

SOME OBSERVATIONS ON THE STATE OF NUTRITION OF INFANTS AND TODDLERS IN SEKHUKHUNILAND

P. M. LEARY, M.B., CH.B. (CAPE TOWN), D.A., D.C.H., D.OBST., R.C.O.G.; AND J. E. S. LEWIS, M.A., B.M., B.CH. (OXON), *Jane Furse Memorial Hospital, via Middelburg, Transvaal*

The figures presented in this paper have been abstracted from the records of a weekly infant welfare clinic at the Jane Furse Memorial Hospital, a mission hospital situated in the Bantu Reserve of Sekhukhuniland in the North-Eastern Transvaal.

MATERIAL AND METHODS

The children attending the infant welfare clinic are a select group in so far as only those living within walking distance of the hospital, a radius of about 5 miles, are able to attend. It is primarily a 'well-baby clinic' and any children found to require specific medical attention are referred to the hospital's outpatient department. For the purpose of this study all regular attenders between July 1964 and January 1965 were included, and a study was made of weights recorded on the clinic days closest to 1 July, 1 September, 1 November 1964 and 1 January 1965. Children attending the clinic are weighed at each attendance and issued with small bottles of Vi-Daylin, Pronutro and dried skimmed milk. In most instances 1 lb. of each was given at every attendance during the period under consideration. Those under the age of 6 months were given dried skimmed milk if this seemed desirable, as in the case of twins.

152 children were studied whose ages ranged between 2 and 24 months on 1 July. Of these, 96 attended both at the beginning and the end of the experimental period and could be used for a comparative weight-gain study. In many cases the exact day of birth was known. In the rest, the month of birth could be determined accurately.

Weights recorded at the clinic attendances closest to 1 July, 1 September, 1 November and 1 January were plotted against the age in months of the child on each occasion.

RESULTS

The mean weights of the children at different ages are represented in Fig. 1 by the lowest curve, with the 3rd, 10th and 90th Boston percentile¹ curves shown for

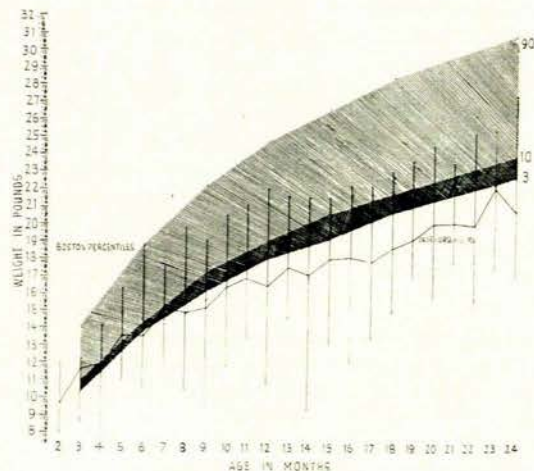


Fig. 1. Average weights recorded at Jane Furse compared with 'Boston' percentiles. Range of weights at each month of life shown by vertical lines.

comparison. The range of weights recorded at each month of life is shown by the vertical lines.

In the first 6 months the curve approximates closely to the 10th percentile of the Boston figures, but from the age of 7 months there is an increasing discrepancy. Although at each month a few children have weights within the Boston normal range, the majority fall well below even the 3rd Boston percentile. It should be noted that many of these children had already been receiving food supplements for several months before the survey started, and all received them during the time of survey.

In order to demonstrate weights gained during the period under consideration, the 96 children with an attendance close to both 1 July and 1 January were divided into 4 age groups. There were 24 children between 2 and 6 months old on 1 July (group 1), 32 children between 7 and 12 months (group 2), 29 between 13 and 18 months (group 3) and 11 children between 19 and 24 months (group 4). In Fig. 2 the gain in weight of the 4 groups of children

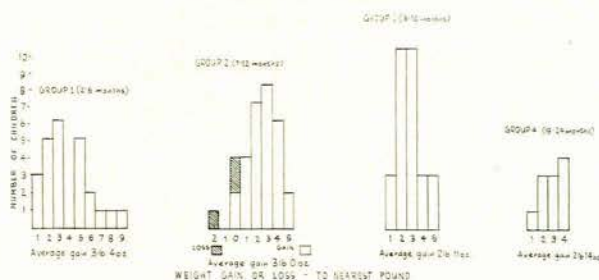


Fig. 2. Weight changes of 96 children in the 6-month period.

during the 6-month period has been represented by means of histograms. It will be seen that in group 1 all the infants gained weight, but there was considerable variation in the amount of weight gained; 5 children gained 2 lb. or less. In group 2, three children actually lost weight. In groups 3 and 4 weight gains were less variable and averaged less than in the previous 2 groups. In group 1 the average weight gain was 3 lb. 4 oz. in the 6-month period. In group 2 it was 3 lb., and in group 3 it was 2 lb. 11 oz. Children in group 4 gained an average of 2 lb. 14 oz.

DISCUSSION AND RECOMMENDATIONS

Sekhukhuniland is typical of South Africa's Bantu homelands in having a widely scattered population living in small villages, or isolated kraals, linked by rough paths and bad roads. Medical care for most villages is limited to a fortnightly visit by a doctor from one of the two mission hospitals serving the area. Figures do not exist for infant and child mortality rates, but from retrospective questioning of mothers of children admitted to the hospital it would seem that at least 50% of all children born alive fail to reach their fifth birthday, and the majority of those who die do not reach their third birthday.

In most cases the men work in towns and spend only a few weeks each year with their families. Although some send money home regularly, many seldom make any contribution to the upkeep of their wives and children. Other

men live at home, not even seeking work, and providing no income for the family. The illegitimacy rate is high and several of the mothers attending the welfare clinic are unmarried. An illegitimate child, according to our definition, is a child born from a casual relationship, in which the father makes no contribution to the support of the child, and may in fact never even see it. We do not include under this heading the many cases of stable cohabitation which may arise because the man cannot afford the marriage price. It is also fairly common in this area for a man to have more than one wife.

The figures obtained in this survey correspond to those of other observers in various parts of Africa. The birth-weights of Bapedi infants are lower than those of White children, but during the first 6 months of life, unless they are weaned, they gain weight satisfactorily. Thereafter, as the supply of breast milk becomes inadequate, the rate of growth falls away. It is usual for Pedi infants to be breast fed on demand until they reach the age of about 18 months; solid foods are often introduced within a few days of birth, and usually by the age of about 4 months. Traditionally Pedi weanlings are given *motepa*, a gruel prepared from mealie meal and water. According to Quin,² quoting Fox and Goldberg, this contains 0.46 G of crude protein per ounce. Questioning at the hospital has elicited the fact that many of the weaned children exist on a diet of *buswa*, or hard porridge only. This contains 0.8 G of crude protein per ounce.³ Some of the children receive *morogo*—a type of wild spinach, which contains approximately 1 G of crude protein and 0.3 mg. of vitamin C per ounce. As the survey took place during an unprecedented drought, stocks of this were in short supply.

The Pronutro and dried skimmed milk issued to these children were intended to act as a complement to traditional foods, and since no child attending the infant clinic regularly developed overt nutritional oedema or kwashiorkor, a small measure of success may be claimed. However, the figures show that, as measured by weight gain, the nutrition of the infants and toddlers who received these supplements leaves much to be desired. Although it is usual for underweight children to gain more weight than normal children when given a satisfactory diet, this growth spurt did not occur among those studied in this survey, showing that the supplements were far from adequate. It was impossible of course to assess how much of the food issued for a particular child was shared by other members of the family, but it is felt that this certainly occurred.

Although accurate figures are not available, it is unusual to encounter nutritional oedema or other signs of frank malnutrition in children over 4 years old. Undernutrition is widespread and many of the children are thin and undersized. However, in children old enough to fend for themselves to a certain extent, overt signs of malnutrition are rare. A knowledge of edible herbs and plants has been acquired and herd boys undoubtedly supplement their diet with milk direct from the animals they tend. Among children attending schools in this area malnutrition is not seen. Thus the provision of school meals obviously achieves its aim.

It is our contention that malnutrition in this Reserve needs to be tackled primarily in the age group 9 months to 3 years when morbidity and resultant mortality, usually

from kwashiorkor or infection, is highest. At the present state of development of these people, the weekly distribution of dried milk powder, Pronutro and, in some cases, fortified soup powders is not sufficient. The milk is not always properly reconstituted, being often far too dilute.

Quin¹ has shown admirably that the traditional Pedi diet contains sufficient of all essential nutrients. However, the combined effects of Western civilization and a long and serious drought have modified and depleted the traditional diet, and the vast majority of children subsist on a mealie-porridge diet, which makes protein supplements obligatory if they are to survive.

We feel that in a Bantu Reserve such as this, with a widely scattered population, malnutrition can only be tackled realistically by the use of mobile soup kitchens which visit given areas at least 3 times a week for the distribution of reconstituted high-protein soup, fortified biscuits such as 'Kokstad' type, and dried skimmed milk which the people may reconstitute themselves. Clearly an undertaking of this magnitude is beyond the financial means of mission hospitals, and would have to be financed by the State. We contend that the reduction in child morbidity and mortality, with the saving of hospital expenses and the ultimate increase in available labour for industry, mines, etc., would make this step financially worth while. It may be, too, that the lack of energy, mental drive and moral responsibility which characterize so many Bantu in adult life, could be traced to chronic undernutrition during the important years of growth and development in early childhood.

SUMMARY

A study was made during the period July 1964 to January 1965 of the weights of 152 regular attenders at a weekly Infant Welfare Clinic in the Bantu Reserve of Sekhukhuniland in N.E. Transvaal.

A graph plotted of average weights of Pedi infants at each month of life from 2 to 24 months shows that after the age of 7 months the curve falls well below even the 3rd Boston percentile, in spite of the fact that all these children were receiving regular supplements of dried skimmed milk, Pronutro and Vi-Daylin—some for several months before the survey started. The weight gain of 96 infants over the 6-month period was analysed, and it was found that this averaged 3 lb. 4 oz. in the group 0-6 months on 1 July; 3 lb. in the group 7-12 months; 2 lb. 11 oz. in the group 13-18 months, and 2 lb. 14 oz. in the group 19-24 months. Three infants in the group 7-12 months actually lost weight.

Pedi weanlings usually receive *motepe* (soft mealie porridge) containing 0.4 G crude protein per ounce. Many, however, exist solely on a diet of *buswa* (hard porridge) containing 0.8 G of protein per ounce. Although no child receiving regular food supplements at the clinic developed overt nutritional oedema or kwashiorkor, the figures obtained showed an appalling degree of undernutrition from which most never recover. At least 50% of Pedi infants would seem to die before their fifth birthday.

We contend that the productivity of the Bantu in adult life could be increased if a large-scale feeding programme for infants (and their mothers) were instituted, and suggest that mobile soup kitchens should visit given areas at least 3 times a week for the distribution of reconstituted high-protein soup, fortified biscuits and dried skimmed milk.

REFERENCES

1. Nelson, W. (1964): *Textbook of Paediatrics*, 8th ed., p. 42, fig. 18. Philadelphia: W. B. Saunders.
2. Quin, P. J. (1959): *Foods and Feeding Habits of the Pedi*, p. 152. Johannesburg: Witwatersrand University Press.
3. *Idem* (1959): *Ibid.*, p. 143.
4. *Idem* (1964): *S. Afr. Med. J.*, **38**, 969.

MORNING SESSION — 13 April — OGGENDSITTING

Chairman/Voorsitter: Dr. R. E. Cronje