

Growth Promotion for Child Development

**Proceedings of a
colloquium held in
Nyeri, Kenya,
12-13 May 1992**

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Growth Promotion for Child Development

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held in Nyeri, Kenya, 12–13 May 1992

Edited by
J. Cervinkas, N.M. Gerein, and Sabu George

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Evaluation of the Community-Based GMP Program in Embu District, Kenya

*John Njera Gacoki, graduate student, Unit of Applied Human
Nutrition, Faculty of Agriculture, University of Nairobi, Kenya*

Introduction

The Community-based Child Growth Monitoring Program (CBCGMP) of Kenya was started in 1987 in Embu, one of the six districts of the Eastern Province, as an experimental project. The program was implemented in three locations covering 14 sublocations (i.e., an administrative area, within a location and under an assistant chief). In 1990, the district had a population of 429,741 with a density of 158.3 persons per square kilometre. Population of children under 5 years was 96,203, whereas that of females aged 15–49 was 87,136 (Population Projections for Kenya 1980–2000). According to a survey carried out by the Central Bureau of Statistics (CBS) in 1981/82, 22.3% of all children below the age of 5 years in the district suffered from chronic malnutrition.

UNICEF and the Freedom From Hunger Council of Kenya (KFFHC) assisted in program implementation. UNICEF provided equipment, e.g., scales and stationery, funds for training, and a vehicle for the transport of supervisors to the weighing centres. The community contributed volunteer personnel at the weighing centres, while the Ministry of Health provided nutrition fieldworkers who supervised the weighing centres. UNICEF also assisted in the evaluation of the program and publication of the annual health report to the Ministry of Health in which the CBCGMP was included.

KFFHC also operated the Applied Nutrition Program (ANP) in one of the locations covered by the CBCGMP program. The ANP was multidisciplinary in nature and included the provision of in-kind credit for food production, water, health, and nutrition projects. The ANP focused on the nutritional status of children aged 0–60 months and pregnant and breastfeeding mothers.

The ANP provided personnel to the CBCGMP at the community level in the one location where it operated. It had one nutrition fieldworker and a community-development assistant concerned with supervision and coordination of

the program in the location. The Ministry of Health had one nutrition field worker attached to a rural health training centre in the area who worked in collaboration with the ANP personnel in the field.

The communities provided personnel for growth-monitoring activities. In some centres, through local arrangements made between the mothers and committee members, mothers were expected to pay monthly fees of about two shillings per weighing session. Where a mother could not raise the fee she was allowed to have her child weighed on credit. Funds raised were used to pay the committee members in some centres, purchase stationery, buy soap for washing weighing pants, pay for repair of worn out pants, and pay bus fare to allow committee members to attend meetings and deliver tally sheets to the health centres. In some centres, funds collected were used to buy materials for the construction of weighing shelters. Labour and some of the materials were, however, provided by the community.

Basic Program Components

Apart from weighing and charting, the mothers were counselled both individually and in groups on their children's health at the centres. Weighing sessions were also used as fora for teaching attending mothers lessons on family planning, agriculture, treatment of minor ailments, and general public health. In the ANP area, qualified persons were invited to educate the mothers on topics in which the program did not have the relevant skilled personnel.

Sick children were supposed to be referred by the committee members and nutrition fieldworkers to the facility-based centres (FBCs) as the program did not provide medical treatment at its community-based centres (CBCs). Immunizations were offered by community nurses at three centres located far away from the FBCs. Although the ANP provided food supplements to some households in this area, it placed more emphasis on the household's own food production than on food hand-outs. Through the livestock extension component some households received dairy goats or cows in two sublocations. Food production was encouraged through provision of farm inputs, e.g., bean and finger millet seeds and fertilizers loaned to the mothers in the needy households. The criterion for selection of households to benefit from the inputs was the presence of a malnourished child considered to be nutritionally "at risk."

The CBCGMP centres were simple stations lacking the complex structures characteristic of the FBCs. The location of the centres was determined by the mothers. Where the number of children attending a centre were too many to be managed efficiently, the population would be split into two with mothers

determining the site of the new centre. Mothers also selected their new committee members and the centre acquired its own weighing scale and stationery. The objective of the study was to conduct a process evaluation of the Community-Based Child Growth Monitoring Program in Embu district, Kenya.

Methods

The three locations in Embu District where the study was carried out were selected on the basis of having started the program earlier than the others in the district. From the three locations, nine out of a total of 14 sublocations were randomly selected, with three sublocations coming from each location. All the nine sublocations were mapped and subdivided into units marked by rivers, streams, roads, and/or paths. Three units were randomly picked and all children aged 5–60 months were enumerated.

The names of children who had utilized the program at least once were put into a sampling frame from which 450 children were selected through simple random sampling. Mothers of all the selected children were included in the study and a questionnaire was administered. The names of all the "nonutilizing" children were put into another sampling frame from which some 330 children were randomly picked and their mothers interviewed through a questionnaire.

From each of the nine selected sublocations, one weighing centre was randomly selected and included in the study. The selected centres were visited during a weighing session without the prior knowledge of either the mothers or the committee members. Materials available (e.g., scales, weighing pants, stationery, shelter) were enumerated and their physical condition and frequency of use at the centres recorded. The scales at the centres were assessed against a standard weight for accuracy. Committee members' skills were also assessed by observing their interaction with a total of 77 children. A number between 0 and 10 was randomly selected to identify the first mother in the sample. Then every tenth mother was identified as they entered the centre and one of her children used in the assessment of the committee members' skills. Where a mother had more than one child, the children were ranked in order of their ages and the index child chosen by use of random numbers obtained from an electronic calculator. An assessment was done of the committee member's performance in weighing, recording, and interpretation of results obtained from the 77 children. Later, the committee members were visited at home and interviewed through a questionnaire.

Results

Mothers' Population Characteristics

Out of the 448 mothers interviewed whose children utilized the CBCGMP, about a third (34.2%) were aged between 25 and 29 years while 12 (2.7%) were below 20 and 10 (2.2%) above 49 years. The majority (83.9%) of mothers were married, 15.0% single, and 1.1% either separated or widowed. Two percent were the head of the household. Most (96.4%) of the mothers were farmers, with only 16 (3.6%) being engaged in other activities as their primary occupations. A vast majority (81.7%) had some formal school education. Sixty-one (13.6%) had not been to school, whereas 21 (4.7%) had attended adult literacy classes but had no formal schooling.

Coverage and Attendance

Out of some 2220 children enumerated from the sampled units, 1638 (73.8%) had utilized the program at least once over the period between March 1987 and May 1991, whereas 582 (26.2%) children in the units had not registered in the program. Coverage in the sublocations ranged from 87.7% to 40.3%. Most (33%) of the children utilizing the program were found in the 13–24 months age group, the proportion declining steadily in older age groups. The lowest proportion (10.3%) of utilizers was in the 5–12 months age group (Table 1).

Table 1. Distribution of children in the program by age group.

Age group (in months)	Attending children	
	Number	Percentage
5–12	46	10.3
13–24	148	33.0
25–36	113	25.2
37–48	87	19.4
49–60	54	12.1
Total	448	100.0

Attendance and coverage were facilitated by the local assistant chiefs within their sublocations who encouraged parents through "barazas" (i.e., public meetings) and home visits to put their children into the program. Committee members and the nutrition fieldworkers also attempted to interest mothers in the

program. Health, social, and financial factors also influenced the attendance of children. The five most common reasons given by the mothers of "utilizing" children for missing weighing sessions, in descending order of frequency, were:

- Sickness of the child,
- Absence of mother from home,
- Sickness of the mother,
- Domestic commitments, and
- Lack of monthly fees.

The five most important reasons given by mothers of "nonutilizing" children for not attending were:

- Sickness of the child,
- Nearness to and use of a FBC providing GMP services,
- Lack of immunization at the CBCs,
- Lack of awareness of the presence of the CBCGMP in the area, and
- Mother's low confidence in the services provided at the CBCs.

Sickness of the child was the principal and the only common reason for both missing weighing sessions and not utilizing the program at all.

Time Expenditure

The study field assistants estimated the distance walked by mothers from their homes to the centres to be 0 to 3.5 km, with an average 0.9 km. Mothers estimated the time taken to walk to the centres to be 20.5 minutes on average. Waiting time before weighing at the centres varied from 0 to 300 minutes, with an average of 28.0 minutes. The average total time taken by the mothers at the weighing centres was 79.6 minutes. When travel time was included, mothers spent on average of 120.7 minutes per attendance in growth monitoring activities.

Mother's Nutritional Knowledge and Program Perspectives

From a test chart given to the 448 mothers interviewed, 331 (73.9%) interpreted a growth curve of a healthy, normally growing child as "good," whereas 33 (7.4%) interpreted it as "poor" growth. Of these 448 mothers, 393 (87.7%) associated a faltering curve with "poor" child growth whereas 26 (5.8%) interpreted it as "good" growth. Out of 426 mothers, 411 (96.5%) associated growth faltering with poor feeding, and 331 (77.7%) related it to disease. More than half (57.6%) of the mothers scored above 65% in a test on nutrition administered to them. The scores attained by the mothers had a weak positive

correlation with their number of years of formal schooling. (corr. +0.2). The 242 (54.6%) mothers who had received lessons at the CBCs performed significantly better than the 201 (45.4%) who had not (Chi-square=51.6 p=0.0084 df=30).

Most (92.2%) of the mothers felt that the program did not interfere with their other essential duties. Out of 444 mothers, 432 (97.3%) believed that their children benefited from the program. Of these, 382 (88.4%) credited the program for keeping them informed of their children's growth. Twenty-six (6.0%) appreciated that they walked shorter distances to CBCs than to FBCs, whereas 23 (5.3%) maintained that their children profited from the nutritional knowledge imparted to the mothers in the program.

Education and Training of Committee Members

Each of the centres was expected to have five committee members charged with the responsibility of weighing children, recording their weights, educating the mothers on child feeding, simple hygiene and treatment of minor ailments, referring needy cases to the FBCs, and making follow-up visits. Nevertheless, only four of the nine centres had five or more committee members. The nine centres included in the study had a total of 40 committee members, 39 of whom were accessible for interview. Of the 39 committee members, 27 (69.2%) and 12 (30.8%) were females and males, respectively. For the purpose of this study, committee members in the program were those members who had provided service in at least one weighing session between January and May 1991.

Table 2. Literacy level, training and period of service by number and percentage of committee members (n=39).

Committee members	With		Without	
	Number	Percentage	Number	Percentage
Formal education	35	89.7	4	10.3
Reading ability	34	87.2	5	12.8
Writing ability	34	87.2	5	12.8
Training	30	76.9	9	23.1
Retraining	0	0.0	39	100.0
Service > 2 years	18	46.2	21	53.8

Most of the committee members had some formal education, could read and write, and had been trained in program service delivery. Although most of the committee members were trained in program service delivery, none of them had been retrained. About a half of the committee members had served in the program for more than 2 years (Table 2). Of the committee members with formal education, only 14 (40.0%) had more than 7 years of schooling. In the previous one year, eight of the nine centres in the study had been visited at least once by a nutrition fieldworker for supervision. No supervision had been done at the centres from the district headquarters over the same period of time.

Data Collection and Utilization

Data collection at the centres was the responsibility of the committee members while mothers kept the growth cards. Data routinely collected included the name of the child, sex, village of origin, and nutritional status based on weight-for-age, which was classified as normal or underweight. No details of diagnosis or intervention were recorded on either the card or the register.

Data collection at the centres was inaccurately done, with errors arising from faulty scales, poor weighing skills, and recording. Of the nine scales in use in the nine centres, only four could consistently make accurate measurements as compared to a scale verified as accurate. Errors in accuracy of the five scales found to be out of working condition ranged from -400 to +50 gms. None of the nine scales had been serviced, but four had at one time been replaced with new ones, two of which were still in good working order. There were, however, no records of their dates of replacement.

About 43% of the children in the nine centres were weighed in heavy clothing, considered to be anything more than a vest and pair of pants. About 36% of the children had their weights read above or below the reader's eye level and 19.5% received correct advice or encouragement.

In all of the centres visited, attendance and monthly fees registers were maintained but none kept records on referrals to FBCs. Registers of children in the program area and those in need of follow-up were kept only in the three centres that were part of the ANP area of operation. In this area, although there was no recorded evidence of follow-up, data on growth monitoring were used to identify children for follow-up and households to receive food supplements, agricultural inputs, and livestock. Although data at the centres were complete, program statistics at the district level were incomplete for four of the nine sublocations.

Discussion

Process of GMP and Performance of Committee Members

From these results it can be concluded that GMP activities were not well carried out in any of the centres. Some scales were inaccurate, which led to inaccurate weight data being collected. Mistakes in reading and recording of weights likely resulted in a similar outcome. The subsequent interpretations based on wrong data collected could have led to inappropriate interventions being recommended for the child. Some children who were not at risk might have been recommended for referral or follow-up, whereas needy ones were left out. There was no recorded information of cases referred to the FBCs in any of the nine centres, although it is most unlikely that there were no cases in need of referral over a period of one year. There were some children in need of follow-up in three of the centres in the ANP area, but no information on whether or not follow-up was done or its nature.

Only a small proportion of mothers received correct interpretations of their child's growth trends from the committee members. The reason was that most committee members put more emphasis on the child's weight being maintained above the 3rd centile line for girls and the 80th centile line for boys on the card rather than on increase of its weight over time. Although velocity of weight gain is more important than status, this interpretation was, in most of the cases, used as the basis of counselling the mothers on the health of their children.

The poor quality of service provision at the centres, in spite of the fact that the vast majority of committee members had been trained, could be blamed on their low levels of formal education, inadequate training, and/or inadequate supervision. Routine program supervision, if properly conducted, should have revealed the deficiencies in service provision and consequently recommended actions to redress some of the problems.

Coverage and Attendance

The low attendance in the 5–12 months age group could be attributed to the fact that some mothers preferred taking their children to the FBCs until they received measles immunization at the age of 9 months. Also, it is in this age group that children are most vulnerable to disease; because the CBCs did not offer medical treatment, mothers likely opted to take their sick children to the FBCs. It is clear that the number of children attending declined after the age of 24 months. About a quarter of all the eligible child population did not utilize the program between March 1987 and May 1992. Although a large proportion of the

mothers felt that the program did not interfere with their essential duties, absence of the mother from home and domestic commitments remained some of the most important reasons for missing weighing sessions.

Dropping out of committee members resulted in some centres having less than five members. Discussions revealed that dropping out of committee members and subsequent closure of some centres, was the result of low or no payments at all for the services they rendered to the program. Some centres had more than five members because of the large number of children attending. The short duration of service of committee members (less than 2 years for half of them) could be attributed to the young age of some centres and to dropping out and consequent replacement of some committee members.

Nutrition Education

Most of the mothers had a good level of nutrition knowledge, evidenced by the finding that 57.6% scored above 65% in a test of nutrition knowledge. The positive, although weak, correlation between the test scores and number of years of formal schooling shows that the schooling may have influenced the mother's nutritional knowledge or her ability to acquire it. The reality that mothers who had received lessons at the CBCs performed significantly better than those who had not could not exclusively be attributed to the efforts of the program. The reason for this is that the mothers might have attained some of the nutritional knowledge from outside the program.

CBCGMP and Other Interventions

The program in the ANP area has acted as a good forum for the introduction of other PHC services, specifically, family planning for the mothers and immunization for children. According to the Embu ANP project document July 1989 – June 1992, in two sublocations in the area covered by the ANP, immunization levels were increased from the district coverage of 74% to 85% through the CBCGMP. These findings agree with those of Jon Rohde who suggested that in Haiti village-based programs led to increased utilization of PHC services (Ashworth and Feacham 1986).

Conclusions and Recommendations

It is clear that the current functioning of the program must be improved to increase its usefulness. The factors limiting proper implementation of the program include lack of personnel training and poor supervision together with shortage of funds necessary for purchasing stationery, transport, and payment of

committee members among other things. With inadequate training or no training at all of some of the committee members, the program is not in a position to meet its intended objectives. The program should, therefore, ensure that the committee members are given adequate initial training and are regularly retrained to maintain and update their knowledge and skills in GMP activities. Mothers should select committee members who have an adequate level of education and motivation.

Close supervision of GMP should be conducted both by the nutrition field workers and from the district headquarters. Through supervision, the areas in which the committee members need to be retrained could be identified. Faulty scales would be detected and repaired and unserviceable ones replaced. Regular supervision could also reveal some other problems unique to the individual centres and those in need of attention from either the community, the supervisor, the district headquarters, or the program implementors. Supervisors need to be provided with means of transport to the centres as some of the weighing sites are far from their working stations and inaccessible by public means.

There was little effort put into both referral and follow-up in this program. Because the committee members could not adequately perform most of the GMP activities, it is not clear that they could also execute these two additional activities. The lack of performance may have been a result of insufficient motivation, due to lack of monthly payments or meagre payments where made. However, even improved motivation would not be able to make up for their fundamental lack in knowledge and skills.

Although service provision was initially supposed to be provided on a voluntary basis, it is important that the Ministry of Health consider giving the committee members a salary. This could be a way of maintaining the involvement of the committee members who expend their time and energy at the expense of their own activities to assist with the program.

The Ministry of Health should also consider introducing treatment for minor child ailments into the program. This would increase attendance of children in the program as fewer cases would need attention at the FBCs. However, because the committee members do not have the ability to absorb training in this area, qualified nurses would have to be used in the weighing sessions to provide the necessary medicine. Like immunization, medical treatment could successfully be incorporated into the CBCGMP with the program still remaining community-based in approach.

Mothers should be relieved of monthly fee contributions by introducing income-generating projects such as rearing of livestock, production of agricultural products, or even operating a "posho" (i.e., corn) mill. Funds generated from the projects would be channelled into GMP activities. The mothers should be made aware that the aim of the donor and implementing agencies was to initiate the program but that the community had the responsibility of sustaining it.

The ANP includes GMP in its multidisciplinary approach to solving nutritional problems of the community. This approach appears preferable to that of undertaking GMP in isolation from other health, agricultural, and economic components. The program should involve the Ministry of Health together with other relevant ministries more actively in child survival and development activities at the community level. This multiministerial approach will, however, require extra resources, better program coordination, and supervision.

Although mothers are interested in the program, the committee members and supervisors charged with the responsibility of its implementation have largely failed. This failure indicates that the program is unlikely to meet its intended objectives. The program can, however, be credited for being a forum for the introduction and expansion of PHC services.

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