

Is the Educational Function of the Under-Five Weight Chart Optimal?

PATRICIA LADIPO AND NAOMI BANKOLE

*Department of Extension Education and Rural Sociology,
Faculty of Agriculture, University of Ife,*

and

*Department of Environmental Health and Epidemiology,
Faculty of Health Sciences, University of Ife, Ile-Ife.*

Summary

Patricia Ladipo and Naomi Bankole (1977). *Nigerian Journal of Paediatrics*, 4(2), 32
Is the Educational Function of the Under-Five Weight Chart Optimal?

In order to evaluate the level of understanding of three different weight charts used respectively at the Wesley Guild Hospital, Ilesha, Somolu Clinic, Lagos, and the pre-school nutrition program, Isoya, Ife, 212 literate and illiterate mothers attending the under-five clinics at the above institutions were asked to interpret their children's charts. The general level of understanding of the charts by the mothers was poor even when differences in educational inputs were accounted for. However, weights charted as bars were better understood than those charted as lines. It is concluded that the educational impact of the under-five weight charts would be optimal if:

- (a) a chart is used which incorporates an even base line, a constant weight scale, and bar-charting of the weights.
- (b) mothers receive constant education on how to interpret and utilize the charts.

WHERE time, staff, and equipment for anthropometric measurements are limited, a change in weight is an informative and inexpensive reflector of the nutritional and growth pattern of a child. Thus, the "Road to Health Chart" designed by Morley (1968) has been used by the Wesley Guild Hospital, Ilesha, and other under-fives clinics in Nigeria as a guide for health workers to quickly spot the child at risk of developing clinical malnutrition. It also serves as a record of the child's illnesses, recoveries, and inoculations. The "Road to Health Chart" was primarily designed to be meaningful to health workers,

although in most of the clinics using it, mothers were given educational talks to help them understand that the child's recorded weight should fall within the printed standards. In Wesley Guild Hospital, and in most other clinics, weights are recorded on the chart as a line-graph, but at the Preschool Nutrition Programme of the Isoya Rural Development Project, we have elected to record the weights as a bar-chart (Figs. 1-3) in the hope that the relative heights of the bars would be easier for illiterate mothers to perceive than a continuous line.

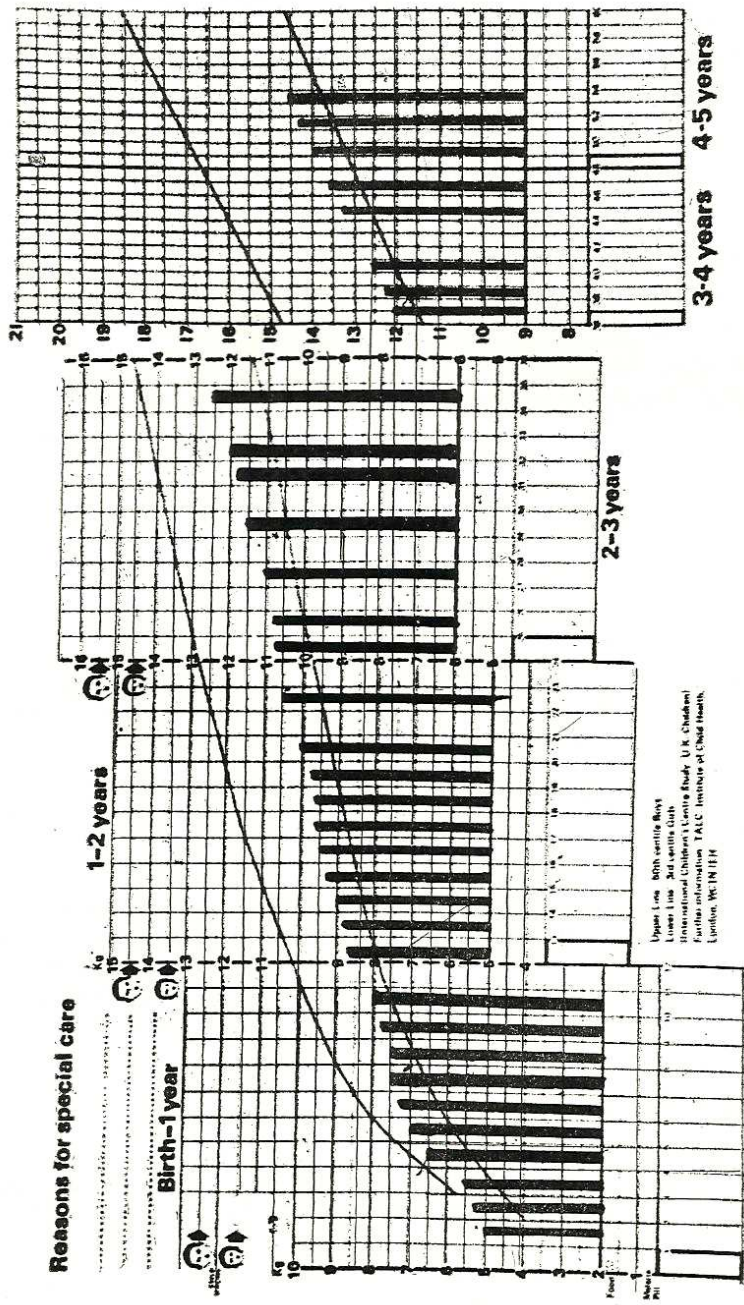


Fig. 1. Wesley Guild Hospital weight chart illustrating line-graph and the broken base-line. Also shown are the upright bars representing weights as charted in the Isoya project.

Irrespective of whether weights are recorded as a line-graph or as a bar-chart, the "Road to Health Chart" has been found during field work to present the following perceptual difficulties:

1. The last two years of age (5-7) are recorded overleaf, and not as a continuation of the earlier years.
2. The base-line changes every year. (Fig. 1)
3. The scale is smaller from 3 to 5 years of age than for the earlier years. Thus, many mothers who had been actively following their children's progress and whose children had been growing well, have expressed dismay at the apparent loss of weight following birthdays, and at the apparently smaller size of the 3-5-year olds compared to their younger siblings.

Another type of chart designed by the Institute of Child Health, University of Lagos, is in use at the Somolu clinic in Mushin, Lagos. This chart has the advantage of a constant base line, continuity of scale and all the records being printed on one side of the card. Weights on this chart are, however, plotted as line-graphs.

The present study was undertaken with the following objectives:

1. To compare the degree to which mothers were able to interpret the three types of charts, namely: The original Wesley Guild Hospital chart; our modified Isoya chart, and the Somolu clinic chart;
2. To see whether literacy was related to the level of understanding of the charts by mothers;
3. To see whether length of time in using the charts affected the level of understanding;

4. To discover specific perceptual difficulties which could be rectified by changing the form of the printed chart.

Methods

The study samples consisted of 212 mothers made up as follows:

73 mothers attending the under-five clinic at Wesley Guild Hospital, Ilesha; 68 mothers enrolled in the Isoya Project-Pre-school Nutrition Programme; and 71 mothers attending the Somolu clinic, Lagos. The mothers were asked to interpret to interviewers, their children's weight charts, and the following three categories of response were recorded:

1. Mothers who could accurately say whether their children gained or lost weight at any two points on the chart, and who could describe their children's progress relative to the printed standard.
2. Mothers who understood vaguely that the chart was a record of weight, but could not interpret gains and/or losses.
3. Mothers who did not understand the purpose of the chart.

Information on literacy, as well as the duration of attendance on enrolment of each mother at the clinic was noted. This was done by direct interview at Wesley Guild Hospital and Somolu clinics, and from records already available in the Isoya group of villages.

Results

The extent to which mothers understood the three types of chart is summarized in Table I

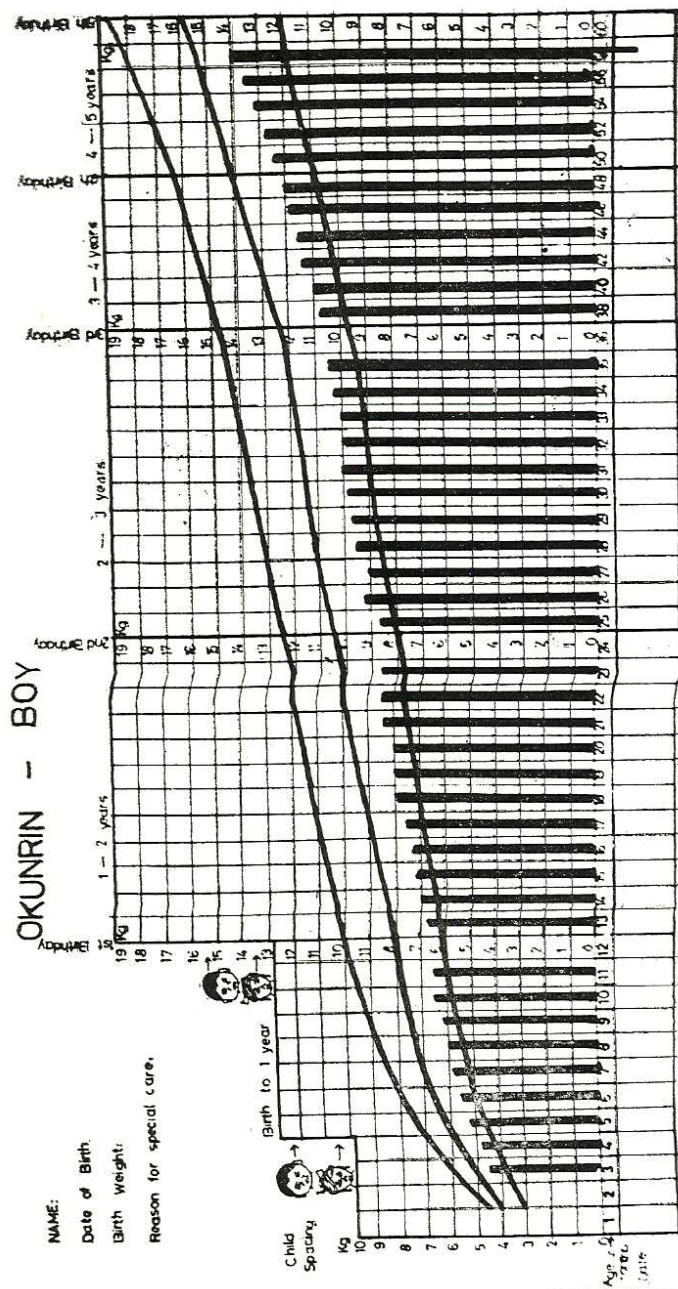


Fig. 2. A recommended modified weight chart. Note that (a) the base-line is unbroken, (b) the weights are charted as upright bars. This particular child was healthy throughout the period of observation. Note also that there is progressive increase in the heights of the bars.

TABLE I
Mothers' Levels of understanding of three different Weight Charts

<i>Type of chart</i>	<i>No. of respondents</i>	<i>Level of understanding</i>		
		<i>Clear</i>	<i>Vague</i>	<i>Nil</i>
Line-graph broken base line (Wesley Guild)	73	4 (6)	12 (16)	57 (78)
Line-graph, even base line (Lagos)	71	15 (21)	29 (41)	27 (38)
Bar-chart, broken base line (Isoya)	68	21 (29)	33 (47)	14 (24)

Note: Figures in parenthesis represent per cent of total.

which shows that the bar-chart was best understood while the line-graph with the broken base line was least understood. Using the Student's "t" test, the differences between mothers understanding of the line-graph with broken base line and the other two charts were significant at the 1 per cent level. However, the difference between their understanding of the line-graph with even base line and the bar-chart, was not significant at the 5 per cent ($P < 0.05$). Whereas all the mothers using the bar-chart at Isoya villages were illiterate, thirty each of the mothers using the line-

graph charts at Ilesha and Mushin (41.1 per cent and 42.2 per cent respectively) could read. Table II summarizes the results of the illiterate mother's responses.

Although it is reasonable to expect that the level of understanding of mothers might increase with prolonged usage of the chart, this was not the finding in the present study. As shown in Table III, the proportion of mothers who could interpret the charts was least in Wesley Guild Hospital where the period of enrolment was longest.

TABLE II
Illiterate mothers' Level of understanding the Charts

<i>Type of chart</i>	<i>No. of respondents</i>	<i>Level of understanding</i>		
		<i>Clear</i>	<i>Vague</i>	<i>Nil</i>
Line-graph, broken base line (Wesley Guild)	43	1 (2)	1 (2)	41 (95)
Line-graph even base line (Lagos)	41	— (0)	12 (41)	24 (59)
Bar-chart, broken base line (Isoya)	68	20 (29)	32 (47)	13 (24)

Note: Figures in parenthesis represent per cent of total.

TABLE III
Effect of Duration of usage on the understanding of the Charts

<i>Type of chart</i>	<i>No. of respondents</i>	<i>Length of time Range</i>	<i>Clear understanding</i>	
			<i>Mean (Mons)</i>	
Line-graph, broken base line (Wesley Guild)	73	1 mon.—16 years	6	6
Line-graph, even base line (Lagos)	71	2 mons—1½ years	9	21
Bar-chart, broken base line (Isoya Project)	68	6 mon—2 years	20	29

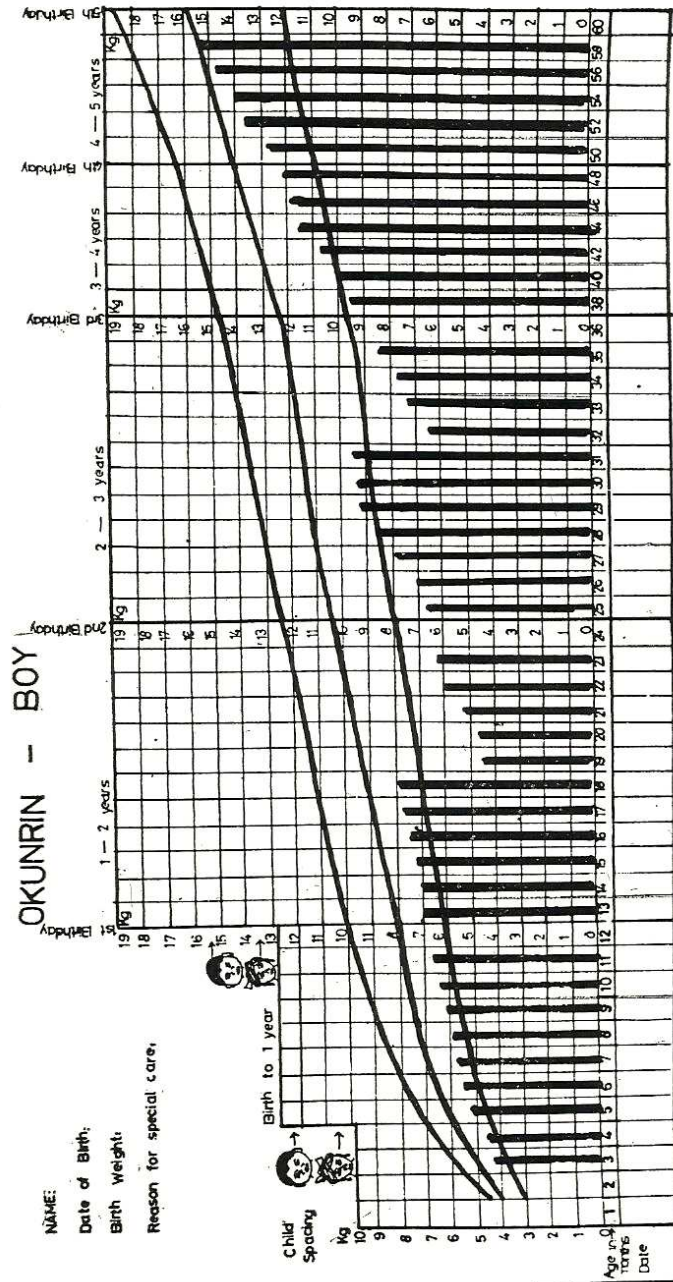


Fig. 3. Another modified weight chart of a child who had two major illnesses during the period of observation. Note the conspicuous drops in the heights of the bars corresponding to the two periods of illness.

Discussion

The level of mothers' understanding at the three centres studied was poor even when differences in educational inputs were accounted for. The staff at both the Wesley Guild and Somolu clinics maintained that some special effort was made to explain to the mothers that their children's charts were related to weight. In spite of this, however, a majority of illiterate mothers at these clinics had no idea as to the purpose of the chart. At Isoya where emphasis was placed on the relative size of the bars from month to month, only 29 per cent of the mothers could interpret change in weight.

On the whole, the bar-chart has been shown by the present study to be most easily understood, regardless of the length of exposure to it, or the literacy level of the mother. The advantage of the bar is that it shows a solid block of colour which can be easily conceptualized as representing size. Changes in size are easier to perceive than a mere abstract line-graph. Charting weights as bars is easily learnt, and probably more comprehensible to the health workers themselves. Using a felttip pen, it takes no longer to record than the line-graph and the workers may even achieve more

self-satisfaction in adding the more conspicuous bar. It seems that this would, in fact, encourage staff to chart weights and to explain weight changes to mothers.

However, part of the advantage of using bars is at present lost, due to an uneven base-line, changes in scale, and discontinuity of the chart. This is reflected in the fact that 47 per cent of the users of chart knew it to be a record of weight, but could not interpret it.

One potential function of weight charts is to provide the mother with visible evidence of her child's progress, thus giving her an incentive to improve the diet. The present study shows that in our population, bar-charting does this more effectively than line-graphs.

It is concluded that in order to improve the educational impact of under-five weight charts, the best approach would be a combination of: even-base, constant weight scale, bar-charting, more educational effort on the mothers.

Reference

- Morley, D. (1968). Health and Weight Chart for use in developing countries. *Trop. & Geograph. Med.*, **20**, 101-107.