

SECOND CARNEGIE INQUIRY INTO POVERTY
AND DEVELOPMENT IN SOUTHERN AFRICA

Food and Nutrition Policy with
Relation to Poverty: The Child
Malnutrition Problem
in South Africa
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FOOD AND NUTRITION POLICY WITH RELATION TO POVERTY: THE
CHILD MALNUTRITION PROBLEM IN SOUTH AFRICA

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In the formulation of desirable food and nutrition policies for a country as diverse as South Africa it is important to have reliable data on the nutritional status of the population. To obtain this, in the absence of all-embracing expensive prospective nutrition assessment surveys, reliance has to be placed on available health statistics, hospital records and individual published and unpublished data that have a bearing on nutrition. In this paper an attempt has been made to get an overall picture of child malnutrition in Southern Africa from the literature, from official statistics and from recent surveys of weights and heights of preschool and school children in selected areas.

METHODOLOGY

Indirect measures of community nutrition status are morbidity and mortality rates: particularly in the 0-4 year age groups. These are reported where relevant.

In a countrywide survey of malnutrition at all ages, it is not possible to obtain reliable data on clinical signs of malnutrition because of observer error and differing opinions of interpretation. The simplest measure of food intake in children is growth (weight and height for age). Weight for height is useful in extremes of obesity or wasting. It is now generally agreed that international reference levels should be used in assessing these parameters and WHO has adopted this policy for comparative surveys in all countries^{1, 2, 3, 4}.

The weights and heights published in various surveys in the R.S.A. and surrounding territories since 1970 have been collected and looked at from regional and general aspects. In the earlier papers Harvard (Boston percentile) reference standards were used but latterly the newer NCHS reference levels^{2, 3} have been utilised by authors. There is very little difference of practical significance between the two so they have been considered together in the context of this paper.

When relating a weight and length for age against reference standards it is important to have a cut-off point at which one can say that an individual is at risk for malnutrition or frankly malnourished. For most authors this is the third percentile of weight and height data or alternatively 80 percent of the expected mean weight and 90 percent of the expected mean height for age. Where weight for height is used 80 percent of the expected mean is the cut-off point.

Weight for age (WT/AGE) and mid-upper arm circumference (MUAC) are the strongest discriminants of mortality and morbidity risk, whereas weight for height (WT/HT) is the weakest^{5, 6}. Low height for age (HT/AGE) is an indicator of prolonged malnutrition. Where possible the appendix tables will give all these parameters.

RESULTS

1. R.S.A. AS A WHOLE

HEALTH STATISTICS

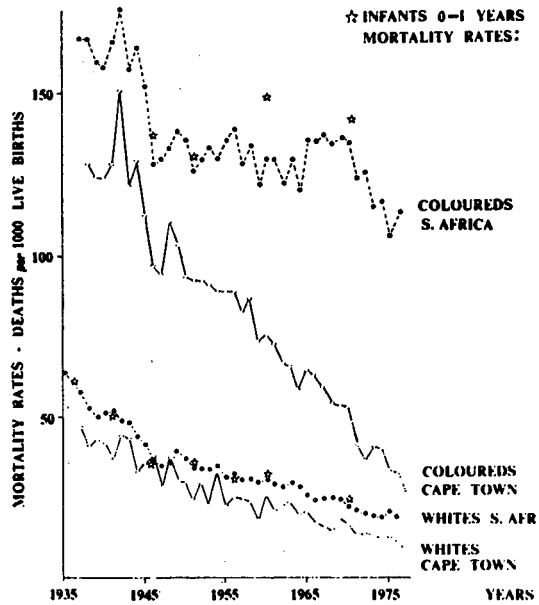
a) Nutritional Disease Mortality

Data from the Department of Statistics reveal that there is a considerable mortality from nutritional disease and diseases related to nutrition in the 0-4 year age group⁷ (Table I, Fig. I). In 1977, the mortality rates/100,000 were 64, 247 and 1781 for whites, asians and coloureds respectively. These rates had decreased from those pertaining 10 years previously, but the percentage of deaths from these diseases in coloureds had not decreased. The estimated black mortality rate in 1970 from these diseases is 2104. It is calculated from these figures that there were 50,626 deaths in black children in 1970. Of these 6005 were due to the severe forms of malnutrition - kwashiorkor and marasmus.

b) Infant Mortality Rate

This rate is an index of general health in a population and it should be less than 20. It shows over the last 40 years a striking reduction in the white population with little reduction in the coloured population of the whole country. However, in Cape Town the coloured infantile mortality has declined to almost the white level⁸ (Fig.II).

/In



Infant mortality rates for Whites and Coloureds in South Africa and Cape Town over the last 40 years.

R.S.A. AS A WHOLE (CONTINUED) - HEALTH STATISTICS.....1. b) Infant Mortality Rate (continued)

..... In Soweto the black IMR has fallen from 232 in 1950 to 35 in 1979⁹ but in this same year some areas of the country had figures as high as 192¹⁰.

c) Department of Health and Welfare Survey on underweight for age (Annexure VIII)

A nationwide anthropometric survey of primary school children in 1980 and 1981^{11, 12}, showed that the number of children who were underweight for age between 6 and 10 years of age was approximately 5, 30, 31 and 25 percent respectively for white, coloured, asian and black children. The range of underweight extended as high as 55 percent in some areas - the children at 10 years, in general, being more underweight than those at 6 years (Table II, Annexure VIII). When the 0-14 year all races age range is taken together it is estimated that there are 2¹/₄ million out of 9³/₄ million children (23%) who are underweight for age in South Africa¹³ (Annexure IX).

COMMENT

These overall official health statistics reveal that there is a severe nutritional problem amongst preschool and school children in South Africa in the coloured, asian and black population groups. The statistics also show that there has been some improvement in infant mortality in the last 15 years and, in particular, a striking improvement in the coloured population of Cape Town and the black population of Johannesburg.

2. REGIONAL DATA FROM REVIEW OF LITERATURE 1970-1983(a) Transvaal: Table III, Annexure 1^{14,15,16,17,18,19,20}

In all age groups from 0-17 years there is evidence of underweight and underheight for age. The ranges vary from 2-11 percent in whites to 8-60 percent in blacks with considerable regional variation (see annexure). Underweight in the preschool age group fluctuates between 10 and 30 percent and rises with school age to 24-84 percent tapering off again at puberty.

2. REGIONAL DATA..... Transvaal continued

In most studies weight for height seemed to be relatively normal - the children, therefore, are underweight and stunted rather than excessively emaciated. In one study¹⁹ approximately 20 percent of 10-12 year old children in a rural area had some diminution in serum albumin concentration, suggesting marginal protein deficiency.

(b) Gazankulu, Bophuthatswana, Ka Ngwane and Driefontein (Tribal Trust) : Table IV, Annexure II - 10,21,22,23,24

Community surveys of ambulant preschool children in these three territories revealed that one third of the children in Elim Hospital area of Gazankulu and Driefontein Tribal Trust near Piet Retief and one half of the children in the Gelukspan area of Bophuthatswana are underweight. Of importance is the fact that active intervention in the latter area reduced the incidence within two years to one third in the preschool age group. The high prevalence of kwashiorkor in Ka Ngwane is evidence of a problem in that area.

COMMENT ON TRANSVAAL AND ADJOINING TERRITORIES OF GAZANKULU, BOPHUTHATSWANA, KA NGWANE AND TRANSVAAL TRIBAL TRUST

Throughout the region there is evidence of protein energy malnutrition in at least one third of the childhood population. As height is affected as much as weight the figures suggest a chronic deficiency of protein and energy. There is some evidence that there is less severe malnutrition in urban areas with high employment rate but urban and rural figures are very similar. In Gelukspan, Bophuthatswana, there appears to be improvement where active intervention had an effect within two years¹⁰. Where age groups and areas can be compared, e.g. Gazankulu and Driefontein there is a remarkable similarity in prevalence of underweight in preschool age groups. In one rural area school feeding appeared to have a very favourable effect¹⁹. The Elim Hospital sample is a true reflection of non-hospitalised children's weights. Underweight and stunting is more prevalent in school age children but there is improvement at the age of 17.

(c) Natal and KwaZulu : Table V, Annexure III^{25,26,27,28,29,30,31,32}

Both in the urban (Durban) and rural areas there is evidence of malnutrition in Indian and Black children. In some districts
/the

3. REGIONAL DATA..... Natal and KwaZulu..... continued

the position is better than others. Chatsworth Indian children appeared to be the most undernourished. In KwaZulu Nqutu area the estimate for underweight was 27% in 1974 and 16% in 1978 but the lower figures represents non-hospitalised children. As in other areas school-age children appear to be more underweight than preschool children.

The range of underweight for Natal/KwaZulu is 10-53%. Height is equally affected and there is not much evidence of wasting in the community.

In one study the Indian children of Chatsworth were compared with those at Laudium near Pretoria. There is a striking difference in weights and heights reflecting the better-off Indian community at Laudium^{31,32}.

(d) Eastern Cape and Cape Town: Table VI, Annexure IV
33 (a,b,c), 34, 35, 36, 37

These areas represent rural and urban Cape. There are, as in other parts of the country, differences depending on income and availability of creches for preschool children. The preschool rural areas in Eastern Cape are roughly similar to the Cape. However, school children in rural areas are considerably worse off, wasting being as high as 33 percent. There is, in Cape Town, considerable improvement in school children, both black and coloured, between 1979 and 1981^{34, 37}. (Annexure IV).

(e) Ciskei and Transkei: Table VII, Annexure V^{36,38,39,47}

In Ciskei and Transkei nutritional status is worse than the Cape both in preschool and school age children. Up to 50 percent of children in both age groups are underweight. In one study a school feeding scheme showed improvement in weight of children.⁴⁷

(f) Namakwaland and S.W.A.: Table VIII, Annexure VI^{40, 41}

The malnutrition picture in this South Western part of South Africa is apparently not very different to the rest of the sub-continent. The South West African children Baster group appeared somewhat better than the Nama, but some evidence of /malnutrition

2. REGIONAL DATA Namakwaland and S.W.A. continued

malnutrition is seen in most of the children.

Overall growth rates are less than international standards.

3. HOSPITAL ADMISSION OF CASES WITH SEVERE MALNUTRITION, E.G. KWASHIORKOR AND MARASMUS. ANNEXURE VII, 10, 42

Hospitals in rural areas all have their quota of severe malnutrition cases. The number of children in hospital with kwashiorkor or marasmus varies from 5-31 percent of admissions depending on the rural area⁴². Of children in hospital who are underweight for age figures vary from 24 to 64 percent.

D I S C U S S I O N

In the R.S.A. and surrounding territories, it is apparent that there is a problem of malnutrition in children. The figures for school children from multiple published papers from 1970 to 1983 are remarkably similar to those obtained in an official survey by the Department of Health and Welfare in 1980 and 1981^{11, 12}. From all these sources it can be said that approximately a third of black coloured and asian children below the age of 14 years are underweight and stunted for their age. In some area, e. g. parts of the Ciskei and Chatsworth in Durban the situation is worse (rising to 60-70% or more). In other areas, particularly in Cape Town and Soweto the figures for underweight, mortality rate and hospital admissions have shown great improvement in recent years⁹. This latter improvement can probably be linked to better socio-economic conditions, as an earlier study in 1965. showed a very precise relationship between underweight and stunting in children and income/head/day⁴⁴.

Malnutrition in children has its most serious effect in the under six year age range and it is in this age group that hospital admissions for severe kwashiorkor and marasmus occur. The prevalence of these severe forms of malnutrition may be as high as 3 percent of the preschool population in rural areas, leading to a high admission rate of hospital of these cases - in KwaZulu and Lebowa from 5-31% of admissions. In the context of nutritional disease and mortality the rates/100,000 preschool (0-4 years) population are 1981 for coloured and 2104 for blacks. This is 31 times as high as the white figure of 64⁷. As with the incidence of underweight there is great improvement in Cape Town and Soweto. In these areas admissions for malnourished cases have fallen steadily during the last ten years⁹.

/Causes

Causes of Malnutrition in Children:

From published papers where an attempt has been made to link malnutrition to environment and socio-economic factors, it is apparent that lack of cash income is the most important^{29,39,44}. In KwaZulu and other rural areas^{29,33}, poor education of mother, lack of dietary understanding, non-availability of protective foods were additional factors, which probably have universal application. In broken families where mother is the chief breadwinner there is more malnutrition. Family size (excess numbers of children) is a factor in the towns⁴⁴ but neither family size or migrant labour appears to be important in rural areas²⁹. A sociological factor in urban areas is the working mother. Lack of crèches and child minder schemes results in poor supervision and feeding of children during the day¹⁴.

What is to be done about malnutrition in children in the R.S.A.?

There are indications that improved income in the towns^{35, 39} has a marked beneficial effect on the incidence of malnutrition compared to rural areas. In a rural area a cash income from a field appeared more important than a vegetable garden³⁴. On the other hand the Valley Trust Concept of community vegetable gardens and fish pond cultivation has had a marked effect on the incidence of malnutrition in a specific area⁴⁵. In the R.S.A. as a whole there is statistical evidence that there has been a gradual reduction in nutritional disease amongst Asians and Coloured in the decade 1968-1977⁷, and in Johannesburg there is evidence of steady decrease in malnutrition amongst Blacks according to hospital figures⁹.

The overall situation with regard to malnutrition in children is nevertheless unsatisfactory and many lives will be lost before general economic and educational uplift is sufficient to overcome the problem.

Can specific intervention on the part of health and welfare services produce a meaningful improvement in child malnutrition in the short term? The most caring and authoritative study on this¹⁰ has demonstrated that intervention in a rural setting can be most successful. In this study the intervention consisted of:

/1.

I. With the Community Hospital as a base, a mobile Under 5 Clinic Team consisting of a psychologist with an interest in community involvement, primary health care nurses, a family planning guidance officer and a health assistant (hygiene) was established. This team had a Kombi at its disposal and concentrated on:

- (a) weighing and immunising all children in the district and issuing a "road to health" card to each,
- (b) screening out all children at risk and following them up with health education and visits,
- (c) screening out all children with severe malnutrition and giving them appropriate treatment with food supplements,
- (d) giving health education to mothers, and
- (e) referring people with social problems to social workers.

The team discussed the whole project with the Community Leaders in each and every village and co-operation was sought from teachers, ministers, women's leagues, traditional healers, etc.

II. A gardening and poultry project was started at the hospital for selling produce at cost price.

III. A nutrition rehabilitation centre was opened in the hospital to admit malnourished children with their mothers.

IV. Health service was decentralised with erection of distal clinics to which the mobile team paid visits. A T.B. case finding team with mobile X-ray visited the clinics and the health inspector assessed quality and quantity of water.

RESULTS Within two years from 1980 to 1982 this intervention programme produced the following results:

- (a) a reduction of underweight children from 51 to 34 percent of the 0-6 year population.
- (b) The number of deaths from PEM in the hospital dropped to 15 percent.
- (c) Child mortality 0-6 years in the Community decreased from 9,5% to 2,1%.

/These.....

These striking results demonstrate that a well organised health team working closely with the Community Leaders can make a difference to child health and reduce the incidence of malnutrition in a relatively short period of time at relatively low cost.

SUGGESTED FOOD AND NUTRITION POLICY PRIORITIES

1. Improvement of socioeconomic status of underprivileged sections of population. This requires concerned intergrated effort of planners in conjunction with relevant government departments, agriculture, water affairs, commerce and industry.
2. Better organisation of health services to ensure monitoring of growth of preschool and school children and the giving of comprehensive service including immunisation, family planning and surveillance for tuberculosis.
3. Food supplements for those at risk, e.g., underweight children, both preschool and school, pregnant and lactating mothers who have failed to gain weight in pregnancy, industrial workers who are underweight for height.

It is of interest that 15 million children under five years of age died in the world during 1983⁴⁶. A mnemonic denoting techniques which can reduce this enormous toll is GOFBI-FFF. The letters stand for the simple and low cost methods of Growth monitoring, Oral rehydration therapy, Breast feeding and Immunisation and the more expensive, though equally important, strategies of Family spacing, Food supplements and Female education. These principles are backed by UNICEF and incorporate the three priorities of food and nutrition policy advocated above.

SUMMARY:

In the assessment of the extent of childhood malnutrition in Southern Africa statistics on mortality and morbidity from malnutrition have been reviewed in conjunction with published data in weight and height. It is apparent that there is a severe problem in the rural areas where numbers of children are admitted to hospital for treatment of malnutrition and death rates are high. Of the non-hospitalised population approximately

a third of black, coloured and asian children throughout the country are underweight and stunted for their age. Low cash income combined with poor socioeconomic conditions is the most important cause of malnutrition. There are indications that well organised health services can ameliorate the problem to some extent but educational and economic uplift is the long term solution.

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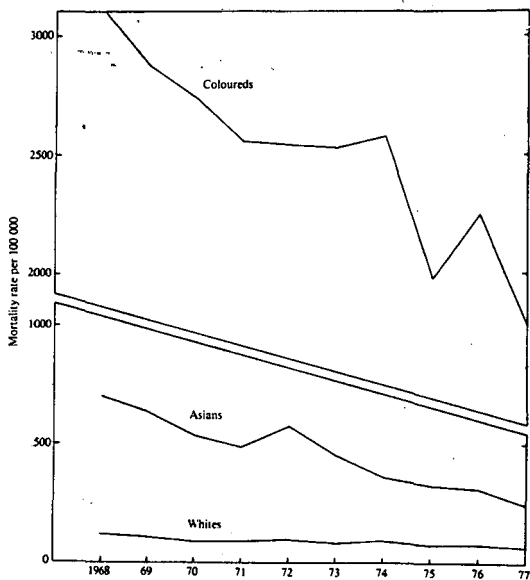
TABLE I.

R.S.A. AS A WHOLE : CHILDREN

Mortality Rates; Nutritional Diseases and Diseases
Related to Nutrition - i.e., Gastroenteritis,
Pneumonia, Measles.

0-4 year Mortality Rate/100,000 (percentage of deaths
in brackets)

	<u>Whites</u>	<u>Asians</u>	<u>Coloureds</u>	<u>Blacks</u>
1968	122 (20)	702 (59)	3103 (69)	
1977	64 (17)	247 (38)	1781 (65)	
1970				2104



Mortality rates per 100 000 for diseases related to nutritional deficiency for the three population groups over the period 1968 - 1977.

TABLE II

PERCENTAGE OF UNDERWEIGHT CHILDREN AT PRIMARY SCHOOL, R.S.A.

(less than 80% Expected weight NCHS Reference)

	<u>No.</u>	<u>Yrs.</u>	<u>White</u>	<u>Coloured</u>	<u>Asian</u>	<u>Black</u>
1980	20,000	6 - 9	3 - 11	12 - 55	32 - 53	14 - 42
1981	24,426	6 -10	1 - 10	15 - 41	18 - 47	9 - 41

TABLE III

PERCENTAGE OF CHILDREN WITH WEIGHTS AND HEIGHTS LESS THAN
3rd PERCENTILE

TRANSVAAL URBAN

<u>Year</u>	<u>Age</u>	<u>White</u>	<u>Coloured</u>	<u>Asian</u>	<u>Black</u>
1967 - 1978	0 - 17	2 - 11	12 - 44	4 - 61	8 - 47 *
1967 - 1978	0 - 17	2 - 5	8 - 26	33 - 45	14 - 60 **

TRANSVAAL RURAL

<u>Year</u>	<u>Age</u>	<u>White</u>	<u>Coloured</u>	<u>Asian</u>	<u>Black</u>
1969 - 1978	0 - 17	-	-	-	16 - 84 *

* WEIGHT

** HEIGHT

TABLE IVPERCENTAGE OF CHILDREN UNDER 3rd PERCENTILE WEIGHT

<u>GAZANKULU</u>	<u>AGE</u>	<u>BLACK</u>
1978	0 - 5	24,6
1982	0 - 5	35
 <u>GELUKSPAN</u>		
1980	0 - 6	51
1982	0 - 6	34 (post Intervention)

DRIEFONTEIN (TRIBAL TRUST)

1979	0 - 16	38
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KA NGWANEKwashiorkor & Marasmus

1979	Per 10,000 population	24,3
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TABLE V

Percentage of Children under 3rd Percentile WeightNATAL AND KWAZULU

<u>Place</u>	<u>Year</u>	<u>Age</u>	<u>Black</u>	<u>Asian</u>
Nqutu	1974	1-15	27	
Chatsworth	1977	6-8		54
Nqutu	1978	1-5	16	
Durban	1978	1-12	12	
		1-6	10-30	
		11-12	30	
Phoenix	1982			33
Tongaat		less than 8		46

TABLE VIPERCENTAGE OF CHILDREN UNDER 3rd PERCENTILE WEIGHT

	<u>EASTERN CAPE</u>	<u>CAPE TOWN</u>	
	<u>Black</u>	<u>Coloured</u>	<u>Black</u>
<i>Pre-School</i>	1,7 - 13	13	8
<i>School</i>	35 - 58	24	33

TABLE VIIPERCENTAGE OF CHILDREN UNDER 3rd PERCENTILE WEIGHT

	<u>CISKEI</u>	<u>TRANSKEI</u>
	<i>Pre-School</i>	25 - 51*
<i>School</i>	70 - 90*	23 - 49

(*Gomez)

TABLE VIII

PERCENTAGE OF CHILDREN UNDER 3rd PERCENTILE WEIGHT

<u>YEAR</u>	<u>AGE</u>	<u>NAMAKWALAND</u>	<u>YEAR</u> <u>AGE</u>	<u>S.W.A.</u>
1981	2-6	30	1976 1	30-50
	6-8	52	7-12	20-43

PLACE	YEAR	SAMPLE	AGE	PERCENTAGE BELOW 3rd PERCENTILE :			WT/HT LESS THAN 80% (PERCENT)	ARM CIRC. LESS THAN 85% (PERCENT)	% KWASH. MARASMUS	COMMENT AND REF.
				WEIGHT						
SOWETO (Urban)	1975	186 Families 523 Children 208 Preschool 315 School	2-5	18 - 29	63 - 66	(< 90) 9 - 26			Correlation between Malnutrition and standard of education of head of house. (1977) ¹⁴ SHUENYANE et al. S.Af. Med J. 51 495 - 500	
			6-9	38	55	25				
			10-16	38 - 45	45 - 59	16				
JOHANNESBURG (Urban)	1977	4607 Preschool Black - B Coloured - C Whites - W	0-1	B 8 C 12 W 3	B 8 C 8 W 2	B 1.3 C 2.0 W 1.4			Skin folds available and data on obesity. RICHARDSON B.D. (1980) ¹⁵ J. Trop. Paediatrics 26 80 - 84	
			1-5	21 28 8	22 26 5	0.9 0.1 0.4				
JOHANNESBURG (Urban)	1967-69	Black rural 3383 Black urban 4874 Coloured 1746 Indians 869 Whites 1991	0-6	B 8 - 23 C 12 - 29 I 4 - 19 W 2 - 8	15 - 49 14 - 44 32 - 61 2 - 11			See tables for details, ¹⁶ RICHARDSON B.D. (1977) S.Af. Med. J. 51 42 - 48		
	1973									
I.W. & N.E. Tvl	1975					← WEIGHT ONLY				
JOHANNESBURG (Urban and Rural)	1972-75	Preschool and School children all ages	0-17	BLACK Male/Female	BLACK Male/Female				RICHARDSON B.D. (1977) ¹⁷ Trus. Roy. Soc. Trop Med & Hyg. 71 210 - 216 (Histograms available)	
				R 57 45 U 38 33	75 63 60 47					
VL AND JOHANNESBURG	Prior to 1978	14087 all groups	0-6	BLACK 25%		2 - 5			Improvement at age of 17 RICHARDSON B.D. (1978) ¹⁸ S.Af. J. Science 74 246 - 249	
			6-17	60 - 70%		1 - 2				
JOHANNESBURG AND VL.	1978	Sotho and Tswana	10-12	20 - 84 School Feeding 20-52 No School Feeding 24-84	14 - 33	4 - 18		Hypoalbumin-aemia. 22%	WALKER A.R.P. BHAMSEE D. WALKER B.F. RICHARDSON B.D. (1978) ¹⁹ J. Trop. Med. Hyg 81 2 - 8	
BULDERSDRIFT	1975	54 Families on small holdings	1-5	27.6	22.8		MAC 13.8 skin folds 11.4		13.2% Nutritional anaemia 41% adults no schooling MARGO G. et al (1976) ²⁰ S.Af. Med. J. 50 67 - 73	

ANNEXURE II		PERCENTAGE					WT/HT LESS THAN 80% (PERCENT)	ARM CIRC. LESS THAN 85% 13.5 cm	% KWASH. MARASMUS	COMMENT AND <u>REF.</u>
<u>PLACE</u>	<u>YEAR</u>	<u>SAMPLE</u>	<u>AGE</u>	<u>BELOW 3rd PERCENTILE :</u>						
				<u>WEIGHT</u>	<u>HEIGHT</u>					
<u>BOPHUTATSWANA</u>										
GELUKSPAN DISTRICT	1980	265 Households 493 Children 6 228 Males 262 Females	< 6	51%	B 15%) G 17%) 16%	B 38%) G 28%) 33%	5%	7.9 @ 12-23 m 4.4 @ 24-47 m 4.7 @ 48-60 m	Mortality 0 - 6 9.5%	
	<u>POST INTERVENTION</u>									
	1982	273 Households 504 Children	< 6	34%	34%	5%	3.2%	2.3 @ 12.23 m 4.0 @ 24-47 m 2.3 @ 48-60 m	Mortality 0 - 6 2.1% REF: (1983) ¹¹ BAC, M. et al in Press	
<u>GAZANKULU</u>										
	1978	Cluster Sample 4 Villages	< 5	(Harvard) 24.6%				1.7 %	P.W. KOK quoted by IJsselmuiden (1983)	
	1983	462 School Children	7-17	33-95 (NCHS)	10-53	2-8%			A.D. Penman, 1983 (in preparation)	
<u>ELIM HOSPITAL DISTRICT</u>										
	1982	658 Children in community represents 17% of total population of under five, measurement at time of polio immunisation	< 5	35 %				15% of all admissions to hospital.	IJsselmuiden (1983) S.Afr.med.J. in Press	
				0-1 29% 1-2 45% 2-3 37% 3-4 23% 4-5 32%	Weight compared with	<u>DRIEFONTEIN</u> 0 - 1 15 1 - 2 18 2 - 3 36 3 - 4 26 4 - 5 36				
<u>DRIEFONTEIN TRIBAL TRUST (NEAR PIETRETTIEF Tvl)</u>										
	1978	433 Black Children Preschool & School TOTAL	0-5 6-16 0-16	14 - 48 35 - 52 38	33 - 44 33 - 44 42	0 - 7 5 - 10 6.3			PETTIFOR J.(1983) Personal Communication	
<u>LANGWANE</u>										
	1979							Per 10000 Population		
<u>HEMBA HOSPITAL</u>										
	1980							24.3 13.5	FILLIPSON, M.G. (1980) S.A. Nutrition Society Congress.	

APPENDIX: ANNEXURE III

PLACE	YEAR	SAMPLE	AGE	PERCENTAGE BELOW 3rd PERCENTILE :		WT/HT LESS THAN 80% (PERCENT)	ARM CIRC. LESS THAN 85% (PERCENT)	% KWASH. MARASMUS	COMMENT AND REF.
				WEIGHT	HEIGHT				
NATAL KWAZULU	1978	5743 Black Urban Children	0 - 12	11.7	41.2		6.75		ADHIKARI, M COOVADIA, H.M. (1981) ²² S.Afr.med.J. 59 32
UMLAZI (Urban)	1978	5743 Black School Creches and Baby Clinics	1 - 6 11-12	10 - 30 30	35 - 63 30 - 40				COOVADIA, H.M. ADHIKARI, M. (1978) ²³ MITHETHWA, D. Trop.Geog.Med. 30 373 - 381
CHATSWORTH (Urban)	1977	488 Primary School Indian	6 - 8	M 54 F 53	41 50		Skin fold 0 - 2%		VAN RENSBURG, C.F. BOOYSENS, J. GATHURAIN, P. et al (1977) ²⁴ S. Afr.med.J. 52 644 - 649
PHOENIX Tongaat	1982	Indian	8	33 46	20 25				Personal Communication (MOOSA, A.) (1983) ²⁴
NQUTU (Kwazulu) Rural	1978	392 Black	1 - 5	16.4			0.3-16	2.7 Anaemia 6.7%	MARGO et al (1978) ²⁵ S.Afr.med.J. 54 21-26
NQUTU	1974	536 Children Black 11% of 4833 patients admitted to hospital 14000 children in district	1 - 15	Estimate 27 ALL 10 Trauma 20 Healthy	39 ALL 30 33				SCHLEMMER, L. ²⁶ STOPFORTH, P. (1974) Institute Social Research University of Natal. Durban Fact Paper No.2 22/74
HOSPITAL DURBAN	1981	7392 In-Patients 2739 Malnourished = 37%						10% Kwash 8% Marasmus	MOOSA, A. COOVADIA, H.M. JINABHAI, C.C. (1981) ²⁷ S.Afr.med.J. 59 888-889

PLACE	YEAR	SAMPLE	AGE	PERCENTAGE		WT/HT LESS THAN 80%	ARM CIRC. LESS THAN 85% (PERCENT)	% KWASH. MARASMUS (PERCENT)	COMMENT AND REF.
				BELOW 3rd PERCENTILE :					
				WEIGHT Harvard	HEIGHT				
EASTERN CAPE AND CAPE	1980	School Sub A & B 3171 Urban Black Rural	7-8	58 35	64 34	31 33			R.J. FINCHAM (1981) ^{24(c)} Working Paper No. 3 Institute of Economic and Social Research Development Studies No. 3 Rhodes University
EASTERN CAPE	1980	Preschool creche 58 children (Feeding) Urban	<6	NCHS 1-7					R.J. FINCHAM (1982) ^{24(d)} IBID Working Paper No. 6
	1981	Dias.Div. Council 2160 children	<6	M 12 - 17 F 15 - 17	23 - 33 23 - 25	13 - 21 11 - 24	10 - 13 14 - 15	Skinfolds<3P	
	1982	Amatola (Ciskei) 225 Preschool	<6	M 9 - 13 F 4 - 10	M 17 - 21 F 0 - 6.3	M 9 - 12 F 13 - 16	M 2 - 8 F 5 - 5	Education	R.J. FINCHAM (1982) Working Paper No. 9 ^{24(e)}
				NCHS <5th					
CAPE TOWN	1979	School Sub A Coloured 896 Children	6-9	24	20	11			POWER, D.J. (1982) ²⁴ S.Afr.med.J. 61 303-305
CAPE TOWN Crossroads (compared with Nqutu)	1978	464 Preschool (416 Nqutu)	1-5 1-5			1.9 (.7.3)			WHITE, M.W. (1978) ³⁰ Paper No. 5 SADRU/SAMST Conference on economics of health care in Southern Africa.
CAPE TOWN	1979	694 Guguletu	6-12	B 28 G 33	41 32	B & G 3.7	Skinfold 1.6 5.2	Serum Albumin 2.1% < 3.5	VAN NIEKERK, C.H. (1979) ³¹ M.D. Thesis University of Cape Town

ANNEXURE V												30	
PLACE	YEAR	SAMPLE	AGE	PERCENTAGE BELOW 3rd PERCENTILE :				WT/HT LESS THAN 80% (PERCENT)	ARM CIRC. LESS THAN 85% Hypoalbumin-aemia	% KWASH. MARASMUS Borderline	COMMENT AND REF.		
				No	Months	MALNUTRITION (1st, 2nd & 3rd)						HEIGHT	
CISKEI	1980	RANDOM SAMPLE OF CHILDREN FROM HOUSEHOLDS	203	6-23	25 - 42%		4 - 21		2 - 9		10 - 15% 2 - 13% 0 - 6%	Kwashiorkor borderline & firm cases in 3,8% of all children Marasmus in 2.7% of all children.	DE VILLIERS, M. (1980) DSc Thesis "An Evaluation of the Nutritional Situation in the Ciskei with Recommendation for Remedial Measures". University of Pretoria
			288	24-36	42 - 51%		20 - 36		3 - 10				
			222	84-96 (7-8yrs)	71 - 95%		23 - 48		15 - 33				
TRANSKEI	1979	Tsolo		Yrs	B	G	B	G		Skinfold B. G	Hypoalbumin-aemia	VAN NIEKERK, C.H. (1979) The prevalence of asthma in urban and rural black children - an epidemiological survey. M.D. Thesis. University of Cape Town.	
			671	6 - 12	29	23	47	49	0.9	14.6 17.5			16
TRANSKEI	1977	Tsolo 193 children		< 5	36 (57 between 1½ & 2½ yrs)	1½-2 yrs- 33 2-3 yrs - 38				7%	Rural in hospital 1965 - 200 1975 - 200 30 percent children die before 2 yrs.	WESTCOTT, G.M. STOTT, R.A.P. (1977) S.Afr.med.J. 52 963-968	

PLACE	YEAR	SAMPLE	AGE	PERCENTAGE BELOW 3rd PERCENTILE :		WT/HT LESS THAN 80% (PERCENT)	ARM CIRC. LESS THAN 85% (PERCENT)	% KWASH. MARASMUS	COMMENT AND REF.
				WEIGHT	HEIGHT				
NAMAKWALAND & S.W.A.									
NAMAKWALAND	1981	COLOURED							
		118 →	2 - 6	30	57			30% normal	KIBEL M. ³⁵ JACOBS M. (1983) Personal Communicatio
		528 →	6 - 8	52	38			70% mal-nourished	
S.W.A.	1976	COLOURED							
		462	0 - 1	AVERAGE On 3 P	AVERAGE On 3 P			47 - 70% show some degree of malnutrition	H. de. V. HEESE ³⁶ J.M.E. du PLESSIS J.J. FERREIRA (1976) Report on an epidemio- logical study in a group of Namibian infants in the Rebboth-Gebied
		3773 School	7 - 12	< 5 P Baster 20 Nana 43	< 5 P 26 42			5.8% low albumin	

SUMMARY OF SOME HOSPITAL STATISTICS

PLACE	YEAR	% OF TOTAL ADMISSIONS INCLUDING UNDERWEIGHT	NUMBER OF CHILDREN IN HOSPITAL WITH KWASHIORKOR OR MARASMUS	REFERENCE
DURBAN KING EDWARD VIII	1970	43	In 1981 Kwashiorkor 10% admissions Marasmus 8% admissions (Total hospital admissions 7392)	Moosa, A. (1983) Personal communication
	1981	37		
KWAZULU NQUTU	1972	70	501 466	Ndaba (1983) Personal communication
	1977			
	1982			
KWAZULU 8 Hospitals	1982		5 - 20% of admissions	Ndaba (1983) Personal communication
SOWETO BARAGWANATH HOSPITAL	1970	58		Rosen, E. (1983)
	1982	26		
LEBOWA JANE FURSE HOSPITAL	1980	64	31,5% of admissions	Booth, R. (1982) ³⁷ S.Afr.Med.J. 61, 911-913
BOPHUTHATSWANA, GELUKSPAN	1980		42 percent of deaths)direct 15 percent of deaths)intervention	Bac, M. (1983) In press
	1982			

JDLH/js
August 1983

ANNEXURE VIII

PERCENTAGE CHILDREN BELOW 3rd PERCENTILE WEIGHT (80% MCHS)

R.S.A.	YEAR	6 Yrs		7 Yrs		8 Yrs		9 Yrs		10 Yrs		COMMENT	
		B	G	B	G	B	G	B	G	B	G		
20,000 Children 5000 each group	1980	White	4.5	3	4.0	5	3.5	3	8.5	11			3 percent under 60% of 50th P. KOTZE J.P. VAN DER MERWE G.J. MOSTERT W.P. REYNDERS J.J. BARNARD S.O. SNYMAN N (1982) J. DIETICS AND HOME ECONOMICS 10 77 - 81
		Coloured	30	12	37	37	35	42	40	55			
		Asian	32	39	51	42	44	41	49	53			
		Black	14	19	25	25	22	30	34	42			
24426 School Children													3 percent less than 65% expected weight KOTZE J.P. WILLIAMS W.N. VIVIER F.L. MACINTYRE U. (1983) Dept Health & Welfare
6333 White	1981	White	1	2	4	5	3	5	6	10	6	9	
6169 Coloured		Coloured	16	19	31	28	28	31	40	41	36	38	
6120 Indian		Asian	19	20	26	30	25	33	35	47	36	39	
5804 Black		Black	10	13	17	19	18	26	28	40	33	40	

DEPARTEMENT VAN GESONDHEID EN WELSYN: VOEDINGSTATUS VAN SUID-AFRIKAANSE KINDERS - 0-14 JAAR OUD GEBKSTRAPOLEER NA AANLEIDING VAN ANTROPOMETRIESE DATAVERSAMELING.

1981

(STANDAARDE NCHS - - 1977)

	Onder 6 jr.	6-14 jr	Totaal	Gem. % < 80 %	Getal < 80 %	Gem. % < 75 %	Getal < 75 %	Gem. % < 70 %	Getal < 70 %	Gem. % < 65 %	Getal < 65 %	Gem. % < 60 %	Getal < 60 %
Blankes	569 128	815 839	1 384 967	4,9	69 123	1,8	24 929	0,72	9 971	0,272	3 767	0,08	1 121
Kleurlinge	509 785	667 686	1 177 411	30,4	357 850	16,7	188 385	7,7	90 578	2,855	33 615	0,76	8 948
Asiërs	135 352	185 097	320 449	31,1	99 339	15,5	48 067	7,5	24 033	2,418	7 748	0,6	1 922
Swartes	2 957 646	3 957 370	6 915 016	25,6	1 770 244	11,5	760 651	6,6	456 391	1,352	93 491	0,3	21 436
Totaal	4 207 639	5 590 204	9 797 843	23,1	2 253 503	11,4	1 116 954	5,63	580 973	1,72	138 621	0,44	33 427

These papers constitute the preliminary findings of the Second Carnegie Inquiry into Poverty and Development in Southern Africa, and were prepared for presentation at a Conference at the University of Cape Town from 13-19 April, 1984.

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