Nutritional status of children under the age of 5 years in northern Gazankulu

A cross-sectional assessment

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Summary

A cross-sectional study of the nutritional status of 658 children under 5 years of age was carried out in one district in Gazankulu. Of these children, 29.8% were below the 3rd percentile of weight for age of the 1976 National Center for Health Statistics standards; in the 1 - 2-year age group this figure was 38.2%. A small group, 1.8%, weighed less than 60% of expected weight for age. The presence of a clinic in a village seems to have no influence on the percentage of underweight children.

Parts of Gazankulu were struck by a poliomyelitis epidemic during the second half of 1982, and mass vaccination campaigns were organized to contain the epidemic. This created an opportunity to assess the nutritional status of all children under five years old (UFs) in our area. Previously published studies of the nutritional status of rural Black children in the RSA have all been conducted on more or less selected groups. Richardson1 in 1973 studied urban and rural nursery and non-nursery school children, the latter group coming from a selected number of villages. Westcott and Stott,2 in 1977 surveyed the children of one village in Transkei. Scragg and Rubidge3 in 1978 reported on malnutrition in Black children admitted to King Edward VIII Hospital.

An additional reason for conducting the survey was that the results could be compared with those of a cluster-sample survey of four villages in our area carried out in 1978 (personal communication — Dr P. W. Kok). The combined results for the four villages showed that 1.7% of the UFs were below 60% of expected weight for age (W/A), and 24.6% below 80% of expected W/A. The socio-economic conditions of our population have been described.4,5 The presentation of malnutrition at Elim Hospital has remained almost static over the period analysed, 1976 - 1982. Approximately 300 admissions (15% of all admissions) and 35 deaths (28% of all deaths) due to undernutrition occur yearly. During the same period no major change has occurred in the population served by this hospital.

Subjects and methods

Number of UFs: Elim Hospital serves a population of approximately 200 000 people; 63 000 of these are Gazankulu residents among whom the study was carried out. From previous (unpublished) surveys it is known that the UFs represent approximately 17.2% of the total population and that the population of a village can be estimated by multiplying the number of stands (occupied and vacant) in that village by 5.6 The percentage of UFs reached with the vaccination campaign was 91%, ranging from 70% to 119% for individual villages. A properly selected sample from this group will probably be representative of the whole UF population. It should be noted that the younger age groups are slightly better represented than the older groups (Table I).

Selection of the study sample. In principle it was decided to assess every 5th child that presented for vaccination; in some places this had to be reduced to every 10th or 15th child for lack of staff, but a systematic sampling technique was maintained throughout. The lowest common ratio of UFs weighed/UFs vaccinated was 1:15. Therefore, although 1 619 children were measured, only 658 comprised the sample.

Measurements. Hanging Salter scales (0 - 25 kg), accurate to within 100 g, were used for weighing. The scales were checked against a known weight 3 times during the survey. Children were weighed naked or wearing underpants. The results were plotted on a Morley-type 'road-to-health' chart, based on the W/A standards of the National Center for Health Statistics of 1976. Height measurements were not taken because of insufficient staff.

Determination of age. The majority of UFs had a road-to-health chart which indicated the birthdate. Of those who did not possess one, the mother usually knew the exact birthdate. Only in a few cases was it necessary to compare a child with children of known age.

The Elim Hospital Health Area consists of 24 villages. Of these, 8 were excluded for the following reasons: they were close to the hospital (3); many non-Gazankulu residents presented for vaccination (3); no records were kept (1); or records were incomplete (1).

Results

The numbers and percentages of children falling below the 3rd percentile of W/A are shown in Table II. There is a considerable
increased in the percentage of underweight children in the 2nd year of life, while the percentage of underweight children in the other age groups is more or less constant.

A small group of 12 (1.8%) was below 60% of W/A, 10 of whom were younger than 2 years.

No relationship could be established between the absence or presence of a clinic in a village and the percentage of underweight children. The mean (± SD) of children below the 3rd percentile in the 1-2-year age group was 29.0% ± 10.3% in villages with a clinic and 34.0% ± 5.7% in those without a clinic; for the 0-5-year age group the figures were 27.2% ± 5.7% and 29.3% ± 6.5% respectively. Differences were not significant. There was also no relation between the size of a village and the percentage of underweight children.

**Discussion**

The nutritional status of a community can be assessed using several anthropometric parameters. A combination of height-for-age and height-for-weight measurements is advised by Waterlow et al. because this allows reliable comparison with other reference populations and discriminates between past and present malnutrition. Height-for-age alone has several disadvantages but is nevertheless the most useful and most frequently used single measurement for a community diagnosis of malnutrition, since for public health reasons the duration of malnutrition is not of major importance and, in addition, child mortality has been shown to be inversely related to the percentage of weight below 80% of the international reference standard weight. Shakir also states that even mild forms of malnutrition can increase the morbidity and mortality of infectious diseases in young children, while according to a recent review by Walker, nutrition intervention programmes aimed at the very young child (0-2 years and possibly slightly older) undoubtedly reduce ill-health and mortality in this group.

It is against this background that our results are presented. Roughly one-third of our UF population is below the 3rd percentile of W/A; a sharp increase in the number of undernourished children being present in the 1-2-year age group. Although the results obtained in 1978 (mentioned above) do not cover exactly the same population, comparison shows that if any change has taken place over the last 4 years, it has been an increase in the number of mild-to-moderate malnourished UF's, i.e. those with weight below the 3rd percentile but above 60% expected W/A. However, hospital statistics concerning malnutrition have shown no increase over the same period, but this is probably because admission due to malnutrition is usually on the basis of clinical stigmata which occur mainly in the severely malnourished child. It is therefore not clear if the increase is a genuine one. It is clear however that mild-to-moderate undernutrition is still common. Gazankulu had been drought-stricken for 1½ years at the time of the survey and it is quite conceivable that this contributed to the high percentage of underweight children, but it is not likely to be a major factor since previous reports on malnutrition over the last 10 years all show a high incidence of malnutrition in rural Black children in the RSA. The increase in the percentage of underweight children in the 1-2-year age group, which was also found in Tsolo, coincides with the age at which children in our area are completely weaned from the breast, after which they are usually fed with soft porridge and tea, often only once or twice daily. This seems to be a clear indication for a nutrition programme.

A disturbing finding was that the presence of a clinic in a village had no positive influence on the percentage of underweight children. The enormous workload and insufficient training for community health work of the clinic staff are certainly contributory factors. Further evaluation is needed.

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**REFERENCES**