Growth Promotion for Child Development

Proceedings of a colloquium held in Nyeri, Kenya, 12-13 May 1992
Growth Promotion for Child Development

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

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

Co-sponsored by
the Canadian International Development Agency (CIDA), Cornell University,
and the International Development Research Centre (IDRC)
Contents

Foreword vii

Acknowledgments xi

Dedication xii

The Nyeri Declaration on Growth Promotion for Child Development 1

History, Principles, and Implementation of GMP

Growth Promotion for Child Development
*Michael C. Latham* 5

Growth Monitoring and Promotion: A Development Strategy
*Lukas Hendrata* 19

Growth Monitoring in Primary Child Health Care in Developing Countries
*C. Gopalan* 23

Evaluation and Policy Change in UNICEF: The Case of GMP
*Roger Pearson* 33

Frameworks for Growth Assessment and Promotion

Summary 45

Conceptual Analysis of GMP
*Urban Jonsson* 52

Challenge of Policy Formulation for Growth Promotion
*Yves Bergevin and Nashila Mohamed* 59
Causal Factors Influencing Childhood Malnutrition
Carl E. Taylor and Mary Ann Mercer 73

Individual, Family, and Community Perspectives on Growth Promotion
Gail G. Harrison 92

Culture and Growth Promotion
Cecile De Sweemer-Ba 106

Research, Evaluation, and Case Studies

Summary 113

Growth Monitoring and Promotion in the Health Services Setting
A.A. Kielmann 119

When Research does not Shape Programming: GMP in Zaire
Nancy Gerein 129

Successful Growth Monitoring in South Indian Villages
S.M. George, M.C. Latham, and R. Abel 150

Evaluation of the Community-Based GMP Program in Embu District, Kenya
John Njera Gacoki 167

Growth Monitoring in Rural Kenya: Experiences from a Pilot Project
G.A. Ettyang, A.A. Kielmann and G.K. Maritim 178

Community-Based Growth Monitoring
David Morley and Mike Meegan 188

Tamil Nadu Integrated Nutrition Project (TINP), India
M.C. Latham 195

GMP Implementation in Indonesia: Does Behaviour Change Take Place?
Satoto 197

GMP Programs in Ecuador
Marta Medina 208
Action, Research Needs, and Policy

Summary 217

Nutrition Improvements in Thailand: National Policies and Strategies
Kraisid Tontisirin 226

Growth Monitoring in Health and Nutrition Information Systems: Tanzania
Björn Ljungqvist 232

Growth Promotion in Primary Health Care
Carl E. Taylor and Mary Ann Mercer 259

Terms 265

Participants 267
The current debate regarding the usefulness of growth monitoring programs seems to be more a confusion of assumptions and concepts rather than a matter of real issues. Just as in the case of any other data-generation methodology, it is impossible to state whether growth monitoring is "good" or "bad" without describing the context in which it is used and the purpose for which it is applied.

The health and nutrition conditions of a population are the result of many complex and interacting processes at different levels in society. Some of these processes are directly and consciously linked to efforts to improve health and nutrition conditions, e.g., home care of children or maternal child health (MCH) services. Others are not, but may still have profound implications for these conditions, e.g., structural adjustment policies and developments in agricultural technology.

In all of these processes there are key actors: policymakers, managers, people who control different resources. What they all have in common is that they are following a certain procedure of assessment, analysis, action, reassessment, reanalysis, continued/modified action, and so on, i.e., a process known as the triple-A cycle (UNICEF 1990).

Access to information plays a critical part in all decision-making and management processes. Sometimes the key actors may rely upon formal, explicit information systems but, most often, informal assessments of what they see, hear, feel, and read guide their decisions. The issue of the usefulness of growth monitoring thus becomes a question of the extent to which growth monitoring really is or could be an effective part of such management information systems.

Therefore, is growth monitoring already in use? By whom? Does the GM information effectively guide the decision-maker? If not, are there ways to improve the usefulness of GM information through changing the way the system is set up and operates? Are there other, more time- and cost-effective methods to provide the same (or better) information?
If growth monitoring is not currently applied, would the introduction of GM systems improve overall performance of health and nutrition management systems? Again, are there any better alternatives?

**Anthropometric Measures**

Anthropometric measurements have for a long time been accepted as one of the most valid and convenient ways to assess nutritional status in a population – particularly of young children. Interpretation of anthropometric measurements in children have to be related to the expected growth of the child, hence what you assess is really the deviation compared to an "optimal" growth pattern.

Growth monitoring is a time series of anthropometric measurements (normally weight) and is introduced to establish a more precise picture of the actual growth trajectory of the individual child. It provides a basis for analyzing the factors that may have influenced the child's nutritional status negatively or positively. The point is that "nutritional status assessments" and "growth monitoring" are really very closely related, and both essentially measure growth performance in children.

Anthropometric measurements for nutritional status assessments were introduced in Tanzania during the 1950s and used quite extensively in surveys carried out by the Nutrition Unit in the Ministry of Health during the 1960s for the purpose of establishing the prevalence of protein–energy malnutrition (PEM) among children in the country (Malefuleura 1979). The Tanzania Food and Nutrition Center (TFNC) was established in 1973 and continued and intensified these efforts to map out the problems of malnutrition.

The nutritional surveys carried out during these years had the very important effect of firmly establishing that malnutrition was a major problem among Tanzania children. The survey results also demonstrated many contradictions to the "common understanding" of the causes to malnutrition. Many of the high-producing agricultural and economically developed areas showed higher levels of malnutrition than more backward, food-deficit areas (Ljungqvist 1981).

It became clear that something had to be done to alleviate the problem of malnutrition in young children, and it also became evident that new concepts and approaches needed to be developed. Measurement of children's growth performance was suggested as a useful tool in these endeavours. The technique of using children's weight plotted on a growth chart was developed and quickly introduced into the newly established MCH services system.
GM in MCH Services

General MCH services in all health institutions in Tanzania were introduced in the mid 1970s. Growth monitoring was made one of the key elements of these services. The idea was that GM should serve the dual purpose of promoting a better understanding among parents (mothers) about the relationship between child feeding and child growth and, at the same time, provide information to health managers at district, regional, and national levels regarding the prevalence of malnutrition (measured as underweight), in various locations at different times of the year.

A growth chart to be used in Tanzanian clinics was developed, together with a series of tally and reporting forms to facilitate monthly compilation and reporting of the data from the weighing sessions. All clinics were equipped with weighing scales and MCH aides were taught how to organize weighing sessions, how to plot the weights on the chart, and how to compile and report the results. They were also taught how to explain the growth chart to the mothers and provide advice according to growth problems identified.

The clinic-based GM system was often linked to food aid handouts, which served as an important incentive to mothers to attend the weighing sessions. Because of unreliable supplies and distribution problems with food aid and the many different policies applied in establishing criteria for rations, these food handouts tended to frustrate and disappoint the mothers more often than providing real motivation and support. Such practices have now more or less totally disappeared from the MCH clinics.

After more than 15 years of experience with clinic-based GM, it is generally accepted that neither the "growth promotion" nor the "nutrition surveillance" objectives of the system have been achieved. There are many reasons for this, some of them similar to what is recently being reported from GM evaluations from other countries (Pearson 1992), and some more specifically related to implementation problems in Tanzania.

Ineffective Use of GM Information

The major problem with regard to the growth promotion aspects of the system was that growth monitoring information was never made part of any useful decision-making process: none of the direct actors were given a chance to explore how the information could effectively be used. Those who designed the system or supervised it never made sufficient effort to address this obvious, basic issue. Weighing sessions were thus normally conducted under very congested conditions.
with hundreds of mothers and children waiting, many of them tired and ill and eagerly waiting to receive treatments or other specific services. Besides being pressed for time, very few of the MCH aides had the knowledge to interpret (properly) growth patterns or the skills to communicate with the mothers effectively to use the growth measurements for careful analysis and understanding of relationships between growth, feeding, and control of disease. Generally, they resort to "standard" and typically inappropriate advice on balanced diet or scold the mother for being lazy, stupid, and a poor caretaker in general.

The actual outcome of the GM surveillance component, i.e., reporting and use of the information at higher administrative levels, is possibly even more disconcerting. There are very few examples of any of the data, painstakingly compiled and reported for over 15 years, ever having been used for any meaningful analysis or action. First, the management of the data itself was never well designed, leading to long delays in reporting. Second, there was never any clear idea on how the information should be used. MCH coordinators at different administrative levels thus dutifully compiled the reports and forwarded them to their supervisors, but neither they nor the supervisors knew what conclusions to make or what kind of decisions were needed to affect problems indicated by the reports.

The shortcomings of the clinic-based GM system as summarized above have been identified and reported through formal and informal assessments throughout the last 15 years of implementation, but very little has been done to address the problems identified. As a result, valuable time for mothers, MCH aides, and other PHC workers has been wasted and children suffer directly and indirectly!

**GM in the Iringa Nutrition Program**

The Iringa Nutrition Program was planned and prepared during 1982–83 and implementation started during the first half of 1984 in the pilot area of about a quarter of the villages in Iringa Region in Tanzania. The program provided an opportunity to operationalize and to apply the National Food and Nutrition Policy that had been completed in 1980 under the coordination of the Tanzania Food and Nutrition Center, TFNC (TFNC 1980). The policy clearly spelled out that nutritional status has to be viewed as an outcome of many interlinked and complex processes at different levels in society. Control of malnutrition consequently requires an integrated and multisectoral approach, where the actors should come together and analyze the situation, defining the specific factors operating and the role of each sector and actor in controlling these factors.
In recognition that malnutrition is caused by processes at different levels of society, operationalization of the policy for the purpose of the Iringa program required methods to be developed to enable actors at different levels to assess, analyze, and design actions at their respective level of decision-making. The "triple-A cycle" approach to nutrition programming was coined and developed (UNICEF/WHO 1983).

In the triple-A approach to nutrition programming, access to reliable information about the nutrition problem in an area is crucial not only for an initial analysis of the problem, but also to enable the "management structure" to reassess and evaluate the effectiveness of various actions taken so that further improvements can be made. In the Iringa context, as well as in most parts of rural Tanzania, it was agreed that the following administrative levels were most important with regard to "nutrition-related decision-making": household, village, (ward, division),1 district, region, and national.

**Nutrition Information Systems**

The first step in the final planning of the Iringa program was to consider and develop "nutrition information systems" for the defined levels of decision-making (Ljungqvist 1988). Most effort went into defining such systems at household and village levels, due to the paramount importance of the resources at these levels in determining appropriate care and feeding of the children in a rural Tanzania context.

Mothers and other caretakers in Tanzania use informal nutrition information systems in assessing the everyday development of their children and in many cases their system seems to work reasonably well as judged by the fact that many children actually grow well under the prevailing circumstances. It was clear, however, that the mothers seem to be rather isolated in using this information and taking full responsibility for the care of the child. It was agreed that if nutrition information could be more effectively entered into the decision-making system of the family and extended family unit, involving particularly the males, then better use of available resources leading to improved nutrition and child survival could be achieved.

---

1These two levels were not considered to have any major "resource management functions" but constituted critical "linkages" between the villages and the district. The situation is now changing with the wards being given a stronger coordinating role in the decentralized planning and implementation or rural development.
It was also agreed that the village unit, which controls considerable human and productive resources in Tanzania, could play a much more decisive role in supporting the women and the children, if their decision-making systems were more effectively addressing these issues, i.e., that nutrition information was regularly reviewed and made a priority in resource allocations and actions by the village government.

Nutritional status data from the growth monitoring assessments was considered the most appropriate and viable means of strengthening nutrition information systems at community (in this case = village) level, as it was operating at that stage, but it was also agreed that the existing clinic-based system was inappropriate for this purpose. Considerable time was spent discussing with health staff and other extension workers, as well as with village leaders and people, how to generate and compile growth measurements at household and village level for improved nutrition decision-making.

Eventually, it was agreed that a system be established where all children were weighed at least every 3 months and that this weighing could take place either at the clinic or at village weighing sessions. Each child thus had only one growth chart, and this chart was used both for the existing clinic purposes as well as for the household and village nutrition management. The MCH aide closest to the village conducted the clinic-based weighing and she also assisted the village health committee and the village health workers in organizing village weighing sessions on "health days" and to interpret and discuss the results. In this way, confusion and contradictions between the two growth monitoring systems were avoided.

**Uses of Growth Information** The growth information generated in the community was used for a number of different purposes:

- The results were used as a basis for discussions with individual mothers and caretakers at the time of the weighing (fathers were also encouraged to participate fully).

- Nutrition status data collected in the village were used for public information and education, usually taking place on the "health days."

- The data were compiled and analyzed by the village health committee (both current status and trends were noted) and presented to the village government for decisions about various follow-up actions to be taken. Such actions have included organization of child feeding posts, health/nutrition education, and support to individual families and children.
• Children with severe underweight or faltering weights were visited in their homes by the village health workers who helped the parents to analyze and improve their child care and feeding problems.

• The data, often complemented with comments and information about village actions taken, were reported to the ward and district levels to solicit support in critical areas where the village could not take action themselves, e.g., improved water supply, health services, agriculture inputs, etc.

The growth information generated in and reported by the villages was then compiled and analyzed at ward, division, district, and regional levels and used for continuous planning and implementation of the program. Growth monitoring thus became a core element in the entire program. It helped to direct and focus efforts and resources and to evaluate effectiveness of actions taken. The positive results of the Iringa program clearly demonstrate the feasibility and the effectiveness of the approach (Fig. 1).

![Severe Child Malnutrition](Fig. 1)
GM in CSD Programs

Applying the Iringa Experience

The positive experiences from the "Iringa approach" became evident from 1985 and prompted the government and UNICEF to apply the same approach in other area-based programs that were ongoing or being initiated at that time. Similar programs were thus started in Kagera, Shinyanga, and Kilimanjaro regions and the UNICEF-supported, "Basic Services Programs" in Mtwara, Ruvuma, and Morogoro regions were restructured and reprogrammed adopting the same principles.

In Iringa region, the authorities decided to expand the nutrition program to cover the whole region. This was done late in 1987, largely with resources from the region and the districts themselves. In the other regions starting up the program, initial implementation was confined to selected districts and divisions, with the intention of adding additional areas to cover the entire population at a later date.

In 1989, additional funding was secured through UNICEF to expand the program approach to the whole of Zanzibar, and to provide minor support to regions that were able and prepared to start up the program with their own resources. The latter type of limited support was initially (1989–90) given to Mara and Singida regions, which had for some time strongly pressed UNICEF for support and had already pledged considerable local resources for special programs for women and children.

The formal, final evaluation of the Iringa program in 1988 (WHO/UNICEF 1988), and the "mid-term review" of the UNICEF country program 1988–89, which included an assessment of progress in all the regions mentioned (Mushi 1988), brought new convincing evidence of the effectiveness of the approach, by now named Child Survival and Development (CSD) programs. The Tanzanian government began to take a more direct coordinating role, trying to mobilize additional internal as well as external resources to further strengthen and expand CSD actions.

National Coordinating Committee for CSPD Programs

A National Coordinating Committee for Child Survival, Protection and Development NCC/CSPD, (CSPD) programs, was formed under the chairmanship of the Deputy Principal Secretary in the Planning Commission, with secretariat functions shared between the Planning Commission in the President's Office and the ministries responsible for local government and community
development (CSD was changed to CSPD in 1991/92, adding "P" for protection). A large number of ministerial departments are members of the NCC/CSPD together with some important national institutions like the Tanzania Food and Nutrition Center. All the regions in mainland Tanzania are represented on the NCC/CSPD through their regional planning officers. A similar national coordinating committee has also been established in Zanzibar for the purpose of the nutrition-CSPD program started there in 1988.

External agencies are also invited as members of the NCC/CSPD in an effort to mobilize additional external financing of CSPD programs and to harmonize different approaches to community-based social development programs supported by different donors. Of the other donor agencies (besides UNICEF), particularly the World Bank, NORAD and SIDA have shown a keen interest in joining hands to promote and expand the CSPD approach in Tanzania. The World Bank is thus in 1991–92 starting up "district health and nutrition programs" in 10 of the most disadvantaged districts in mainland Tanzania, and NORAD is adopting CSPD elements into their "regional integrated programs" in Rukwa and Kigoma regions. SIDA is, from 1992, providing support through UNICEF to accelerate the program in Mara and to initiate a program in Mwanza region.

Two international NGOs, World Vision and Plan International, are adopting similar approaches in Kahama district and Dar es Salaam region, respectively. Other UN and bilateral agencies and NGOs are linking up with CSPD programs, like the UNDP/UNFPA/WFP/UNICEF program in Shinyanga, or establishing mechanisms for collaboration and sharing experiences.

In the new 1992–96 country program of support to Tanzania, UNICEF is pledging support to start a CSPD program in one additional region, Coast, and to seek funding also for Mbeya region (not yet confirmed). In the current situation (May 1992) 11–12 out of the 20 regions in Mainland Tanzania have started or are preparing to start programs with support from UNICEF (in many cases in collaboration with other external agencies) and in many of the remaining regions and districts, similar program approaches are underway with support from other external agencies and NGOs. The whole of Zanzibar (five regions) is already covered with UNICEF support.

It should be noted that in most of the regions and districts with CSPD programs, program activities are covering only parts of the areas. Iringa region and Hai district in Kilimanjaro are the only ones so far with full coverage. In many of the others, like Mtwara, Ruvuma, Kagera, and Morogoro, the current coverage is around 50% with plans established to reach full coverage by 1993–94. The number of districts (excluding Zanzibar), where programs have started with UNICEF support is summarized in Fig. 2, adding the districts receiving support
from other agencies for integrated CSPD program to a total number of 60, i.e., more than half of the districts in mainland Tanzania. The rapid expansion of children participating in community-based CSPD programs is further reflected in the increase of GM information reported every quarter as shown in Fig. 3.

**Sustaining the CSPD Approach**

The original Iringa Nutrition Program included a large number of different projects and activities (UNICEF/WHO 1983). The total, external cost per child was estimated as USD 16/year, out of which about half had been used for various "start-up" and operational research activities, and about USD 8/child per year would be needed to keep the program going with the same activities receiving similar support.

In the expansion of the program approach, however, originally planned activities receiving the same external inputs (UNICEF/WHO 1988), considerable efforts were made to define which of the components were most crucial for the success of the program and how these activities could be implemented in the most cost-effective manner to establish long-term sustainability of the approach. In all the assessments made, it was clear that activities directed toward improving nutrition and health management at household, village, ward, and district level
formed the "core" and had to be considered highest priority in all efforts to improve conditions of children and women. Core elements include advocacy and communications, integrated training, transport support, and community-based health and nutrition information systems. With this emphasis on "core elements," the annual cost per child in the Tanzanian CSPD programs is now in the range of USD 2–4. More important than external financial sustainability, however, is to ascertain "indigenous" sustainability, i.e., that people really see the benefits of confirmed weighings, reporting, discussions, and contributions.

Regular reports on growth status are forthcoming from all villages where the program approach has been well understood and adopted, and the "attendance," i.e., proportion of the expected children covered in the reports, is normally above 80%. In the villages, wards, and districts where the program approach among people, leaders, and managers is not well understood or adopted, the coverage is normally lower and varying. With time, however, most of these areas have tended to catch up and started to collect, compile, use, and report growth and immunization information regularly. "Attendance" information and reporting in itself has thus become one of the most important indicators of village-level management efforts and is used at district, region, and national levels to initiate efforts to strengthen the programs.
GM and CSPD

The CSPD program approach with growth monitoring as a key component has become a national strategy, and more and more decision-makers are looking for nutrition information to guide their priorities for action. Growth monitoring information has moved from collecting dust in the corners of the MCH coordinators' office to planning officers' and other functional managers' desks. In one of the new CSPD districts, Manyoni in Singida, the district management team, which is the highest technical committee in the district, has decided to hold regular quarterly meetings with all of their division and ward secretaries to review the village GM reports to set priorities for planning and follow up actions.

Growth monitoring information has also found its way into the Planning Commission. The chairmanship and the secretariat of the NCC/CSPD is housed in offices dealing with macroeconomic planning – the most effective base for intersectoral planning and setting priorities. At first, there was a certain degree of uneasiness in using this type of information in regular planning procedures, however, as the information continues to flow in and the experiences accumulate, it becomes clear that change is indeed possible, and that actions to improve the conditions of women and children deserve and require guidance and support from all relevant offices and actors. The graph below summarizes the progress made in the CSPD program areas up to end of 1991 (Fig.4).

It is clear from Fig. 4 that one of the regions, Mtwara, showed very little progress during the first 3 years of implementation. The actions taken to address the situation in Mtwara is a good example of how national and regional levels of administration can use growth information for CSPD management and coordination.

The Mtwara Initiative

For quite some time, 1987 up to 1990, the GM data from practically the whole of Mtwara CSPD areas showed low and varying attendances and little, if any, improvements of nutritional status. Possible problems were analyzed and a number of explanations were offered, including droughts, floods, general poverty, and poor levels of education. Eventually, it was agreed that the poor staffing situation at district and subdistrict levels in Mtwara had made it difficult to ensure that the concept and the methodologies of the program were fully understood and spread in villages of the region.
Mtwar region is a typical "Cinderella" region in Tanzania, where very few competent staff like to be placed. There are, consequently, a large number of vacancies and the staff who are actually in place are often frustrated over the conditions of work. This is a problem that is not easy to address with short-term measures, but the very serious conditions with many villages showing more than 10% severe malnutrition and the region having one of the very highest infant mortality rates in the country, called for immediate action. The National Coordinating Committee, NCC/CSPD, therefore decided to try temporarily to use experienced CSPD implementors from other regions to go to Mtwar and help to explain the program approach to the villagers and to the leaders and the few existing staff, and assist in organizing the program activities, including weighing, registers, and community-based nutrition rehabilitation.

The "Mtwar Initiative" was started early in 1991 with 40 outside "animators" coming to Mtwar and being placed in each of the CSPD program wards for an initial 2 months. When they left, they had managed, in collaboration with existing extension staff, to update all registers, conduct weighing of all children and organize community-based nutrition rehabilitation of more than 17,000 severely malnourished children, where the children were fed three extra meals per day, the food and other arrangements contributed and run by the villages themselves. In addition, they conducted extensive training and public education and left behind a situation where the issues were fully understood and where all villages had organized themselves and established concrete plans to continue to improve the condition of their children.
The external animators came back 2 months later for a-month long follow-up visit to supervise the subsequent quarterly weighing and provide some additional support and guidance. There were many sceptics who predicted that when the external helpers left then the whole effort would collapse, but none of this has happened so far; more and more children are being weighed every quarter and their nutrition status is gradually improving.

The total external costs for this applied example of "horizontal technical cooperation" was very modest. The results were dramatic, given high coverage in national media and recognized and discussed at the highest political and government levels. One of the districts, Newala, changed from being one of the nutritionally worst off CSPD areas to become one of the very best, within one year (Fig. 5).

**GM in the National Program of Action for CSPD**

Actions for children using community-based GM were given additional push and emphasis through the global campaign started with the UN-organized World Summit for Children held in September 1990. The President of the United Republic of Tanzania, Hon. Ali Hassan Mwinyi, was present at the World Summit, and the National Summit for Children was organized in the National Assembly on
7 June 1991, and in the House of Representatives in Zanzibar on 5 October the same year. Both of these important meetings adopted the global goals for children during the 1990s, with minor changes and additions. The "resolutions" stated the goals and outlined the strategies to be pursued. The "resolutions" also identified the NCC/CSPD to act as the coordinating body in drafting a National Program of Action for Child Survival, Protection and Development, which was to be discussed during the next special session scheduled on the Day of the African Child, 16 June 1992, a date that coincides with the beginning of the annual budget session of the National Assembly.

The challenges of the goals for the children during the 1990s are great in Tanzania, given the economic crisis and deteriorating social services in the last decade. However, the reason for optimism and determination during the national summits and among the national planners was on account of the positive experiences of the CSPD programs, the immunization campaigns, and a number of other specific efforts.

What these efforts all had in common was that they demonstrated that very significant achievements can be made even during difficult economic circumstances, provided that people and communities are properly involved in analyzing problems and that they are supported to take actions. Most regions in Tanzania have managed to reach over 80% coverage of all immunization antigens using this approach and practically all CSPD programs have already reached the national goal for reduction of the numbers of severely underweight children to 2%.

The "resolutions" from the national summits clearly spell out that the major strategy for improving the conditions for women and children in Tanzania during the next decade is to pursue an integrated, community-based approach. The emerging National Program of Action is articulating this approach very much according to the experiences gained from the CSPD programs, using nutrition as an entry point and growth monitoring information as one of the key indicators for assessment and analysis and management of the whole process at all levels.

Some Methodological Issues

Although GM has been widely adopted in a large and increasing number of community-based CSPD programs, there are certainly a number of issues that need further and continued attention and improvement. Some of these issues are related to the collection of the growth measurements, others to the compilation and interpretation of the data, and finally to the communication and use of the information. We will also briefly consider the use of the community-based GM
data for nutrition surveillance purposes and look into existing and emerging linkages between the GM systems and other information systems critical for child survival, protection, and development.

Collection of Growth Measurements

Attendance and Coverage  It is essential that all children under five in a population participate in a growth monitoring system, both to ascertain their own development as well as to provide reliable estimates for analysis of conditions and trends. There are alternative ways of acquiring data for the latter purpose, e.g., through sampling and sentinel approaches, but such methodologies would hardly be practical at village and ward levels.

To facilitate estimates of attendance rates and follow up individual attendance in the CSPD programs, village registers have been introduced. These registers are organized in "10-cell units" according to the current system in Tanzanian villages, and include listing all children under five in the households belonging to each 10-cell unit, and recording all births and deaths, either as they occur or at regular intervals.

The 10-cell leader is expected to be present at village weighing sessions to ensure that all his/her children are weighed. In some of the registers used, the position of the child on the growth chart is actually entered in the register, whereas in others the village health committee has a separate "child monitoring form" for this purpose. The first system was the one introduced in Iringa and some of the other early CSPD programs, whereas the latter is an attempt to link up the child registers with more general civic registers now being tested.

Regular and correct updating of the registers, as well as reporting of births and deaths, have proved to be a problem as evidenced from comparing village reports with other population estimates (census data, etc). As the programs proceed, however, and with continued training, supervision, and support, there is clear evidence that village registers and other record-keeping will gradually improve. Continued promotion and institutionalization of the civic registers is expected to strengthen further the usefulness of village registers to ensure better coverage of the community-based growth monitoring.

There are a number of reasons for low attendance of children at the actual weighing sessions. Most important is the time-consuming way that these sessions often are conducted. Other reasons include temporary out-migration, travels and sicknesses. If the mother or the father or both, do not see any major benefit from participating in the sessions and the village leaders make little effort to explain and encourage them, then there is also low attendance. On the other hand, where
the system is well understood and the information actively used to help to improve the child's condition, then participation is usually very impressive with attendances regularly above 80%.

**Organization of Weighing Sessions**  Most villages are organizing quarterly village health days when all the children under five are weighed and immunization services provided, together with health and nutrition education. The problem is that most villages in Tanzania are very large, on average having 450 under fives and some have more than 1000! Weighing all these children takes considerable time and does not give much opportunity to discuss with parents the problems identified.

Various ways to improve on this situation are now being applied — some villages are arranging several parallel queues for weighing the children and others are encouraging the parents to take the children to clinics before the health days so that their weight can be checked and recorded more quickly. The best approach so far, however, seems to be to conduct the weighing in different subsections of the village during different days. This also gives a better opportunity to update the registers and to discuss with the "neighbourhood group" their children's problems and progress.

**Accuracy in Weighing and in Plotting the Weight**  Despite serious concerns during various stages of program implementation about having village auxiliaries weighing and plotting growth data, this has proved to be a very limited problem in practice. Several controls by external survey teams and evaluators confirm high accuracy. The continued support and guidance from MCH aides and frequent comparisons of village and clinic weighing and plotting (the same growth chart is used) provide ample opportunity to correct any errors made.

**Compilation and Interpretation**

**Compilation of Village Data**  Compilation of the village weighing data is done by the village health committee (VHC) according to age group (0–1, 1–3, 3–5 years of age) and position on the growth chart ("severe," "moderate," "normal" weight for age). Absolute numbers as well as percentage distribution are given. In the beginning, these calculations posed some problems but, after training and after ensuring that at least one teacher from the village primary school became a member of the VHC, there are few mistakes.

Summarizing these rather extensive data from the different villages at higher administrative levels poses more of a problem — particularly at ward and division levels. The districts have normally more capacity to compile the information and are also more directly concerned about getting the information
correct. The ward and divisional secretaries in general do have less computing skills and less indepth knowledge of the meaning of the data, and consequently make more errors. This situation is addressed through training and introduction of "reporting books" and provision of calculators. Because copies of the village reports are sent directly also to the district CSPD coordinator, any compilation errors introduced at the intermediary levels could be easily corrected.

Interpretation of Growth Measurements Because of the colours of the growth chart and because the emphasis of the growth monitoring system at the beginning was more on "cure" rather than "promotion," there has been a tendency to look more at the position on the growth chart rather than the progress of the child's growth. The fact that such high numbers of children are found in the "severely underweight" category (red zone on the chart) in the beginning of the CSPD programs also prompts "nutrition rehabilitation efforts" rather than long-term growth promotion as a priority for the village health committees. As the programs proceed and the various actors, including parents, become more familiar with the growth measurements and the charts, it is easier to focus more on growth performance and how to interpret and understand progress of growth in individuals and groups of children.

Community-Based GM

The community-based GM system introduced by the CSPD programs covers, so far, only about 20% of the country, and even within the districts where the programs have started it will take some time before full coverage of all villages is achieved. In the foreseeable future, attendance rates may not be high enough for the information generated to be used for nutrition-surveillance purposes at district and higher levels.

To meet the most immediate needs for nutrition data at national level, a "nutrition module" has been incorporated into the national household survey system. This will provide national-level data with estimates for analyses possible for urban and rural areas and for socioeconomic groups of households. Within the next year, the sample will be increased to provide regional estimates on an annual basis. Larger, less frequent surveys, such as the demographic health survey, include anthropometric measurements and questions concerning factors related to nutrition. For nutrition surveillance information within the districts, there are currently renewed efforts to revise the clinic-based GM system as a part of a reorganized health management information system.
Communication and Use of Information

It has already been noted that communication and use of growth monitoring data at household level strongly depends on the way the weighing and follow up is organized. The mother or other caretaker needs to understand what is going on and fully participate in interpreting the information and discussing what actions to take.

The most critical thing, however, is to get the father and other influential males involved in this process, because they are usually the ones who control critical resources that determine the conditions of children as well as of women. Communication and use of growth monitoring at household and community level in CSPD programs are thus strongly linked to "social mobilization actions" to establish responsibilities, accountability, and awareness (Ljungqvist 1987). The methodologies employed include films, popular theatre and dance groups, village correspondents and newsletters, and advocacy meetings and seminars of different types. Considerable progress has been made and GM has been a factor in promoting awareness of the issues. There is, however, certainly still a long way to go before more equal systems for "sharing the burden," i.e., joint child nutrition management systems, are established.

The use of the GM information at community level has largely been for identification of children "at risk" and finding solutions through discussions with parents and 10-cell leaders, community-based nutrition rehabilitation or referral for treatment, or temporary support to individual children and families. The information has also prompted more general actions like organization of child care and feeding posts in the village as well as immunization, environmental sanitation, and health and nutrition education. In many villages, it has facilitated promotion of economic activities for women and agriculture developments and helped to ascertain that families in need, i.e., with malnourished children, are able to benefit from such actions.

Despite considerable success from community actions based on GM information, there is still a tendency for stereotypical analysis and action, village health workers, village health committee members, and other key actors tend to follow solutions that have been taught during CSPD training sessions rather than taking a more independent and in-depth look at their own information to find solutions and opportunities that may be more beneficial in their local context. Again, participation of women in this process is normally limited, with the result that the VHC and the village government may organize actions that add to women's workload rather than help them. Efforts are now underway with the assistance of trained community-development workers to strengthen facilitation and animation processes with special gender concerns at ward and village level.
Communication and use of GM information at district, region, and national levels have had problems similar to those at village level. The leadership is predominantly male and preoccupied with issues not directly related to problems of women and children. Although the overall development objective in Tanzania from the time of the Arusha Declaration has clearly been for social development, this is often seen as a more or less automatic outcome of economic development. Malnutrition has been considered largely a problem of "ignorance," and a shortage of protein-rich foods and health services.

Nutrition information from nutrition surveys and GM systems are slowly but surely changing this situation. Major "paradoxes" between economic/agriculture developments and malnutrition have been and continue to be brought forward, changing concepts and policies. Successes and failures of CSPD programs are becoming political issues, and the goals for the 1990s add further impetus to this process. There is an increasing awareness of the usefulness of and a demand for nutrition information at different levels of public administration and development planning. The challenge is now to meet this demand and to facilitate a good understanding and use.

**Child Survival, Protection, and Development**

Child nutritional status measured as growth performance is a good indicator of overall child "developments" under conditions prevailing in Tanzania. Additional information is, however, needed for more detailed analysis of health, feeding, education, socioeconomic, and other factors and processes affecting children. Some information of this kind is already generated by other formal information systems but may not be available in the analysis of nutrition information for various reasons: population and time frames may not be compatible, reports not available at certain management levels, etc. As a part of the efforts to monitor the goals for the 1990s, mechanisms are now being established to pull these information systems together and to complement and adjust existing systems as required.

For the purpose of community-based management information systems, there were efforts from the beginning to link up the GM system with other relevant data such as child birth and deaths, health (direct causes of child death), and immunization. In the original design of the Iringa program, a system for establishing village "profiles" for malnourished children was tried but turned out to be too cumbersome to apply. It was concluded that most of this information would be "known" in the village simply by knowing who the malnourished children were and did not warrant the trouble of collecting, compiling, and reporting data.
Two new major areas where more formal, community-based information systems could help to improve action and management have, however, emerged. These are pregnancy and early childhood development and education. Weight gain in pregnancy and other risk factors, breast-feeding, early childhood development milestones, school enrolment at age of seven, and learning performance in schools are some of the indicators now tried out. The idea is to establish more explicit and better focused management of child survival, protection and development using a community-based information system (such as GM) as an entry point.

Alternatives

In discussing alternatives to GM we first have to decide if we are interested in promoting child growth as an end in itself or if we see growth as a reflection of the overall health and nutrition status of the children (in the first instance) and of the women and the population at large. In the ensuing discussion we have taken the latter approach.

To be meaningful, any analysis of alternatives to GM has to consider options from the point of view of health and nutrition information systems. What decisions, at what level, are made or changed based on health and nutrition information? Where can GM make a difference and what other kind of information systems could have similar positive effects on decision-making for improved health and nutrition?

This also means that we have to assess pros and cons of GM and possible alternatives within the context where they are presumed to play a part of the decision-making process. This paper can only consider the situation in mainland Tanzania.

At household level, mothers and other child caretakers have informal health and nutrition information systems that guide their actions in their day-to-day care and feeding of the children. Given sufficient time and other resources to allocate to child care, the outcome is usually satisfactory. Tanzania is one of the poorest countries in the world in macroeconomic terms, and the major part of the population has to survive on very marginal economic means. In these harsh conditions most Tanzanian families manage to survive surprisingly well and this is due to the coping strategies that they have developed. These coping strategies are triple-A cycles based on people's intimate knowledge of their environment and use of various information systems that guide them when and how to act.
However, women are normally left with very limited control of the household resources. Even the use of their own time is largely predetermined by the many heavy responsibilities they have to shoulder. One of these responsibilities is the care for the children, which women normally have to do almost exclusively. Again, under normal circumstances, the women manage surprisingly well, but on a very thin margin. Any disturbing factors like drought or floods, or family break-ups, or severe illness among the family members tends to tilt this precarious situation off balance and lead to a "high risk situation" where the children and the women themselves are most vulnerable. This high-risk situation is reflected in increased rates of young child and maternal deaths and malnutrition and morbidity.

The introduction of the community-based GM system within the CSPD programs seems to have three major advantages:

- The caretakers have a better understanding of the thin margins upon which they are balancing their own and their children's health and nutrition conditions, and they are thereby encouraged and supported to increase these margins, which make them less vulnerable.

- The growth information has made it easier for the more influential male members of the family to understand the resource implications of child survival and development and provide support, or to put it the other way around, it has made it easier for the women to claim a more equal share of the family resources for herself and the children.

- It makes it easier for the individual family or mother to draw upon the community resources in times of stress, and it makes it easier for the community or government "social welfare" system to decide when and how to intervene in distressed families to safeguard individual mothers and children.

For each of these advantages brought about by community-based GM alternative information systems and indicators could be considered, but it would be difficult to find an alternative that could fill all functions.

For the first and possibly the third purpose listed, various other health and nutrition indicators could be considered, e.g., frequency of common and severe diseases, breast-feeding and feeding frequency, pregnancy risk factors, etc. Indicators reflecting the socioeconomic status or specific facilities, like availability of latrines, in the households could also be useful. Indicators reflecting the workload of women might be useful in helping women to claim more family resources.
Note that all the alternative indicators listed relate to factors assumed to determine overall health and nutrition status of the children. The relative usefulness of these indicators are thus a function of a correct "situation analysis" (made by whom?) of the conditions of women and children. But this situation may change, and the usefulness of a certain indicator may become more limited as a result. Growth monitoring is more generally dependent on a wide range of possible factors and processes and is thus more generally applicable.

**Tapping Informal Information Systems**

Are there other more direct ways of tapping into the existing, informal information systems already used by the community members? There are a large number of positive experiences from "rapid appraisal procedures" (RAP), "qualitative methodologies," "community diagnosis," and other similar approaches, which all seem to build upon people's experiences and available information to bring about community actions.

The current view in the CSPD programs in Tanzania is that such methodologies should be explored much more systematically and trials are already underway. However, we rather see them as valuable complements to the GM system. It would be difficult for such methodologies to replace growth monitoring fully for two major reasons.

First, qualitative information is much more difficult to store and use systematically in comparing and analyzing situations at different times, individual households, and locations. We have already concluded that use of one single indicator, i.e., growth, to assess social conditions and developments at different levels gives enormous advantages in establishing linkages between all important processes that need to take place at different levels to bring about sustainable change in health and nutrition conditions.

Second, qualitative information systems normally rely on initiatives to be taken by somebody, and how do you ensure that such initiatives are taken and pursued as and when required? From a management systems point of view it is easier to use a quantitative information system, such as growth monitoring, which defines when more indepth discussions are needed at household or community level. Growth monitoring information then also provides a starting point for such discussions by establishing that certain changes have occurred and need to be understood and subject to action.

The previous discussion about alternatives at household level applies largely also to village and ward levels in the Tanzania CSPD program context, and this is a result of the close linkages and interaction between health and nutrition conditions.
management systems at different levels. As you proceed away from the households and extended family levels toward higher administrative levels you gradually lose the rich and detailed information about the specific conditions affecting the individual children or women but, instead, you get access to wider perspectives and more technically advanced knowledge that may be necessary for improvements.

The ward level in Tanzania is where a number of extension services are focused, like health (a dispensary), agriculture and livestock, and community development. It is important that these "change agents" are able both to link up to the community-based information systems and, at the same time to use their own, more technically refined data on crop yields, disease factors, and community development factors like participation, leadership, etc.

The MCH aides used to apply the clinic-based GM system for identification and counselling individual mothers and children. As described previously, this system does not work well with individual mothers, nor yet in the mobilization of broader household and community resources. Involvement in the community-based GM systems provides much better opportunities.

The question is then whether the clinic-based weighing of children should be discontinued as the CSPD program approach expands. This is in fact already happening – children who do not need any special care are no longer coming to the clinics only for weighing. The children who are brought to the clinic for immunization or illnesses are, however, still weighed. This is seen as an advantage, because immunization provides an opportunity to weigh the young infants more frequently than the quarterly, village health day sessions. It also gives the MCH aide a chance to relate an acute illness to the current overall health and nutrition conditions of the child.

Obviously, other information collected at the dispensaries becomes important as components of ward and village-level health information systems. Many disease factors like diarrhea and respiratory infections are closely related to malnutrition and would serve as good indicators in the absence of GM information. The practice of bringing children with such illnesses to the dispensaries may, however, differ due to seriousness of the conditions, distance, and quality of services offered, etc., and the validity of the data would be limited accordingly.

Village and ward leaders and extension staff also frequently receive less systematic but important information about food shortages, social problems, and other events and conditions appearing in the area. Such information often
prompts them to take action and may be very valuable inputs into health and nutrition analysis, but is difficult to use for more formal and systematic management purposes.

At the district and regional levels growth monitoring information from the community-based system is already starting to influence decision-making and planning, although the data in most cases may not have adequate coverage and validity as discussed. The revised health-management information system currently being tested will be more useful in this respect and is expected to serve as a complement to the village reports in the future. The data on immunization coverage are already partly serving such a function.

The only other indicator besides growth data, which could serve equally well as a measure of overall health and nutrition status of the population, is mortality information. There are systems introduced to establish systematic collection of birth and death information from the villages, but it will take a long time before these systems will achieve the coverage and reliability needed for use in health and nutrition management. The best progress observed so far is actually made when these systems are introduced as a part of the community-based CSPD programs.

Disease-related mortality data are at present reported from health institutions with in-patient facilities and district medical officers often make references to such data. Most districts, however, have only very few institutions of this kind, which limits the usefulness of the information.

The only reliable mortality data currently available are from the population census and from special demographic surveys. They provide estimates down to district level and can thus be used primarily at national and regional levels. They also have the disadvantage of being conducted very infrequently (census every tenth year) and with long delays for data processing. They do, however, serve as important "benchmarks" to establish long-term trends and to compare and assess the validity of growth information. Incidentally, the latest child mortality estimates derived from the 1988 population census show a close relationship with community-based growth data collected at the start of the CSPD programs in the various districts.

It should be noted, finally, that the great advantage of GM information as a component of health and nutrition information systems at different administrative levels in Tanzania is probably related to the current high prevalence of growth retardation in the country. Severe malnutrition is typically found in 4 - 6% of the children under five and total underweight, i.e., weight below 80% of the Harvard standard, is affecting about half of the children. This makes it possible to identify
significant numbers of children and households affected in practically all population groups and to establish differences and trends. If the situation (hopefully!) improves over the next decade, it will be necessary to reassess the usefulness of growth information and consider alternatives afresh.

Conclusions

Child growth is a concept that is easily understood by everyone in society. It is seen as a necessary process in human development, and evidence of growth retardation would raise serious concern in wide circles, but clearly most among those close to the child.

Severe and moderate underweight among children under five is very widespread in Tanzania as a result of diseases and inadequate food intake. This makes GM in children a potentially very useful component of health and nutrition-management information systems. The key issue in applying GM is, however, to define (a) the management system concerned with child health and nutrition, and (b) how growth information should be used to strengthen the management process within these systems.

Growth assessments for health and nutrition-management information purposes if pursued only at the level of the individual mother-and-child (GMP) and at higher levels of sectoral or multisectoral health and nutrition information systems (nutrition surveillance) seem to lead to limited success. This paper argues that the main reason for this is that it leaves out other management systems where growth information could make the most significant differences!

The individual mother has very little resource control, and any close analysis is likely to show that she is already doing as much as she can to manage those meagre resources to support health and nutrition developments in her children while attending to other, equally crucial, chores at the same time. If she received information showing that her child, despite her efforts, is growing poorly, she is able to make only very limited adjustments in her resource allocations (mainly time use) and actions. Instead, it is likely that she will feel even more marginalized and frustrated being told that she is failing and that nobody else seems interested to help, except possibly an MCH aide providing advice, which often is inappropriate.

Instead, growth information needs to be better introduced into the management systems that are able to interact directly with the efforts of the mother and provide critical additional food, care, and health services. These systems include the household, where the father normally controls the dominant
resources, the extended family/neighbourhood units, the community at large, and the government extension services and NGOs. These management systems (with the exception of the household) do not have a close day-to-day contact with the individual child and, therefore, have problems in providing timely and appropriate support as required. Access to growth information would greatly facilitate this process and, at the same time, help to establish their responsibilities and accountability with regard to ascertaining the children's right to good health and nutrition.

The development of a National Food and Nutrition Policy in Tanzania and the operationalization of this policy (initially within the Iringa Nutrition Program), facilitated the emergence of a more comprehensive "community mobilization, participation, and management" approach to growth promotion. The results of this approach in terms of community participation and reduced rates of severe and moderate underweight have been highly encouraging, and efforts gradually to expand these CSPD programs and to improve further upon effectiveness and efficiency has been going on in Tanzania during the last 7 years.

Eighteen out of the 25 regions in mainland Tanzania and Zanzibar have now started community-based CSPD programs, and the government expects that by the middle of the next century, most if not all districts would have initiated such programs. The CSPD program approach, with growth assessment as a core component, forms a major part of the social development strategies for the country as reflected in the "resolutions" from the national summits for children and the draft National Plan of Action for CSPD.

Alternative types of information to strengthen health and nutrition management at different administrative levels need to be regularly reviewed. However, it is concluded that, currently, it would be difficult to find indicators other than growth assessment that strengthen the performance of the individual systems and, more important, facilitate interaction and harmonization of efforts at different levels and within different sectors. This is crucial to bring about the much needed improvements in the health and nutrition of the children in Tanzania. The aim is to ensure that the president and the mother mean the same thing when they talk about development; growth information and, indeed, the growth chart, are becoming very helpful in this respect.