Growth Promotion for Child Development

Proceedings of a colloquium held in Nyeri, Kenya, 12-13 May 1992
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Standing for the first letter of UNICEF's by now famous and widely propagated strategy for improving child health and child survival "GOBI," growth monitoring (GM) is one of four major interventions making up this strategy, others being oral rehydration, breastfeeding, and immunization. The rationale for having it included was provided by the results from several observations and controlled pilot and demonstration studies in the late 60s and early 70s, notably David Morley's original work in Nigeria (Morley 1968), the Narangwal group in Punjab (Taylor et al. 1978), and others (Shekar and Latham 1992).

In all of these well-controlled, and mostly pilot or demonstration projects, growth faltering was detected through regular weight monitoring and health personnel were then able to institute corrective action with apparently highly beneficial results in terms of improved child nutrition and reduced child deaths. Since then, weighing of preschoolers has practically become a routine in most MCH clinics the world over.

A considerable amount of resources, not to speak of health workers' time, are put into growth monitoring efforts. It seems necessary, therefore, that evaluations of other than pilot and demonstration projects, namely of growth monitoring programs in the "real" situation, i.e., the government health facilities are done. In fact, in some locations these have been carried out and with differing results (Gerein 1992), raising questions about the ultimate usefulness of growth monitoring (Ruel et al. 1992).

Decidedly, more evaluations are needed before a more definitive judgment may be made. Such evaluations should address both impact as well as process, i.e., measure whether children subjected to GM are doing better and whether all the required inputs, activities, and actions necessary to implement the process are indeed taking place. Recently, one such evaluation, in a well-controlled experiment in Tamil Nadu, showed that GM had no influence on growth, even though GM was not limited to the "monitoring" but included other aspects of growth promotion advocated by the proponents of GM (George et al. 1992).
Indeed, before one advocates adding GM activities to any program, one has to be reasonably sure that prevailing conditions merit its implementation and that the service infrastructure will support having yet another branch "grafted" on it. Failing to do so will risk wasting precious resources with at best no results and at worst negative results. I have come to believe that in many, perhaps most situations, instituting GM has resulted precisely in the latter. To assess the potential feasibility and usefulness of GM within a given health services structure, a conceptual model was developed as shown in Fig. 1.

Fig. 1. Model for assessing institutional capacity for growth monitoring.
The Model

The model assumes:

- That there is an established need for GM; i.e., GM should be instituted if there is a suspicion or proof to suggest that a considerable proportion of children fail to gain weight compatible with healthy development and is based on the assumption that early detection of growth faltering will permit corrective action.

- That implementation of a GMP will require an infrastructure consisting minimally of:

  (a) A physical setting where GM may be carried out that can sustain a group of clients waiting for the service, with respect to relative comfort and essential utilities

  (b) Availability and functioning of the necessary instruments (growth monitoring tools), and

  (c) Adequate number of personnel trained to carry out all functions of GM, namely determining the nutritional status, recording it, interpreting it, and taking action.

- That these functioning infrastructural units are distributed so that the majority of the community has ready access to services. That services are affordable, that opening hours are convenient, and that there are no social barriers.

- That the number of (GM) activities carried out at each of these service stations, i.e., the activity level, suffices potentially to cover all eligible children within the required monitoring interval, and that the quality of the GM process is such that the results are indeed valid.

- That immediate action takes place for those children identified to be at risk according to preset criteria, either in terms of special or more attention.

- That the community accepts and is satisfied with the services and, hence, utilizes the program to an extent that will allow effective coverage of the target population.
That a management system is in place and functioning that will implement and maintain quality control measures, such as ongoing supportive supervision and training, documentation in terms of upkeep and processing of recorded information, and will ensure day-to-day organization and running of the services.

All of these components of the growth monitoring system are inter-dependent, i.e., the state of one influences all others. Only if all of them are in place and are functioning can GM be carried out effectively and, hence, make sense.

**Evaluation**

Over the past 12 years, the author evaluated about the same number of programs, mostly in African countries, and in the course of these evaluations came into contact with over 200 health workers in charge of carrying out child health care and GM services. Health staff ranged from the community health worker (CHW), the nursing auxiliary to the graduate nurse and medical assistant. Usually, overall evaluation of primary health care services was the focus. Examination of specifically GM programs was not an objective or carried out. In all of these projects or government services, GM was part of the routinely provided package of MCH services; in none was GM the only or special program being offered. Results presented here cover 100 health care facilities in eight countries and close to 180 health workers. With one exception, Pakistan, where the health facilities were preselected, inclusion of facilities followed random sampling from among all belonging to a chosen project or lying within a given administrative boundary.

Data available do not allow examination of all components of the model. For those for which we do have information, a few selected indicators will need to serve as proxy. However, it is assumed that these adequately reflect the status and if found to be deficient, others are most likely deficient as well. The methodology of assessing these indicators has recently been described (Kielmann et al. 1991).

**Indicators**

Specific indicators looked at were:

- Integrity of infrastructure, as measured by the availability and/or functioning of the required instruments/tools (i.e., scale or hanging balance, height measuring instrument, growth charts).
Quality of the GM process, as measured by presence of the required knowledge and skills on behalf of the health worker (i.e. the abilities to weigh within the smallest gradation on the scale or balance, to determine height to within ± 1.5 cm, to plot, to interpret correctly).

Management, as indicated by availability and functioning of an in-service training and supervision process (i.e., ongoing quality control).

Potential coverage of the target population as measured by the utilization rate of health services by the preschool child population.

In three locations, East Uganda, West Uganda, and Yemen, we also looked into whether any action had taken place, if and when children were identified as being at high risk. (Projects and programs are listed in the Appendix.)

Table 1. Availability of essential components of growth monitoring in selected health services of various countries (1978-1991).

<table>
<thead>
<tr>
<th>Selected Health Facilities</th>
<th>Indicators</th>
<th>Coverage Training and (visits/ch/year)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location and year</strong></td>
<td><strong>Institution</strong></td>
<td><strong>No. of facilities</strong></td>
</tr>
<tr>
<td>Egypt, 1978</td>
<td>government</td>
<td>25</td>
</tr>
<tr>
<td>Cameroon, 1982</td>
<td>project</td>
<td>7</td>
</tr>
<tr>
<td>S. Sudan, 1982</td>
<td>project</td>
<td>17</td>
</tr>
<tr>
<td>E. Uganda, 1985</td>
<td>mixed**</td>
<td>6</td>
</tr>
<tr>
<td>Pakistan, 1988</td>
<td>government</td>
<td>2</td>
</tr>
<tr>
<td>West Uganda, 1989</td>
<td>government</td>
<td>20</td>
</tr>
<tr>
<td>Mali, 1991</td>
<td>mixed***</td>
<td>4</td>
</tr>
<tr>
<td>Tanzania, 1991</td>
<td>mixed***</td>
<td>8</td>
</tr>
<tr>
<td>Yemen, 1991</td>
<td>project</td>
<td>12</td>
</tr>
<tr>
<td>All</td>
<td></td>
<td>101</td>
</tr>
</tbody>
</table>

*average number of visits per preschool child per year to the health facility for all services
**including one mission hospital
***governmental and project facilities
n.e. = not examined
Results

Results are largely disappointing as can be seen from Tables 1 and 2. To our knowledge in only one of the locations, West Uganda, findings led to a major reorientation of services (Kipp et al. 1991). As shown in Table 1, availability and integrity of the necessary infrastructure varied considerably from one location to the next. Facilities in S. Sudan and Tanzania clearly did not have the equipment to support GM, others, notably from the projects in Cameroon, in Pakistan, east Uganda and Egypt, were relatively well endowed. Overall, almost three-quarters of the health facilities had the necessary infrastructure.

In-service training and supervision, essential for maintaining quality performance, was nonexistent in 66 of the 100 facilities and, with the exception of the project in Cameroon, was carried out to only a limited extent in the remaining

Table 2. Levels of ability related to growth monitoring in health facilities of various countries (1978–1991).

<table>
<thead>
<tr>
<th>Location and year</th>
<th>no. of indiv.</th>
<th>weighing no.</th>
<th>percent</th>
<th>taking height no.</th>
<th>percent</th>
<th>plotting no.</th>
<th>percent</th>
<th>interpreting no.</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt, 1978</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cameroon, 1982</td>
<td>7</td>
<td>5</td>
<td>71</td>
<td>n.e.*</td>
<td>6</td>
<td>86</td>
<td>6</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>S. Sudan, 1982</td>
<td>29</td>
<td>15</td>
<td>52</td>
<td>n.e.</td>
<td>8</td>
<td>28</td>
<td>n.e.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Uganda, 1985</td>
<td>17</td>
<td>8</td>
<td>47</td>
<td>6</td>
<td>35</td>
<td>7</td>
<td>41</td>
<td>7</td>
<td>41</td>
</tr>
<tr>
<td>Pakistan, 1988</td>
<td>6</td>
<td>2</td>
<td>33</td>
<td>1</td>
<td>17</td>
<td>1</td>
<td>17</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>W. Uganda, 1989</td>
<td>53</td>
<td>17</td>
<td>32</td>
<td>15</td>
<td>28</td>
<td>11</td>
<td>21</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>Mali, 1991</td>
<td>6</td>
<td>4</td>
<td>67</td>
<td>3</td>
<td>50</td>
<td>n.e.</td>
<td>n.e.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanzania, 1991</td>
<td>16</td>
<td>5</td>
<td>31</td>
<td>5</td>
<td>31</td>
<td>n.e.</td>
<td>n.e.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yemen, 1991</td>
<td>20</td>
<td>10</td>
<td>50</td>
<td>8</td>
<td>40</td>
<td>7</td>
<td>35</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>All locations</td>
<td>179</td>
<td>66</td>
<td>37</td>
<td>38</td>
<td>27</td>
<td>40</td>
<td>25</td>
<td>33</td>
<td>26</td>
</tr>
</tbody>
</table>

*n.e. = not examined
34. The average number of visits to the health facility per preschool child per year at 0.5 (range 0.1 – 1.3) hardly suffices to bring about any "meaningful" coverage, even though in the Egyptian setting the potential coverage, i.e., the proportion of the population that lived within 5 km of a health facility was 95%. In Mali, it was 35%, in Southern Sudan and Yemen less than 20%. No determination on the potential coverage was done in the two other locations. Even though client satisfaction was not being measured in any of the locations, the extremely low utilization rates encountered perhaps reflect its level closely.

Only 37% of all health workers could weigh correctly, even fewer could take the height, plot, or interpret the results. The largest deficits were found in Egypt where none of 25 nurses could weigh, take height, plot, or interpret the results or results given to them (Table 2). Such findings are especially sobering when one considers that obtaining 100% on the knowledge and skills tests administered should be the rule rather than the exception.

Lastly, in none of the facilities of the three locations (East Uganda, West Uganda, and Yemen) where we had looked into follow-up measures had any action been taken when a child was identified as being at risk.

Judging from the outcome of the four process variables we looked at, only in the project in Cameroon was the system able to support and use fruitfully the GM process. In this project, providing primary health care, including oral rehydration, control of acute respiratory tract infections, antenatal/postnatal care, and environmental hygiene through routine home visiting by CHWs was the focus of activities. Admittedly, we would have also needed information on preschoolers’ utilization rate of the offered GM services and, ideally, on their nutritional status as compared to that of children without access to the GM services, i.e., on program impact, before that latter program may be called a success. However, these were not examined at the time. In all other locations, we may assume that GM activities, if anything, detracted from the already very marginal health care services by taking up time and resources that could have been employed more effectively with other activities.

Both the sample and results do have some major limitations. Selected health facilities were restricted to rural areas only, hence, say nothing about urban services, where GM may indeed be functioning better. Also our sample of facilities is not homogeneous as both health service projects of specific donor agencies as well as routine government services were being looked into, nor was information on all of the (above) four indicators being collected in all of the sites. Inclusion of project locations, however, would tend to bias results "positively" i.e., the real, or i.e. governmental, situation is if anything worse. In general, and based on personal impressions from additional evaluations in which no formal recordings
of findings were made, but the same methodology was followed, I tend to believe that the findings reflect the rule rather than the exception. If so, they point out major weaknesses inherent both in the conceptualization and in the execution of the GMP that urgently need addressing.

Conclusions

Because GM has been shown in a sufficiently large number of demonstration or pilot projects to be effective in identifying children at risk, most recently Iringa (9), thus enabling health care workers or mothers to provide them with appropriate and effective interventions, it is not the methodology that is at fault but the means and methods of implementation. In the Tamil Nadu situation, even though GM activities seem not to have been hampered by any of the problems enumerated, they still did not exert any discernible effect on the children's nutritional situation (Ljungvist 1992). This is difficult to understand, but it might well be because the primary health care system in place had already achieved the maximum benefit possible under the given constraints of caste, endemic disease prevalence, and of seasonal variations in food security.

Our results indicate that GM is not generally applicable. The reasons why in so many, probably most, routine health care settings GM falls far short of achieving expected results are multifactorial and differ from one situation to the other. They may include the "obvious" problems of poor process implementation, as demonstrated above, but may lie also with GM not being applicable to the specific situation at hand, as seems to have been the case in the Tamil Nadu study. Hence, it appears to be imperative that, for each location, a precise situational analysis has to be carried out and problems specific to the given setting be identified either before GM is added or after it has been implemented.

Approaches to making GM work, where indeed GM is indicated, similarly must be multifactorial, and will decidedly not lie with unifocal approaches such as developing newer or simpler gadgets or giving growth monitoring a different name without changing the underlying problems.

As long as any one of the essential components that make up primary health services are lacking or nonfunctional, GM will not work within that (health) sector. The first and most important step, therefore, is to render the (primary) health care system functional.

Even if GM were to be taken out of the formal health sector, as has been variously suggested, and brought to and made the responsibility of the community, all components that are essential for it to now function within the given
community, i.e., equipment, trained labour, accuracy of work, etc., would similarly have to be in place and operative. If this is not the case, GM will not work there either!

References


Appendix

Programs and projects evaluated in chronological order.

Egypt
1978
Routine government health facilities (health centres and health units) in Assiut, Fayoum, and Dakahlia governorates, before implementation of the Strengthening Rural Health Services Project, Ministry of Health.

Cameroon
1982
Primary Health Care Services in North West Province (Bamenda). A pilot project funded by the Deutsche Gesellschaft fuer Technische Zusammenarbeit in collaboration with the Ministry of Health (cyclostyled report).

S. Sudan
1982
Primary Health Care Services for the Southern Sudan. A demonstration project funded by the Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) in collaboration with the Ministry of Health (cyclostyled report).

E. Uganda
1985
Routine government services and one mission hospital in Masaka district as part of an AMREF-funded pilot project for the development of a Rapid Data Collection Methodology.

Pakistan
1988
Routine government health services in two district health facilities, Thatta district, Sindh province, assessed as part of field reconnaissance in conjunction with Aga Khan University, Karachi.

W. Uganda
1989
Assessment of governmental health services in Bundibugyo and Kabarole districts, West Uganda, before the implementation of a German-funded primary health services support project (cyclostyled report, summary results published).

Mali:
1991
Evaluation of the project: "Soins de Santé Primaires dans le Cercle de Bandiagara." Mixed (GTZ) project and nonproject (governmental) primary health care services (cyclostyled report).

Tanzania:
1991
Evaluation of the project: "Familiengesundheitsdienste, Tanzania." Mixed 1991 (GTZ) project and nonproject (governmental) primary health care services (cyclostyled report).

Yemen:
1991
Evaluation of the (GTZ) project: "Primary Health Care Services Project Services Project (PHCSP)," in and around Amran, North Yemen (cyclostyled report).