Expecting too much From the Rural Development Projects: A Case of the Iringa Nutrition Project

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Abstract

The Iringa Nutrition Project (INP) supported jointly by the Government of Tanzania and UNICEF was started in 1984 as one way to improve rural livelihood. It was implemented in Iringa region because it was found that despite good food supply in the region, there were still high rates of malnutrition among children. The present study was carried out in Thirty-nine villages of Ludewa and Iringa districts to evaluate the performance of the INP. Child growth and nutrition status data for the period between 1984 and 1992 were used. Indicators of project outcome included success in lowering the proportion of malnourished children and extent of coverage (number of children reached). In addition, regression analysis was used in identifying the community characteristics that were responsible for determining rate of malnutrition changes in the study area. It was observed that 10 percent of the 39 villages in the project area were able to maintain a downward trend in malnutrition during the period 1984-86 and 18 percent in 1987-92 period. None of the villages was able to sustain a continuous downward trend for the entire period of nine years (1984 to 1992). The regression analysis revealed that malnutrition declined significantly in those wards where the rates of malnutrition were highest at the outset of the project. In addition Dominant cropping system and population size indirectly affected the capability to improve nutrition through their influence on coverage. In conclusion, the Iringa Nutrition Project appears to have had only a modest impact on improving the nutritional status of children in Iringa. This implies that, while the use of projects to combat malnutrition in poor countries may still be inevitable, we should not expect too much from these projects.

Introduction

The Iringa Nutrition Project (INP) in Tanzania is among the most internationally publicized successful nutrition improvement actions of the 1980s (UNICEF, 1989; ACC/SCN, 1991; Kavishe, 1993). The project was among several such programmes globally initiated by WHO and UNICEF in the 1980s to improve nutrition in some of the poorest countries in the world, particularly in rural areas. The objectives of the INP were to improve child growth and development through good maternal and child health and nutrition. Iringa region was chosen because it was found that despite its high potential for food production it was among the regions with high rates of malnutrition and deaths of infants and children in the country. The project was initially implemented in only 168 villages in 7 divisions in five districts from 1984 to 1988, and since then it was expanded to include 620 villages covering the whole region. Full description of the INP and how it was organised is provided elsewhere (UNICEF, 1989; ACC/SCN, 1991; Pelletier and Jonsson, 1994; Msuya, 1999). While several studies have attempted to evaluate the INP (WHO/UNICEF & URT, 1986; UNICEF, 1989; ACC/SCN, 1991), such evaluations were based mainly on short-term impact. In other words, there has not been a comprehensive study to look back at what has actually happened since the project was phased out. It is common with most donor-supported projects to have a short-

lived impact but once the support is withdrawn much of it collapses. The aims of this study were therefore to: (a) revisit the Iringa Nutrition Project with an intention of examining the extent to which nutrition improvement has been sustained, and (b) identify community characteristics that were likely to have influenced changes in malnutrition rates in the area.

Subjects and Methods

Data sources

To carry out the investigations mentioned above, it was necessary to obtain data showing the nutrition situation in the project area since the project began. Since villages maintained records of nutritional status of all the children 1 – 5 years of age during the project, these were used as the source of nutrition outcome data. The records distinguished the children who were malnourished from those who were well nourished according to the weight-for-age standards.

Sampling

Three variables were used as indicators of project outcome: (1) success in lowering the proportion of malnourished children, and (2) success in the extent of project coverage. A village was considered successful in lowering the proportion of malnourished children if it was able to attain a much lower proportion than for the previous year, that is positive reduction, and unsuccessful if otherwise. On the other hand, a village was considered successful in the extent of project coverage if it were able to reach at least 80% of the target group (children of 1 - 5 years of age), and (3) 'success in having prevalence of malnutrition less than 40%'. The 40% cut-off point was chosen as a relative figure because of high malnutrition prevalence that existed in the area.

Two project phases were distinguished. First, the pilot phase which represented the first three years of the project (1984 - 1986), and second, the transition and community control phase (1987 - 1988) when the project was preparing for handover to the communities, and thereafter when the project was expanded (1989 – 1992). Complete records of nutritional status for the two phases were retrieved from 39 of the initial villages. These were located in four divisions, predominantly in the Iringa rural district (appendix 1 A). For the purpose of comparison, a second sample of 42 villages from the expanded area was also selected from the Iringa rural district (appendix 1 B). The project had a strong monitoring system and decision making was decentralised at all levels (WHO/UNICEF & URT, 1986; Pelletier and Jonsson, 1994).

Data analysis

Simple descriptive statistics were used to compile and analyse the data. In addition, regression analysis was used in identifying the community characteristics that were likely to have influenced changes in malnutrition rates in the area. Statistical package for social sciences (SPSS) was used to run the regressions. The data used were obtained from wards rather than from individual villages. This was necessary because information on most of the dependent variables (as described below) was compiled at ward level. It is important to note that, the database was much broader involving a total of 64 wards, which is about two thirds of the size of the whole region. Ordinary least squares (OLS) method was used to estimate the models.

Hypothesis

Four hypotheses were used to guide the conceptualisation of the evaluation. These included:

1. The previous levels of malnutrition did influence the rates of malnutrition change in the project area. The outset levels of malnutrition (PROPMN88) were included in the model 1. It was expected that, the management would be quick to take actions by allocating more resources to the areas with relatively higher rates of malnutrition and hence faster reduction in malnutrition rates.
2. Structural variables such as remoteness and the dominant cropping system in the study area may influence the extent of coverage for growth monitoring. Coverage is more in less remote areas than in remote areas. Similarly for a more intensive cropping system there is less coverage since women will not find time to take their children to health posts for growth monitoring.
3. Duration of participation in the project has an influence on the outcome of the project. The longer the duration, the better the outcome. Those wards that were for a long time in the project, as represented by wards that were in the initial area since 1984, may have achieved a higher quality of project service. This factor may be important over and above the extent to which the target group was actually covered for monitoring, or the structural conditions of the location. The inclusion of the dummy variable DUM_INITIAL was intended to capture this aspect in all the three models.
4. A key variable for project operation and therefore change in malnutrition at the ward level was the extent to which the intended target group was covered. The inclusion of the variable COVERAGE in models 1 and 2 was meant for this. Coverage itself may be determined by a set of infra-structural and agro-ecological variables (this is the essence of the third model). The variables included the size and structure of the population, i.e. the population size and the household size. Others were dominant cropping system and condition of the roads.

Models tested

(1) MLN88_91 = *f* (COVERAGE DUM_INITIAL, Distance km DUM_AGRO, PROPMN88)
(2) MLN88_91 = *f* (COVERAGE DUM_INITIAL, Distance km DUM_AGRO)
(3) COVERAGE = *f* (DUM_AGRO, DUM_ROAD, HH_SIZE, Total Pop, DUM_INITIAL)

Whereby:

MLN88_91 is the extent to which malnutrition rate changed in a ward. This variable is obtained by subtracting the malnutrition prevalence (in percentage) for a particular ward in 1991/92 from the corresponding value in 1987/88.

COVERAGE is the proportion of all children 1 – 5 years old in a ward who were weighed for the purpose of growth monitoring in 1991.

DUM_INITIAL is dummy variable: 1 is for wards that were involved in implementing the initial pilot project and 0 for the other wards that were included much later.

Distance km is distance in km from the ward head office (where all the project activities within the ward were co-ordinated from) to the district head quarters (where the activities for the whole district were organised).[‡‡]

DUM_AGRO is dummy variable for the dominant cropping system. The value 1 is for wards situated in the non-maize areas and 0 for those in maize-dominated areas. Wards situated in non-maize cropping areas had a higher chance of participating in the

[‡‡] Information on actual distances were not obtained and therefore they were measured from straight lines in the map (i.e. aerial distances).

project than those situated in maize-dominating areas.

PROPMN88 is the initial level of malnutrition. It is the proportion of children 1 –5 years old in a ward who were identified as malnourished among those reached and weighed for growth monitoring in the year 1987/88.

DUM_*ROAD* is dummy variable for the condition of roads connecting the ward and the district head quarters. The better the roads the greater the interaction between wards and district head quarters. The value 1 is for good roads and 0 for poor roads.[§§]

HH_SIZE is average number of individuals in the households in the ward. This was calculated by dividing the total population in a ward by the number of the households.[***]

Total Pop is the population size in the ward.

Results and Discussion

Nutrition performance

Table 1 presents the results of the analysis. The table indicates that very few villages were able to perform well in the various indicators and time periods considered. Only four villages (10.3%) out of the 39 sampled in the initial area were successful in either lowering or maintaining the low prevalence of malnutrition during the pilot phase. It is also interesting to note that none of the four villages was found in both indicators (see the listing in the included footnotes in Table 1). Despite the implementation experience gained during the pilot phase, the number of villages for the two indicators were respectively 7 (18%) and 3 (8%) during the second phase. However, during the second phase only Kiwere village situated in Kalenga ward appeared in both indicators. With regard to the third indicator, i.e. success of reaching at least 80% of the target group, the results showed that, except for Tanangozi, all the other villages mentioned above were successful in this respect.

Looking across project phases for each indicator, it is striking to note that none of the villages was able to record sustained success throughout the period of the observation (1984 - 92). Considering the need and expectation by donors and recipients to sustain nutrition improvement, this outcome is quite disappointing. The outcome of the project in the initial villages seems to be inferior compared to that of the expanded area for the first two indicators. However, the initial villages excelled by far in terms of the extent of coverage whereby about two thirds of the villages were able to attain high coverage as compared to only one fifth of the other group.

The results of the first two indicators seem to suggest that perhaps it was the experience gained in implementing the project in the initial project area that caused the better outcome in the expanded villages. However, the result of the third indicator (success in reaching at least 80% of the target group) brings a contradiction. While high coverage in growth monitoring was considered necessary, the ability of the expanded villages to perform well while at the same time showing a poor coverage in growth monitoring needs to be investigated further. It might be, that broader coverage caught more children with bad nutritional status. The focus should also be on identifying the motivating factors, which led to a wide attendance at child-weighing sessions within the initial area, but which were unlikely to cause nutrition improvement. For example, cases where villagers were fined or threatened by local leaders for not complying

[§§] Good roads were those passable by normal two-wheel-drive vehicles throughout the year while poor roads were passable during the dry seasons only.

[***] The numbers are based on the 1988 Census records for Iringa region (URT, 1993).

fully with the requirements of the project have been reported (UNICEF, 1993).

Factors that have influenced changes in malnutrition rates

Table 2 presents the estimates of the three models. The coefficient of the variable PROPMN88 is positive and highly significant (in model 1) indicating that wards that had worse nutrition situation at the beginning of the study period (1988) improved most significant. This result concurs with the related hypothesis. The coefficient for the dummy variable of the involvement in the initial phase (i.e. DUM-INITIAL) is negative and significant indicating that the capability to reduce malnutrition decreased significantly if the ward was involved in the initial phase. At first glance, this result which is also repeated in model 2, can easily be misinterpreted that these wards did improve the nutrition at a lower rate than the others did. It is possible that the wards had improved their nutrition situation earlier before and therefore the observed change was small. These wards had a worse nutrition situation when the project began, which actually was one of the criteria used in selecting them for the initial phase in 1984 (WHO/UNICEF, 1986). But, by the end of 1988, the mean malnutrition rate of the initial wards did catch up with the rest of the area at 41%. Thus, these wards have actually achieved much more.

Model 1 differs from model 2 in that the inclusion of the outset level of malnutrition (variable PROPMN88) as a determinant of the change in malnutrition was omitted in the latter model. The result shows that the coefficient of the variable which addresses the issue of coverage (COVERAGE) became significant ($p = 0.05$) (and positive) unlike in the former model where this variable was not significant. Because of this observation, the determinants of coverage were explored further in model 3. It was also found that the value of R^2 dropped from 64% to 12%, indicating that the model was now explaining a smaller proportion of the observation.

In model 3, the dependent variable is the extent of coverage of the intended target group (COVERAGE). The initial area participating wards achieved a higher coverage than the other wards (the coefficient of the variable DUM_INITIAL is positive and significant) by a 6 per cent points. The size of the population in the ward (Total Pop) had a significant negative effect on the extent of project coverage. The positive and significant coefficient of the variable DUM_AGRO implied that the wards located in areas dominated by the non-maize cropping system had a higher coverage than those in the maize-dominated areas. However, the road situation (DUM_ROAD) and the average size of households (HH_SIZE) were not important determinants.

As expected by the third hypothesis above, the superiority of the initial wards in achieving a higher coverage than the other wards is an indication that exposing a community to the project for a long time was more likely to help it acquire some favourable qualities for nutrition improvement. For example, growth monitoring sessions were also the opportunity for the mothers to be taught about nutrition and good health. In addition, households that were at higher risks of malnutrition were identified during the growth monitoring sessions, and therefore necessary actions could be taken.

Both large population size and being located in non-maize growing areas showed negative effects on the extent of coverage (model 3). While the former may reflect difficult faced in mobilising large communities, the latter may reflect effects of the main type of farming system on the time availability to take part in the project activities. The lack of significant importance of the differences in the situation of roads

from the ward to the district head quarters (DUM_ROAD) is not surprising. This is a good evidence that the 'push' to take part in the project did not come from the higher levels of the project management but rather from within the communities. This seems to be a desirable feature of the community-based approach of implementing the Iringa Nutrition Project (Pelletier and Jonsson, 1994).

Conclusion

This study has that the Iringa Nutrition Project has had only a modest impact thus far. This implies that, while the use of projects to combat malnutrition in poor countries may be inevitable, it is important to bear in mind their limitations to sustain improvement. Probably economic growth and development for rural people need more emphasis if sustained improvement is to be achieved.

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Table 1: The extent to which villages performed well during the different phases of the Iringa Nutrition Project in three indicators.

Indicator	Project Phase		
	Pilot Phase (1984 - 1986)	Transition + Community Control (1987/88 - 1992)	Entire period (1984 1992)
1. Success in lowering malnutrition rate:			
-Initial area	4 villages (10.3%)	7 villages (17.9%)	none
-Expanded area	-	10 villages (23.8%)	-
2. Success in maintaining malnutrition prevalence rate of less than 40% :			
-Initial area	4 villages (10.3%)	3 villages (7.7%)	none
-Expanded area	-	7 villages (16.7%)	-
3. Success in reaching at least 80% of the target group:			
-Initial area	-	25 villages (64.1%)	-
-Expanded area	-	10 villages (21.4%)	-

*The four villages, out of the 39 sampled from the initial area, are: Mangalali from Nzihi ward in Kalenga division; Tagamenda, Wangama, and Kitayawa, all from Magulilwa ward in Mlolo division.

*The seven villages are: Utilili from Lupanga ward in Mlangali division; Magozi village of Ilolo ward in Pawaga division; Kiwere in Kalenga ward and division; Tanangozi and Ugwachanya both from Mseke ward in Mlolo division; Lupembe-senga in Mgama ward and Ikuvilo of Magulilwa ward, both from Mlolo division. While the first village is from Ludewa district, the rest are from Iringa-Rural district.

*The ten villages, out of the 42 sampled from the expanded area, are: Idodi and Tungamalenga from Idodi ward and division; Mahenge, Nyanzwa and Mgowelo all from Mahenge ward and division; Muwimbi and Udumka, both from Ifunda ward in Kiponzelo division; Kipozelo village in Maboga ward also in Kiponzelo division; Kilala-kidewa and Ikokoto both from Image ward in Mazombe division.

*The four initial villages are: Tanangozi in Mseke ward; Mgama, Ibumila and Lyamgungwa, all three are situated in Mgama ward. The two wards with their respective villages are found in Mlolo division.

*Three initial villages are: Nyamihuu, Kiwere and Tagamenda from Nzihi, Kalenga and Magulilwa wards, respectively.

*Seven villages from the expanded area are: Idodi from Idodi ward and division; Mtandika and Mbuyuni both from Mahenge ward and division; Isupilo and Ikungwa in Ifunda and Wasa ward, respectively, both in Kiponzelo division. Others are Ilula-Itunda and Lyasa all from Image ward of Mazombe division.

*The 25 initial villages are: Masimbwe, Utilili, Lipangala, Madope (Mlangali division in Ludewa district); Luganga, wachanya, Kaing'ombe, Kikombwe, Lupembe-senga, Lyamgungwa, Malagosi, Tagamenda, Ikuvilo, Ng'enza and Kitayawa (Mlolo division).

*The ten expanded villages are: Idodi (Idodi division), Nyanzwa (Mahenge division); others are Ifunda, Lumuli, Wasa, Ihomas

Table 2: Results of estimating the models: Factors that have influenced change in malnutrition rates.

Variable	Mean value	Coefficient	T-Ratio	Significance
Model 1:				
MLN88_91	2.13 (%)	(dep. variable)	-	-
Constant	-	-42.438	-4.91	.000
COVERAGE	86.84 (%)	.138	1.41	.163
DUM_INITIAL	.39 (dummy variable)	-3.968	-2.14	.036
Distance km	35.11 (km)	-7.475×10^{-2}	-1.52	.135
DUM_AGRO	.78 (dummy variable)	-2.414	-1.13	.264
PROPMN88	41.25 (%)	.936	9.17	.000
R^2 = .641; F = 20.70; N = 64				
Model 2:				
MLN88_91	2.13 (%)	(dep. variable)	-	-
Constant	-	-17.008	-1.34	.186
COVERAGE	86.84 (%)	.329	2.21	.031
DUM_INITIAL	.39 (dummy variable)	-5.304	-1.85	.069
Distance km	35.11 (km)	-.116	-1.52	.134
DUM_AGRO	.78 (dummy variable)	-4.187	-1.27	.211
R^2 = .12; F = 2.01; N = 64				
Model 3:				
COVERAGE	86.84 (%)	(dep. variable)	-	-
Constant	-	93.804	9.45	.000
DUM_AGRO	.78 (dummy variable)	5.819	2.18	.033
DUM_ROAD	.83 (dummy variable)	3.634	1.31	.196
HH_SIZE	4.89 (persons)	-2.581	-1.34	.186
Total Pop	12059.88 (people)	-3.545×10^{-4}	-2.06	.044
DUM_INITIAL	.39 (dummy variable)	6.072	2.78	.007
R^2 = .257; F = 4.019; N = 64				

Appendix 1: The list of the sampled villages

A. Villages in the initial area

Village	Ward	Division	District
Tagamenda, Ikuvilo, Wangama, Ng'anza, Ndiwili, Kitayawa	Magulilwa	Mlolo	Iringa
Wenda, Tanangozi, Ugwachanya, Kaning'ombe Mgama, Ibumila, Kikombwe, Lupembe-Senga, Lyamgungwa, Malagosi	Mseke Mgama		
Kalenga, Mgongo, Kitapilimwa, Kiwere	Kalenga	Kalenga	
Nzihi, Kipera, Weru, Kibebe, Mangalali, Ibangamoyo, Nyamihuu	Nzihi		
Itunundu, Mboliboli, Kasanga	Itunundu	Pawaga	
Luganga, Mkombilenga, Magozi	Ilolo		
Madope	Ilininda	Mlangali	Ludewa
Masimbwe	Mlangali		
Utilili	Lupanga		
Milo	Milo		
Lipangala	Lugarawa		
Ibumi	Ibumi		

B. Villages in the expanded area in Iringa rural district

Village	Ward	Division
Lundamatwe, Mazombe, Mbigili	Irole	Mazombe
Ilula-Itunda, Ilula-Mwaya, Ilula-Sokoni, Ikuka, Imalutwa, Isagwa, Itungi, Kilala-Kidewa, Lyasa, Mlafu, Uhambingeto, Uhominyi, Vitono, Ikokoto	Image	
Igangidung'u, Makunga, Kihanga, Kiponzelo	Maboga	Kiponzelo
Wasa, Ikungwa, Ihomasa, Ufyambe, Makongati	Wasa	
Ifunda, Lumuli, Isupilo, Muwimbi, Kibena, Udumka	Ifunda	
Irindi, Mtandika, Mahenge, Nyanzwa, Mgowelo, Mbuyuni, Ikula	Mahenge	Mahenge
Ifuwa	Udekwa	
Idodi, Tungamalenga	Idodi	Idodi