

Special Article

Growth monitoring — is it a task worth doing in South Africa?

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Childhood undernutrition is a serious public health problem in South Africa. Growth monitoring (GM) is a central tool in attempts to prevent and detect undernutrition. Despite its widespread adoption by international and national agencies, there has been very little evidence which shows that it has made an impact in reducing undernutrition. An important problem has been the conceptual confusion as to the exact role of GM. This article reviews the international evidence for the effectiveness of GM when used in various roles and proposes some of the factors necessary for GM to be successful in South Africa.

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It has been estimated that there are about 1.5 million children suffering from undernutrition in South Africa.¹ There is strong evidence that malnourished children experience significantly greater morbidity and mortality from diarrhoea, measles and other infections.² In 1995, for example, Hlabisa District Hospital in KwaZulu-Natal admitted over 280 children with severe malnutrition. Despite impressive reductions in the case mortality rate,³ they constituted over 40% of the total paediatric hospital deaths.⁴ Chronic undernutrition is also thought to lead to permanent cognitive and developmental deficits and reduced physical capacity. The implications for the future growth and prosperity of this country are potentially significant.

In response, the government is spending nearly R1 billion on nutrition programmes. In keeping with the recommendations of UNICEF and other international agencies, growth monitoring (GM) is to play a central role in the strategy to fight malnutrition. It is therefore important to evaluate critically the potential benefits and pitfalls associated with the use of GM and to develop a clear understanding of the future role of this technology in the new South African health system.

The image of a child being weighed at a clinic is an appealing one and the advantages of GM have been actively promoted by its advocates.⁵ They argue that prevention is better than cure and the regular weighing and plotting of the child provide a visible record of its growth and allow preventive actions to be taken. Many developing countries

have already spent millions of rands importing weighing scales and training health workers in the technical task of weighing and plotting and, in some cases, in giving appropriate counselling.

However, the results of reviews of GM programmes have been disappointing. Inaccuracies in the weighing, misclassification in the plotting, little understanding by many health workers of the growth card and widespread ignorance among carers about the information conveyed by the growth monitoring are near-universal findings.^{6,7} The difficulty in understanding the growth curve has been commented upon by David Morley, who points out that even some doctors studying at the Institute of Child Health, London, were unable to complete a growth chart when given the relevant data.⁸

This may explain why very little in the literature to date evaluates the effectiveness of GM in a well-designed and controlled manner.^{9,10} This paucity of research is especially acute in Africa. What little evaluation has been undertaken has produced sceptical conclusions. Gerein's conclusion, after reviewing three well-supported projects in Zaire, was that 'GM as commonly practised adversely affects the attitudes and behaviours of health personnel and the appropriateness of the health education and communication with users'.¹¹ This has been echoed by other African workers.^{12,13}

Undoubtedly many of these problems are related to the poor training and supervision of health workers. But these difficulties are compounded by the conceptual confusion that surrounds the use of growth monitoring.¹⁴ At least three main functions of GM have been advocated — as a tool for screening/targeting,¹⁵ or as an educational/growth promotional tool,¹⁶ or as a tool for surveillance.¹⁷ Experienced workers have remarked that these tasks are usually not compatible with each other at best and contradictory at worst.¹⁸ UNICEF has emphasised that if GM is to be successful, there must at least be a clear understanding of its role within a particular health system.¹⁹ There is a need therefore to consider the role of GM in South Africa — should it be used for screening, as an educational and growth promotional tool, for surveillance or for all three? Or should it be used at all?

Growth monitoring as a screening/targeting tool

GM is perhaps most widely associated with the function of screening individual children to assess whether they are underweight and require further intervention. For GM to work as a screening tool at least three conditions are necessary: (i) the coverage of the population must be high and regular and, in particular, the poorest and most vulnerable must be covered; (ii) the cost of screening must be low compared with the cost of providing the intervention indiscriminately; and (iii) screening must lead to appropriate targeting and effective actions.

Both international and local studies have found that the population utilising the clinics is very different from that which does not have access to such facilities. In both Guatemala and Swaziland the nutritional status of clinic

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users was significantly better than that found in community surveys.^{20,21} Locally, Solarsh *et al.*,²² in a rural setting, found the prevalence of stunting in the community survey to be twice that of the population attending the local health clinic. A similar survey in the vicinity of Alexandra Clinic found that young children in the community were up to five times more likely to be stunted than the clinic population.²³

GM is also not cheap. It requires reliable scales and fairly intensive training and supervision in order for frontline health workers to master the technical skills and understand the principles of the growth curve. Gopalan²⁴ has forcefully made the point that in many circumstances it is cheaper and more ethical to provide supplements to all the children than to use GM for targeting. In most areas of rural South Africa the majority of children will be undernourished — either in terms of weight or height, or micronutrient deficiency. Is it cost-effective or ethical in these circumstances to train health workers to screen children by growth monitoring?

Other authors have used simpler and cheaper targeting screening tools such as the child's age, height cut-off points or arm circumference. There has been increasing recognition of the many ways in which mothers monitor the growth of their children;²⁵ for instance Zulus quite often measure the growth of their children in terms of the increasing size of the abdominal girth (our unpublished data). In many instances it may be more appropriate to use these signs of growth rather than spend time and energy imposing the quite often alien concept of growth curves.

Even if GM could be shown to be a cost-effective screening tool there have been no studies to show that earlier interventions performed as a result of GM have reduced subsequent mortality.²⁶ As a result of these disappointing experiences even UNICEF has recommended that GM should not be used for screening purposes¹⁵ alone, but as a tool for education and growth promotion.

Education and growth promotion

It is quite obvious that weighing and plotting alone (no matter how accurate) will not reduce the rates of malnutrition; rather they are a peg upon which to hang other child care interventions. In other words, it is the education and action that follow the weighing and plotting that are crucial. For a mother to be able to understand the growth chart she needs to be intimately involved in the weighing and plotting; this must be followed by sustained discussion and education. Clinic staff will therefore have to make time to counsel carers individually with reference to the child's growth pattern. To do this effectively they will also need to be aware of the common causes of growth faltering in their communities, the normal local diets and availability of foodstuffs, and appreciate the common constraints mothers face in caring for their children. Even this may not be completely effective, as local research has shown that it is often the grandmother, mother-in-law or father who make the important decisions about the food and feeding habits of the children.²⁷ On a broader level there need to be local community structures into which the clinic and other health staff can provide input.

If these other interventions are not performed optimally, not only will GM waste resources but the lost opportunity cost in terms of undertaking other nutrition-related activities will also be great. Recent research has begun to question the utility of GM, as currently performed in isolation, in changing behaviours, compared with good nutrition education alone. George *et al.*²⁸ in South India showed in a well-controlled trial that GM made no difference to the growth velocity of young children. Similarly Ruel and Habicht,²⁹ working in Lesotho, showed that nutrition education significantly improved maternal knowledge but that growth charts were not necessary for obtaining such an effect.

However, a number of nutrition programmes have successfully used GM as a means of increasing awareness of the problem of undernutrition, and thus involved the community in tackling the problem. This is most clearly highlighted in the success of the Iringa project in Tanzania,³⁰ which has managed to bring about substantial reductions in levels of malnutrition in one of the poorest areas of the world. Through the use of information collected by GM (by clinics and community workers), discussions are started with local communities about the possible causes; possible interventions are then planned. Villagers are made aware of the significance of undernutrition as a measure of poverty and the deleterious consequences of poor growth. The information on local nutritional status thus becomes a source of local concern as well as a way of monitoring current interventions. In return, health workers also acquire a greater understanding of the local causes of undernutrition and have a potentially greater number of interventions to offer.

Surveillance

The nutritional status of young children has been identified as an appropriate and sensitive indicator of development in this country. A recent report to the Director of Nutrition has recommended that the data from the GM that occurs at primary health care clinics be used to provide information for national nutritional surveillance.³¹ However, as highlighted above, the international and local experience is disappointing in the utility of clinic-based nutritional data. A UNICEF workshop, which involved representatives from seven African countries, also highlighted the inaccuracies in data collection, recording and reporting and the selectiveness and erratic attendance of the clinic participants,³² which further decrease the usefulness of clinic-based GM data for national surveillance.

Furthermore, recent nutritional surveys in South Africa have found that stunting is far more prevalent than either wasting or low weight for age. This suggests that measurement of height is more relevant than that of weight (which is the indicator measured at clinics) for national nutritional surveillance in South Africa. It is acknowledged, however, that height measurement is difficult and too time-consuming to be performed routinely.

Finally, at Hlabisa, we have encountered another problem in training our clinic staff to collect data to use for nutritional surveillance. One of the strengths of GM is its potential to

prevent malnutrition by intervening when faltering first occurs; it is therefore more important in most cases to pay attention to the direction of the growth curve rather than the actual weight.¹⁶ However, overworked clinic nurses very quickly latch onto the fact that the information that they collect and analyse will be the nutritional status of the child and their focus tends to be the current weight of the child (as opposed to the direction of the curve). Intervention is therefore only directed at those children who have already become malnourished and the preventive benefit of GM is lost. However, in other African countries increased training has overcome some of these potential problems and the clinic nurses have been taught to collect GM data from individual measurements and to construct bar charts or 'mastercards' to illustrate the nutritional status of the clinic users. Trends can then be recognised by comparison of charts over a period of time and dialogue about the possible causes of changes in nutritional status of clinic users can be initiated. For this to be an effective exercise, it is also important that these data be used and understood by the wider local community because the interventions offered by the clinic alone are usually quite limited.

As illustrated by the Iringa project the use of GM data for surveillance at a local level can be very effective in mobilising community dialogue and action. For this to be even more effective and representative it would be better for the GM to be performed at a community level so that those not attending the formal health services are also reached and included. This is beginning to happen in a few projects in South Africa.

In Hlabisa health district, community health workers are performing individual GM at the homes of the children.³³ They have been trained to use the results from the GM to start a dialogue with the mother and other members of the family about the particular practices and constraints in that household. Charts illustrating the possible causes of growth faltering at different ages, e.g. breast-feeding, weaning, are used to assist in the dialogue. At the end of every quarter the community health worker compiles a bar chart which shows the number of children who have grown in the previous 3 months and the number whose growth has remained static or has faltered. This is presented at a community meeting and the results compared with a similar bar chart from the previous 3 months. These findings are used as a starting point in discussions about the local causes of malnutrition and possible solutions, or about whether the interventions that were planned the last time are functioning and what effect they are having. Operation Hunger³⁴ has also initiated similar programmes, with some modifications, at a number of pilot sites in different parts of the country.

In reviewing the international experience of the possible roles of GM, it is quite clear that a number of crucial lessons have been learnt. One of the most important has been the critical role that community organisation plays in ensuring the success of GM at an individual and community level. By sharing the results of individual GM with community health or development committees, health workers can learn about the particular constraints and potentials affecting local carers; by further sensitising the community to the significance of nutritional status, GM can also be used to mobilise communities. Growth monitoring can be optimally

utilised when it is a part of a wider community-based comprehensive primary health care programme. It can then serve not only as an effective tool for initiating dialogue with a child's family about his/her growth but also in strengthening community participation in primary health care initiatives.

Conclusion

This is a critical time in the development and implementation of health policy in this country and it appears that clinic nurses will be at the forefront of the health service; demands on their time and skills will be great. GM is an expensive technology which requires a lot of training and supervision for the weighing, plotting and interpretation to be done correctly. This review of local and international experience suggests that policy-makers should critically examine the role of GM in the new health service. This must be accompanied by operational research that examines possible ways in which vulnerable children can be identified at an early stage and the types of intervention strategies health staff can utilise.³⁵ In particular, the role of GM in engaging households and local communities in a dialogue about the causes of and responses to malnutrition needs to be further developed and evaluated; this is also true of the role GM can play in community-based nutrition surveillance.

The conquest of hunger and undernutrition is one of the most important challenges facing the new health service. Both local and international experience suggests that this will only be achieved in an appropriate and sustainable manner through the full and active participation of the affected communities. This remains the door which many local nutrition interventions have been unable to open: the appropriate use of GM may provide the key.

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