

Measuring and managing Protein Energy Malnutrition in Rural Communities

3 Nutrition survey results -Gelukspan District

by Martin Bac, Arts, Gelukspan Community Hospital

Demographic variables

Between the beginning of March and the end of April 1980, 265 households were visited. 493 children under the age of six from 352 mothers were seen. Of these children 228 were males and 262, females. The sex of three of the children was not recorded. The following data were obtained: 156 children (32%) in 83 households; in traditional villages 167 children (34%) in 83 households; in resettlements, 170 children (34%) in 94 households.

The area in which this study was performed is the "Gelukspan District" which is served by Gelukspan Community Hospital. This is a part of the Ditsobotla district in Bophuthatswana.

In the Gelukspan health region there are three different type of villages. Traditional villages where people have lived for more than a century (65% of whole population). The trust villages where people were re-settled in 1940 - 1950, relatively small villages with most land per family (15% of whole population) - the remaining 20% of the people live in three recently re-settled villages (1975 - 1980).

A list was made of all the villages in the Gelukspan district. If a village was very big, a division was made into subvillages, so that each (sub) village on the list counted not more than about 250 houses. The list totalled 76 units out of which 13 (sub) villages were chosen at random: six trust villages, four traditional villages and three resettlements. A map was made of each (sub) village and the houses were numbered.

Number of persons per household and number of children per mother

The average household consisted of 7,7 persons with a mean of 1,9 children under six (see Table III.1.) Often children

born of different mothers were present in one household.

A relatively high score in the number of households with 12 or more persons is a remarkable outcome of this survey. In many households kinsfolk other than parents and children were members of the households.

Child mortality

In the households visited, on the whole 52 children, born after the 1st April 1974 were said to have died. It must be taken into account that only households with living children under six were interviewed.

Therefore this number of dead children is most likely an underestimate for the whole population in the district. (See Table III.2.)

Table III.2.: Relative frequency of the age of death of the children under six.

Age of death in months	% of children
0 - 3	30,6
4 - 6	12,2
7 - 9	22,4
10 - 12	8,3
13 - 18	16,3
14 - 24	4,1
25 - 36	4,1
37+	2,0
N = 52	100

Table III.1.: Relative frequency of number of persons per household -number of children under six per household, number of children per mother.

persons		p/h.h		Children < 6yrs p/h h		Total no. of children per/mother	
n	%	n	%	n	%	n	%
1	0	1	41,1	1	32,4		
2	0	2	38,1	2	25,0		
3	4,2	3	16,2	3	13,9		
4	5,3	4	3,0	4	6,0		
5	10,2	5	0,8	5	9,4		
6	13,2	6	0,8	6	6,0		
7	21,5		100	7	2,3		
8	12,1			8	1,4		
9	12,1			9	1,9		
10	6,8			10	1,4		
11	4,2			11	0,3		
12+	10,2			12	0,3		
	100				100		
Mean	7,7	Mean	1,9	Mean	3		
N =	265	N =	265	N =	352		

From this table it appears that more than 50% of the mortality occurs at the ages 0 - 3 months and 7 - 9 months. The most prominent cause of death among these children was gastro-enteritis or diarrhoea (16 children) followed by other infectious diseases like tetanus, diphtheria, septic skin sores and measles, nephritis and malnutrition. The diagnosis was made according to the answer given by the person who was interviewed. About 80% of these children died at home; about 20% in hospital.

Social variables

Relation of child to its caretaker

Of the children under six 32% did not receive personal care from their mothers but from a grandmother, an aunt or both. Another 32% of the children were taken care of only by their mothers. The remaining 34% of the children had more than one caretaker in charge of them of whom one was the mother.

Age of the caretakers and mothers

In general, the mothers were much younger than the other caretakers. The median age of the mothers was 27 years; of the other caretakers, 57 years. This considerable median age difference is what was expected since a great proportion of "other" caretakers consisted of grandmothers. As will be mentioned later, no statistically significant difference in percentage of malnourished children was found among those reared by their mothers as compared to those reared by another caretaker.

Level of education of the caretakers and mothers

Of the caretakers 51% had attended school (excluding the mothers), 48% never attended school. Education of 1% is unknown. Of the mothers, 82% attended school, 17% never did and of 1% it is unknown. It can be concluded that the mothers in general have a higher educational level than the other caretakers, which probably is related to the fact that they are younger. As will be mentioned later, it was found that schooling of the mother or caretaker, of the child is significantly correlated with the presence of malnutrition.

Job, presence and marital status of mother

Of the mothers 30% had a job, 69% did not. We have no information about 1%.

Job and presence of husband or unmarried partner

Of the husbands or partners 91% had

a job, 8% did not. We have no information about 1%. 22% of the working men had a job in Bophuthatswana, 73% in the Republic of South Africa, 1% in Botswana. We have no information about 2%.

Of the husbands or partners 27% lived at home. This means that out of the total of 352 mothers only 63 had a husband or a partner living with them in the same household each day, while 169 mothers had a husband or partner not living with them in the same household and 120 mothers did not have a husband or a partner.



Economic variables

Possession of land and animals

42% of the households possessed land and animals. On the average the households of which the number of morgen is known possessed 10,5 morgen. 96% of the landowners ploughed the land. As will be mentioned later, there is a significant difference in the percentage of landowners among the various types of villages. The explanation for this difference can be found in the different historical backgrounds of these villages. 78% of the households owned animals. The percentage of households (all households included) in possession of cows was 42%, sheep 21%, horses 12%, goats 13%, donkeys 16%, pigs 20%, turkeys or geese 5%, chickens 65%.

The possession of cattle is also related to the type of village, though not as strongly as landownership. Both landownership and cattle possession show significant correlations with malnutrition.

Construction of house, presence of garden

Building materials of the houses are: zinc 27%, clay 45%, cement or bricks 25%, zinc and clay 2%, clay and cement 1%. The construction of the house is strongly related to the type of village.

Income

No detailed information is available on this subject. Of the mothers who were working and not living at home, 78% sent money to the family, 1% did not and 21% unknown. Of the men who were not living at home, 92% sent money to the family, 6% did not and about 2% unknown.

Attendance of medical services

Attendance of the ante Natal Clinic (ANC)

The mothers of 63% of the children under six attended the ANC during pregnancy, unknown 4%. Of the mothers who did attend the ANC, 97% said that they attended the ANC once a month or more often and 3% less than once a month. Again an interesting difference was found in the percentage of mothers attending the ANC among the different types of villages. However, no correlation was found between attending the ANC and malnutrition.

Delivery

59% of the children had been delivered at home and 40% in a clinical situation, unknown 1%.

Attendance of the under five clinic (UFC)

Only 27% of the children under six attended the UFC, 71% did not. 2% unknown. Of the children that did attend, 49% went once a month or more often, 51% went less than once a month.

Vaccination status of the children

60% of the children showed a BCG 68% of the children had a vaccination card, and for 13% of the children it was said that they had a vaccination card, but the card was missing. 19% of the children had no card.

Food intake

Breastfeeding pattern

The survey found that 87,4% of the children were breastfed and 12,0% of the children did not receive any breast milk. It

was unknown whether 0,6% of the children were breastfed or not.

The mean duration of breastfeeding was 15,7 months for boys - with a standard deviation of 9 months - and 15,0 months for girls with a standard deviation of 9,1 months. See Table III.3. for the reasons for not breastfeeding.

Table III.3.: Relative frequency of the reasons for not breastfeeding.

Reasons	% of Children
- Baby refused	38
- Mother had no milk	22
- Mother was ill	14
- Painful breasts	9
- Other reasons	17
	100

Weaning practices

The mean age for the start of weaning was 3,5 months with a standard deviation of 2,0. The kinds of weaning foods given were industrially produced weaning food (64%), soft maize porridge (25%), grain, potatoes, eggs or vegetables in 11% of cases.

Nutritional status

Of the children under six years 51% had a weight for age less than 80% of the Child Health Card Bophuthatswana. Figure 1 shows the comparison of the Harvard Standard of weight for age of the boys with the weight for age of the boys in our survey. The birthweight is almost the same for these two populations.

Figure 2 shows the same comparison for the girls. Here the birth weight is about the same for the two populations. Of the boys, 38% suffered from acute malnutrition as defined by 80% of the reference weight for height. So 38% of the boys had a weight for height less than 80% of the Harvard 50th percentile for weight for height. In the same way 28% of the girls were found to be acutely malnourished. Of the boys 15% suffered from chronic malnutrition as defined by 90% of the reference height for age. Of the girls 17% suffered from chronic malnutrition.

Figures 3 and 4 show the comparison of the Harvard Standard of height for age with the height for age of the boys and girls in this survey. In some of the children under six years chronic as well as acute malnutrition was seen. It occurred in 8% of the boys and 7% of the girls.

5% of the children between 12 and 60 months had an arm circumference of less

Weight for age

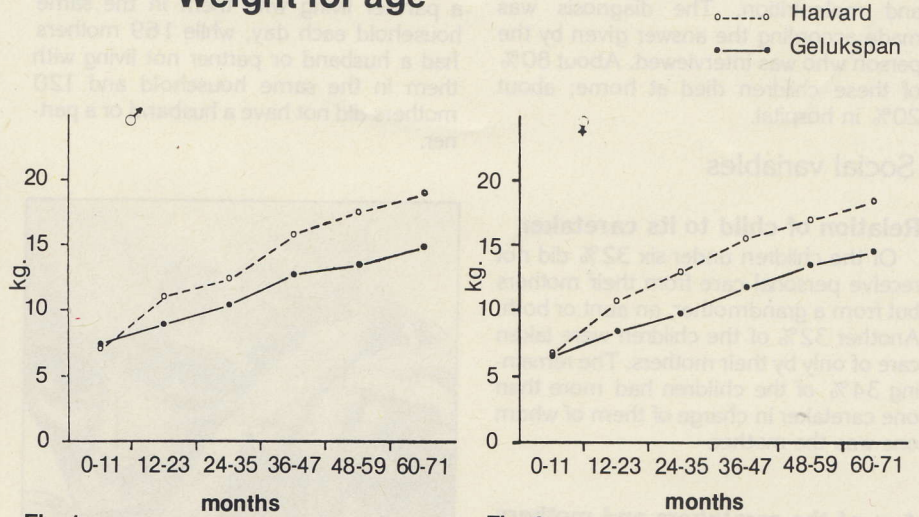


Fig. 1

Fig. 2

Height for age

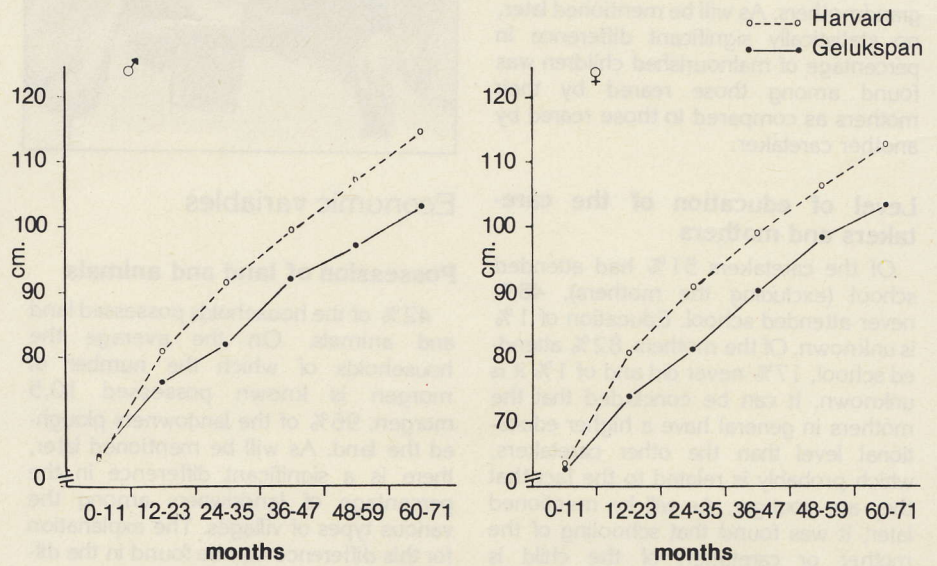


Fig. 3

Fig. 4

than 13,5cm. According to Anderson⁽¹⁾ this means that 5% of the children are severely malnourished.

Percentage of malnourished children under six years

- W/H < 80% of the median Harvard standard (50th percentile) 33%
- H/A < 90% of the median Harvard standard (50th percentile) 16%
- W/A < 80% of the Child Health Card Bophuthatswana: 51%
- ARM < 13,5cm only for children between 12 and 60 months: 5%.

Significant correlations

Significant correlations between some factors and acute malnutrition:

Acute malnutrition is defined as weight for height less than 80% of the Harvard Standard.

In **Table III.4** the factors which showed a significant correlation with acute malnutrition are present.

We have used the X² - test to assay the significance of the correlations between the different factors and chronic and acute malnutrition.

Significant correlations between some factors and chronic malnutrition.

Chronic malnutrition is defined as height for age less than 90% of the Harvard 50th percentile Standard. The correlations are calculated by the X² - test and presented in **Table III.5**. For the factors which showed a significant correlation with chronic malnutrition.

Table III.4.: Significant correlations between some factors and acute malnutrition.

Factors	♂	p	♀
- number of persons < p/h.h.			0,025 < p < 0,25
- number of children < 6 p/h.h	0,025 < p < 0,02		
- age of the child	0,001 < p < 0,005		0,025 < p < 0,05
- attending school by caretakers yes/no			0,01 < p < 0,025
- attending school by mother yes/no			0,005 < p < 0,01
- possession of land yes/no			0,001 < p < 0,005
- possession of cattle yes/no			0,001 < p < 0,005
- building material of house			0,025 < p < 0,05
- frequency of attending UFC			0,025 < p < 0,05
- BCG scar present yes/no			0,025 < p < 0,05
- foodscore ★★	0,01 < p < 0,025		
- source of water (borehole/well/tap)			0,001 < p < 0,005
- kind of village (trust/traditional/resettlement)			< p < 0,001

★★ Foodscore reflects composition of diet.

Table III.5 Significant correlations between some factors and chronic malnutrition.

Factors	♂	p	♀
- age of child			0,001 < p < 0,005
- marital status of mother	0,025 < p < 0,05		
- attending UFC yes/no	0,025 < p < 0,05		
No significant correlation was found for the factors not mentioned			

Calendar

Squibb Cardiovascular research grant

The second Squibb Cardiovascular Research grant valued at R10 000 was recently presented to Dr V A Fritz and Dr L J Leven to conduct research into the "Role of the heart and extracranial vessels in acute cerebral ischaemia". Dr Fritz and Dr Leven were chosen as the successful applicants by a distinguished panel of physicians eminent in this sphere of medicine.

The Squibb Cardiovascular research grant is awarded annually to an applicant to conduct cardiovascular research either in South Africa or overseas at a recognised institution. Thereafter, the applicant is required to spend a minimum of two years in South Africa after completion of the research project so that the benefits of his work will accrue to this country. For further information please contact Dave Searle at (011) 36-1531.

The child - the family - the crisis

The Third National Congress of child psychiatry, child psychology and related disciplines is to be held in the Senate Hall of the University of South Africa on 22 and 23 September 1983.

The congress is being organised by the Northern Transvaal Branch of the ACPD and is presented by the Institute for Continuing Education of Unisa. The registration fee of R50 per person includes refreshments. The closing date for registration is 19 August 1983. A programme and a registration form can be obtained from the Director, Institute for Continuing Education, Unisa, PO Box 392 Pretoria, 0001.

For further information please contact Mrs Ley at (012) 440-1879 mornings only.

Southern Africa's first international sexually transmitted diseases conference

Several world-renowned authorities on sexually transmitted diseases (STD) are to attend Southern Africa's first international STD conference to be held at the Johannesburg Hospital auditorium on November 3 and 4 this year.

This was announced recently by Dr R Ballard, President of the Sexually Transmitted Diseases Society of Southern Africa, an organisation which aims to advance knowledge and disseminate information regarding STD in the sub-continent.

A wide spectrum of STDs will be discussed.

For further information, please contact The Secretary, STD Society of Southern Africa, PO Box 5095, Johannesburg, 2000.