Zambezia (1978), VI (ii).

RESEARCH REPORT

THE SUPPLEMENTARY FEEDING OF SCHOOL CHILDREN IN A TRIBAL TRUST LAND OF RHODESIA

THE RECORDING OF the heights and weights of schoolchildren in the Chiwundura Tribal Trust Land was initiated by Dr J. C. A. Davies in 1970; after his transfer to Salisbury this work was continued by Dr G. Lochrie who was subsequently also involved with the administration of a school-feeding scheme sponsored by the Freedom from Hunger Campaign.[1] Using Dr Davies's demographic data I was able to show in a report that, in 1973, the height for age of 40 per cent of school children in the Chiwundura community was below the 10th percentile, 'Boston Standards'; this suggests a relatively high level of nutritional stress within the community.[2]

A follow-up of agro-economic and health survey not only verified this finding, but also showed that socio-economic variables such as the cultivation of vleis, size of livestock holdings, wage earnings of migrant family heads, school education of family heads, and religious practice were significantly related to family nutrition, height for age of children, child mortality and birth rate.[3] Furthermore, evidence from these surveys clearly indicated that while the supplementary feeding of children was likely to bring about an improvement in their nutrition, growth and academic performance, such action would merely remedy the symptoms rather than effect the cure of nutrition and health problems which were rooted in the home environment rather than the school environment. Therefore dynamic action directed at changing the home environment, as well as the supplementary feeding of children in schools, was required to effect a permanent change in the nutrition and physical development of children.

[1]Dr J. C. A. Davies, City Medical Officer of Health, Salisbury and formerly Tuberculosis Officer, Gwelo; Dr P. Lochrie, Government Medical Officer of Health, Gwelo.

[2]R. J. Theisen, 'Agro-economic Factors Influencing the Health and Academic Achievement of Rural School Children' (unpubl. paper, mimeo, 1976). Data from my follow-up health survey shows that the 'height for age' rating of African schoolchildren is significantly correlated with the size of the family's livestock holdings, the incidence of protein foods in the diet and with religious practice. These findings suggest that the height-for-age factor may be more indicative of long-term protein stress rather than carbohydrate stress. On the other hand, the weight-for-age factor is more variable than the height-for-age factor, and is significantly correlated with season and crop yield. This suggests that the weight-for-age factor is more indicative of short-term carbohydrate stress rather than protein stress. However, there is a significant correlation between height-for-age and weight-for-age values which indicates a high level of interdependency. The more stable height factor has been used in the analyses of this report in order to control seasonal influences.

[3]R. J. Theisen. 'Variables of population growth', *Zambezia* (1977),V,161-8.

In June 1974, a school-feeding scheme sponsored by the Freedom From Hunger Campaign (OXFAM) was initiated in all schools of the Chiwundura Tribal Trust Land. Children in Grades 1 to 4 were given 190 ml of Nutresco daily. No payment was made for the meal which was prepared at the school. What follows is a summary of the influence of this scheme on the physical development of children in St Barnabas, Siwundula and Gunde schools.

Analysis 1 shows that there has been an overall 12 per cent improvement in the growth of children who have participated in the scheme. This finding has been verified by other analyses which show that during the period of supplementary feeding 73 per cent of severely stressed children

Analysis 1

THE INFLUENCE OF SCHOOL FEEDING ON THE HEIGHT FOR AGE OF CHILDREN

HYPOTHESIS: After two years of supplementary feeding there will be a significant improvement in the height for age of school children.

ANALYSIS

10th Percentile

School	Year	Number		10th Percentile	
		at or above	below	Percentage below	Percentage Improvement
Siwundula	1973	112	57	34	12
"	1976	124	35	22	
St Barnabas	1973	101	62	38	11
"	1976	156	59	27	
Gunde	1973	65	63	49	13
"	1976	108	62	36	

CONTROLS: Children in Grades 1, 6 and 7 and all new children have been omitted from this analysis, as these children were unlikely to have benefited from supplementary feeding.

SIGNIFICANCE EVALUATION AND CONCLUSION: A statistical test shows that there has been a significant improvement in the growth of school children (the hypothesis is significant at less than the 5 per cent level).

who were below the 10th percentile height-for-age 'Boston standards'[4] were found to be growing taller at a faster rate than that predicted by the 10th percentile standard. This improvement is significant at the 1 per cent level when compared with the situation prior to supplementary feeding.

Growth-rate statistics also show that the number of children in any particular school who actually benefit from supplementary feeding would normally depend on the number of stunted children prior to feeding. In fact, this evidence suggests that supplementary feeding, in schools or classes where the height-for-age value of less than 20 per cent of children falls below the 10th percentile standards, is not likely to result in a significant increase in the numbers of children benefiting from the scheme. At this level other factors involving genetic, climatic and socio-economic variables would appear to be more important to nutrition and growth. These findings, as Dr Davies has emphasized,[5] suggest the need for a simple height-for-age screening programme in order to isolate those schools which have the greatest need for subsidized feeding.

In spite of these findings, however, it could perhaps be argued that the improvement in the physical development of children in the Chiwundura community has resulted from the recent spate of good seasons rather than from supplementary feeding. The validity of this assumption is tested by Analysis 2, which compares the 1973 and 1976 height-for-age measurements of children in Grade 1 in order to determine whether there has been an improvement in the growth of children entering school. The analysis, in fact, shows that there is only a marginal difference in the 10th percentile height-for-age ratings of children entering school in 1973 and in 1976; and this suggests that the significant improvement in the growth of the older children had in fact been brought about by supplementary feeding and not by an improvement in season and crop yields.

The findings of Analysis 2 are further verified by replicated observation of the agro-economic survey which showed that agricultural productivity actually declined after the 1971 season when the Lands Inspectorate prohibited the cultivation of areas of highly productive vlei or wet land arable in accordance with the Natural Resources (Protection) Regulations.[6]

There can, therefore, be little doubt that the school-feeding scheme in the Chiwundura community has had a significant influence on the nutrition and growth of school children. Furthermore, headmasters and teachers maintain that there has been an overall improvement in academic performance and school attendance.

In February 1976 a series of interviews were held with the parents of children who were participating in the feeding scheme in order to determine whether the people wished to support and continue with supplementary feeding after the withdrawal of the sponsors. Analysis 3 shows that attitudes to supplementary feeding were generally favourable: 76 per cent of respondents maintained that feeding improves health and is important in combating

[4] Those readers who question the suitability of using the 'Boston Standards' as a basis for the comparison of growth statistics of African children should refer to M. Bohdal *et al.*, 'A comparison of the nutritional indices in healthy African, Asian and European children', *Bulletin of the World Health Organization* (1969), XL, 166-76.

[5] J. C. A. Davies, 'A screening programme for rural school children in Rhodesia', *Developmental Medicine and Child Neurology* (1971), XIII, 779-83.

[6] The 'unauthorized cultivation' of wet land is illegal according to these regulations which are designed to protect natural resources, Rhodesia, *Government Gazette*, 14 June 1968, Rhodesia Government Notice No. 774.

diseases; 68 per cent said that it assisted poor families who could not afford to give their children sufficient food; and others maintained that the children were more contented at school and did not come home hungry.

There were, however, some indications that the scheme could be improved. For example, 26 per cent of respondents maintained that school-feeding was likely to spread diseases because the children shared dirty cups. Other indications for improvement can be seen in the category, 'Academic Performance', where it is suggested that the scheme interferes with lessons as teachers spend too much time preparing food. Also to be noted is that 69 per cent of respondents (all men) maintained that the food was medicated or that the feeding scheme was a Government plan designed to sterilize African children. A few respondents objected to the scheme for religious reasons.

Analysis 2

THE HEIGHT FOR AGE OF GRADE 1 CHILDREN IN 1973 AND 1976

HYPOTHESIS: In view of the recent spate of good agricultural seasons, the height of children entering school in 1976 will be significantly better than the height of children entering school in 1973.

ANALYSIS

Year	*Height for Age of Children in St Barnabas, Siwundula and Gunde* *10th Percentile*		*Percentage below the 10th Percentile*
	below	*and above*	
1973	65	76	46
1976	73	102	42
Totals	138	178	44

CONTROLS: None.

SIGNIFICANCE EVALUATION AND CONCLUSION: The Hypothesis is not significant. With reference to the 10th percentile standards, the height of children entering school in 1976 is only marginally better (4 per cent) than the height for age of children entering school in 1973. This suggests that the school-feeding scheme, rather than season and crop harvest, has brought about the significant improvement in the height for age of children in Grades 2 to 5 (see Analysis 1).

Analysis 3

ATTITUDES TO THE SCHOOL-FEEDING SYSTEM

QUESTION: What are the good things . . . AND bad things about the school feeding scheme?

	RESPONSES, MEN AND WOMEN (in percentages)
Health: Feeding improves health and is important in combating illnesses such as colds, flu and bilharzia.	*Positive* 76
The scheme is likely to spread disease because the child's cup is not properly cleaned. Each child should have his own cup	*Negative* 26
Hunger: It assists poor families to feed their children, and so they are more contented at school and do not go home hungry.	*Positive* 68
The scheme encourages laziness amongst parents. Children will not be properly fed at home	*Negative* 9
Academic Performance: Children become more attentive in class. Their work improves.	*Positive* 68
The scheme interferes with lessons. Teachers spend too much time preparing the food. The Tribal Council should employ someone to undertake the preparation.	*Negative* 15
Sterility: The food has been medicated and the scheme is a plan to sterilize the children.	6
Religion: Parents of the Apostolic faith will not allow their children to participate, because the food is fermented.	12

Although attitudes to the school-feeding scheme are generally favourable, Analysis 4 shows that there is a real possibility of the scheme collapsing after the withdrawal of the sponsors. While 62 per cent of respondents maintained that parents should attempt to support the scheme, many of these same respondents also maintained that they themselves could not afford to pay for the food or that people in general are too poor to pay or that the scheme should be sponsored by some other external organization, such as the Ministry of Health. In other words, most of the people who would like to see the scheme continued also have reservations about financing it. This indicates a considerable degree of frustration in the community.

Analysis 4

ATTITUDES TO CONTINUING THE SCHEME AFTER THE TERMINATION OF SPONSORSHIP

	RESPONSES, MEN AND WOMEN (in percentages)
Question: Do you think parents should pay for the feeding when the Rhodesian Freedom from Hunger Campaign terminates its support? They should pay. People who can afford it should try and pay but this will depend on how much it costs. We cannot afford it. Many are too poor to pay. People do not realize the importance of the scheme. The Rhodesian Freedom from Hunger Campaign, the Ministry of Health or the Tribal Council should pay. We pay enough school fees already	*Positive* 62 *Negative* 68

CONCLUSION

These findings suggest a need for a multi-disciplinary extension drive to promote a greater awareness of the importance of the scheme. Without such a drive the scheme is likely to collapse after the withdrawal of the sponsors.

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