gm rice and 33 gm dal and provided 460 calories), in quantities sufficient to meet 75 percent of the child's total daily caloric need for the first month of supplementation and 50 percent thereafter (for example, children weighing 7.8.5 kg received 2 units/day for the first month and 1.5 units/day subsequently). Children were supplemented until they had crossed above the third degree of malnutrition or until they were no longer faltering; in practice, this usually required two months of supplementation.

Nutrition sessions were offered for six to seven days at a center with follow-up at home every two days (two to four hours per day); they were conducted by field coordinators and village health workers. Topics covered included the following: the importance of breastfeeding until 2 years, with supplementation starting in the fifth month; the importance of continued feeding during illness; preparation of chatu for use as a pre-cooked supplement and weaning food; and preparation of a "khichuri" rice/vegetable/lentil stew appropriate for children from foods usually available at home.

Whether or not mothers of "at risk" children attended nutrition education sessions was noted in manual records but not entered into the PMIS; thus we were not able at this point to select from among mothers of "at risk" children, a group who participated in the education sessions and a group who did not. We have no reason to believe, however, that a significant portion of mothers of severely malnourished children declined to participate; the availability of food supplements would have been an added inducement to participate.

Study design

Growth monitoring data which had been collected in PMIS between January 1, 1987, and September 30, 1992, were used to determine the prevalence of various levels of malnutrition by year and to compare weights of older and younger siblings at corresponding ages. Children aged 6 to 36 months were grouped into three-month age intervals, for example, 6-8 months, 9-11 months, 12-24 months, etc. Comparisons between siblings were made within the limits of these intervals.

For determination of change in the prevalence of malnutrition, children were classified according to their percentage of median weight-for-age (MWA); severely malnourished children weighed 60 percent or less than the median for their age; moderately malnourished children weighed from 61-75 percent of the MWA; and normally nourished children weighed more than 85 percent of the MWA.

The main purpose of this study was to determine whether mothers who had (probably) participated in the nutritional education program had

retained their new knowledge and applied it in the care of younger siblings. According to the criteria described above, mothers eligible to participate in the program were those whose children were severely malnourished or growth faltering. We thought that mothers of severely malnourished children were most likely to have attended the sessions, because their children would definitely have been eligible to receive supplements; therefore, we assessed the effect of participation in nutrition sessions by comparing difference in weights between severely malnourished index children and their younger siblings (at corresponding ages) to differences in weights between less seriously malnourished or normally nourished children and their younger siblings. In order to limit this comparison as much as possible to one between children whose mothers had and had not participated in the nutrition education sessions, we eliminated from the less malnourished or normally nourished categories of index children those who had been identified as growth faltering at any time during the study period (and whose mothers might therefore have been eligible to participate in the nutrition education sessions).

For comparison of older and younger siblings, growth monitoring data for the entire 57-month study period were considered together. Children in each three-month age interval were grouped according to their nutritional classification at the time of weighing; if the child was weighed more than once during the three month interval, either the middle weight (in the case of three recordings) or the second weight (in the case of two) was considered. Weights for the same child can be included in different three-month intervals; during the 57 month study period, a child should have been weighed more than once as he or she aged from 6 to 36 months during the study interval.

Next, sibling pairs were identified and elder siblings labeled "index" children. If an older sibling passed 36 months at any point during the study period, he or she was still considered an index child; comparisons of weights, however, were made only between children aged 6 to 36 months during the study interval. Comparisons between older and younger siblings were made for all children together and with children stratified as follows: those living in non-Nasirnagar areas; girls and boys; and those belonging to the two upper socioeconomic groups and the two lower groups.

Results

Numbers of children in study areas and proportions ever weighed

Table 1 shows the total number of children aged 6 to 36 months who lived in Nasirnagar and non-Nasirnagar areas during the study period, by three-month age group. The proportions of children aged 6 to 36 months who were ever weighed during the study period were as follows:

	Non-Nasirnagar	Nasirnagar
1/1/87 - 12/31/87	84%	89%
1/1/87 - 12/31/88	91%	89%
1/1/87 - 12/31/89	98%	93%
1/1/87 - 12/31/90	97%	90%
1/1/87 - 12/31/91	97%	86%

(Proportions are not given for the period January through September 30, 1992, because this was not a full year.)

Prevalence of malnutrition in study year

Tables 2a and 2b show, for Nasirnagar and non-Nasirnagar areas, the proportions of children in each year who were severely malnourished, mildly to moderately malnourished, and normally nourished. Throughout the study period and in almost all age groups, the prevalence of severe malnutrition in Nasirnagar exceeded that in other areas. After 1989, the prevalence of severe malnutrition decreased slightly; its decrease was more pronounced in areas other than Nasirnagar, and was not consistent for all age groups.

Comparison of index children to younger siblings

Regardless of stratification for area of residence (Nasirnagar vs. non-Nasirnagar), sex of sibling or socioeconomic status, we observed the same pattern of weight difference between older and younger siblings as we did when all children were considered together. With index children grouped into four nutritional categories (severely, moderately and mildly malnourished, and normally nourished), Table 3 presents the number of index children and next younger siblings by age; the mean percentage median weight-for-age for index children and siblings in each age group, and t-test value and level of significance for the difference in weight between index child and younger sibling. For each nutritional category of index child,

TABLE 1
Children age 6-36 months living in project area at midyear, by age group and residence

	87		88		89		90		91		92	
Age Group	Non-Nasirnagar	Nasirnagar	Non-Nasirnagar	Nasirnagar	Non-Nasirnagar	Nasirnagar	Non-Nasirnagar	Nasirnagar	Non-Nasirnagar	Nasirnagar	Non-Nasirnagar	N
6 to 8	183	140	254	166	143	133	120	120	147	152	121	
9 to 11	173	179	278	201	173	199	123	185	157	193	167	
12 to 14	217	255	233	278	238	309	158	319	208	323	150	
15 to 17	177	148	174	174	162	186	115	204	151	181	123	
18 to 20	191	142	158	147	150	171	108	232	149	123	151	
21 to 23	141	157	176	175	180	194	126	194	151	182	159	
24 to 26	178	231	218	248	225	270	165	302	221	316	154	
27 to 29	183	158	179	146	168	169	117	182	160	201	141	
30 to 32	217	155	192	155	160	151	125	155	138	128	157	
33 to 36	102	152	142	173	175	171	126	190	161	193	178	

TABLE 2A, B
Proportion of children age 6 to 36 months by Gomez classification, by age group and residence

Age group	87 S	87 M	87 N	88 S	88 M	88 N	89 S	89 M	89 N	90 S	90 M	90 N	91 S	91 M	91 N	92 S	92 M	92 N
Non-Nas.																		
6 to 8	2.4	75.3	22.4	3.9	76.5	19.6	2.5	74.7	22.9	2.8	73.5	23.7	1.9	74.4	23.8	2.9	74.4	22.7
9 to 11	5.4	85.3	9.3	5.1	86.4	8.5	3.2	85.3	11.5	3.9	84.5	11.6	2.7	84.6	12.7	3.8	84.2	12.1
12 to 14	3.9	85.5	10.6	5.3	88.3	6.4	3.1	90.3	6.6	4.3	86.6	9.1	3.5	85.7	10.7	4.3	89.0	6.6
15 to 17	5.8	84.7	9.4	5.9	88.2	5.9	3.3	92.1	4.6	3.3	89.3	7.4	4.0	89.5	6.5	6.7	87.0	6.3
18 to 20	6.3	86.0	7.7	6.2	88.6	5.2	3.6	92.8	3.6	3.5	91.5	5.0	4.3	91.5	4.2	4.3	89.8	5.9
21 to 23	8.0	84.6	7.3	4.8	89.7	5.5	4.8	91.7	3.4	3.3	92.6	4.1	5.0	90.3	4.7	4.1	90.3	5.5
24 to 26	8.3	84.6	7.0	5.2	90.8	4.0	4.7	92.5	2.9	3.1	94.2	2.7	3.7	91.1	5.2	4.0	91.0	5.1
27 to 29	10.1	81.6	8.4	6.7	87.3	6.0	3.8	91.8	4.3	2.4	94.5	3.1	2.5	91.6	5.9	3.8	91.5	4.7
30 to 32	6.6	86.8	6.6	7.3	87.2	5.5	4.8	91.0	4.2	2.4	93.4	4.2	2.5	92.3	5.3	4.3	91.8	3.9
33 to 35	10.1	85.5	4.3	7.2	87.2	5.7	3.8	92.8	3.4	4.2	92.6	3.2	3.2	92.5	4.2	2.8	93.0	4.2
Nassirnagar																		
6 to 8	3.2	72.9	24.0	6.0	76.7	17.3	6.3	83.5	10.3	4.8	86.1	9.1	8.0	83.1	8.9	9.6	81.5	8.9
9 to 11	9.0	85.1	6.0	9.1	81.8	9.0	12.1	83.5	4.4	7.9	86.9	5.2	10.4	85.4	4.3	11.3	84.7	3.9
12 to 14	8.0	87.1	4.9	8.4	83.4	8.2	10.2	85.8	4.0	8.0	87.9	4.1	9.6	87.2	3.1	11.6	84.9	3.5
15 to 17	9.0	84.9	6.0	9.5	85.4	5.0	10.8	86.7	2.5	9.5	88.1	2.4	8.6	89.0	2.3	12.4	85.0	2.6
18 to 20	11.1	85.4	3.6	9.6	86.7	3.6	8.8	88.9	2.3	8.8	89.5	1.8	8.3	89.6	2.1	11.1	86.6	2.3
21 to 23	10.7	83.4	6.0	8.4	88.8	2.9	7.2	89.7	3.1	7.6	90.7	1.7	7.7	89.7	2.6	10.0	87.9	2.1
24 to 26	10.5	85.0	4.5	8.6	89.6	1.8	8.2	89.4	2.3	6.0	92.6	1.4	8.8	89.3	1.9	9.8	89.1	1.1
27 to 29	12.0	81.6	6.4	6.7	90.9	2.3	6.2	91.4	2.5	6.0	92.1	1.9	8.6	89.2	2.2	6.6	92.1	1.4
30 to 32	8.5	81.6	9.9	10.1	87.3	2.5	6.9	91.1	2.0	2.5	95.7	1.7	8.4	90.1	1.5	6.7	91.7	1.7
33 to 35	12.2	31.6	6.2	9.7	87.9	2.4	8.7	89.4	1.8	5.0	94.2	0.9	8.7	89.7	1.7	9.1	89.6	1.3

Note: S= severely malnourished, M= moderate to mildly malnourished, N= normally nourished

TABLE 3
Test results for all children, by Gomez classification and age

Sex ever identified as:	Age groups	Cases Index	Cases Sibling	Mean % median weight-for-age Index	Mean % median weight-for-age Sibling	t value	2-tail Probability
Severely malnourished	6 to 8	183	429	66.89	72.43	-5.14	0.000
	9 to 11	218	438	63.56	69.00	-6.16	0.000
	12 to 14	255	414	62.86	67.37	-5.59	0.000
	15 to 17	297	389	62.61	67.45	-6.79	0.000
	18 to 20	325	361	62.40	67.69	-7.85	0.000
	21 to 23	354	331	63.58	67.66	-6.02	0.000
	24 to 26	367	309	62.79	67.48	-7.12	0.000
	27 to 29	388	292	63.88	68.37	-2.80	0.005
	30 to 32	390	259	62.87	68.49	-8.08	0.000
	33 to 35	322	178	61.73	68.19	-7.38	0.000
Moderately malnourished	6 to 8	200	814	75.53	76.74	-1.46	0.144
	9 to 11	253	833	72.35	73.69	-1.93	0.054
	12 to 14	310	805	73.18	71.89	1.00	0.318
	15 to 17	372	769	70.51	71.52	-1.79	0.073
	18 to 20	430	755	70.36	72.41	-1.46	0.146
	21 to 23	475	695	70.80	71.83	-2.12	0.034
	24 to 26	572	660	70.68	71.38	-1.57	0.117
	27 to 29	602	627	70.40	71.46	-2.40	0.016
	30 to 32	624	572	70.85	71.86	-2.36	0.018
	33 to 35	562	410	70.42	72.39	-3.79	0.000
Normally nourished	6 to 8	270	794	82.36	80.94	1.88	0.061
	9 to 11	323	782	78.78	77.54	1.97	0.049
	12 to 14	372	733	78.79	75.46	2.73	0.006
	15 to 17	422	689	76.94	75.03	3.50	0.000
	18 to 20	483	685	76.91	74.38	5.39	0.000
	21 to 23	535	632	77.60	74.91	5.91	0.000
	24 to 26	561	566	77.44	74.76	5.91	0.000
	27 to 29	606	542	77.83	74.96	6.42	0.000
	30 to 32	656	491	78.93	74.95	9.19	0.000
	33 to 35	539	351	78.97	75.53	7.11	0.000
Total	6 to 8	148	212	87.86	83.66	3.73	0.000
	9 to 11	155	204	84.09	80.31	3.52	0.000
	12 to 14	153	181	86.46	78.38	2.30	0.022
	15 to 17	151	163	82.63	76.90	4.62	0.000
	18 to 20	170	157	82.39	76.72	5.50	0.000
	21 to 23	176	143	82.81	76.96	5.77	0.000
	24 to 26	171	115	82.91	76.34	5.52	0.000
	27 to 29	169	109	83.60	76.66	5.86	0.000
	30 to 32	176	103	84.48	76.23	6.82	0.000
	33 to 35	130	73	84.28	75.15	5.87	0.000

Figures 1-4 illustrate weight difference between index children and next younger siblings.

Younger siblings of severely malnourished index children weighed significantly more than did their older siblings at corresponding ages; the difference between older and younger siblings averaged to approximately 5 percent over all age groups. Younger siblings of moderately malnourished children also tended to weigh more, though differences were not as significant. We see a reversal of this pattern for younger siblings of mildly malnourished and normally nourished index children; in these cases, the younger siblings tend to weigh significantly less than their older siblings.

One possible confounding factor here is the birth interval between older and younger siblings: if the birth interval between severely malnourished index children and their younger siblings is much longer than that between moderately and mildly nourished (or normally nourished) index children and their younger siblings, it may account for the reversal in pattern of differences. The birth interval between the index and younger siblings of the severely malnourished group was two to five months longer than that between the index and younger siblings in the normally nourished category.

Discussion

It is difficult to study children's nutritional status, particularly in relation to socioeconomic factors or program interventions, without longitudinal data on identifiable individuals. Although Save the Children's Child Survival project was designed mainly to improve health services and to increase the practice of protective health behaviors at the family level rather than to set a framework for research, the project's community-based health information system did provide the necessary body of longitudinal data. Had the computerized longitudinal database included information on mothers' participation in the nutrition education program, we could have studied the effect of the program more precisely.

FIGURE 1
Percentage median weight-for-age for severely malnourished index children and next-younger siblings (by age in months)

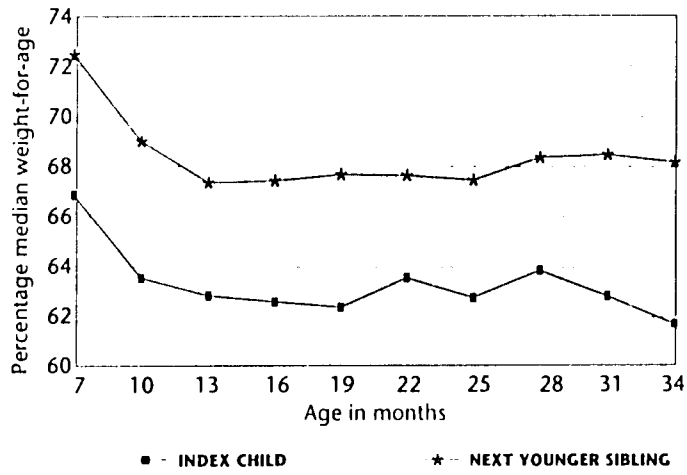


FIGURE 2
Percentage median weight-for-age for moderately malnourished index children and next-younger siblings (by age in months)

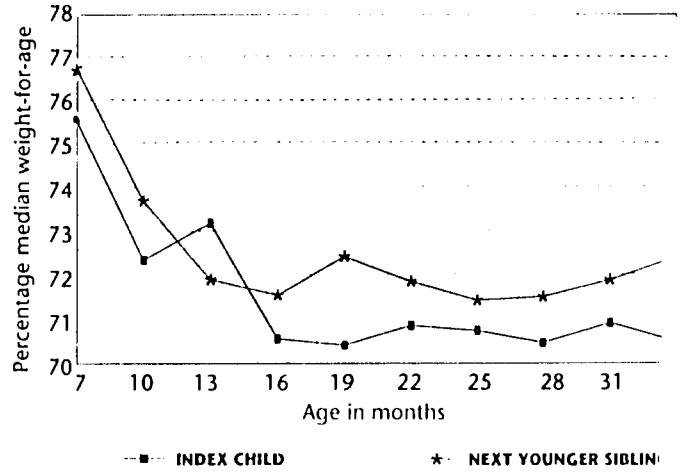


FIGURE 3
Percentage median weight-for-age for mildly malnourished index children and next-younger siblings (by age in months)

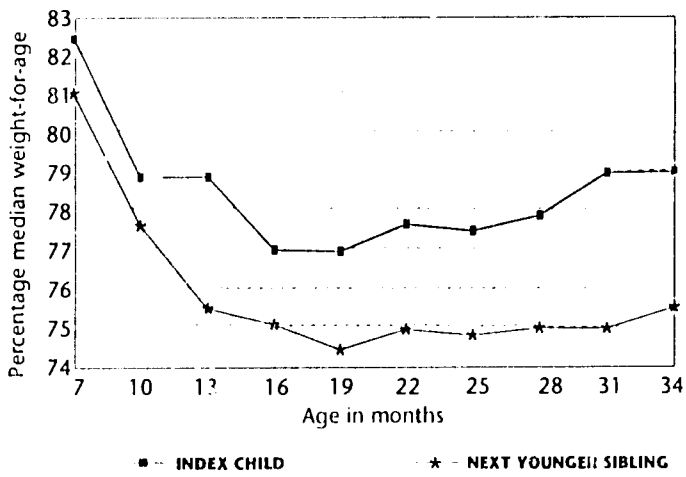
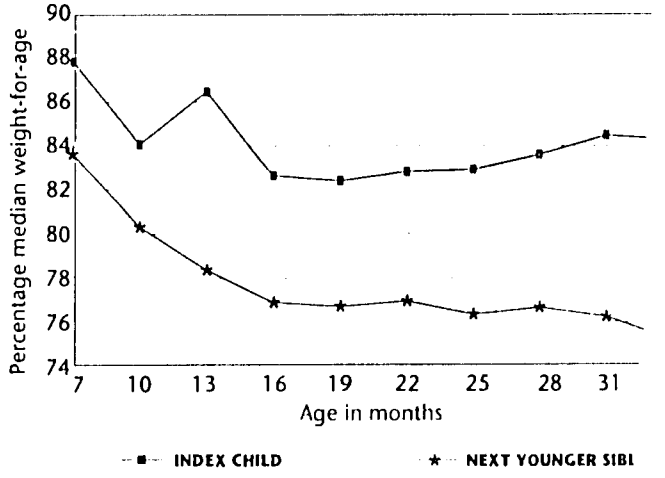


FIGURE 4
Percentage median weight-for-age for normally nourished index children and next-younger siblings (by age in months)



Nevertheless, we were able to document that the younger siblings of severely malnourished children (whose mothers probably participated in the nutrition training sessions) did fare better, nutritionally, than the younger siblings of children whose mothers were probably not exposed to such education. The birth interval between severely malnourished children and their younger siblings was only slightly longer than that between less severely malnourished children and their younger siblings; it is unlikely that such a small difference would account for the growth patterns observed here, but future studies which include larger numbers of children could be designed to control more rigorously for this possible confounder.

Results from this study suggest that mothers were able to apply the lessons they learned in nutrition training sessions to the care of younger siblings. This most likely would not have occurred had Save the Children's program consisted only of growth monitoring; impact is due to the program's intensive and thorough follow-up of malnourished children

Although the prevalence of severe malnutrition remained almos unchanged during the course of thi Child Survival project, child mortali decreased from 24.58 to 10.01 in Nasirnagar and from 12.1 to 5.4 in non-Nasirnagar areas.

Impact of Sustainable Behavior Change on the Nutritional Status of Children

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Abstract

Approximately 400 women and their second and third degree malnourished children with an average age of 29 months participated in nutrition education and demonstration workshops in 1990. The 15-day workshops were one component of the Child Survival project to improve health and nutritional status. Mothers were trained on appropriate feeding and weaning practices. In an attempt to demonstrate to mothers how children's weight and health respond to appropriate feeding, mothers prepared daily meals and fed their children during the workshop. The weights of the children were collected at the beginning and the end of each workshop and each mother was informed about the improvement in her child's weight.

During 1993, Save the Children located 22 of the children who participated in he workshops; their weights and the eights of their siblings were recorded. sing the Gomez classification, the 1993 eights showed that 11.5 percent of the ildren had normal weight as opposed to .8 percent in 1990 and a reduction in ird degree malnutrition from 25.8 rcent in 1990 to 5.7 percent in 1993. ova tests also show that the difference age between the different Gomez asses at the 1993 weighing is not ignificant," indicating that this improvent is not just due to an age increase. eights were also measured in a control oup of children for the same period. An ova test of the change in standard ight between the foyer participants d a control group of children is not significant. However, the Chi square test for the Gomez classes does indicate a significant difference between the participating and control groups with a p value of 0.02.

This data demonstrates that the behaviors acquired during the nutrition education workshops have a sustainable benefit to the participating children. Further study is being done to evaluate the impact of these behaviors in helping mothers protect the siblings of participating children from malnutrition.

Introduction

Maissade Commune, a Save the Children (SC) impact area, is located in the Central Plateau of Haiti. SC's program integrates four key sectors: education, health, economic opportunities, and sustainable agriculture and natural resource management.

One of the key strategies used by SC with the community of Maissade to address malnutrition of children in the commune is the nutritional demonstration foyer (NDF).

The French word "foyer" may be translated as "home" or "hearth." In a locally typical kitchen the NDF provides a two-week intensive nutrition demonstration course. It functions as an itinerant, temporary health structure within a health region in one neighborhood at a time.

The foyer is led by two nutrition educators "monitrices" and is attended by 15-30 mothers or caretakers. Its purpose is to educate the mothers in the best possible utilization of locally available foods, using traditional culinary methods and providing mothers with a nutritious but affordable diet for their children. Additional important health themes complement the nutritional core of this course.

The education of the NDF is achieved in the context of active participation of the mothers; however the foyers' most powerful educational tool both for the mothers and for the entire community is the changes appearing in the children. The best demonstration lesson is seeing irritable, lethargic, malnourished children

begin to smile, run, play, and interact again.

Children participating in the foyers are ages 3-48 months and are identified through the growth monitoring records of the health program as well as face-to-face contact with project staff throughout the program. Criteria for participation include one or more of: weight falling in the M3 column (Gomez classification), recognizable signs of kwashiokor or marasmus and/or a weight decrease over a period of two successive weight sessions separated by a two or three month period of time.

Over a period of four years, more than 1,200 children under 5 years of age have participated in the NDF.

The sustainable agriculture sector together with the associations of farmers is addressing the problem of food security in the commune. However, at a particular period of the year, food scarcity remains a serious concern. The NDF is proving to be a strategy which assists mothers to make good use of the amount of food that is available. It is a strategy in which mothers of malnourished children learn how to improve the quality and quantity of their children's diet with existing resources. Meanwhile, the children are given an unprecedented opportunity to catch up on their growth while the mothers learn how to prepare low cost nutritional meals for the family.

This study analyzes the impact of the NDF on the nutritional status of under 5s in the commune of Maissade.

Methods

SC has been facilitating foyers in Maissade for four years. In order to determine the impact of this activity on the participating children a comparative study was established which included two groups:

Participant group: Children who participated in a foyer with their mothers.

Control group: Children with characteristics (age, nutritional status) identical to the participant group but who did not participate in a foyer.

Selection criteria of participant group

From the list of children who had participated in the 1990 NDF, 122 children were randomly selected from a total of 400. A survey questionnaire was prepared with the following information: weight for age of children before their participation in the foyer, weight for age of children after their participation in the foyer, weight for age during these times, and the gender of the children in the study.

Selection criteria of the control group

In October 1993, children who had the same nutritional status and age of the participating children in 1990 were identified in the rally posts. The same survey questionnaire was used to collect information on 96 control children.

Results

The group of 122 participating children showed a significant improvement in their nutritional status over the three year period. By Gomez classification the 1993 weights showed that 11.6 percent of the children had a normal weight as opposed to only 0.8 percent in 1990 and a reduction in third degree malnutrition from 24 percent in 1990 to 5.8 percent in 1993. There is very little improvement in the group of 96 control children. (Table 1).

Of the participating children, 51.2 percent had a positive increase from one Gomez class to another while 8.3 percent had a negative change. In the control group 25 percent had a positive increase and 27.1 percent had a negative change (Table 2).

Discussion

The study design originally chosen was matched case-control but there were not enough non-participating children with weight data available in 1990 to permit the use of this design which would allow stronger conclusions. The design is retrospective with the controls chosen by contracting the children coming to health rally posts rather than random selecting control children as was done for the participants.

TABLE 1
Proportion of foyer participants and controls, by Gomez classification 1990, 1993

Degree	Participant in 1990	Control	Participant in 1993	Control
N	0.8%	5.2%	11.6%	3.1%
M1	22.3%	31.3%	42.1%	33.3%
M2	52.9%	45.8%	40.5%	51.0%
M3	24.0%	17.7%	5.8%	12.5%

Also, as shown in Table 2, participating children had a 9 point average increase in their standard weights while the control group had a 1 point average decrease. The ANOVA statistical test of this difference in standard weight increase between the participating and control groups shows that it is significant (p < .0001)

TABLE 2
Crossing of children between different degrees of malnutrition before and after the foyers.

Standard weight increase			No change			Standard weight decrease		
Change	Participant	Control	Change	Participant	Control	Change	Participant	Co
M3-M2	13	5		49	49	N-M1		
M3-M1	9	6				N-M2	1	
M3-N	3	1				N-M3		
M2-M1	26	10				M1-M2	6	
M2-N	7	1				M1-M3		
M1-N	4	1				M2-M3	3	
Total	62	26	**Total**	49	46	Total	26	
Percent	51.2	25	**Percent**	40.5	47.9	Percent	8.3	

Three years after NDFs held in
ie communities of Maissade the
articipating children have an im-
roved nutritional status: 51.2 percent
ave a positive increase in Gomez
lassification and an overall average
ncrease of nine points in their stan-
ard weights. However, 48.8 percent
f the participating children had either
o change or a negative change from
ie Gomez class to another. Thus
ere is an overall positive impact, but
ot all the participants have a sustain-
le improvement.

General malnutrition levels
nd through regular nutritional
eillance in Maissade show that
ere malnutrition (Gomez M2 & M3)
reases by age group (0-1 month = 10
ent, 12-23 months = 30 percent,
months = 34 percent). Instead of
worsening pattern the participat-
children are improving as they
ease in age.

However, the results of the
trol group show little change in
ritional level between 1990 and
3. In the group, 15.9 percent had
hange in Gomez class, and
ough 2% percent had an increase in
nez class, 27.1 percent had a
rease. Thus the decrease negates
increase. The control group has
ntained a stable nutritional status
t a slight decrease of one
dard point in their weights.

When the control group is
pared to the participating group,
ANOVA test for the change in
dard weights for these two groups
s a significant difference. This
stical test reinforces the impression
ade.

The CDI is one of the several
s of interventions which is de
ed with an emphasis on parental
ation which assumes a lack of
vledge. We recognize that the
ome-three model places the
n blame on the inadequate child
ng due to harmful economic
tions. In Maissade as in other
of Haiti and the world, the
ity of both models is evident
ough the CDI acts primarily to
ss detrimental feeding practices,
study demonstrates that the new
viors acquired have a sustainable
it to the participating children.

Impact of the Integration of Reproductive Health Strategies within Child Survival Programs: Changes in Knowledge, Attitudes, and Practices of Mothers

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SAVE THE CHILDREN/HONDURAS
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THE POPULATION COUNCIL

Abstract

In 1987, Save the Children/Honduras (ASCH) obtained a CSIII grant from USAID to implement activities in 54 rural communities of Honduras. Three years later, ASCH sought assistance from the Population Council to conduct operations research to test the impact of strategies designed to increase birth spacing. The strategies tested were 1) training personnel to offer reproductive health services; 2) incorporation of reproductive health counselors into feeding centers; and 3) incorporation of contraceptives into revolving fund mini-pharmacies. The effectiveness of these strategies was measured by comparing the results of baseline and final household surveys. Implementation of these strategies resulted in greater access to information, higher levels of knowledge, positive changes in attitudes, improved breastfeeding practices, and an increase in access to and use of contraceptive methods.

The percentage of women who received reproductive health information increased from 19 percent to 50 percent. The percentage of feeding center beneficiaries with breastfeeding problems decreased from 21 percent to 6 percent, while the percentage of women who continued breastfeeding in spite of problems rose from 74.6 percent to 92.3 percent in a one-year period. Contraceptive prevalence increased in all impact areas. Twenty percent of contraceptive users reported receiving their method from an ASCH volunteer. Data collected during the nine months after this project suggest that the strategies are sustainable. The number of new users increased by 48 percent, mini pharmacies continue operating, health centers provide services which did not exist previously, and the strategies tested have been incorporated in ASCH's CSIX project.

Introduction

In 1987, Save the Children/Honduras (ASCH) obtained a grant from USAID for the implementation of a Child Survival project in the rural areas of La Esperanza, in the Department of Intibuca and Pespire, and in the Department of Choluteca. This grant was administered under the CSIII initiative. Activities were initiated on August 1, 1987, and were to conclude on July 31, 1991. However, ASCH received a no cost extension until July 31, 1992. This extended the duration of the project to five years. In January 1992, interventions to improve maternal health were incorporated with funding and technical assistance from the INOPAL program of the Population Council.

ASCH CSIII was implemented in 24 communities of La Esperanza in the northwest region of the country; 30 communities of Pespire, Choluteca; and five peri-urban neighborhoods of Tegucigalpa. The total target population was 26,000 inhabitants of whom 3,780 were children under 5 years of age and 5,350 were women of childbearing age. The goal for the project was to diminish mortality and morbidity among mothers and children. The project included the following interventions: immunization, promotion of oral rehydration therapy, early diagnosis and timely treatment of acute respiratory infections, prenatal care, birth spacing, growth monitoring, promotion of breastfeeding and supplementary feeding, and prevention of HIV/AIDS and cholera. ASCH decided to place a greater emphasis on reproductive health because of the

important influence of adequate birth spacing on child survival.

Objectives and methodology

After the first three years of the project, ASCH realized that it was necessary to develop specific strategies to integrate reproductive health into its Child Survival program in order to improve women's health. ASCH sought assistance from the Population Council to conduct operations research to test the impact of strategies designed to increase birth spacing within the context of child survival activities.

The strategies tested were 1) training institutional and volunteer personnel to offer reproductive health services; 2) incorporation of breastfeeding and family planning counselors into supplementary feeding centers; and 3) incorporation of contraceptives into revolving fund mini-pharmacies.

The effectiveness of these strategies was measured by comparing the results of baseline and endline household surveys after 18 months of implementation. A special reproductive health survey was designed as the KPC survey measures relatively few variables related to this topic. To guarantee comparability of the data, the sample design and size of the two surveys were similar. A total of 975 household interviews were conducted in the communities, and 260 women were interviewed in the lactarios at baseline. For the final survey, 846 interviews were conducted in the communities and 222 in lactarios. No significant difference in socioeconomic and demographic characteristics was observed between the baseline and endline surveys.

Project implementation

Training

The first phase of the project consisted in training institutional staff in reproductive health. Subsequently, a training module which included reproductive health manuals was developed for volunteers and counselors.

Incorporation of breastfeeding and family planning counselors

ASCH works closely with the housewives' clubs in charge of managing complementary feeding centers, called lactarios. Program beneficiaries are pregnant and breastfeeding women and malnourished children under 5 years. ASCH felt that they would be ideal locations for the dissemination of reproductive health messages. Therefore, ASCH created a new volunteer, the breastfeeding and family planning counselor, rather than rely on the existing health volunteers, the majority of whom were men and already overloaded with responsibilities. The counselors were selected from beneficiaries of the lactarios by the community. Their activities included identification and referral of pregnant women to prenatal care, promotion of exclusive breastfeeding, provision of information about complementary family planning methods during breastfeeding, referrals to contraceptive services, and follow-up to contraceptive users.

Incorporation of contraceptives into mini-pharmacies

ASCH opened 10 mini-pharmacies in each rural area, managed by health volunteers. UNICEF provided the initial stock of medicine, while ASCH trained the volunteers in prescription of the medications and principles of small business management. Each region established a cooperative which deposited a percentage of the supply of the funds generated by sales to restock the pharmacies at wholesale prices. The original supply of pharmacy stock did not include contraceptives. Thus in order to test the strategy of community based distribution , methods were supplied and the volunteers in charge of the pharmacies were trained in the management of oral contraceptives and condoms. The local affiliate of the International Planned Parenthood Federation (IPPF) and the Ministry of Health assisted ASCH in the training of the volunteers and provided educational materials.

Education and promotion

ASCH also provided education on reproductive health topics and promoted exclusive breastfeeding and family planning through radio programs, home visits, group talks, and referrals to services.

Results

The following results are the product of the efforts of the first non-governmental organization in Honduras, with the exception of ASHONPLAFA, the International Planned Parenthood affiliate, to begin work in the field of reproductive health. These results demonstrate that implementation of these strategies resulted in greater access to information, higher levels of knowledge, changes in attitudes, improved breastfeeding practice, and an increase in access to and use of contraceptive methods.

Access to information

- The women interviewed identified ASCH volunteers and staff as the most important sources of family planning and breastfeeding information in their communities. The volunteer was mentioned most frequently (51.1 percent) followed by the ASCH promoter (40.5 percent) and the reproductive health counselor (32.1 percent). Other sources were mentioned much less frequently.

- The percentage of women who had received education about breastfeeding and family planning increased significantly (from 19 percent to 50 percent

- Individual counseling was one of the most important educational activities of the project. A significant difference was observed between the percentage of women who received individual orientation between the baseline and endline surveys, which increased from 30.8 percent to 54.6 percent.

Attitudes and knowledge

- Knowledge of reproductive health topics increased significantly. For example, the percentage of women who mentioned inadequate birthspacing as a risk factor increased from 6 percent to 18 percent.

- The percentage of women who desired more children decreased from 37.6 percent to 25.5 percent. A significant difference was also obser

between the percentage of beneficiaries of the lactarios who desired more children between the baseline and endline surveys. The percentage decreased from 40 percent to 24 cent.

astfeeding practices

ASCH volunteers and promoters nseled women on how to increase ir production of breastmilk. Survey ults show that awareness of the portance of immediate postpartum nding, breastfeeding on demand, l exclusive breastfeeding during the t six months increased significantly ween baseline and endline.

The percentage of beneficiaries of lactarios who mentioned a astfeeding problem decreased from percent to 6 percent. In the final vey, 92 percent of the women who orted a breastfeeding problem ght help to solve it, while in the eline survey, only 6 percent sought istance. The percentage of women h lactation problems who contin- l breastfeeding increased from 75 cent to 92 percent.

ntraceptive use

Contraceptive prevalence increased he three project areas. However, difference was significant only in urban area, where it increased from percent to 48.2 percent.

The health volunteer became an ortant source of contraceptive hods in the rural areas. Data from endline survey showed that 16 ent of users in Pespire and 21 ent of the users in La Esperanza ived their methods from ASCH nteers.

The couple years of protection vided by the 10 mini-pharmacies in pire sum increased to 150 during a month period.

tainability of project activities

mparison of the service statistics ected during the nine month od after completion of the project the 11 months of project activi- demonstrates that the strategies tested by ASCH have been incorporated into the organization's health program and are sustainable without special funding.

- ASCH volunteers and promoters counseled women on how to increase their production of breastmilk.
- Data collected from the new Child Survival project shows that during the first six months of project implementation, ASCH reported an average of 144 contraceptive users per month. This is more than the monthly average achieved during the operations research project (84 users) and is less than the average number referred during the period between projects. This suggests that ASCH has improved its efficiency in terms of users. With the initiation of additional health activities, the average number of users decreased. However, the number of users still remained higher than during the pilot project.
- The total number of contraceptive users increased by 48 percent (from 915 to 1,766). The number of IUD users almost tripled, while the number of women using tubal ligation and oral contraceptives doubled.
- Establishment of 20 community distribution posts which continue operating and are self-financed through their sales, including a profit for the distributors.
- Incorporation of the strategies tested into ASCH's CSIX project. After six months of project implementation, 13 community-based distribution posts have been established and 51 reproductive health counselors trained.
- ASCH personnel demonstrate more positive attitudes towards participation in family planning activities at all levels.
- Provision of reproductive health services such as pap smears and IUD insertion in health centers which did not exist previously.
- Collaboration with the IPPF affiliate contributes to the sustainability of project activities by providing contraceptives and follow-up of the contraceptive distributors.

Implications for the institution

After analyzing the results of the baseline and endline surveys, ASCH staff selected the following points as key for the implementation of the maternal health component in the new project, CSIX.

- Include men in reproductive health activities.
- Educate young people before they initiate their reproductive lives.
- Conduct ongoing training and follow-up for volunteers.
- Ensure effective coordination with service providers.
- Disseminate and promote the existence, location, and services of the mini-pharmacies.
- Guarantee supplies in the mini-pharmacies and other service delivery institutions.
- Systematize the household visit, focusing on the prevention of reproductive risk.

Do Women's Savings and Credit Programs Affect Fertility and Health?

A Case Study from Bangladesh

Abstract

This study uses longitudinal data from the Bangladesh field office of Save the Children (US) to examine the relationship between participation in savings and credit programs and fertility. Results suggest that fertility rates for members are lower than for non-members, though differences are largely attributable to region of residence: non-members in more conservative areas are only slightly more likely to have large families than members residing in those same areas. Nonetheless, members are significantly more likely than non-members to use a modern method of contraception, irrespective of social class or region of residence. These data link participation in savings and credit groups with increased use of contraception. Even so, future research will need to clarify the potentially complex relationship between group activity, the empowerment of women in Bangladesh, and fertility.

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Background

Discrimination against women in Bangladesh, whether economic, social, or political, deprives them of the ability to lead healthy, satisfying lives. Purdah institutionalizes this discrimination by confining women's mobility and actions outside the home and severely limiting life chances. Women who observe purdah, either by their own choice or by requirement, are restricted past puberty, from going to the market, mosque, medical facilities, school, and fields, factories, and other places of employment, effectively excluding them from most forms of economic, religious, intellectual, and social life. In fact, it is often only through intermediaries—young children, husbands, fathers, and grown sons—that women have access to the world beyond the walls of their own home (Abdullah and Zeidenstein, 1982). Women's reliance upon others for daily tasks often translates into a lifetime of dependence. As one author has observed (Cain, 1988), a woman is considered fortunate if she can successfully transfer her dependence from one category of male to another: first father, then husband, and finally son. The implications for women are clear: women who faithfully subscribe to purdah exert limited control over household resources and decision-making and, along with children, especially daughters, have restricted access to nutritious foods, appropriate medical attention, and social services (Miller, 1993).

Evidence from South Asia suggests that participation in women's groups enhances their material prospects (Dwyer and Bruce, 1988). Groups may also effect changes in women's outlook, increasing their freedom within the family unit and enabling them to mobilize communit government (Dwyer and Bruce, 1988)

Introduction

In Bangladesh, Save the Children has attempted to address gender inequitie through a number of programs, including women's savings and credi groups.

Program description

Women's savings groups consist of 1 to 20 women who meet on a routine basis to save money, gain access to loans, and receive training in comm nity development. Women who participate in groups save two to fiv taka/month, depending upon the amount agreed to by all group mem bers. This money is pooled and used for emergency and non-productive credit. Grants to the Bangladesh fiel office of Save the Children form the working capital for most loans to group members. Group members themselves decide the order in whic loans are given (individual loans are usually for $20-25). Extremely high repayment rates are attributable, in large part, to group pressure to pay back loans in a timely manner.

Women's savings group meml elect leaders from among their own ranks. Savings group leaders are generally better educated than grou members. Save the Children field based staff, including community development organizers and village development trainers, supervise savings groups.

In addition to providing a me

of saving money and accessing credit, women's savings groups are also a focus for other development work, including training in gender awareness, maternal and child health, income generation, and education.

Save the Children has made a deliberate effort to target asset-poor women, in part because they are generally not able to obtain capital or credit from commercial banks or at otherwise fair interest rates. A number of criteria have been used to classify and target asset-poor women, including the type of material they use to construct houses, the quantity of cultivable land which they own, their household assets, income, and self-sufficiency in food. Based upon these criteria, women are divided into four groups: A, B, C,, and D. Members of group A are the most advantaged financially while members of group D have the fewest assets.

Methods

Data from the Bangladesh field office of Save the Children are used to compare married women of reproductive age participating in savings groups with married women living in the same communities who do not participate. While savings groups are intended to reach the poor, some wealthier village women have joined savings groups. Between 1987 and 1992, 34 percent of savings group members were from the two highest classes (A and B). Women's savings group non-members (controls) were somewhat more likely to be better off. Of non-members, 40 percent belonged to classes A and B. Women's savings group members and non-members live in four rural areas of Bangladesh where Save the Children currently works: Mirzapur, Rangunia, Ghior, and Nasirnagar.

Mirzapur and Ghior are both near Dhaka, and Rangunia is near Chittagong; travel to these large cities is frequent. On the other hand, Nasirnagar, located in the northeast corner of Bangladesh, is isolated. It is often regarded as more conservative than either Mirzapur or Ghior and considerably poorer than Mirzapur, Ghior, and Rangunia.

Table 1 provides information on length of association with savings groups. As of March 31, 1993, 93 percent of all women in the study had participated in savings groups for at least one year. More than 40 percent belonged to women's savings groups five or more years.

Data for this study were collected by "paid volunteers" (Save the Children employees given a nominal wage) who visited each household once per month. The total population served by paid workers during the period of study was approximately 54,000. In other areas where Save the Children works, women's savings group leaders collect limited data. Because the quality of data collected by women's savings group members varies, these data are not included in the present analysis.

A number of indicators were used to compare members, non-members, and their offspring. The intent was to assess the extent to which membership in savings groups impacted upon the use of contraception, fertility rates, levels of malnutrition, and rates of neonatal, infant, and child mortality.

Except for contraceptive prevalence rates (which rely on the number of women enumerated as of January 1), all rates were calculated based on the midyear population for members and non-members. Between 1987 and 1992, the midyear population for savings group members ranged from a low of 1,397 (1987) to 2,621 women (1992). Non-members were also the least numerous in 1987 (7,545) and the most numerous in 1992 (8,690). Selection criteria for membership in savings groups included social class (those belonging to the two most assetless classes), marital status (only married women participate), and age (women 15 years of age or older).

Table 2 provides information on the number of live births by year for women's savings group members and non-members. Table 3 details the number of children weighed, by age group. Thus, between 1987 and 1992, 6,817 children were weighed at least once while 6-8 months old. Between 1987 and 1992, children living in intervention areas who were identified as being severely malnourished (<60 percent of the median weight for age using the Gomez standard) were weighed monthly. All other children were weighed every other month.

Social class and region of residence are thought to exert an influence on fertility behavior and health outcomes independent of membership in savings groups. Consequently, all analyses are stratified by class (classes A and B on the one hand and C and D on the other) and residence (Nasirnagar versus Mirzapur, Rangunia,

.E 1
gth of association with women's
ings groups as of March 31, 1993

Number of Years	Percent
>1	7
1<2	27
2<3	11
3<4	7
4<5	7
5<6	9
6<7	9
7<8	6
8<9	10
>9	9

TABLE 2
Live births by year
women's savings group
non-members and members

Year	Non-members	Members	Total
1987	1411	233	1644
1988	1438	284	1722
1989	1283	323	1606
1990	1178	364	1542
1991	1234	294	1528
1992	1177	269	1446

TABLE 3
Children weighed by age, 1987-1992

Age (in months)	Number
6-8	6,817
9-11	6,951
12-14	6,825
15-17	6,827
18-20	6,767
21-23	6,643
24-26	6,422
27-29	6,369
30-32	6,024
33-35	4,548

FIGURE 1
Children severely malnourished by age and membership status

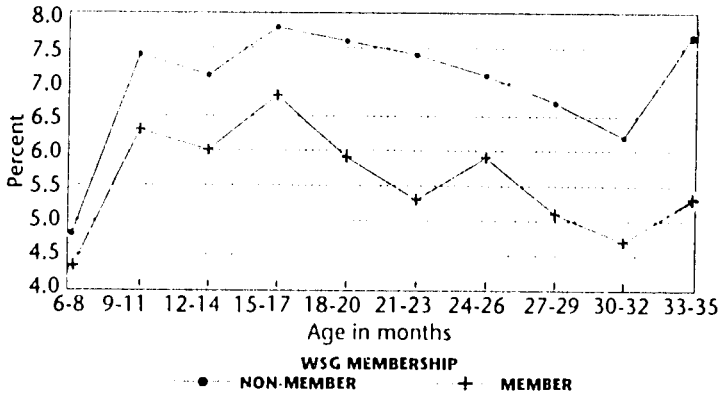


FIGURE 2
Percent of children severely malnourished by membership status and residence

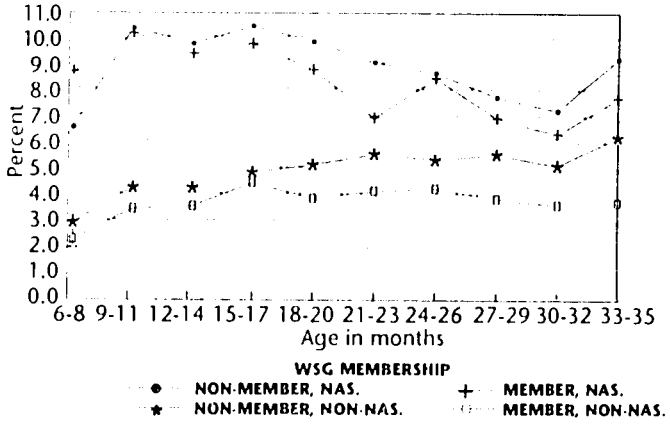


TABLE 4
Comparison of contraceptive usage for women's savings group members and non-members

	Non-members		Members		
Year	Practicing	**Not practicing**	Practicing	**Not practicing**	X^2
1987	1312 (21)	**5026 (79)**	372 (35)	**682 (65)**	109.4***
1988	1519 (24)	**4891 (76)**	577 (40)	**879 (60)**	154.1***
1989	1720 (26)	**4896 (74)**	806 (44)	**1021(56)**	224.2***
1990	1889 (29)	**4694 (71)**	930 (45)	**1155 (55)**	182.6***
1991	2098 (31)	**4648 (69)**	1106 (48)	**1207 (52)**	210.6***
1992	2226 (33)	**4498 (67)**	1149 (52)	**1069 (48)**	248.2***

Note: ***p< .001. One degree of freedom for all X^2 tests

TABLE 5
Comparison of contraceptive usage for members and non-members by region of residence and social class

Group/	Non-members		Members		
Year	Practicing	**Not practicing**	Practicing	**Not practicing**	X^2
NON-NASIRNAGAR					
1987	891 (27)	**2458 (73)**	316 (39)	**488 (61)**	50.7**
1988	1067 (32)	**2257 (68)**	497 (47)	**565 (53)**	75.8**
1989	1171 (34)	**2224 (66)**	666 (51)	**635(49)**	110.1**
1990	1252 (37)	**2169 (63)**	745 (53)	**651 (47)**	114.9**
1991	1337 (39)	**2108 (61)**	868 (55)	**702 (45)**	118.9**
1992	1410 (41)	**2028 (59)**	892 (60)	**599 (40)**	147.9**
NASIRNAGAR					
1987	412 (14)	**2550 (86)**	57 (23)	**194 (77)**	14.4**
1988	451 (15)	**2635 (85)**	80 (20)	**316 (80)**	8.5**
1989	386 (12)	**2781 (88)**	140 (27)	**386 (73)**	76.9**
1990	636 (20)	**2526 (80)**	185 (27)	**504 (73)**	15.3**
1991	766 (23)	**2535 (77)**	237 (32)	**505 (68)**	24.6**
1992	815 (25)	**2471 (75)**	258 (35)	**469 (65)**	34.7**
CLASSES A AND B					
1987	523 (22)	**1853 (78)**	105 (38)	**168 (62)**	36.6*
1988	649 (27)	**1755 (73)**	152 (43)	**205 (57)**	36.6*
1989	701 (28)	**1776 (72)**	214 (48)	**233 (52)**	67.5*
1990	725 (30)	**1691 (70)**	243 (50)	**242 (50)**	73.4*
1991	792 (32)	**1674 (68)**	292 (54)	**253 (46)**	89.2*
1992	811 (33)	**1618 (67)**	292 (57)	**222 (43)**	99.3*
CLASSES C AND D					
1987	789 (20)	**3174 (80)**	267 (34)	**514 (66)**	76.9*
1988	869 (22)	**3137 (78)**	242 (26)	**675 (74)**	9.4*
1989	1022 (25)	**3117 (75)**	592 (43)	**788 (57)**	165.8*
1990	1163 (28)	**3005 (72)**	688 (43)	**912 (57)**	120.9*
1991	1310 (31)	**2970 (69)**	813 (46)	**955 (54)**	129.8
1992	1413 (33)	**2882 (67)**	859 (50)	**845 (50)**	159.0

Note: **p< .01. ***p< .001 One degree of freedom for all X^2 tests

TABLE 6
Comparison of contraceptive usage for members and non-members for women not contracepting as of January 1, 1987

	Non-members		Members		
Year	Practicing	**Not practicing**	Practicing	**Not practicing**	X^2
1987	0	**0**	0	**0**	
1988	481 (10)	**4131 (90)**	152 (16)	**774 (84)**	27.3**
1989	721 (17)	**3526 (83)**	327 (28)	**838 (72)**	72.0**
1990	878 (22)	**3032 (78)**	409 (31)	**902 (69)**	40.4**
1991	985 (27)	**2721 (73)**	525 (36)	**915 (64)**	48.8**
1992	1038 (30)	**2385 (70)**	554 (40)	**826 (60)**	42.8**

Note: ***p< .001 One degree of freedom for all X^2 tests. Totals for each year (rows) will fluctuate due to death and out migration. In-migrants post-1987 were not included in analyses

and Ghior). As has already been mentioned, the populace in Nasirnagar is considered to be much poorer than in the other three regions and socially and religiously more conservative than in Mirzapur and Ghior.

Results

Malnutrition

Data presented in Figure 1 suggest that children of savings group members are consistently less likely than children of non-members to be severely malnourished at all ages, though differences between the two groups are slight. Region of residence does appear to affect a child's chances of being severely malnourished: those living in non-Nasirnagar areas were much less likely to be malnourished at every age (data not shown). As expected, members from classes A and B were the least likely to be severely malnourished (Figure 2). In fact, rates of severe malnutrition for this group hovered between 1 and 3 percent for all ages. Non-members from groups A and B were somewhat more likely to be malnourished, with non-members, then members from groups C and D the most likely to be severely malnourished.

Contraception and fertility

For all analyses related to women's use of contraception, those who were not sure if they were using a method at the time of interview were grouped with non-users. Table 4 indicates that women's savings group members were more likely than non-members to

TABLE 7
Comparison of contraceptive usage by members and non-members for women not contracepting as of January 1, 1987, by region of residence and social class

Group/ Year	Non-members Practicing	Non-members Not practicing	Members Practicing	Members Not practicing	X^2
NON-NASIRNAGAR					
1987	0	0	0	0	
1988	373 (17)	1875 (83)	132 (21)	500 (79)	6.3*
1989	496 (25)	1521 (75)	263 (34)	511 (66)	24.9***
1990	573 (31)	1286 (69)	320 (39)	492 (61)	18.7***
1991	597 (35)	1118 (65)	390 (43)	514 (57)	17.5***
1992	599 (38)	961 (62)	403 (47)	454 (53)	17.0***
NASIRNAGER					
1987	0	0	0	0	
1988	109 (5)	2255 (95)	20 (7)	274 (93)	2.7
1989	225 (10)	2005 (90)	64 (16)	327 (84)	13.4***
1990	308 (15)	1743 (85)	88 (18)	411 (82)	2.1
1991	390 (20)	1601 (80)	135 (25)	401 (75)	8.0**
1992	440 (24)	1423 (76)	151 (29)	372 (71)	6.1*
CLASSES A AND B					
1987	0	0	0	0	
1988	222 (13)	1514 (87)	36 (17)	180 (83)	2.5
1989	307 (19)	1316 (81)	72 (27)	194 (73)	9.5**
1990	344 (23)	1124 (77)	94 (33)	193 (67)	11.1**
1991	383 (27)	1013 (73)	130 (40)	191 (60)	21.2***
1992	398 (31)	868 (69)	133 (44)	168 (56)	17.6***
CLASSES C AND D					
1987	0	0	0	0	
1988	259 (9)	2617 (91)	116 (16)	594 (84)	32.7***
1989	415 (16)	2209 (84)	255 (28)	644 (72)	68.5***
1990	535 (22)	1907 (78)	314 (31)	710 (69)	29.9***
1991	603 (26)	1707 (74)	395 (35)	724 (65)	30.9***
1992	641 (30)	1516 (70)	421 (39)	658 (61)	28.2***

Note: *p< .05 **p< .01 ***p< .001 One degree of freedom chi-square tests. Totals for each year will fluctuate due to deaths and out migration. In-migrants post 1987 were not included in analyses

FIGURE 3
Contraceptive prevalence rate for women not contracepting as of January 1, 1987, by membership status

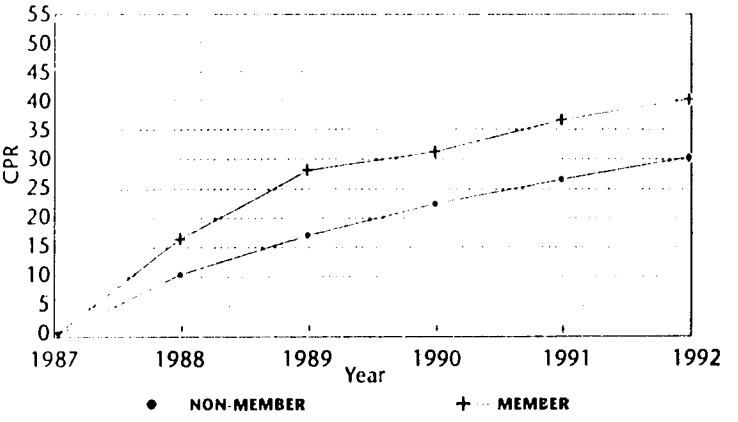
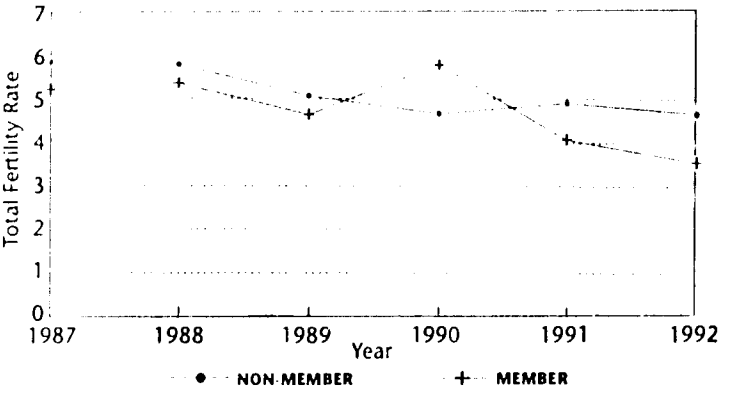


FIGURE 4
Total fertility rate by membership status, 1987-1992



opt a modern method of contraception. In fact, members were significantly more likely than non-members use contraceptives (p value for the i-square test < .001) every year tween 1987 and 1992. During that ne period, the contraceptive acceptance rate of married members who e 15-44 years of age climbed from percent to 52 percent, an increase of percent. Non-members' use of ntraception grew at about the same ; however, they were consistently likely to use modern methods of ntraception. It is difficult to assess extent to which group membership uences the use of contraceptives: ings group members were considery more likely to be using a modern thod in 1987 when data collection an but more than a third of all men participating in savings groups ted before that date.

Members from non-Nasirnagar ions were the most likely to use ntraceptives; non-members from sirnagar were the least apt to use a dern method (Table 5).

Social class played no role whatsoever in explaining women's use of contraceptives. Usage rates for non-members from classes A and B were virtually identical to those of non-members from classes C and D (Table 5). Likewise, members from classes A and B were no more likely than members from lower social classes to practice family planning.

Results presented in Table 5 suggest a marked difference in members' and non-members' use of contraceptives remain after controlling for the effects of region of residence and social class. These differences were statistically significant for both regions of residence (non-Nasirnagar/ Nasirnagar) and for both classes (AB/ CD) in every year (Table 5).

In an attempt to ascertain the true impact of savings group participation on the adoption of family planning techniques, all women not contracepting as of January 1, 1987, were followed to assess the extent to which non-members and members moved from one status (non-user) to another (user). Data presented in Figure 3 suggest that members' rate of adoption was greater than that of non-members. Differences in rates of adoption were statistically significant (using chi-square tests, p < .001) for all years (Table 6). Members from non-Nasirnagar areas who were not contracepting as of 1987 were the most likely to adopt a method; non-members in Nasirnagar were the least likely (Table 7). Social class did not affect the likelihood that women would adopt a method by 1992 (Table 7).

These analyses only track women who were not using a contraceptive at one point in time. Women not using a contraceptive as of January 1, 1987, could have used one before then, raising the possibility that members' greater propensity to use contraceptives preceded their activity in savings groups.

Given these variations in the use of contraceptives, it is not surprising that total fertility rates for members and non-members were also different. The total fertility rate is the average

number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. (In this case, 1987 to 1992 rates were taken from Population Reference Bureau, 1985). Figure 4 indicates that with the exception of 1990, the total fertility rate for members was consistently lower than for non-members.

Because the total number of births by year for some groups of women was quite small (e.g., women's savings group members from classes A and B), aggregate data for the entire period (1987-1992) were used in stratified analyses of fertility. Region of residence had a strong influence on fertility levels. Table 8 indicates that while the total fertility rate for non-members using aggregate date was 5.1, non-members living in Nasirnagar had a considerably higher fertility rate (6.1) than non-members in Mirzapur, Rangunia, and Ghior (4.2). This pattern was even more pronounced among members.

Social class had a modest effect on members' and non-members' levels of fertility. Data presented in table 8 suggest that members from classes A and B had the lowest rates of fertility; non-members from classes A and B had rates comparable to members from classes C and D; and non-members from classes C and D had the highest overall rates.

Mortality

Children of savings group members enjoyed lower neonatal, infant, and under-5 mortality rates than children of non-members. To assess the extent of difference between offspring of savings group members and non-members, relative risks for neonatal and infant mortality were calculated. In this instance, relative risk compares the risk of death for savings group non-members to members. A relative risk of 1 indicates no difference in mortality rates between the two groups. Statistical significance can be determined by constructing 95 percent confidence intervals around the relative risk. When the 95 percent confidence interval includes one, it is not possible to conclude that there is a significant difference between groups.

Data from the first column of Table 9 indicate that children of non-members consistently experienced a greater risk of death in the first 28 days of life than children of members. For example, in 1989, 54 of every 1000 infants born to non-members died in their first 28 days of life. In contrast, only 46 of every 1000 infants born to savings group members died in the neonatal period (results not shown). Even so, differences between the two groups are modest and not statistically significant. Group membership appears to exert a stronger positive influence on neonatal mortality rates in Nasirnagar than in Mirzapur, Rangunia, and Ghior. For example, in 1990, offspring of non-members in Nasirnagar experienced a neonatal mortality rate nearly 50 percent higher than offspring of members. In contrast, neonatal mortality rates for non-members in non-Nasirnagar areas were never consistently higher than those members. Data, by year, for classes A and B are too spotty to reach definitive conclusions, but for the entire period (1988-1991), rates of neonatal mortality for members and non-members were approximately equal (relative risk = 0.94). Finally, children of members from the two poorest groups (classes C and D) experienced considerably lower levels of neonatal mortality than non-members.

Many of these same patterns hold for infant mortality as well (Table 10). For example, the infant mortality rates for members' and non-members' offspring in 1990 were 69 per thousand and 87 per thousand respectively. Differences between members and non-members living in Nasirnagar, an area of extreme poverty, were more pronounced than for those living in non-Nasirnagar areas. Children of members from the two lowest social

TABLE 8
Total fertility rates (1987-1992) by membership status, regional residence, and social class

	Nasirnagar	Non-Nasirnagar	Classes A&B	Classes C&D	Total
Non-members	6.1	4.2	4.6	5.3	5.1
Members	6.2	3.8	4.1	4.7	4.6

TABLE 9
Relative risk of neonatal mortality for children of savings group members and non-members, social class, location, and year

	Relative risk and 95% confidence intervals for:				
Year	Non-members/ members	Nasirnagar	Non-Nasirnagar	Classes A&B	Classes C&D
1988	1.12 (.66, 1.91)	0.94 (.51, 1.73)	1.11 (.38, 3.26)	0.45 (.17, 1.15)	1.55 (.81, 2.96)
1989	1.16 (.67, 2.00)	1.07 (.54, 2.11)	0.99 (.40, 2.47)	2.95 (.40, 21.49)	1.04 (.58, 1.85)
1990	1.19 (.65, 2.16)	1.49 (.64, 3.49)	0.88 (.37, 2.10)	1.42 (.33, 6.05)	1.35 (.70, 2.60)
1991	1.29 (.71, 2.36)	1.41 (.61, 3.24)	1.07 (.44, 2.60)	0.77 (.28, 2.14)	1.49 (.71, 3.13)
Total:	1.21 (.91, 1.60)	1.20 (.84, 1.73)	0.99 (.63, 1.58)	0.94 (.52, 1.69)	1.34 (.97,1.86)

TABLE 10
Relative risk of infant mortality for children of savings grou members and non-members by social class, location, and ye

	Relative risk and 95% confidence intervals for:				
Year	Non-members/ members	Nasirnagar	Non-Nasirnagar	Classes A&B	Cla C
1988	1.20 (.81, 1.78)	1.12 (.70, 1.79)	0.99 (.49, 2.02)	0.81 (.39, 1.70)	1. (.85,
1989	1.25 (.83, 1.89)	1.26 (.74, 2.15)	0.89 (.45, 1.75)	2.74 (.68, 11.02)	1. (.80,
1990	1.26 (.83, 1.92)	1.23 (.74, 2.05)	1.00 (.49, 2.03)	1.46 (.53, 4.01)	1. (.85,
1991	1.12 (.74, 1.70)	1.21 (.71, 2.06)	0.92 (.47, 1.77)	0.90 (.37, 2.20)	1. (.75,
Total:	1.22 (1.00, 1.50)	1.22 (.95, 1.58)	0.95 (.67, 1.34)	1.21 (.76, 1.93)	1. (1.01,

classes were significantly less likely than children of non-members to die in the first year of life.

It should be noted that while nly a select group of individuals elong to savings groups, all pregnant omen, regardless of membership atus, have access to prenatal care. ommunity health workers (CHWs) om Save the Children visit homes ice a month to identify pregnant omen. CHWs give nutritional ounseling to expectant mothers and ge them to visit clinics sponsored by ve the Children. These clinics offer a nge of ante-natal services, including eight monitoring, urine and hemo- obin checks, assessments of risk, and lucation.

The under-5 mortality rate for ildren of members was only slightly s than for non-members for the four ar period ending in 1991 (data not own). It is interesting to note that 1991 there were higher recorded es of neonatal, infant, and under-5 ildhood mortality. This may be an ifact of improved reporting during at year.

scussion

ults from this research indicate that dren of women who participate in e the Children-sponsored savings ups are less likely to be severely nourished. Region of residence class are not important determi- ts of severe malnutrition. Even so, dren of group members are still less ly to be severely malnourished e the effects of residence and social s are controlled.

Women who belong to savings ups are much more likely than non- nbers to use contraceptives. Even r controlling for the effects of lence and social class, two factors ght to be highly associated with adoption of modern contraception angladesh, membership in ien's savings groups plays an ortant role in distinguishing ween those who use contraceptives those who do not. In fact, rences between members and non- nbers were highly statistically ficant for every year, independent gion of residence and social class. so, because there is no informa- tion on women's use of contraceptives prior to joining savings groups, it is not possible to assess the impact of group membership on fertility-regulating behavior.

While women's savings group members have lower levels of fertility than non-members, much of the variation can be accounted for by region of residence: women living in Mirzapur, Rangunia, and Ghior have much lower levels of fertility than women in Nasirnagar.

Group membership appears to have a modest but positive influence on neonates' and infants' chances of survival. The impact on under-5 mortality is less pronounced. It is interesting to note that the effect of group membership is much stronger in poorer rural areas.

It is not clear why membership in savings groups affects neonatal and infant mortality but not under-5 mortality. It may be that regular savings, access to credit, mobility outside the household, and contact with non-kin enhance women's ability to eat more nutritious foods during pregnancy and lactation, provide appropriate supplementation to infants, and access medical facilities, factors thought to exert a strong influence on survival (Rao, 1990; Wallace, 1990). While it is true that Save the Children's prenatal services are offered to all, regardless of affiliation with savings groups , group members may, in fact, be more aware of services and more willing to travel in 'public space' to reach clinics. Alternatively, group pressure to adopt health practices promoted by Save the Children during women's savings group meetings may exert a strong influence on their behavior, ultimately influencing rates of mortality. Even so, it is not clear why these forces would not also affect under-5 mortality. It is possible that the number of under-5 deaths is not sufficient to detect differences between savings group members and non-members.

While reductions in levels of severe malnutrition, fertility, and neonatal and infant mortality may be attributable to participation in savings groups, other factors, including women's control of resources (often determined by birth order), position within the household, and exposure to development activities other than those offered by Save the Children, could explain differences between groups. In the case of contraceptive usage rates, it is difficult to determine why women who participate in savings and credit groups are more likely to adopt a modern method of family planning. Data from this study suggest that members were more likely than non-members to use a method at the outset of data collection. However, rate of adoption for those not using a method in 1987 was greater for members than for non-members. A recent study (Schuler, Meekers, and Hashemi, 1992) on the fertility behavior of women participating in Grameen Bank and Bangladesh Rural Advancement Committee groups suggests that it is length of association with groups and not group membership per se which has a significant effect on current use of contraception.

These analyses account for the effects of social class and region of residence, allowing a more careful review of differences between members and non-members. However, it may be that regardless of social class or region of residence, women who join savings groups are qualitatively different in their thinking and in their behavior, from those who do not join. It is possible that self-selection for savings group membership contributes to differences in health outcomes. In-depth studies on savings group members and non-members, along with more detailed research on the quality of their participation, could provide important insights into the social process of change which precedes changes in health behaviors and outcomes. While this research is an important first step toward understanding the cross-sectional impact of NGO-sponsored activities, further work will need to identify how women's participation in community activities influences their own well-being as well as that of their children.

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PART FIVE

Sustainability after USAID Funding

Sustainability of a Community Health Worker Program in Kasangati, Uganda

Abstract

This paper discusses the successes and problems associated with the sustainability of the volunteer community health worker program in Kasangati, Uganda, conducted five years after outside funding terminated. The broad objectives of this qualitative study are (1) to determine if services are being delivered and if the target population is being served (this included determining the presence of CHWs, an infrastructure to support them, and evidence of services being provided to the community); (2) to determine what the community thinks about the CHW program (since the community was not directly asked through surveys or focus groups, satisfaction was suggested indirectly through interviews with key informants); and (3) to determine if available resources are adequate to sustain the project (including the role that MIHV had in supporting or impeding project sustainability).

Purposes include (1) developing lessons learned to assist in developing sustainable projects elsewhere and (2) disseminating the results and lessons learned to the Kasangati community for use in planning future initiatives. Thirty-two semi-structured interviews were conducted, and health center and CHW records were analyzed. The results were encouraging; the number of active CHWs has increased by half, and they are working closely with the health center. CHWs have also organized themselves and are active in community development; they have been incorporated into the local political structure. Concerns include a cost sharing program that probably cannot continue to support continuing education and new CHW training, and inconstant CHW supervision. On the whole, however, CHWs appear to continue to value their work and be valued by their community.

CHERYL ROBERTSON
MINNESOTA INTERNATIONAL HEALTH VOLUNTEERS/UGANDA

Introduction

The Community Health Worker (CHW) program at Kasangati Health Center, Kasangati, Uganda, was initiated in 1983 by Minnesota International Health Volunteers in partnership with Makerere University as part of a larger community-based health care project.

The goal of this follow-up evaluation is to examine the successes, problems, and lessons learned associated with the sustainability of the CHW program after MIHV's funding was purposefully phased out in 1988. The information in this presentation is taken from the report "Sustainability of the Primary Health Care Worker Program at Kasangati Health Centre, Kasangati, Uganda" (Robertson, 1992).

In summary, I found that the CHW program has sustained itself without direct donor support for nearly five years. The number of CHWs has increased by half. CHWs have organized themselves, and are active in community organization and development; they provide health education, follow high risk families, and appear to enjoy increased community status. On the down side, although the cost sharing program has provided financial support, it does not fully cover operating costs, continuing education for health workers, or training for new CHWs. There are some differences between the CHW role and community expectations. There is not consensus about an NGO's most effective interventions to promote sustainable health care. On the whole, however, CHWs appear to contribute to, and be valued by, their communities.

Purpose of the evaluation

A five year follow-up evaluation has following purposes:

1. Developing lessons learned to ass MIHV in current efforts to develop sustainable community-oriented he care projects elsewhere in East Afric

2. Disseminating the results and les learned to Kasangati Health Centre its use in planning future communi initiatives.

Type of evaluation and broad objectives

This study employs three types of evaluation based on the model dev oped by Judith Garrard (1982): prog monitoring, program satisfaction, a program cost.

1. *Program monitoring: To determine services are being delivered and if the t population is being served.* This inclu determining the presence of CHWs, infrastructure to support them, and evidence of services being provided the community.

2. *Program satisfaction: To determin what the community thinks about the program.* Since the community was directly asked through surveys or fo groups, satisfaction was suggested indirectly through interviews with k informants.

3. *Program cost (sustainability): To determine if available resources are adequate to sustain the project.* This incl examining broader issues of sustainability.

Subjects and data collection methods

For two weeks in August and September 1992, Diane Manahan, an MIHV volunteer public health nurse, and I collected data through semi-structured interviews with CHWs; members of a local women's group; health center staff; faculty from the Institute of Public Health, Makerere University; and UNICEF representatives and Case Western Reserve University faculty working in Kampala. Health center and CHW records were also reviewed.

Constraints and limitations

In this qualitative study all subjects were purposefully selected. There was no random selection. This study does not measure the level and quality of CHW services, the impact of either training or CHW interventions, direct community satisfaction, nor does it determine the cost to sustain the CHW program.

Results, discussion, and recommendations

The results were encouraging. The CHW program is a viable, functioning, and integral part of the community. The spirit of volunteerism is strong. The CHWs expressed pride in their work, commitment to the community, and a sense of increased influence and decision making power in the community. The past medical director at Kasangati summed this up, stating, "These people have been entrusted by their community; they must perform; they cannot fail; they continue to take this commitment very seriously."

In spite of the energizing, encouraging results, I have had to determine the most useful lessons learned to share in this limited time. I decided to focus on the three areas identified in this study that continue to challenge long-term sustainability of the Kasangati project the most: 1) costs of the program, 2) community perceptions and expectations of the CHWs, 3) the NGO's role in promoting sustainable health care. Rather than only focusing on the successes, we can use this opportunity to grapple with these issues, and share some problem-solving strategies.

Costs

In 1987 MIHV assisted in developing a cost-sharing plan involving both private and public support to sustain health center activities and the CHWs. A small fee is charged at the clinic for curative services and medicines. All health promotion activities—immunizations, well child care, and prenatal care—continue to be free. The cost sharing is implemented by a committee of community members selected by the community. If a family is unable to pay for services, it meets with the committee, receives a waiver, and receives free care. No one is denied care. The decision to institute cost sharing was controversial; the Ministry of Health allowed this cost-sharing plan only as a pilot project in 1987. Since then, however, this approach to cost recovery has been adopted as government policy.

The Ministry of Health and Makerere University also provide some financial support, and pay clinic staff salaries, though they struggle with extremely limited resources. UNICEF supplies immunizations and the Danish Red Cross supplies the essential drug kits.

Even so, community-based health care appears to cost more than originally thought. The Kasangati cost-sharing program is only a partial solution to the problem of health financing. Most of the revenue is used for clinic expenses; it does not cover the costs of the CHW program, continuing education, and training for new workers. Even though the community health workers are volunteers, the program needs basic financial support to operate (Wamai, 1992). A 1988 community survey suggested community willingness to support primary health care workers either with cash or in kind (Robertson, 1988). Neither has materialized. During the evaluation, the CHWs were engaged in discussion regarding community-based, income-generating potential. All potential projects were in the planning-stage and they needed infrastructure and financial assistance to move ahead.

Communities need to find a way to personally and palpably support CHWs through selling crafts, collecting dues, providing in-kind goods, etc. If the community is unable or unwilling to provide this support, another health delivery strategy needs to be implemented. A plan to cover costs, whether through ongoing outside funding or community members, should be in place before CHWs are selected for training. It is important to determine the scale of a project that a community can help support financially and to realize that there will be costs such as ongoing training which cannot be fully absorbed by the community. The CHWs expressed frustration at being trained without a fully developed system in place to support them.

CHWs ability to meet community needs

The CHWs work closely with the village governing committees and the health center to meet community needs. Still, there can be differences between services that the worker is able to provide safely and what the community expects. The health center has come to rely quite heavily on some of the CHWs to follow up on referrals. Health visitors and assistant health visitors (public health nurses) used to be responsible for home visits and health education in the field, particularly focusing on families with children. This service has virtually stopped due to lack of transportation and petrol. Now CHWs are often assigned families to visit, teach, and follow up.

All health center staff stressed how they valued the CHWs' work with referrals, though some did express concern about the health workers' rather minimal training and the complexities of some of the referrals. Obviously, these CHWs were never intended to replace public health nurses; such expectations of CHWs invite frustration and tragedy. I also was concerned about the decreased level of field supervision provided. The CHWs themselves universally shared this concern saying: "We feel like we have been abandoned in the village. We have so many questions that are not answered." On the other hand, CHWs have a very good sense of community needs and resources and seem to take referrals very seriously.

Most informants thought that the community does understand the role of the CHW and values it. At the same time, many believe that the community also puts pressure on the worker "to act like a doctor." The community would like the CHW to carry more medication and first aid supplies. It has always been a question whether a CHW, who is more a teacher than a practitioner, is truly valued or, instead, becomes rather marginalized. The health worker can be seen as a person given a little prestige, but who cannot really provide anything. The issue of marginalizing the worker by so limiting his or her interventions is discussed in even some of the earliest CBHC evaluation literature (Backet & England, 1975; Foster, 1982; Nichter, 1984; Stone, 1986).

According to health center staff and community leaders, the Kasangati health workers are well known, well regarded, and seen as role models by the communities. Villagers come to them for advice, and they are seen as individuals with knowledge and influence. Generally, being a CHW can be a stepping stone toward a greater role in the community (Robertson, 1992). A 1988 community survey indicated surprisingly high regard for the CHWs (Robertson, 1988).

Even so, considering the health care needs of the people, it is not surprising that they want more curative services from their health worker. In many settings, CHWs should and do have an expanded role, and safely provide more services, such as immunizations, first aid, and diagnoses and treatment for simple diseases. The current MIHV project in Uganda is starting to train workers as vaccinators, and will move into other health promotion areas.

The NGO's role in sustainability

There is not consensus about the NGO's most effective interventions to promote sustainable health care. Respondents had varied and strong opinions, which I will try to represent properly. Even though all respondents agreed that MIHV played an integral role in the success of the project, most also had real concerns regarding threats to continued sustainability. Some of the concerns could have been addressed by MIHV; some could not.

The project's infrastructure remains shaky. A supervision plan was left in place, but no plan for transition was developed for supervisors' leaving. Funds for vehicle maintenance, petrol, supplies, and training are nearly non-existent. Clinic staff are poorly paid and overwhelmed; they must participate in the second economy to make ends meet. They do not have the time and energy to support the CHW as MIHV project volunteers did. Some participants believe that the community is so poor that it is completely unrealistic to expect a great deal of community participation. People must continue to focus on subsistence.

All respondents were asked what MIHV could have done differently to further promote sustainability, recognizing that issues such as staff salaries, and general poverty of the community are beyond the scope of an NGO. Respondents were split in their opinions whether MIHV stopped its financial support for the project at the appropriate time. About half believed that MIHV involvement had reached a plateau, that fees were being generated, and that it was time for the organization to leave. The other half believed that MIHV pulled out too early; that the management system needed more assistance.

Several individuals recommended that community development and income-generating activities begin before health services so that the infrastructure and support for CHWs are in place. Others believed that the community would not be interested in this approach, and that income-generating activities become personalized and benefit individuals rather than communities. The people want concrete evidence of assistance.

Some felt concerned that MIHV's level of community involvement contributed to a community perception that this was MIHV's project and not a community-owned project. These individuals believe strongly that NGOs should distance themselves from the community, as their conspicuous involvement takes away the sense of community ownership. The difficulty that NGOs experience in working with communities to develop sustainable health care was most apparent in this question. In other words, about half of the respondents believed that MIHV should have done more, and about half that MIHV should have done less.

In response to the challenge of interacting appropriately with its host community, it may be helpful for NGOs to shift in their thinking and expectations. The notion of community-based health care has informed the attitude and approach of NGOs. However, experience suggests that community-based health care is not a complete concept because it does not take into account that the NGO is working with its own mission, and is also accountable to its funders and members. The term "community-oriented health care" takes the dynamics affecting NGOs into account, as well as community felt needs.

It is difficult to reconcile a pure community-based philosophy with actual practices. Perhaps recognizing the philosophical difference between community-based and community-oriented health care can aid the analysis of the seemingly natural tensions between funders, NGOs, and host communities, and provide insight that might make sustainability more achievable and dialogue about it more coherent.

With this in mind, MIHV will always have to struggle with finding balance in its commitment to multipl decision makers and stakeholders. There will also be tension regarding appropriate levels of expatriate volunteer immersion in the community: how much enables empowerment and how much enables dependence? As long as MIHV is involved, the project cannot feel entirely community-owned, but people can feel highly invested and committed to a project that involves them.

Conclusion

In conclusion, the findings of this evaluation indicate mixed results. Most important, the CHW program has sustained itself for nearly five years without direct outside donor support. The number of CHWs has increased by half, and the health center and the community appear to value and utilize CHW services. On the other hand, both the community and the clinic

appear to put pressure on the health worker to perform at a level he or she is not prepared for.

Sustainability continues to be challenged by the general lack of community resources. It is important to recognize that cost-sharing and small income-generating projects will probably not financially support all of the program costs, particularly the cost of ongoing training, at least not in the short term. It is also important to hold the community accountable for providing some level of basic financial or in-kind support. Continued development of realistic methods of income generation for CHWs and greater development of community wealth appear necessary to the long-term sustainability and quality of the CHW program.

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Sustainability of Breastfeeding Mother Support Groups in Guatemala

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Abstract

Project purpose was to recruit low income mothers and train them as breastfeeding advocates (BA). Trained BAs lead community mother support groups and counsel mothers. Of 214 BAs trained during the project, 50 percent remain active.

The BAs in each community select, among themselves, a coordinator and sub-coordinator, who attend monthly half-day workshops and oversee a community health information system that provides BAs and League personnel with data on breastfeeding mother support groups (BFMSGs) held, group attendees, informal BF contacts, and referrals to health services. A general coordinator acts as liaison with La Leche League/ Guatemala and provides leadership to all the BAs.

LLL/Guatemala personnel make a monthly visit to each community to motivate the BAs and to provide them with a refresher course.

The sustainability of this project is measured through the coordinator system. Since funding ended in February 1993, 15 BFMSG meetings are held monthly and each BA averages 20 monthly contacts. There is 90 percent attendance at the coordinators' meeting and 80 percent at the refresher courses.

Between 1990 and 1992 the percentage of infants 0-4 months who were exclusively breastfed increased 7 percent and under 6 months the increase was 8 percent. In the same community breastfeeding duration increased almost 5 percent.

Defining the La Leche League International (LLLI) model

Mother-to-mother support in breastfeeding can be defined as the giving of emotional support and technical assistance to one woman by another. The LLLI model for mother-to-mother support is a formalized system begun 38 years ago in the United States to fulfill a need that was once met by informal or traditional family networks. The LLLI model is based on grass roots organizing and consciousness raising, with a focus on interpersonal and small group communication. As such, it is an excellent model for community based breastfeeding promotion in a variety of settings.

The mother-to-mother support model is carried out primarily through mother support groups and individual counseling.

A. The mother-to-mother support group is an informal, guided discussion group through which emotional support and technical assistance are provided. The goal of mother-to-mother support groups is threefold:

- to provide a knowledge base of adequate and appropriate breastfeeding information, both practical and technical;
- to create an atmosphere of emotional support;
- to enable each mother to make her own particular decisions.

The informal, guided group discussion format provides an opportunity for experienced breastfeeding mothers to share technically correct information, practical suggestions, and

personal experiences. The discussion, as a dialogue rather than a formal class where "experts" teach, allows mothers to express doubts and thoughts about breastfeeding. In this case, the experts are the mothers themselves.

B. Direct, informal mother-to-mother support is provided on an individual basis. Within the LLL model, LLL leaders counsel or provide information to pregnant women and new mothers by telephone, by correspondence, in the doctor's office, at the bus stop, in the market, in the leader's home, or in the home of the woman being counseled.

However, no matter whether this support is provided in a group setting or on an individual basis, it always takes place in an atmosphere of acceptance where the following are present: warmth, empathy, eye contact, supportive verbal and body language, active listening, and praise.

Launching the La Leche League International Child Survival project

In 1988, La Leche League International received funding from the Agency for International Development for a three year Child Survival project, later extended for one year. La Leche League of Guatemala executed the project for Guatemala. The stated goal was to decrease infant morbidity (especially diarrhea) and infant mortality by fostering adequate breastfeeding practices through the formation of mother-to-mother support groups for pregnant women and breastfeeding mothers in several peri-urban communities surrounding Guatemala City.

The target population or beneficiaries of the project were low-income, low literate women who very often have a diminished level of self-esteem.

Adapting the LLLI model and designing and implementing a mother-to-mother support model for a peri-urban community

Based on the results of a needs assessment, the LLLI mother-to-mother support model was adapted and a peri-urban model was designed and implemented. The following steps were taken during this process:

1. Establish the qualifications for the volunteer breastfeeding advocate (BA) and define the function and role.

2. Identify and select potential BAs in their respective communities.

3. Conduct a training for the potential candidates to become certified as BAs for their communities.

4. Assist the certified BAs to form mother support groups (MSG) in their communities.

5. Establish a health information system that includes:

a. Group sheets are used in the MSG to record mothers' attendance and their infant feeding practices;

b. A record of informal contacts made by the BAs. Breastfeeding counseling calendars were designed that allow the BA to document, in a simple way, the number of breastfeeding contacts made monthly, as well as the number of referrals made to health services for other child survival interventions. The calendar also highlights the date for the monthly mini-workshop provided by LLL of Guatemala for the coordinators and sub-coordinators.

Educational materials and other resources were developed to support the BAs in their work. The challenge for LLL of Guatemala was to develop breastfeeding training and educational materials that would be easily understood and handled by the BAs. Two distinct materials were developed that form the basis for training BAs and serve as a resource for their work.

A training and reference manual for BAs was developed that has many illustrations and minimal text. A second revised and amplified edition has just been published with the support of the UNICEF/Guatemala office. This manual summarizes the content of the 24 BA breastfeeding training course.

A set of 12 cloth posters (two yds. each) was developed for the training of the BAs and trainings of community health workers. The cloth posters are also used by the BAs in their mother support groups to stimulate group discussion and reinforce the breastfeeding information messages. The poster set is available as slides with a discussion guide in English or Spanish.

Preliminary results of the Child Survival project and lessons learned

Training the breastfeeding advocates and forming mother support groups are a very labor and time intensive process. LLL of Guatemala is convinced, however, that the mother support group strategy works. Our observations show that this strategy empowers women to make decisions that positively effect duration of breastfeeding in general and exclusive breastfeeding in particular.

In the initial target community of Santa Fe/La Libertad, exclusive breastfeeding under 4 months increased 6.5 percent from 1990 to 1992. In the same time frame exclusive breastfeeding under 6 months increased 7.6 percent. The percentage of children between 20 and 24 months who were still breastfeeding and being given semi-solid or solid foods rose slightly by 3.4 percent.

Not having been able to do so yet, LLL of Guatemala would like to conduct an impact evaluation, specifically designed to determine the impact participation in mother support groups has on breastfeeding practices.

A number of lessons can be drawn from our experience to date in implementing the peri-urban La Leche League model. These lessons can be divided into the following eight categories:

Community needs. In the community, the concept of "health" means "not being sick." There is little understanding of cause and effect. The prominent need in the community is perceived as surviving—not health. These perceptions must be addressed in any program that targets this population.

Establishing an urban program. Community involvement in any project is of prime importance for a project to be successful. Training midwives as BAs proved to be a successful strategy for LLL of Guatemala. It has been our experience that women who are potential candidates to become BAs must be recognized and respected community members.

Networking and collaboration. Networking and collaboration with Ministry of Health and non-governmental organizations working in communities where there is an established program of breastfeeding advocates and mother support groups is of utmost importance. Networking and collaborating adds to the strength of the groups and provides a system of two-way-referral. In addition, it facilitates shared training and technical assistance opportunities.

Training. The initial session with the candidates provides an opportunity for reflection in which the women themselves, through discussion and guidance, come to an understanding of the characteristics a breastfeeding advocate should possess and what her role and responsibilities should be. A summary of this reflective process and discussion provides the basis for a written statement of commitment as a community breastfeeding advocate.

Support and nurturing. We learned that breastfeeding advocates and mother support groups need ongoing nurturing (similar to that provided to LL Leaders within the internal LLL structure). LLL of Guatemala provides this through positive feedback, demonstrated interest, support, guidance, and incentives. The incentives include monthly workshops and refresher courses that provide timely information on breastfeeding and various health related topics. We emphasize to the BAs their important role in the improvement of health in their family, their community and their country and remind them that their work is well worth the effort of careful planning and execution.

Urban health information system. The project showed us that information systems must be kept as simple as possible: if data is not going to be used, it should not be collected. The format of the data collection has been modified as the understanding of the community personnel grew and as community needs changed.

Sustainability of the peri-urban LLL model

Although project funding ended in February 1993, the peri-urban model is still very much in action. Of 214 BAs trained during the life of the project, 50 percent remain active, 15 mother support groups are held monthly and each BA averages 20 monthly contacts. There is 90 percent attendance at the monthly mini-workshops. Recently, BAs from seven communities organized and coordinated a walk for breastfeeding in each community, that in total involved about 1,500 men, women and children. The walk was part of the LLLI world walk that celebrates World Breastfeeding Week.

In order for the project to be sustainable, the BAs need to be self-reliant in their own communities and independent. To help achieve this, three strategies were developed:

1. Each community elected a coordinator and sub-coordinator who gather at the LLL of Guatemala office monthly for a mini-workshop, providing a valuable contact with LLL of Guatemala. The coordinators and sub-coordinators are responsible for the monthly data collection forms in their communities and relay important information from the mini-workshop upon returning to their communities. LLL of Guatemala's role is, therefore, one of facilitator.

2. The coordinators and sub-coordinators elected, from among themselves, a general coordinator and a sub-coordinator, who represent all BAs and mother support groups. Decentralizing and placing responsibility at the community level allows the community to feel ownership of the program.

3. Slowly, but surely, LLL of Guatemala stepped out of attendance and participation in the mother support groups. BAs now organize and conduct the groups by themselves. LLL of Guatemala comes to each community to facilitate a monthly refresher course that serves as an updating meeting and helps to maintain the unity of the BAs. There is 80 percent attendance at these courses. An additional ingredient that helped with the sustainability of project activities is the fact that LLL of Guatemala has been an existing grassroots organization working in breastfeeding mother support groups for 19 years and is totally committed to this work. As a local PVO, we utilize this status to support the BAs, such as asking local industries like COLGATE to donate their products to the BAs at the coordinator's meetings and for raffles in the refresher courses. For example, a shoe factory has just given LLL of Guatemala a donation of shoes, one pair for each active BA.

Figure 1 shows the number of MSGs during project years and 20 months post-project.

FIGURE 1
Breastfeeding mother support groups during and after USAID funding

	Child Survival project 1989-1992	Follow-up 1993-August 1994	Total
No. of BFMSGs	602	391	993
Group attendance	7,255	3,732	10,987
New mothers	2,976	1,182	4,158
Pregnant women	1,077	650	1,727
Breastfeeding mothers	3,836	1,784	5,620

Figure 2 shows the individual contacts made by BAs during project and 20 months post-project.

FIGURE 2
Contacts and referrals made by BAs during and after USAID funding

	Child Survival project 1989-1992	Follow-up 1993-August 1994	Total
Individual contacts	37,485	10,284	47,769
No. of referrals	10,637	5,317	15,954

Figure 3 shows the number and kind of referral made by BAs during project and 20 months post-project.

FIGURE 3
Type of referrals made by BAs during and after donor funding

	Child Survival project 1989-1992	Follow-up 1993-August 1994	Total
Respiratory infection	1,259 (12%)	676 (13%)	1,935
Growth and development	1,415 (13%)	1,592 (30%)	3,007
Immunization	1,605 (15%)	526 (10%)	2,131
Diarrheal disease	1,606 (15%)	644 (12%)	2,250
Malnutrition	1,232 (12%)	450 (8%)	1,682
Prenatal care	1,951 (18%)	735 (14%)	2,686
Child spacing	1,569 (15%)	694 (13%)	2,263
Total	10,637	5,317	15,954

Through the Child Survival Project, La Leche League International and LLL of Guatemala had the opportunity to work with the population that most needs breastfeeding promotion and support. It has been enriching for us to be able to interact with these mothers and to learn from them.

It is very stimulating and exciting to have this chance to share our experiences and lessons learned with all of you. Our hope is that what we have contributed will be useful. Thank you.

Abstract

In May 1994, USAID evaluated CARE-India's Title II feeding program. Knowledge and practices related to health and nutrition among mothers and Anganwadi Workers (AWWs) were found to be better in CARE-assisted ICDS projects as compared to non-CARE assisted projects. Within the CARE-assisted projects, in "CARE-plus" areas the knowledge and practices of mothers and AWWs were better than in the regular CARE areas. The CARE-plus areas had received special inputs in the form of a continuing health education (CHE) program, acute respiratory infection control (ARI) projects, bio-intensive gardening programs or savings and loans associations. The ICDS supplementary feeding program for children and mothers was supported by CARE in both the regular and the CARE-plus areas.

USAID supported Child Survival projects in three states till 1993. After cessation of USAID funding, a CHE program was implemented in the project areas. In the early years of the CS projects, most planning, implementation, and monitoring and evaluation functions were carried out by CARE staff. Over the course of the CS projects, many of these functions were transferred to the government and in the CHE program, community members designed the interventions jointly with ICDS and health functionaries. Continuing education, both in the CHE program and other programs such as the ARI control projects, has led to sustained high levels of knowledge and practice in the CARE-plus areas that were found in the evaluation. Health programs can achieve impressive results in the short term through intensive deployment of PVO staff and rapid training of workers and education of mothers. However, such improvements in knowledge and practice can be sustained over longer periods only if education is continued through involvement of communities and the government.

Continuing Health Education in CARE-assisted ICDS Projects in India

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Introduction

In May 1994, USAID conducted an assessment of the Title II feeding program operated by CARE/India. One purpose of the evaluation was to find out if knowledge and practices related to health and nutrition among mothers and Anganwadi workers (AWWs) were better in the CARE assisted Integrated Child Development Service (ICDS) projects than in the non-CARE assisted projects.

The evaluation found that in CARE assisted projects the knowledge and practices of mothers and AWWs were better in areas which had received special inputs than in regular CARE areas. CARE-plus areas had received special inputs in the form of a continuing health education program, acute respiratory infection (ARI) control projects, biointensive gardening (BIG) programs, or savings and loan association (SLA). Overall knowledge and practice levels in CARE areas were better than in the non-CARE assisted ICDS projects.

In this paper, salient findings of the evaluation related to knowledge and practice are presented. This is followed by an exploration of the reasons for the difference between CARE-regular and CARE-plus areas. Finally, the implications of CARE's approach to health education are considered in the context of sustainability.

Impact assessment

Methodology

The study was conducted in 12 ICDS projects in four states—Bihar, Karnataka, Maharashtra, and Orissa. The states were purposely chosen to reflect the variety of states which have CARE programs. Eighty Anganwadi centers were visited—48 of these were CARE-assisted AWCs, and 32 were non-CARE. In each center, the Anganwadi worker and three to five mothers were interviewed. Analysis was performed using EpiInfo, the statistical software developed by the Centers for Disease Control and Prevention and WHO. AWWs' and mothers' knowledge and practices were analyzed for the CARE-plus, CARE-regular, and non-CARE areas.

Findings

Nutrition knowledge and practices

Information was collected on mothers' and AWWs' knowledge and practices related to infant and child feeding practices and to maternal nutrition. AWWs and mothers in the CARE-plus areas had better levels of knowledge and practices than the other areas.

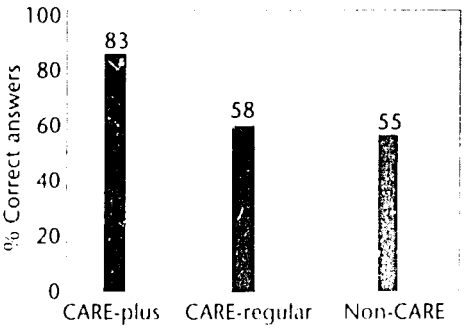
AWWs were assessed on eight nutrition knowledge topics: 1) when should breastfeeding be initiated; 2) when should foods other than breastmilk be initiated; 3) continued feeding during diarrhea; 4) giving a malnourished child double rations; 5) referring a malnourished child to a doctor; 6) counseling mothers of malnourished children; 7) expected weight gain during pregnancy; and 8) need to eat same amount or more food during pregnancy.

Of the 144 responses collected from 18 CARE-plus AWWs, 83 percent were correct. Fifty-eight percent of 240 answers given by CARE-regular AWWs and 55 percent of 256 responses obtained from non-CARE AWWs were correct (see figure 1). Among the CARE-plus AWWs, those associated with the CHE had the best nutrition knowledge—95 percent of 56 responses obtained from them were correct. Eighty-two percent of 40 responses from BIG AWWs, 71 percent of 24 responses from SLA AWWs, and 67 percent of 24 responses from ARI AWWs were correct.

Figure 2 compares the nutrition knowledge of AWWs from the three areas (CARE-plus, CARE-regular, and non-CARE) for those messages for which differences were statistically significant. The graph shows the percentage of correct answers given by 18 CARE-plus, 30 CARE-regular, and 32 non-CARE AWWs. CARE-plus AWWs had better knowledge of messages related to initiation of breastfeeding, continued feeding during diarrhea, expected pregnancy weight gain, and malnutrition counseling.

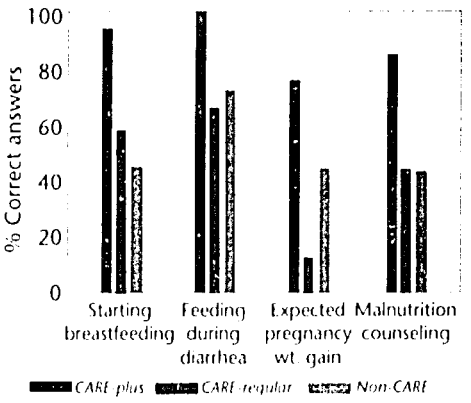
Figure 3 shows the percentage of mothers in areas who reported giving the child colostrum, initiating foods

FIGURE 1
AWWs' knowledge of nutrition by type of project



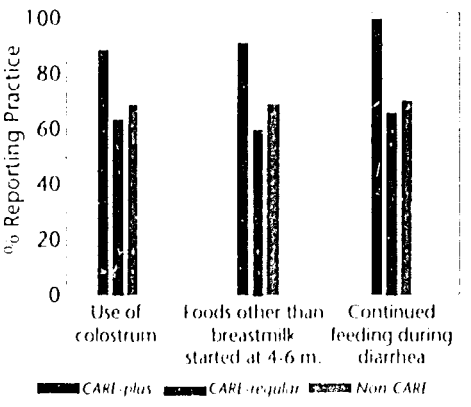
Source: Impact Evaluation of CARE-India's Title II Program, May 1994

FIGURE 2
AWWs' knowledge of nutrition by message



Source: Impact Evaluation of CARE-India's Title II Program, May 1994
Differences statistically significant for all messages ($p<0.05$)

FIGURE 3
Mothers' nutritional practices



Source: Impact Evaluation of CARE-India's Title II Program, May 1994
Differences statistically significant for all messages ($p<0.05$)

other than breastmilk for the child at 4 to 6 months of age, and continued feeding during diarrhea. A significantly greater proportion of mothers in the CARE-plus areas reported correct child feeding practices than in the other areas. Mothers' knowledge about expected weight gain during pregnancy was also assessed. Sixty-nine percent of mothers in the CARE-plus areas gave the correct response; the proportion responding correctly in the CARE-regular areas was 3 percent, and in the non-CARE areas 39 percent mothers gave the correct answer.

Case management

The knowledge of AWWs related to case management of diarrhea, acute respiratory infections, and malnutrition was assessed. Sixty-nine percent of 79 respondents correctly identified treatment with cotrimoxazole and referral as appropriate responses to pneumonia. In CARE-ARI areas, workers were knowledgeable about diagnosis of pneumonia and about appropriate doses of cotrimoxazole. Mothers in the area knew that if a child had fast breathing, they should take the child to the AWW.

Eighty-nine percent of 54 AWWs identified oral rehydration salts and/or salt sugar solution as the treatment modality for diarrhea. Correct case management of malnutrition by AWWs consists of giving double rations, referring to a doctor, and counseling mothers about feeding practices. In the CARE-plus areas, AWWs had better awareness about the need to counsel mothers whose children are malnourished. There was no significant difference between the areas in knowledge of the other aspects of case management.

Explaining the difference between CARE-plus and other areas

CARE interventions

In the CARE-regular areas, the organization supports the government's ICDS program by providing food for children less than 6 years of age and pregnant and lactating mothers. Training is provided to ICDS functionaries in food logistics. In the CARE-plus areas, in addition to these, other interventions have been planned and implemented in consultation with the state governments. These include acute respiratory infection control programs in six states (including Bihar and Maharashtra), Child Survival (CS) projects followed by continuing health education (CHE) programs in three states (Karnataka, Madhya Pradesh, and Orissa), savings and loans associations in Orissa, bio-intensive gardening in Karnataka, and a bee-keeping project in Bihar.

In the CS projects, ICDS workers were trained in diarrhea management, growth monitoring and promotion, immunization, and vitamin A supplementation. The workers, in turn, conducted education for mothers using participatory methods. The CS project has, after cessation of USAID funding, evolved into a CHE program. The CHE educational curriculum is decided by communities and ICDS and health workers and includes many other health topics in addition to the CS content areas based on the seasonality of diseases. (See Figure 4 for an example of how information on seasonality has been used in designing a health education schedule.) Workers and mothers gained a broad-based understanding of the management of the sick child and nutritional and health care of the well child during the CS project. This knowledge has been reinforced and enhanced in the CHE program. The regular CARE areas received only food logistics support from CARE field staff. Many of the area assignments made to CARE for the feeding program were based on the existence of low health, literacy, and socio-economic indices. In the absence of efforts to promote health and nutrition education, levels of knowledge and correct practice among mothers and AWWs remained low in these areas.

CARE inputs

In the early years of CARE's health programming, most planning, implementation, and monitoring and evaluation functions were carried out by the organization's staff.

For example, in the CS project in Madhya Pradesh and Orissa, the curriculum was charted out by the primary health care unit in Delhi, training of ICDS workers was conducted by CARE staff (the field officers), educational programs for mothers were monitored by the field officers, and program evaluation was conducted by the evaluation unit based in Delhi. Over the years, many of these functions have been transferred to the government, and in the CHE program, community members have designed the interventions jointly with the ICDS and health functionaries. This transfer has led to a change in the role of CARE's field staff. In the CS project, CARE field officers were trainers of functionaries and monitors of the educational program for mothers; in the CHE program, they act as facilitators. They guide and assist government workers in planning and implementing project activities. They participate in monthly review meetings with government staff and offer help when the latter have difficulties. They make field visits and support government workers in monitoring project activities. In essence, the project has been planned, and is operated, by the government (and to some extent by the community). CARE field staff have taken on a consultative role.

The decrease in CARE input levels is evident from the changes in staffing pattern after the completion of the CS project. In that project, a field officer was assigned a block—an area consisting of around 100 villages, with a population of about 100,000. In the CHE program a field officer is assigned a

FIGURE 4
Example of training calendar according to seasonality of diseases

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Diarrhea			T	T	XXX	XXX	XXX	XXX				
Pneumonia	XXX		T	T	XX					T	T	XXX
Measles		T	T	XX	XXX							
Malaria		T	T	XX	XX	XX	XX					

X: Peak seasons of diseases T: Training

district—which comprises about 10 blocks. Such low staff density is made possible by the excellent network that the ICDS program has established. Each village has one AWW to implement ICDS interventions—education of preschool children, supplementary feeding of children less than 6 years of age and of pregnant and lactating mothers, and health care for mothers and children.

Sustaining health education

The shift in CARE's role has allowed for continuation of health education in CARE-plus areas after cessation of USAID funding. In the CHE program, responsibility for curriculum planning rests with the community and government staff. Government workers provide education on topics of interest to community members. For their own education, they depend on the monthly meetings of the ICDS and health departments where medical officers and child development project officers conduct training on health problems of seasonal importance.

Continuing education, both in the CHE program and the other PC programs such as the ARI control projects, has led to sustained high levels of knowledge and practice in the CARE-plus areas that were found in the impact assessment.

Conclusions

Health programs can achieve impressive results in the short term through intensive deployment of PVO staff and rapid training of workers and education of mothers. However, such improvements in knowledge and practice can be sustained over longer periods only if education is continued through involvement of communities and the government. The CARE program provides an example of how PVO programs can succeed in promoting health on a continuing basis. CARE staff began by transferring knowledge and skills to government workers and communities and gradually made a transition from being implementors to being facilitators. Through this process, a system has been established to provide ongoing education to communities on health problems that concern them.

Sustainability of Child Survival Activities in 54 Rural Communities in Honduras: The Impact of Decreasing Institutional Resources on Knowledge, Practices, Coverage

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Abstract

Save the Children/Honduras (ASCH) received funding from USAID to implement child survival activities in 54 rural communities from 1987 to 1992. Upon termination, ASCH continued activities with its own funds. In 1993, ASCH supported five full-time staff in these communities. The following year, the percentage of staff time was decreased to 30 percent. From 1992 to 1994, the amount spent to sustain activities was $12,000 per year, 8 percent of the amount spent annually during the project.

In order to determine the sustainability of project achievements and activities, given this reduction in resources, ASCH conducted a KPC survey in July 1994. Sustainability was measured by the results of the survey administered in 1992 at the final evaluation of the CSIII project. To date, 95 percent of the volunteers continue working in the project activities and keep on providing health information. The mini-pharmacies continue to function, all of which are self-sufficient. Cost per project beneficiary has decreased, from $3.80 to $0.46. The analysis of the statistics of the service delivery suggests that the coverage of the Ministry of Health has increased, and the cost-effectiveness of the interventions has been successful. The results of the evaluation suggest that the incorporation of sustained activities and of reproductive health strategies to the health component of the Child Survival project has improved primary health care.

The most relevant results of the survey are: EPI coverage is over 90 percent in children under 1 year; the incidence of diarrhea and death by dehydration decreased by almost 50 percent; the incidence of ARI was not significantly reduced, but the knowledge and treatment were improved. The prevalence of contraceptive use increased.

We conclude that knowledge of child survival and reproductive health and coverage of MCH services have increased despite decreased levels of effort from ASCH.

Background

In 1987, Save the Children Honduras (ASCH) obtained a grant from USAID Washington for the implementation of a Child Survival project in the rural areas of La Esperanza, in the Department of Intibuca, and Pespire, in the Department of Choluteca. This grant was administered under the CSIII initiative. Activities were initiated on August 1, 1987, and were to conclude on July 31, 1991. However, ASCH received a no-cost extension until July 31, 1992. This extended the duration of the project to five years. In January, 1992, interventions to improve maternal health were incorporated with funding and technical assistance from the INOPAL program of the Population Council.

The project was implemented in 24 communities of La Esperanza in the northwest region of the country and in 30 communities of Pespire, Choluteca. The total target population was 26,000 inhabitants, of whom 3,780 were children under 5 years of age and 5,350 were women of child-bearing age. The goal of the project was to diminish mortality and morbidity among mothers and children. The project included the following interventions: expanded immunization program, control of diarrheal diseases and promotion of oral rehydration therapy, early diagnosis and timely treatment of acute respiratory infections, prenatal care, birth spacing, growth monitoring, promotion of breastfeeding and supplementary feeding, and prevention of HIV/AIDS and cholera.

Project implementation

Service delivery was implemented through volunteers. The project trained one or two volunteers in each community. All were selected democratically by their communities. Volunteers were trained in project interventions, management of a community information system, referral systems, and community organization. The volunteers, supported by ASCH promoters, conduct promotional and educational activities, organize vaccination campaigns, distribute oral rehydration salts, detect high risk pregnancies, distribute condoms and oral contraceptives, and refer women to health services. Health promotion activities are implemented through group talks, home visits, and radio programs.

A distinguishing characteristic of ASCH's work is the integration of diverse projects to improve the quality of life. Thus, child survival activities are complemented with projects in potable water, latrines, and generation of resources (goat and rabbit breeding, small farms, fish cultivation, family gardens, etc.). Another key aspect of ASCH's work is the creation of integrated development committees which coordinate the efforts of different community groups. Inter-institutional collaboration is another cornerstone of ASCH's strategy. Through the National Board of Social Welfare and CARE, "child feeding centers" have been established in each one of the communities in which ASCH works. These feeding centers offer supplementary nutrition to children under the age of 5, and to pregnant and nursing women. This activity provides an incentive for the participation of the mothers in educational activities and contributes to the organization of the community.

Achieving project sustainability is a priority for ASCH. Activities which ASCH believes will contribute to the sustainability of their project include inter-institutional collaboration, a community information system, the transmission of health education messages through radio broadcasts the integrated nature of their development work which motivates and supports community volunteers, strategies which are based on community organization and participation such as community volunteers, establishment of revolving fund mini-pharmacies and the incorporation of reproductive health counselors in feeding centers.

Objectives and methodology

USAID funding for child survival activities in these 54 communities ended in July 1992. At this time, ASCH began supporting continued activities with its own funds. From 1992 to 1993, the first year after USAID funding ceased, ASCH supported five full-time staff to continue activities in these communities. The following year, the percentage of staff time allotted to these communities was decreased to 30 percent. The remaining percentage of their time was spent in the new impact areas included in CSIX. Total funding for the five year project was $493,340. From 1992 to 1994, the amount spent to sustain project activities was $12,000 per year, approximately 8 percent of the previous amount dedicated per year.

While ASCH learned a great deal about the effectiveness of their activities during CSIII, the organization is now interested in evaluating the sustainability of their program. In order to determine to what degree project activities and achievements have been maintained, given the reduction in funding and staff time, ASCH administered a KPC survey in July 1994. The results of this survey were compared with the results of the KPC survey administered in 1992 as part of the project's final evaluation. (No baseline survey was administered when this project began in 1987.) This allows comparison of knowledge, practices, and coverage at the time USAID funding for child survival activities in these communities ended, with the same indicators two years later.

Sustainability of the project was measured in the following ways:

1. Comparison of the results of the 1992 and 1994 KPC surveys. Mothers of children under 2 years of age were randomly selected to participate in the survey. Two hundred and eighty women were interviewed in the baseline survey and 300 in the final survey. The following variables were analyzed: incidence of diarrhea, knowledge regarding appropriate management of diarrhea, growth monitoring, vaccination coverage, incidence of acute respiratory infection, identification of serious symptoms in ARI, prenatal care, reproductive intentions, contraceptive use and knowledge of prevention of cholera and HIV/AIDS.
2. Continuation of volunteers measured by the percentage reporting activities.
3. Analysis of the sales of the mini-pharmacies during the two periods (CSIII and the following nine months).
4. Improvements in community infrastructure.
5. Comparison of MOH statistics on incidence of diarrhea.
6. Comparison of the cost of the interventions implemented during CSIII and the 1992-1994 period.

Results

Institutionalization of activities

In order to determine the degree to which project accomplishments have been sustained, ASCH analyzed service delivery data. The organization found that volunteers continue to conduct activities in their communities with reduced support from ASCH promoters. Promoters now visit these communities bimonthly rather than weekly. Volunteers also meet with ASCH promoters monthly to provide support and training. Continuation of the volunteers is very high; only 5 percent have stopped reporting activities. Ninety-eight percent of the pharmacies continue to function, and all have incorporated contraceptive methods into their stock. All the pharmacies are self-financed through their sales, including a profit for the distributors. The reproductive health counselors continue to provide education, support, and referrals.

A comparison of the service statistics collected during the nine month period after completion of CSIII with 11 months of project activities, demonstrates that the family planning activities are sustainable without special funding. The total number of users increased by 48 percent (from 915 to 1,766). The number of IUD

users almost tripled, while the number of women using tubal ligation and oral contraceptives doubled.

Due to the reduced level of effort, the cost per project beneficiary has decreased from $3.80 to .46.

Diarrhea prevention and management

An analysis of Ministry of Health data showed an 80 percent reduction in new cases of diarrhea attended from 1988 to 1993 in ASCH's target area. This may be due to the combined impact of child survival educational activities and the installation of latrines and potable water systems.

According to the KPC survey results, the incidence of diarrhea and death by dehydration decreased by almost 50 percent. However, the percentage of women using antibiotics to treat diarrhea doubled from 30.2 percent to 61.4 percent. The use of oral rehydration salts was reduced from 91 percent to 40.3 percent.

Growth monitoring

The percentage of children who have been weighed during the last four months decreased substantially from 92 percent to 68 percent. This may be due to the fact that the volunteer now conducts the sessions without the support of the promoter. Nevertheless, Ministry of Health data indicate that cases of severe malnutrition in ASCH communities have decreased.

Immunization

Immunization coverage has been one of the most successful interventions. Over 90 percent of children under 1 year had been vaccinated in 1992. Coverage continued to exceed 90 percent in 1994.

Acute respiratory infection

The incidence of ARI was not significantly reduced. The percentage of women who knew the signs and symptoms of ARI did not change (75 percent and 73 percent). The percentage of women who stated that they would take children with these symptoms to the health center was reduced from 84 percent to 66 percent. One possible explanation for this finding is the fact that the pharmacies are stocked with antibiotics for the treatment of ARI.

Reproductive health

In general, the percentage of women with appropriate practices related to reproductive health has remained the same or reduced slightly. For example, the percentage of women attending prenatal care decreased from 88 percent to 75 percent. Similarly, the percentage of women attending in the first trimester decreased from 86 percent to 76.3 percent. The percentage of women with three doses of tetanus toxoid remained approximately the same (42.1 percent versus 38 percent). With regards to family planning, 58 percent of the women interviewed desired to space their next pregnancy in the 1992 survey as compared to 53 percent in 1994. Contraceptive prevalence remained stable, 21.6 percent in 1992 and 19.4 percent in 1994.

Cholera

In spite of the ongoing cholera epidemic in ASCH's target areas, no cases have been reported in any of ASCH's rural communities. The percentage of women who could describe the illness and appropriate treatments remained at approximately 80 percent in 1992 and 1994.

Conclusion

Analysis of ASCH, Ministry of Health, and survey data demonstrates that ASCH volunteers have continued conducting health promotion activities with reduced support from ASCH. The pharmacies continue operating, the number of family planning users has increased, and vaccination of children continues. However, it appears that the volunteers are conducting fewer growth monitoring sessions.

Survey results and Ministry of Health data indicate a decrease in the prevalence of diarrhea, although appropriate treatment of cases with oral rehydration salts has decreased. Indicators of other interventions including EPI, ARI, reproductive health and cholera have remained stable or decreased slightly.

These results are considered positive, in light of the 88 percent decrease in cost per beneficiary.

The Malawi Drug Revolving Fund Experience: Impact, Sustainability, and Lessons Learned

Abstract

We report here on the results of a qualitative study on drug revolving funds (DRFs) conducted by SC/Malawi in collaboration with the University of Malawi Center for Social Research. The study was conducted 10 months after program phase-out from the SC/Mbalachanda impact area to evaluate the DRFs' sustainability and key lessons learned. The methodology included (a) interviews with MOH staff at health centers and at the district level, (b) focus groups with 10 randomly selected villagers in each of the 10 randomly selected villages, and (c) records review.

Through the SC Child Survival program in 1988, 142 DRFs were established, covering a population of approximately 30,000 in 120 villages. The initial cost for drugs to institute the DRFs was $6.70 per village. Eight types of drugs were available through these funds, including Bactrim and Fansidar.

By July of 1994, this study demonstrated that a considerable percentage (58 percent) of the DRFs initially started in 1988 were still functioning; 45 out of 142 (32 percent) were stable and operating successfully; and 37 out of 142 (26 percent) were still functioning but diminishing in cost recovery. The remaining DRFs had either collapsed or had not revolved since SC's phase-out. Some of the lessons learned include: the DRFs led to a significant increase in the accessibility and availability of low-cost basic drugs at the community level; the DRFs have promoted better relationships between the community and volunteer health promoters; supervision of volunteers and maintaining of consistent drug supplies for replenishment are areas that need further attention.

We conclude that the DRFs' intervention used by SC/Malawi has been highly successful, has a potential for long-term sustainability, and may be replicated elsewhere. These results may also contribute to positively influence national policy impact on drug distribution systems and cost recovery at the community level.

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Save the Children/Malawi

Background

Save the Children Federation/Malawi (SC/Malawi) began implementing a community-based integrated rural development program in Mbalachanda area, in the northern area of Malawi in 1983. The development program was completed in October of 1986, by a Child Survival project (CSII) funded by USAID. The main goal was to reduce infant mortality and morbidity through training of families in protective behaviors. The total target population was approximately 38,000 inhabitants and the main beneficiaries were children under 5 years old and women of childbearing age. In 1989, SC/Malawi obtained USAID funding to continue implementing a Child Survival project, under the CSV initiative. This project covered Mbalachanda area with expansion to Mkhota impact area in the central area of Malawi. SC/Malawi received a no-cost extension for this grant until July of 1993.

SC/Malawi's CS community-based strategy included the training of volunteer health promoters (VHPs) who were supported by community health supervisors (CHSs) and village health committees (VHCs). The CS projects included the following interventions: immunizations, management of diarrheal diseases, growth monitoring and nutrition education, malaria control, management of acute respiratory infections, antenatal care, and child spacing. HIV/AIDS prevention interventions were included in CSV.

A community needs assessment conducted towards the end of 1987 suggested frequent shortages of essential drugs at the health posts in Mbalachanda and a need for accessible curative as well as preventive care. This assessment entailed a series of meetings with village headmen, VHPS, CHSs, and VHCs. In 1988, 142 drug revolving funds (DRFs) were established in Mbalachanda through the CSII project and with support from UNICEF, covering a population of approximately 30,000 in 120 villages. Chloroquine and aspirin were the first drugs introduced. In 1990, Fansidar, Panadol, and Bactrim were introduced, as well as magnesium, eye ointment, and ear drops.

Implementation of the DRFs

Once community members expressed their willingness to pay for accessible care and drugs, SC/Malawi developed a logistics plan for supply, distribution, inventory, bookkeeping, auditing, supervision, and re-supply, allowing for input of those villages willing to participate. The management component consisted of training of VHPs in a recording system for the inventory control of the drugs (which included an understanding of the expiry dates) and an accounting system for the purchase and sale of medications. Booklets consisting of MOH protocols, accounts, and inventory ledgers were distributed to trainees.

VHPs trained by SC/Malawi were responsible for managing and distributing the medicines according to protocols. A member of the VHC was appointed treasurer and made responsible for accounting. The VHC was also responsible for setting the price of the drugs based on the prices at the health centers, local shops, and costs of replacement. Prices were reviewed periodically by VHCs in order to cover inflation.

Villages have been grouped in order to facilitate resupply. When a

group of villages ran out of medicines, a request was made to the district with the support of the supervising health surveillance assistant (HSA). SC/Malawi distributed approximately a six month supply per village to each HSA. Each HSA distributed the corresponding supply to each supervised VHP in the presence of the village headman, chairman, and treasurer of the VHC. SC/Malawi kept a supply buffer stock in their area office in case a village ran out of supplies prior to the next requisition. This ensured the credibility and reliability of the system since the most demanded drugs were always available.

Before SC/Malawi phased-out of Mbalachanda area, the district health officer appointed the area health inspector (AHI) to be responsible for the operation and overall supervision of the DRFs. The AHI requested all HSAs to continue supervising VHPs and coordinating with the VHCS. When the CSV project ended in 1993, the buffer stock was left with the AHI.

Objectives and methodology

SC/Malawi conducted a qualitative study of the DRFs in collaboration with the University of Malawi Center for Social Research 10 months after the close of the CSV project. The purpose of the study was to evaluate the impact and sustainability of the DRFs.

The methodology included: (a) interviews with MOH staff at health centers and at district level, (b) focus groups with 10 randomly selected villagers in each of 10 randomly selected villages, and (c) records review.

Criteria was developed by researchers to categorize DRFs as either successful or unsuccessful. The following were the indicators of a clearly successful DRF:

- The supply of drugs is continuous and in sufficient quantities that drugs do not run out quickly.
- A variety of drugs are available that can treat most common ailments.
- Costs of drugs are lower than those at private hospitals or nearby groceries
- Credit is available to those who are sick, but lack cash.
- The village health promoter is knowledgeable, competent, friendly, and trustworthy.
- The promoter does not abuse her/his authority or mislead villagers into thinking that she/he can administer injections.
- Records are kept of treatments given, stock balances, and drug sales proceeds; records are reviewed regularly by the supervising HSA.
- A secure place has been found for storage of drugs and proceeds.
- Drugs are sold before their expiration date.
- A village health committee or village headman monitors closely the stock levels, prices, and cash flow and takes action to rectify problems that may occur.

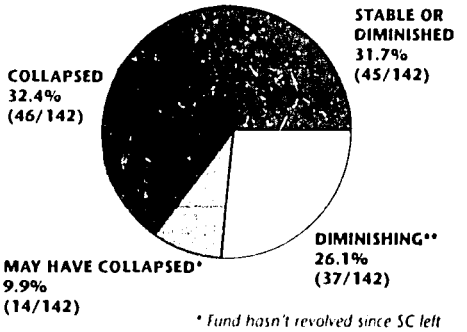
Findings

We report here on some of the preliminary findings of this study:

1. *Proportion of DRFs still functioning:* (Figure 1) By July of 1994, this study indicated that a significant percentage (58 percent) of the 142 DRFs initially started in 1988 were still functioning. From the 58 percent functioning, 45 out of 142 (32 percent) were stable and operating successfully, and 37 out of 142 (26 percent) were still functioning but diminishing in cost recovery.

The remaining DRFs either collapsed (32 percent) or may have collapsed (10 percent). The study suggests that the three main reasons that DRFs collapsed related to (a) problems of management and/or record keeping by VHP, VHC, or treasurer; (b) the departure or death of VHP; and (c) the need for a DRF in the village was not strong.

FIGURE 1
Status of drug revolving funds in Mbalachanda area as of July 1994



** Fund hasn't revolved since SC left*
*** Fund has declined since SC left*

2. *Appreciation of the DRF by villagers and satisfaction with VHPs:* Focus groups with villagers suggest that the DRFs are worthwhile. The main reasons cited by villagers were (a) that drugs are available nearby and can be obtained on credit; (b) the VHP prescribes drugs competently; and (c) drugs are effective. Most villagers expressed satisfaction with the performance of the VHPS.

3. *Understanding and support of the DRF concept:* The study team suggests that one of the most important indicators for a DRF's potential to be sustained is the extent to which community members are willing to pay for the drugs. About 50 percent of community members in focus group discussions expressed support, willingness to pay, and understanding of the DRF concept.

4. *Provision of credit:* Provision of drugs on credit was found in 70 percent of the villages visited by the study team.

5. *Prices of drugs:* Table 1 shows a

TABLE 1
Drug prices in July 1994 for one tablet or application, by source (in tambalas)

Drugs	DRF's average (range)	Grocery[1] average (range)	Kabwafu hospital	CMS[2]	MPL[3]	Pharm[4]
Fansidar	60 (50-90)	—	180	32	119	—
Aspirin	7 (5-10)	5 (3-6)	3	2	4	2
Panadol	19 (3-35)	27.5 (*)	18	6	13	7
Bactrim	29 (20-45)	—	21	18	32	—
Magnesium	16 (3-30)	25 (*)	13	22	12	4
Eye ointment	7 (5-10)	—	700[5]	67[5]	—	—
Ear drops	20 (*)	—	—	81[5]	—	—

NOTES:
[1]Groceries were in Euthini, Kanyankhunde, and Mbalachanda areas.
[2]CMS = Central medical stores (includes 17.5% mark-up)
[3]MPL = Malawi Pharmaceuticals Limited
[4]Pharm = Pharmanova
[5] Not available by application, but by tube/bottle. Each tube/bottle contains 25-28 applications.
(*) = Available at one location only
— = Not available

comparison of drug prices and drug availability in the impact area in the DRFs, groceries, hospital, central medical stores, Malawi Pharmaceutical Limited and Pharmanova. In general, the drug costs are lower and a wider range of drugs is available in the DRFs when compared to the other sources.

7. *Interest in increasing the variety of drugs and including contraceptives in DRFs:* The majority of focus group participants demonstrated interest in increasing the variety of drugs as well as including contraceptives. Several participants spelled out the advantages of contraceptives for child spacing and condoms for HIV/AIDS prevention.

Problems and corrective actions

The drug revolving funds were generally well received and maintained by the beneficiary communities with a significant number of them still functioning and revolving nearly one year after SC phased over its activities. However, the evaluation report highlighted several problems that were faced both in the course of the DRF implementation and in their maintenance after phaseover. In all cases these experiences provide guidance for how SC might proceed differently in the future and in most cases, corrective action has been, or is being, taken with the existing DRF project.

1. *Maintaining consistent supply of drugs* Resupply is dependent on the area health inspector (AHI) purchasing needed drugs from the central medical store. Consistency is difficult due to lack of reliable transport, inconsistent supplies of certain drugs in the central medical store, and inadequate buffer stock to cover lapses or to allow villages to revolve their funds as they run out of drugs.

Corrective action/recommendations

- SC is purchasing drugs to increase the buffer stock.
- SC is repairing the health inspector's motorcycle.
- Villages to revolve their funds through the buffer stock independently of when the buffer stock revolves through the central medical store, in order to maintain supply and limit dwindling due to inflation.

2. *Mismanagement of funds at village level* The misuse of funds by promoters and subordinate staff and incomplete record keeping threaten sustainability at the village level.

Corrective action/recommendations

- Resupply bicycles to HSAs, enabling close monitoring and supervision of funds.
- Annual refresher training planned with MOH for HSAs and promoters in simple record keeping, management, and appropriate drug use.
- Involve more headmen and health committee members in monitoring DRF accounts at village level.
- Simple record keeping systems in place and enforced at all levels.

3. *Inappropriate prescriptions by VHPs* This occurs due to lack of adequate refresher training, lack of simple reference materials and protocols, need for supervision to review prescribing practices, and village pressure for drugs.

Corrective action/recommendations

- Annual refresher course planned through MOH.
- Simple protocol and dosages now attached to drug packages when dispensed.
- HSAs to do spot checking of prescriptive practices.
- Village education regarding appropriate use of drugs.

4. *Motivation of and satisfaction with promoters:* While difficult for the project to influence, village satisfaction and the thriving of a DRF are dependent on the trustworthiness, motivation, and competence of the VHP. The question of incentives with the inherent problems of sustainability and threat to volunteerism is also related.

Corrective action/recommendations

- Project needs to work with village and HSA in selection, supervision, and evaluation of promoters.
- Annual refresher course planned.
- Develop creative schemes of sustainable incentives.

Lessons learned

Nearly six years have passed since the DRFs were established in the Mbalachanda area and almost one year has passed since SC/Malawi phased-out from the area. The following lessons learned are likely to have relevance to the Malawian government and to other local and international institutions willing to establish DRFs:

1. Initial planning and collaboration with local government and/or other institutions may be one of the main contributors to long-term sustainability.

2. Awareness-building and pre-implementation field-tests are important prerequisites to proper introduction of the DRFs.

3. DRFs led to a significant increase in accessibility and availability of low-cost basic drugs at the community level. Where health centers are far away, and drug availability at these facilities is erratic, communities feel a strong need for DRFs.

4. Provision of drugs on credit was highly appreciated by community members.

5. Participation of community members in the selection of VHPs may lead to greater satisfaction with the VHPs' performance.

6. Including a variety of drugs may increase the chances of success and acceptance of the DRFs.

7. Rigorous monitoring of drugs, sales, monthly balances, and careful accounting are essential to operation of DRFs.

8. Roles and responsibilities of the VHP, CHS, VHC, and/or other supervisor should be clarified initially and reinforced periodically.

9. Regular supervision and refresher courses on management and technical issues for VHPs and other individuals who will be dispensing drugs will ensure that problems are detected early, before disrupting the operations of the DRFs.

10. Maintaining consistent drug supplies for replenishment is an area that deserves special attention.

11. Strong supervision, management, and administrative systems are essential to the success and sustainability of DRFs.

Conclusions

We conclude that the DRFs established by SC/Malawi have achieved several successful outcomes. This intervention has a potential for long-term sustainability, for replication elsewhere, and for addition of other drugs and contraceptives. The study findings may also positively influence national policies on drug distribution systems and cost recovery at the community level.

PART SIX

Poster and Roundtable Presentations

Enhancing the Impact of Community-based Village Health Workers: Lessons from Imo and Abia States in Nigeria

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AFRICARE/NIGERIA

VHWs have been the linchpin of Africare efforts to strengthen maternal and child health services in targeted rural communities, using child survival strategies such as immunization, ORT, nutrition, growth monitoring, and child spacing. This poster describes the accumulated lessons of eight years of Child Survival project implementation in southeastern Nigeria, focusing on the impact of VHW-led activities, and appropriate strategies for sustaining community-based village health workers. Extensive quantitative data from household surveys, VHW records, and local clinic registers demonstrate the effectiveness of the project s PHC/ VHW strategy for improving household health knowledge and practices through which maternal and child morbidity and mortality could be reduced. Results from a WHO 30-cluster sample household survey showed that counselling of mothers by the VHWs improved the rate of full immunization for children aged between 12 to 23 months from 24 percent to 59 percent. Percentage of mothers who fortified their child's weaning foods with protein rose from 14 percent in 1990 to 63 percent in 1991. Over the course of project implementation and expansion from one local government area in 1987 to seven areas in 1994, reaching a population of 350,868, Africare-supported health activities have been increasingly integrated with local government primary health care programs. Central to this emphasis on local management has been the increased understanding by local government of the role of VHWs and the importance of local support for VHW activities if child survival health services are to be sustained beyond the period of external donor support. A follow-up evaluation of the project is recommended. ■

Child Survival on the Tea Estates in Malawi— An NGO Private Sector Model

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PROJECT HOPE/MALAWI

In the Thyolo district in the southern region of Malawi, the Project HOPE Child Survival program is implementing a primary health care (PHC) project with the tea estates whose employees and dependents comprise 1/3-1/2 of the population of the district. The project has demonstrated the effectiveness of working through the estates to provide a PHC network by training 30 estate employees as PHC workers and 300 volunteers in HIV/AIDS prevention, family planning, diarrheal diseases, ARI and malaria control, nutrition, and EPI. PHC activities have been successfully integrated into the existing estate medical services; sanitation and hygiene on the estate compounds have improved visibly; and education activities have had an impact on health knowledge and practices. For example, 62 percent of the women with children under 2 years interviewed in the final KPC survey understand when to introduce weaning foods compared to 40 percent at baseline, and 20 percent are using modern family planning methods compared to 4 percent at baseline. The project, which will be expanded to Mulanje district private estates and has been requested by estates in all regions of the country, demonstrates a model for increasing PHC through the private sector, which in turn decreases pressures on the government health services. ■

Impact of a Community-based Information/ Education/Communication Campaign on Knowledge and Practice of Prenatal and Postpartum Care

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Despite the decrease in child mortality which followed implementation of child survival interventions, neonatal mortality rates remained fairly stable and continued to account for a high proportion of infant mortality. Save the Children initiated an intensive information-education/communication campaign to promote appropriate nutritional and health care practices during pregnancy and the postpartum period; the approach was noteworthy because it targeted influential family decision makers (husbands and mothers-in-laws) as well as pregnant women. The campaign was implemented in part of SC's CSVIII project area (a remote rural area in Nasirnagar) and covered a population of approximately 25,000.

The campaign resulted in significant increases in levels of knowledge and practice on the part of pregnant women and other family members regarding nutrition, intake of iron tablets, attendance at prenatal care, contraception, seeking care for problems in delivery, preparation of items needed for hygienic deliveries, and other behaviors. Mothers perceived that other family members were more supportive of these behaviors. There was also a significant improvement in the delivery practices of TBAs. Although a reduction in infant mortality was observed during the period over which the IEC campaign was designed and implemented (1991-1993), lack of a control group as well as small population size make it impossible to attribute the reduction entirely to project interventions. Improved TBA

delivery practices were significantly associated with reduced neonatal morbidity. This successful IEC strategy will be replicated to improve maternal, perinatal and neonatal health throughout SC's entire CSVIII project area in Bangladesh. ■

The Implementation of Community Gardens as an Effective Strategy to Improve the Nutritional Health Status of Mothers and Children in Nicaragua

ALBERTO ARAICA
WORLD RELIEF CORPORATION/
NICARAGUA

Purpose of strategy: To train community women in the development of vegetable gardens and food preparation and teach them the importance of adequate food consumption particularly focusing on pregnant women and children under 5 years.

Methodology: Data was obtained through World Relief's health information system which monitors children's weight gain through growth monitoring sessions. Health statistics were also obtained from the Nicaraguan Ministry of Health.

Principal accomplishments: 1) an increase of 40 percent in the number of women attending health training sessions, 2) 70 percent of the communities within the CS project area have a community garden, 3) 100 percent of the promoters and community volunteer leaders have been trained in garden development, 4) 1,600 women to date and 20 local health committees have been trained in the nutrition intervention, 5) the establishment of community leadership groups who direct and involve the community in the use of gardens, 6) vegetables produced in the gardens are distributed amongst the families and added to their meals, and 7) mothers have acquired new techniques on varied food preparation. ■

The Dhaka Urban Integrated Child Survival Project Experience: How an Urban Community is Meeting Its Needs

MOZIBUR HOWLADER
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The Dhaka Urban Integrated Child Survival project has been addressing the major child health problems in urban Dhaka by implementing six child survival interventions such as prevention and treatment of vitamin A deficiency. Night blindness (NB) due to vitamin A deficiency among children is being combatted through short- and long-term nutrition programs. The prevalence of NB among high-risk children has dropped from 2.5 percent to 0.1 percent. A key strategy has been the development of a community infrastructure consisting of neighborhood health committees, ward consortium, and community volunteers. This cadre of workers plans, implements, and monitors the periodic high potency vitamin A capsule distribution as a short-term mechanism to combat vitamin A deficiency.

To assess the effectiveness of community volunteers, the project conducted a cross-sectional descriptive study. A total of 450 households with mothers who have children 0-71 months old were selected from the community through cluster sampling. The information was collected using structured questionnaires. The study revealed that 100 percent of the households were covered by the volunteers, 97 percent of the target children received appropriate doses of vitamin A, and 92 percent of mothers were given nutrition education at the time of household visits.

This study shows that the community, given the necessary logistics and training, could contribute to the solution of common health problems such as vitamin A deficiency. ■

All for Health: PLAN International's Partnership Experience in Haiti

LUIS TAM
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PLAN International is a child-focused development organization working in 30 developing countries and benefitting more than 660,000 children, their families and communities. Health is one of PLAN's key program areas. In 1987, PLAN opened its field office in the rural and impoverished district of Croix-des-Bouquets, Haiti. Agriculture is the main economic activity, but is severely limited due to the poor soils and the lack of water. In 1990, PLAN was awarded a grant to implement a Child Survival project in the Croix-des-Bouquets district. Partly a consequence of the 1991 military coup and the diplomatic and economic sanctions to the government of Haiti, the project was reduced in both coverage and scope. A new strategy for service delivery was tested, that is, that the project activities be implemented by a health center of the Ministry of Health in the area of Turbe, and by HELP, Inc., a local non-governmental organization working in the area of Vaudreuil. Both institutions are PLAN partners in this endeavor. The presentation described the development of this partnership and its impact on the effectiveness and sustainability of the health program in this district. ■

The Impact of Village Management Committees on Service Delivery in Rural Nepal

Chanda Rai
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Save the Children/Nepal

Save the Children, US has established and mobilized village management committees in rural Nepal to improve the provision of primary health care services in communities. Management committees have helped create a sense of community ownership for several Child Survival (CS) project activities, thus leading to greater community support, greater program impact, greater project sustainability, and greater likelihood of successful phaseover to the community.

Health post and outreach clinic management committees have been organized through CS projects in Siraha (terai or eastern plains region) and Nuwakot (central hills region). Committee members are selected by the community in a joint meeting with SC/Nepal project staff and the district heaith office; they motivate and educate fellow villagers regarding health care services, register mothers and children at clinics and health camps, monitor health post activities, demonstrate and sell ORS, and raise funds by charging minimal fees for health cards (some of which are used to subsidize clinic and referral services for the poorest villagers) or establishing drug revolving funds.

Data were presented on the impact of management committees on attendance at health posts and outreach clinics, using service-based statistics, and on cost recovery. Findings were presented on the quality of Siraha clinic services (such as EPI, FP, teaching, or ORT), using quality assurance tools developed through the project. ■

The Incorporation of Community Natural Organizations in the Transmission of Basic Messages in Child Survival

Alberto Araica
World Relief Corporation/
Nicaragua

Purpose: To demonstrate that the integration of schools and churches is a successful and sustainable alternative to project specific teaching about child health.

Methodology: The data were gathered through the World Relief's health information system.

Main achievements and conclusions: The incorporation of 90 percent of schools and churches in the transmission process of basic messages in health. The increase by more than 50 percent of trained women. The training of 70 percent of teachers and church leaders selected as new volunteers in health, and their incorporation into the community work. The incorporation of the new interventions of health as a part of the academic program of the schools. Schools and churches as permanent organizations for the community have great potential for sustaining community education about health. ■

Gender Equity: A Fundamental Issue to Ensuring Sustainability of an Urban-based Child Survival Program

Sylvester Costa
World Vision/Bangladesh

This paper will discuss the significant achievements of the Dhaka Integrated Child Survival Project in five administrative wards of Dhaka City Corporation (DCC) with an estimated population of 197,245, of whom 43,325 (22 percent) are women of 15-45 years. The project emphasized women's participation in execution and implementing child survival interventions. Sixty percent of project staff, neighborhood health committee members, and community volunteers are female. The project has organized and trained 78 focus group mothers and 56 traditional birth attendants who represent and provide voluntary support/services, especially to slum communities.

These groups' active involvement facilitated the achievement of project objectives such as full immunization coverage among children 12-23 months from 15.5 percent to 92.5 percent; TT2 coverage from 15.4 percent to 92.8 percent; ORT usage from 57 percent to 74 percent; semiannual vitamin A capsule distribution to children from 24 percent to 80 percent; and contraceptive prevalence from 27 percent to 72 percent.

As a result of these achievements, the national EPI has recommended in its 1993 EPI report that similar health committees in other urban areas be organized to bring together the appropriate MOH, DCC, NGOs, private professionals, and representatives from local community groups to prepare a strategic plan for immunization. Women's maximum participation and

involvement in the leadership and health-management process enabled the project to gain social support from influential decision makers in the families and the communities. These women have become pioneers in establishing a community-based health services center to sustain Child Survival project achievements and its service quality. ■

Impact of the Child Health Initiatives for Lasting Development (CHILD) Project on the Government's EPI Program in Bangladesh

FLORENCE DURANDIN
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CARE/BANGLADESH

Background – CARE/Bangladesh implements the Child Health Initiatives for Lasting Development Project (CHILD) in Sylhet District of the Chittagong Division. Since October 1991, USAID has funded CHILD, which operates in five thanas. The target population of the project area is 488,024 and includes all children under age 6 years (242,114) and all women of reproductive age 15 to 49 years (245,114). It comprises four major interventions: immunization, control of diarrheal disease, vitamin A, and family planning for the prevention of high risk births.

The main objectives of the project are to increase child survival service coverage and to improve mothers' knowledge and practices related to basic health and family planning issues.

Conclusion – It appears that the CHILD project strategy has been effective within a short time. There is evidence from the data presented that immunization services have greatly improved within the three years of the project. Other data from CARE's health information system and the MOHFW management information system also show that the operation of the outreach sites is more regularized, organized, and effective, which increases the opportunity for the children and their mothers to receive quality services at the community level. The midterm evaluation of the project also found that MOHFW workers are more skilled and visible in the community. ■

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