Growth Promotion for Child Development

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

Of the various components of the so-called child survival and development revolution, the most difficult to implement and sustain in many countries, and the least convincing in terms of documented, positive effects on child health, has been growth monitoring and promotion (GMP). Monitoring of body weight can provide an early warning sign that all is not well during periods of life when rapid gain in weight is normal and failure to gain is a sensitive reflection of poor health or nutrition (i.e., infancy and early childhood, pregnancy). Not an intervention in itself, the process is rather one of identification of the child at risk and, theoretically, provision of a starting point for education of mothers and families both for the child at risk and for the child who is growing well.

Long used in clinical pediatric practice in Europe and North America, growth monitoring has been incorporated into primary health care systems and preventive health care systems in developing countries with uneven success. Evaluations of the impact of GMP programs in various countries have been undertaken and reviewed (Ashworth and Feachem, 1986; Yee and Zerfas 1987; Lotfi 1988), with the overall conclusion that impact on child mortality has not been demonstrated and that improvements in nutritional status, although sometimes found associated with well-managed GMP programs, are difficult to attribute to this aspect of preventive care, independent of other associated factors.

Given the cost and difficulty of mounting and maintaining GMP programs, the lack of concrete demonstration of positive effects on child health and mortality has given rise to thoughtful questioning of the role of GMP and the wisdom of expending scarce resources on this particular set of activities (Anon. 1985; Nabarro and Chinnock 1988).
The serial measuring of weight, recording and interpreting the weights in terms of adequacy of growth as an indication of overall health and nutrition, and the utilization of that information as a basis for educational or other intervention, is conceptually and logistically complex. Like all primary health care activities, effectiveness depends on its correct use (i.e., accurately carried out and appropriately acted upon) by both health care workers and families. It is not surprising, therefore, that advocates of the potential benefits of GMP have turned their attention to devising complete and clear guidelines for implementation of GMP programs, including follow-on nutrition education (cf. Rohde et al. 1979; Jelliffe and Jelliffe 1990).

The literature contains accounts of whether or not mothers in given environments were able to pass tests of understanding of the growth chart (e.g., Forsyth 1982). When results were negative or understanding limited, it was assumed that the teaching method(s) must have been inadequate. A great deal of attention has also been focused on refinements of growth charts for greater ease of recording and reading, and for cultural appropriateness (Griffiths 1987, 1988; Jelliffe and Jelliffe 1990). Attention has also been paid to problems of coverage and attendance at GMP activities. Both of these factors (understanding of the meaning of the information recorded, and motivation to bring a child repeatedly to be weighed) depend upon effective interface and dialogue of the program with local concepts of child rearing, parenting, health promotion, and disease prevention. Nevertheless, little serious attention has been paid to assessment of this interface.

Brownlee (1990) has recently provided a very useful review of published (or at least accessible) reports relevant to this topic; there is very little. One may attribute the lack of information to the fact that medical anthropologists like other biomedical scholars have paid more attention in general to perceptions of disease than of health, and there has been more study of traditional curative practices than of perceptions and behaviours related to health maintenance and promotion.

This paper will attempt to explore the cultural roots of growth monitoring and the symbolic value that it serves for biomedical practitioners; to survey the sparse existing literature on cultural differences and similarities in preferences for particular body size, shape, or growth patterns; to summarize information on perceptions of weighing children; and to place the context of body weight within the larger perspective of perceptions of healthy child development.
Weighing and Measuring to Promote Health: The Cultural Roots of the Practice

Anthropometry (the measurement of the human body) developed as a tool of early physical anthropologists in 18th- and early 19th-century Europe, building on the detailed descriptive traditions of earlier anatomists whose work also underlaid the development of modern medicine over the time period. The motivation for devising precise instrumentation and reproducible methodology for measuring lengths, widths, circumferences, and volumes of various components of the body related to the intellectual preoccupation of the time with taxonomic concerns relating to understanding the phylogeny of human racial groupings.

Weighing in 18th-century Europe was largely confined to the role it enjoys in many contemporary cultures, namely the weighing of commodities in the marketplace for purposes of establishing market value. The descriptive tools of anthropometry were applied over time in a wide variety of populations, primarily in terms of describing and documenting differences among populations in adult body size and shape. (Most populations studied were smaller as adults than the average European of today, likely giving rise or at least reinforcement to the "bigger is better" notion, which so fascinates modern scientists). Measuring body weight was added to the descriptive repertoire somewhat later when anthropometric measures began to be utilized to study human growth.

The study of human growth, so far as it is documented, began with longitudinal documentation of the increments in height of a few individual children in the 1700s in Europe. Descriptions of child health of the same period utilized qualitative descriptors of malnutrition, such as "weak," "sickly," "small," "lean," and do not contain mention of quantization of growth or growth deficits. The Swedish physician Nicholas Rosen von Rosenstein, writing during this period, published the first compendium of pediatrics, "The Diseases of Children, and their Remedies" (Rosen von Rosenstein 1771). This treatise, which earned Dr Rosen his place as the "father of pediatrics," contains no specific mention of body weight, although it gives detailed attention to nourishment of the infant and refers to "thriving" throughout.

The beginnings of description of individual persons in terms of body weight in European literature are not clear, but the concept of weight as a descriptor seems to be very old. Certainly, before weighing of either adults or children was routine, we find descriptions of large individuals in terms of the number of stones (a unit of weight) they were estimated to equal. The specialty of pediatrics developed further recognizing that children are different from adults primarily in that they are in a process of growth, development, and differentiation. Early in the 20th century, the knowledge of nutrition expanded, vitamins were discovered,
and the sensitivity of growth to nutritional deficits began to be appreciated. Concepts of preventive health care and public health policy evolved in parallel to the specialty of pediatrics, in a social and cultural milieu in which literacy, numeracy, and accurate description were highly valued.

Growing out of these traditions, European and later North American pediatricians, human biologists, physical anthropologists, and nutritionists have elaborated very rich databases and methods for handling, reducing, describing, and applying data on the growth of large numbers of supposedly healthy, normal children to diagnose the individual child or the population whose growth is compromised. The amount of data available not only on weight and length/height but of multiple other body dimensions in samples of children in widely differing environments is vast indeed (Eveleth and Tanner 1976).

As pediatric practice developed, it incorporated weighing and measuring from the descriptive, natural science tradition in which Western medicine had its roots. Not surprisingly, the concept of growth and development measured as changes in body weight made intuitive sense to the lay public in the same societies. The weighing and measuring of the infant in the clinic or doctor’s office, the recording of that information on a rather complex and mysterious chart, and the discussion of the results with the parent or caretaker, became a fundamental ritual of child care. Not only did the ritual demonstrate the doctor’s knowledge and seriousness of purpose in relation to the individual child (highly valued in societies that prize individuality) but also served as an entry point, a common meeting ground of intellect, for the health care provider to begin discussion with the parent about how the child was doing and what was needed to maintain or improve his/her growth.

The cultural compatibility of the idea of weighing children is well demonstrated in the adoption of birth weight as a major lay descriptor of newborn children, after routine weighing of newborns after delivery became established. Birth announcements, whether formal or informal in North American and European cultures, almost invariably include a mention of the birth weight (and, in recent times, sometimes length), and if weight is not mentioned, it is routinely inquired after.

The transfer of the ritual of serial weighing, recording, and interpreting of body weight data on children to health care systems in quite different cultural contexts has met with differential reactions. Sometimes the process has been perceived by some observers as a successful focus for child health activities; sometimes the process simply seems a waste of time; in other settings the ritual aspects of the process have been adopted but the follow-up is elusive — perhaps because unless body weight makes intuitive sense to the mother in terms of her
child’s health it will not serve the purpose of initiating dialogue about the child’s health and the parent’s care-giving practices, as it has so effectively done in the West.

**Perceptions of Body Size, Shape, and Growth Patterns**

Growth monitoring and promotion programs are being promoted vigorously and are taking place on a wide scale, but in the near-absence of information on people’s expectations and perceptions of child size and growth in particular cultural settings. Pelto (1987, p.155), in a review of cultural issues in maternal and child health and nutrition, makes the point that "...this lack of knowledge is not trivial; parental expectations and interpretations undoubtedly affect child-rearing behaviour, including health seeking activities and feeding practices."

Because the effectiveness of GMP programs depends in large part on a sustained behavioral response on the part of parents or other caretakers, understanding local perceptions of child size and growth would seem to be essential for effective communication between health care workers and their clientele.

**Preference for Newborn Size**

Preference for size at birth has received some attention in the literature, primarily because birth weight is a sensitive index of maternal health and nutrition and low birth weight a well-documented and potent predictor of perinatal mortality. The data are somewhat scanty, but it is clear that preference for small newborns, if they are otherwise healthy, is common to many cultures. It is not surprising to find that many populations have developed an appreciation of the undesirability of a too-large fetus. The risk of infant mortality in relation to birth weight is U-shaped, with increased risk over a wide range of smallness and a more threshold-shaped risk at high birth weights.

Maternal risk, however, is much greater from a large fetus than a small one. Although low birth weights are many times more common and place an infant at great risk, they do not generally cause immediate risk of death to the mother. Too-large fetuses, however, pose the risk of difficult or obstructed labour and potential maternal death or severe morbidity in the absence of modern obstetrical care.

Preference for small newborns has been noted in passing in a variety of cultures, including the Philippines (Cruz 1970); Latin America (Wellin 1955; Gonzalez and Behar 1966); India (Katona-Apte 1977; Nichter and Nichter 1983);
and East Africa (Trant 1954). Jimenez and Newton (1979) conducted a cross-cultural survey of patterns of work and activity during pregnancy in 202 traditional societies in the Human Relations Area Files. The most common single pattern was continuation of usual activities and duties until the onset of labour; Asian women tended to have the most modification and suspension of duties both late in pregnancy and postpartum, whereas Middle Eastern and Russian women had the least. They also note, as did Ford (1945) much earlier, a common belief in "daily exercise to keep the woman strong, the fetus small and the labour brief."

Nichter and Nichter (1983) explored preferences of women for newborn size and associated behaviours and beliefs in two rural areas of South India. They confirmed a preference for smaller babies, which had been noted by others in India. In addition to considerations of ease of delivery, they found that large, "bloated" babies were regarded as weak and unhealthy, whereas compact, muscular infants were regarded as strong and vital. Thus, women wished for a small baby not only for their own ease in labour and delivery, but also for the baby's strength and health.

In addition, they found that the practice of eating less (or at least of not consciously eating more) during pregnancy, although common, was not perceived as deliberately aimed at producing a small baby. On the contrary, the local view was that the fetus should have enough room to develop normally. Because the fetus was perceived to share the same space in the mother’s body as food, feces, urine, and air (gas from gas-producing foods), it was important not to overfill with food so that the "baby space" would be protected.

Certainly, small babies are not uniformly preferred. In the U.S., common experience is that mothers take pride in having delivered a large newborn even if it was at the cost of a Caesarean section delivery. One could argue that this bias is a reflection of the availability of modern obstetrical care and the relative maternal safety of producing a newborn that meets or exceeds cultural expectations for size.

**Older Children and Preferred Growth Patterns**

In the U.S., common experience is that parents exhibit concern if their child is felt to be delayed in either physical growth or developmental achievements. Developmental acceleration is usually seen as desirable and there are major culturally-sanctioned efforts to prevent delays and to encourage early development. Although the society is in general quite negative in its attitudes toward obesity, there is evidence that a "fat is healthy" notion persists in relation to young children. Bryant (1978) studied perceptions of baby size in a multiethnic
sample of mothers in Florida, and found that most mothers chose from a sample of caricatures the most desirable baby shape as one somewhat fatter than the one they selected as most like their own child.

Our own work with mothers of very fat 6-month-old infants (Graver 1988) showed that even when the child's pediatrician and/or other significant adults had showed concern about an infant's fatness and the child was in excess of the 97th percentile on all indices of weight and adiposity, more than 50% of mothers did not perceive their child to be overweight. Common descriptions, often given with obvious pride, particularly in the case of boys, was that the child was "chunky," "a hunk," "all boy," and "solid."

Norms that become internalized in the cultural context sometimes give a positive value to smallness, leanness, or slow growth. Margaret Mead (1977) noted that endemic malnutrition influences cultural perceptions of normal size and of appropriate childhood behaviour. Short stature; delayed achievement of developmental milestones, such as walking and talking; and depressed levels of physical activity become normative in populations in which a large proportion of children are afflicted with malnutrition over several generations. Chavez and Martinez (1979) reported that when a cohort of children in a malnourished community were provided with nutritional supplements from prenatal life through early childhood, their active and lively demeanour as toddlers posed challenges to a community whose child-care practices were geared toward malnourished children. Several died in household accidents as a result.

Some years ago, the author had the experience of spending several days discussing child nutrition with a group of Liberian health care administrators. Initial discussions about infant feeding and weaning practices in their country brought agreement that after breast milk, there were three possible food items that could form the basis for a toddler's diet: rice, banana, or cassava. There was clear and unanimous agreement among them that rice was the least desirable choice and should be discouraged.

Because this conclusion went counter to nutritional considerations, it was clear that further exploration of their thinking was essential. Discussion resulted in the articulation of two reasons for their choice, both based on recognition that rice would produce faster growth in a child than would a diet of cassava or banana. The first was a belief that not only do physical and mental development in childhood proceed out of the same pool of resources, they are achieved at the expense of one another. A child who grew too fast ran the risk of being stupid, an outcome no parent would choose. The second was a fear that the child who grew too fast would become top-heavy, with a body too heavy for his legs, and
would, therefore, be late in learning to walk. Because the end of the postpartum sex taboo was linked to the child's first steps, delayed walking was seen as undesirable.

American anthropologists Nichter and Nichter (1986) have written about their experiences in raising their young son while doing fieldwork in South India. They found that their baby was not regarded as either pretty or healthy, at least in part because he was large by local standards. When comparing his development with that of his local age-mates, they became aware of the perception that too-rapid development was undesirable because it indicated that the individual was "using up" his allotted life span too quickly and would, therefore, die young.

**Perceptions of Weighing and Measuring**

The notion of measuring a human being's body weight is variably sense-making and acceptable in different cultures. Where weights and scales are principally used to assess the quantity of items for pricing in the market, there may be resistance to the notion of weighing children because of the unpleasant connotation that they might be being evaluated for sale. Measurement of length, while less common in GMP programs, may be a threat in communities in which human beings are not routinely measured traditionally except for the purpose of constructing their coffins.

In many developing countries, attention is beginning to be paid in a highly visible way to problems of chronic disease, obesity, diabetes, and heart disease among the urban and more affluent portions of the population. Slimming clinics, diet books and columns, and street-corner scales to evaluate one's weight for a small fee have become commonplace in many cities.

At the same time, value is placed on chubbiness in babies. In a recent ethnographic study of infant feeding patterns, which we conducted in a low-income neighbourhood in metropolitan Cairo, Egypt, several mothers expressed the conflict they felt over supplementing their breast milk with formulas and other milks. They felt that optimal growth would be reflected in relative fatness and would require supplemental milk but recognized the increased danger of diarrheal illness with supplements in their environment. One mother stated that she was continuing to breastfeed her baby girl exclusively because her husband "doesn't want her to be ill with diarrhea, even though this way she will never be fatty." (Harrison et al., forthcoming).

The role of the "evil eye," common throughout much of the Middle East, South Asia, and Latin America, is important in community and family perceptions of weighing programs, or at least to their degree of comfort with them. In South
India, it has been pointed out that one should not call attention to the attainment of developmental milestones, because having a child exceptional in any way invites evil eye and thus ill health (Nichter and Nichter 1983). Our own work with traditional birth attendants and mothers in rural Egypt (Ritenbaugh et al. 1989) showed that even among women who had no basic objection to the idea or process of weighing a newborn infant, there was a reluctance to expose oneself to the possibility that an announcement of the weight of the baby, or a description of his/her health, might be made in the presence of nonfamily members.

Those mothers and birth attendants who articulated the reasons for their objections uniformly mentioned the risk of evil eye. In addition, many expressed the view that weighing a child implied a lack of gratitude to God for the gift of the child, because the child's characteristics were being evaluated.

In India, a combination of belief in evil eye and resistance to the market-mentality associated with weighing have been reported. An Indian delegate to a 1985 meeting on growth monitoring reported that:

There is...the concept of the "evil eye" where weighing a well child is detrimental to its health. This belief is very prevalent ...though attitudes are slowly changing.... Other mothers believe that weighing is only for sale of goods/produce such as rice, meat, vegetables, etc. Mothers do not want to "sell their children." Thus, a certain prejudice in the community to weighing, especially healthy children, exists and needs to be adequately tackled (Foundation for Indonesian Welfare, 1985:66-67).

The dehumanizing aspect of weighing of children as would be done with goods in a market has been repeatedly reported; mothers may also feel uncomfortable undressing children for fear of cold or because they believe the weighing equipment may be unsanitary (Nutrition Communication Project 1989, p. 29).

**Perceptions of Child Development**

Physical growth and body size are important only as markers for health, nutritional status, and development. Parents in every culture strive to have healthy children and to provide them with appropriate care and socialization and take pleasure in their development. Parents and mothers, in particular, are liable to have their own competency as adults judged at least in part by how well their children do in locally relevant terms. Different milestones and indicators are utilized in different cultures, but all parents have some concrete ideas of how to assess their child's development.
Understanding traditional indicators of physical growth and of development, and integrating some of these into GMP programs, may be key to utilizing GMP programs in the way they work so well in the West, i.e., to initiate discussion of how the child is doing and why. None of the guides to GMP programs that the author was able to locate, in spite of very great detail in "how to" advice and guidelines, suggested beginning the encounter by asking the mother *how she feels the child is developing, and how she knows.*

A noteworthy exception to the lack of relevant data on this topic is the very interesting study in rural central Ghana by Lovel et al. (1984) on mothers' perceptions of growth and indicators for assessment. The 150 mothers attending well-child clinics were interviewed in detail on this subject, and a wealth of information was obtained that is directly relevant to improving the local GMP program.

In response to the question about how mothers know when their child is growing well, a variety of criteria were mentioned including (from highest to lowest prevalence): a good appetite, fatness/thinness, expressions of mood (smiling, interactive, content); activity level; appropriate timing of developmental milestones, including tooth eruption, crawling, sitting, walking, and learning new things; health (frequency of illnesses, sleeping well); heaviness or lightness on lifting; weight gain or loss appreciated as the way the child feels when carried; appearance of skin; and outgrowing clothing. Weight, although a component of this multivariate evaluation of thriving, is only one and likely not the most important component. Traditional anthropometric-type measures included bead-strings put around the waist, wrists, and legs of a newborn that need to be modified or changed as the child grows. "One mother explained that by the time the child had reached the age of five months, the bead-strings around the waist should have been changed or adjusted five times" (Lovel et al. 1985, pp. 1–3).

A less-detailed investigation in India (Anderson 1986) focused only on indicators of physical growth and found that more than half of mothers correctly perceived their children's nutritional status as measured by weight-for-age, even without weighing. They mentioned noting that the child is getting heavier to lift, waist-strings getting tighter and outgrowing clothing. The author is aware of no published accounts of GMP programs that have incorporated traditional indicators of thriving and used weighing as an adjunct to, rather than a replacement of, traditional methods of developmental assessment.

Studies that have identified maternal or household correlates of better nutritional status among children have generally resulted in clusters of attributes or maternal behaviours that are identifiable as "good parenting" in local terms (see, for example, Dettwyler's (1986) study in Mali). In other words, children
thriving in terms of nutritional status tend to belong to parents who are perceived as successful parents in their own culture. This would tend to argue that the underlying signals by which parents know their children are thriving are more or less part of the same cluster of health and development, which is tapped by knowing the weight of the child relative to that of a population of healthy children.

Conclusions

Growth monitoring and promotion programs are being widely implemented and are the subject of some controversy as to their acceptability, effectiveness, and cost. Not an intervention in themselves, they seek to utilize serial weighing of children to identify children at risk of developing malnutrition and as the basis of health and nutrition education. The process involved in attending the clinic for the purposes of weighing, weighing the infant, charting the data, and interpreting the information and utilizing it in educational interactions with the mother or caretaker are complex, abstract, and not easily communicated except where body weight is an accepted and intuitively sense-making part of the culture.

The child-weighing ritual is firmly institutionalized in well child care in North America and Europe, and grew out of medical and intellectual traditions that not only made it acceptable but allowed it to serve important symbolic functions and to provide an entry point for health education. In other parts of the world, the ritualistic aspects of child-weighing have been transplanted into low-technology, primary health care systems; the extent to which the information they generate is sought after by parents and is useful to them varies greatly and very likely depends on the degree to which body size and weight are intuitive measures of good growth in the particular cultural context.

Rather than focusing exclusively on improving the content of education and information in the context of GMP programs, it would be useful to disentangle conceptually the assessment function (identification of risk) from the educational functions of GMP programs. Body weight as an assessment tool for malnutrition has undoubted value, and if focused on very young infants and children rather than older children with the highest prevalence of attained malnutrition, may serve as a very effective early warning system for targeting health care interventions.

On a population basis, this function might be served as well or better by cross-sectional surveys than by longitudinal monitoring. For growth promotion, on the other hand, the real issue may be to find and utilize the indicators of child health, thriving, and development, which are used locally by parents and families. Weighing may (or may not) be a useful addition to these measures and will surely
make more sense used in conjunction with them. Most important, the function that baby-weighing has served in European and North American well child care, that of providing a basis for parent education, may be served much more efficiently by building on traditional indicators, particularly when they do reflect good growth and health.

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