

children ranging from 30% - 60%. Coovadia later in a detailed report on the crisis of health in South Africa²² writes that: "Malnutrition, especially the more severe forms such as kwashiorkor or marasmus, is an emotionally charged issue in South Africa. Government representatives go to great lengths to minimise the prevalence of protein energy malnutrition (PEM). There is absolutely no question that large numbers of black children in the country have protein energy malnutrition. The deliberate exclusion of this condition as a notifiable illness and the absence of a nutritional survey conducted along sound methodological principles and based on a truly national sample allow disagreement on the extent of the problem." He however still estimated that 41% of rural black underfives, 20% of coloured preschool children and 6% of Indian preschool children were stunted with 31%, 48% and 35% being underweight respectively.

Hugo-Hamman et al²³ argue that "the seeds of malnutrition in these children are sown in infancy", hence the finding of underweight and stunting even in early childhood progressively advancing until the child either adapts or dies. But all the scholars in the field point to the close association between childhood infections [especially gastroenteritis, measles and respiratory tract infections] and malnutrition leading to growth and developmental disturbances.

In Transkei where the infant mortality rate was last estimated to be 130/1000²⁴ and where the level of immunisation coverage is still low²⁵, most childhood morbidity and subsequent mortality are still due to preventable diseases and diseases of poverty like gastroenteritis and protein energy malnutrition.

Most of the affected children dwell in remote rural areas where poverty is still rampant and communication very poor. The corresponding high prevalence of similar problems in peri-urban zones is attributed again to urban poverty, overcrowding and associated poor environmental sanitation.

Margo et al¹⁸ described the nutritional anaemia associated with PEM in South African black preschool children living in semi-rural communities while Hansen¹⁹⁻²⁰ in his various writings categorically specified poverty as a major contributor to PEM in black preschool children in the region.

productive as land became scarce and increasingly barren making it impossible to support the ever enlarging family size. This demographic trend has also been associated with an "epidemiological trap"¹ whereby there was a high incidence of infectious diseases of poverty among rural urban migrants compounded by an increasing prevalence of chronic diseases associated with the urban lifestyle. This forced planners to focus on comprehensive health services covering both curative and preventive services.

1.2 LITERATURE REVIEW

The impact of urbanisation on the health of women and children has been widely studied.^{2,7} In Nigeria a close association between the urban environment and child health has been well documented.³ In South Africa, the association between overcrowding in squatter and peri-urban areas and the prevalence of respiratory diseases in children has been well described.⁶ But among the various indicators of child health the following indices have been promoted by WHO and UNICEF as guidelines for assessing child health especially that of underfives.

1.2.1 NUTRITIONAL STATUS

The nutritional problems of black communities in South Africa have attracted a lot of concern from researchers.⁸⁻²¹ Richardson¹⁶⁻¹⁷ believed that stunting which she referred to as "Nutritional dwarfism" was attributable to "genetic factors" or was some form of black children's "physiological adaptation" to their environment. This genetic and environmental contribution to stunting is extensively discussed by Waterlow.²³ In his reflections on stunting, he points out other researchers' observations that the process begins in the first month of life and continues through the second year then slows down. He then goes on to say that the hierarchy of stunting in developing countries has poverty and deprivation at the bottom of the pyramid, converging through various channels of inadequate food, infection, lack of stimulation and anorexia to the apex of reduced activity of the cells that produce linear growth.

In the South African context, Moosa and Coovadia¹³ reviewing a series of studies done earlier in the field, observed the serious level of nutritional stunting in the black preschool

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

1.1 INTRODUCTION.

Transkei, one of the four TBVC "independent states" created in 1976, covers an area of 45000 km² with an estimated population of about 5 million [1985 Sample census put it at 3 million] of which preschool children contribute 15-17%. The population structure is characteristically that of a developing country undergoing population growth during the transition stage. Umtata is the capital and economic nerve centre of Transkei.

Demographically the majority of people [95%] live in rural areas while 5% are fully urbanised. Over the past ten years, however, the rapid rate of urbanisation with increasing rural-urban migration has not only led to an increase in the urban population, but also created a rapidly expanding peri-urban fringe which might account for 5-10% of the total population. This peri-urban zone is inhabited mainly by rural-urban migrants looking for jobs in cities but who cannot afford the city's high rental costs. Housing and many social and sanitation amenities in these peri-urban zones are generally poor. Overcrowding and poverty are in some cases even worse in these peri-urban fringes than in more remote rural areas. Unemployment and its associated socioeconomic maladies prevail. Health facilities originally meant to cater for a small urban population have now been overwhelmed by the influx.

In the rural areas, the majority of Transkeians are poor subsistence farmers largely dependent on monthly remittances from relatives working either in Transkeian towns or in South Africa for survival. The Transkei population just like the rest of South Africa is in a process of transition from a predominantly rural to a mostly urbanized population. The rapid rate of urbanisation and the changes in life-style from traditional agriculture to modern cash economies have affected the demographic structure of the population in rural areas with high migration rates of young people to towns leaving behind women and children to cater for old people. This loss of manpower has contributed to poor crop production exacerbated by soil erosion and poor agricultural methods. Traditional cattle/sheep keeping likewise became less

LIST OF ABBREVIATIONS

ORS	ORAL REHYDRATION SOLUTION
ORT	ORAL REHYDRATION THERAPY
PEM	PROTEIN ENERGY MALNUTRITION
MPCFE	MONTHLY PER CAPITA FOOD EXPENDITURE
MRC	MEDICAL RESEARCH COUNCIL
TBVC	TRANSKEI, BOPHUTHATSWANA, VENDA AND CISKEI
NCHS	NATIONAL CENTRE FOR HEALTH STATISTICS
WHO	WORLD HEALTH ORGANISATION
EPI	EXPANDED PROGRAMME ON IMMUNISATION
RSA	REPUBLIC OF SOUTH AFRICA
VHW	VILLAGE HEALTH WORKERS
GOBI	GROWTH MONITORING, ORAL REHYDRATION THERAPY BREASTFEEDING AND IMMUNISATIONS.
DBSA	DEVELOPMENT BANK OF SOUTHERN AFRICA
UNICEF	UNITED NATIONS CHILDREN'S EMERGENCY FUND
RHOSA	REGIONAL HEALTH ORGANISATION OF SOUTHERN AFRICA
RTHC	ROAD TO HEALTH CARD

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DEDICATION

I dedicate this work to my children Harriet, Lydia and Steven. May they grow to love the art of research as I have done.

DECLARATION

I hereby declare that this dissertation is my own work and that it has not been submitted for any other degree or examination in any other University.

John Byarugaba

Date

ABSTRACT

The purpose of this study was to assess the state of child health by comparing pre-school children from three geographic zones in the Umtata district of Transkei.

The study area comprised clusters from urban, peri-urban and rural areas for comparative purposes. Ninety clusters of 12 pre-school children each were demarcated using a stratified, proportional cluster sampling technique thus giving a sample size of 1080 children. Information collected included the children's anthropometric measurements [weight and height], their immunisation status, the family's socioeconomic status and the maternal/guardian's knowledge, attitudes and practices regarding the GOBI package. The child's place of birth, maternal education and paternal support were also assessed.

Twenty one percent of children had been born at home. Many mothers were married but few stayed with their husbands in rural areas because of migration for employment. Diarrhoea was prevalent (2 week period prevalence) in all three zones ranging from 18% in urban to 25% in peri-urban areas. But while 72% mothers/carers knew about ORT and 56% had used it to treat diarrhoea, only 3% knew how to prepare the solution properly. Breastfeeding was practised early in life but by one year of age 75% of mothers had stopped with 55% starting supplementary feeds at one month of age. Ninety percent of all children were on supplementary feeds by 4 months of age. Rural mothers generally breastfed longer than others.

Regarding malnutrition, 10% of children were underweight [ranging from 8% in urban to 10% in peri-urban], 26% were stunted [ranging from 14% in urban to 34% in rural areas] and 4% had acute PEM [wasting]. Nutritional status was based on Waterlow's classification. Regarding socioeconomic status, the monthly per capita food expenditure [MPCFE] was used and the lognormal distribution showed that 50% of all children came from homes spending R21.00 or less per person on food per month.

The socioeconomic impact associated with urbanisation and rural-urban migration for employment is discussed. Reasons for poor child health were examined and possible practical interventional recommendations are made to promote child health in the face of rapid urbanisation.

**A COMPARATIVE STUDY OF THE HEALTH OF BLACK
PRESCHOOL CHILDREN LIVING IN THE UMTATA DISTRICT
OF TRANSKEI.**

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Witwatersrand, in fulfilment of the requirements for degree of Master of Science
in Medicine.**

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Fig 3. Maternal age
Percentage distribution of maternal age by zone

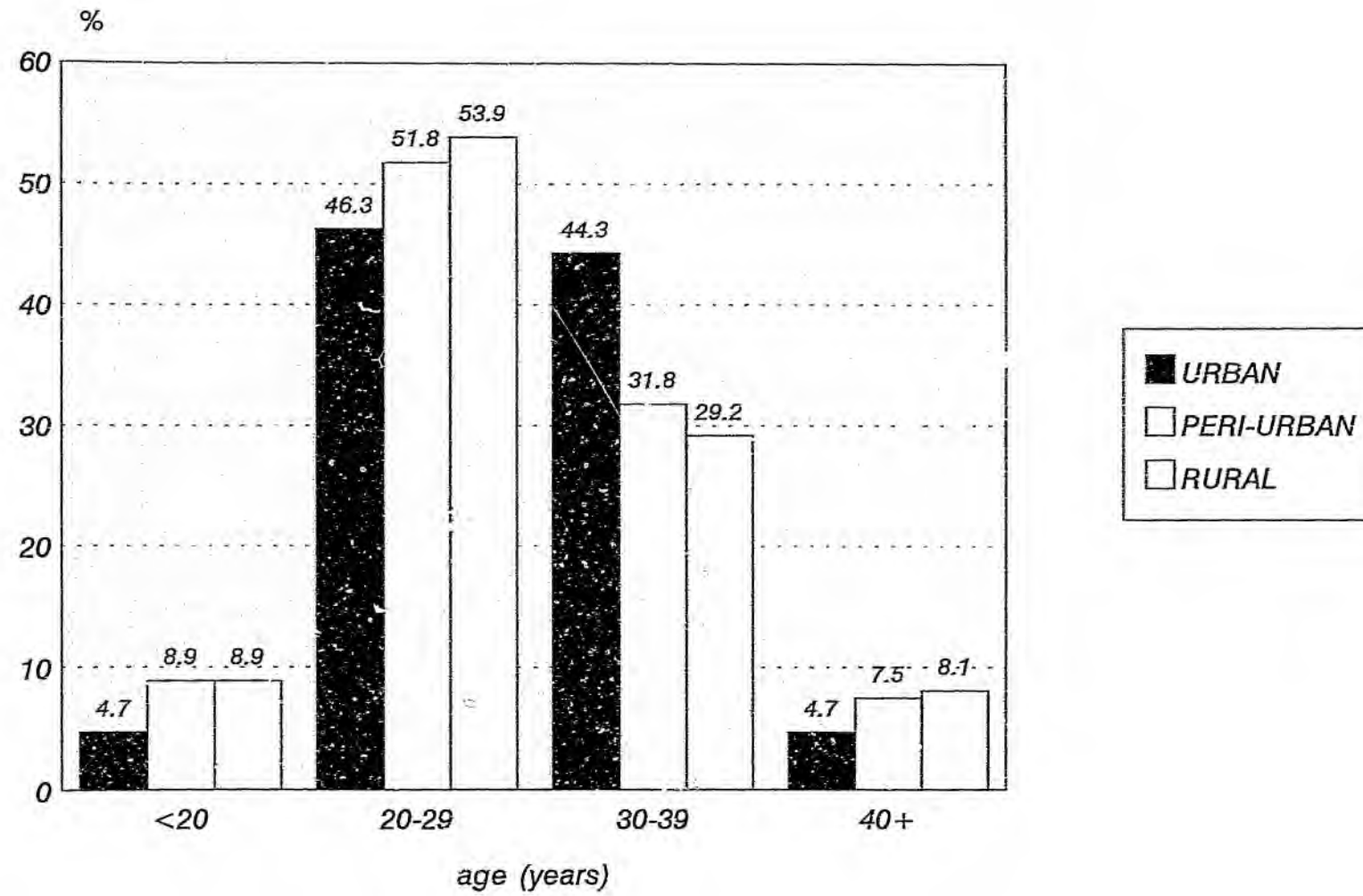
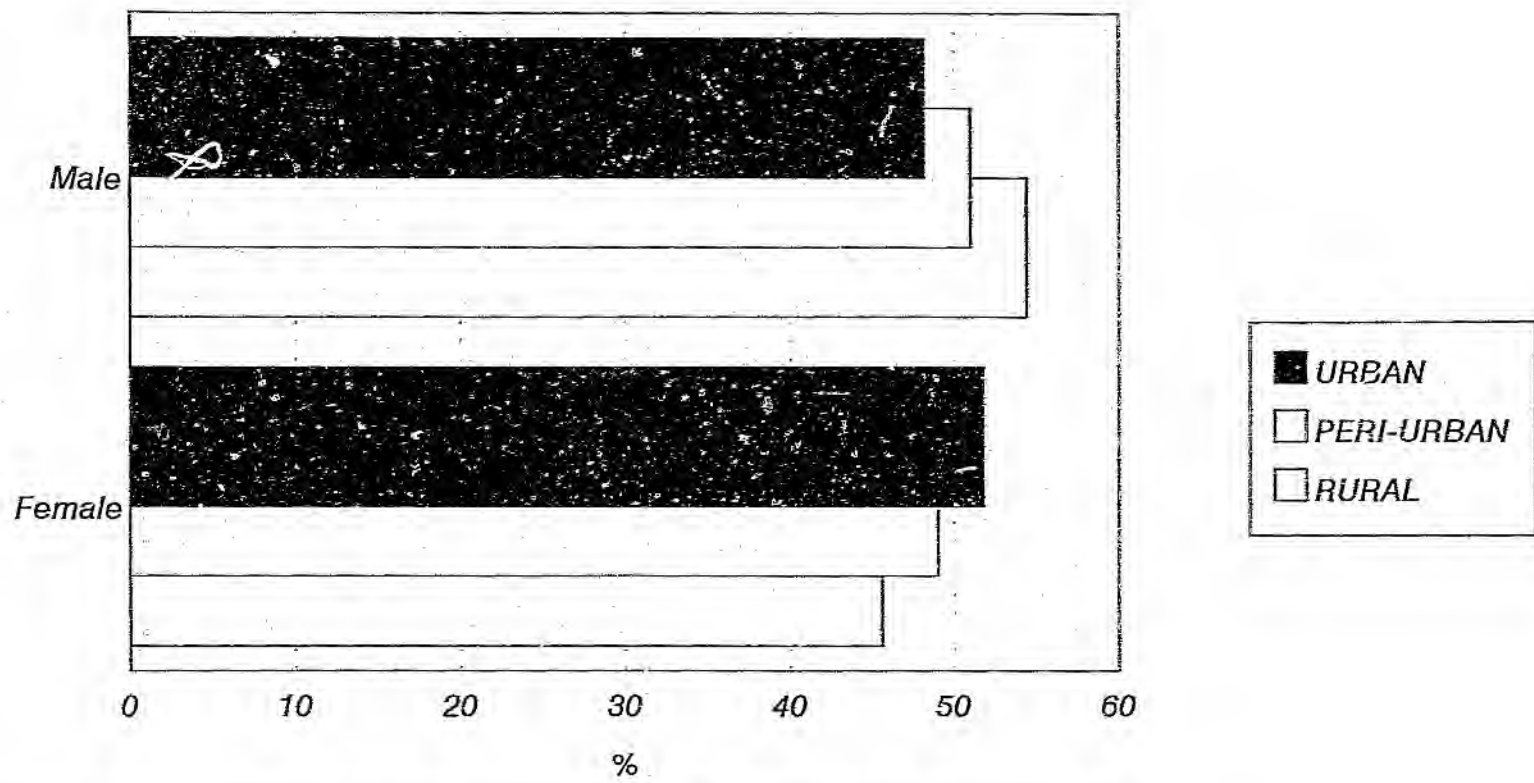


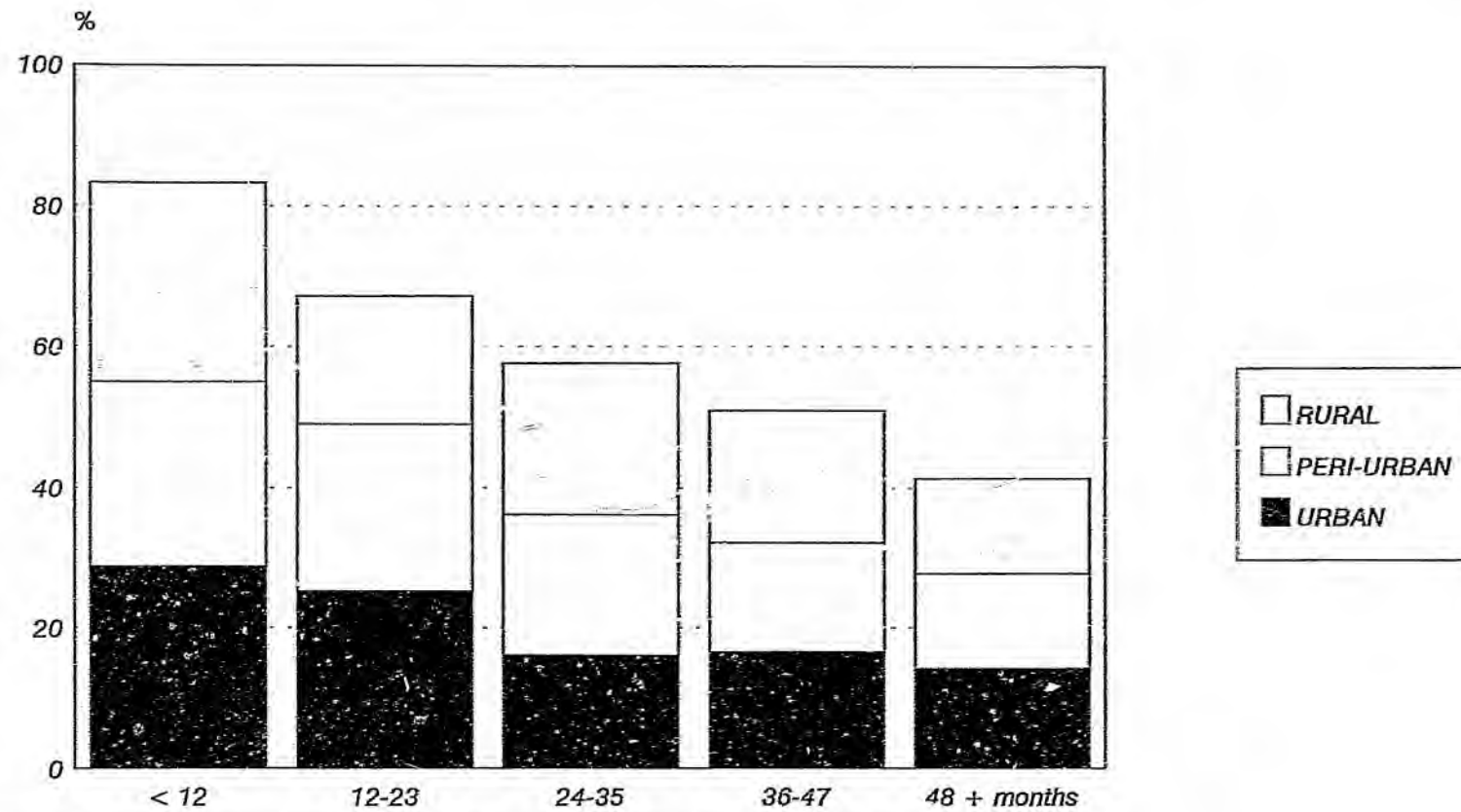
Fig 2. Gender distribution of study population
Percentage distribution by zone



URBAN	48.2	51.8
PERI-URBAN	51	49
RURAL	54.4	45.6

N=360 per zone.

*Fig 1. Age distribution of study population
Percentage distribution per zone*



<i>RURAL</i>	28.3	18.1	21.4	18.9	13.6
<i>PERI-URBAN</i>	26.2	23.9	20.1	15.6	13.6
<i>URBAN</i>	28.8	25.2	16.1	16.6	14.2

CHAPTER 3. RESULTS

A total of 1080 children were examined and mothers/carers interviewed. The results are summarised in the following tables and figures:

4.1 RESPONSE RATE

Although the results show a 100% response rate it should be acknowledged that this high response rate was achieved through searching for more participants whenever there was a refusal. The number of refusals or the impact they would have had on the findings is not included in the following discussion. The number of refusals was however very small (<2%), that they could not have significantly affected the findings.

2.7 DATA ANALYSIS AND DEFINITIONS

All data was processed and analysed on an IBM mainframe computer using the National Centre for Health Statistics [NCHS/WHO]⁵² charts for reference purposes [for anthropometric data].

Classification of anthropometric indicators of malnutrition was done according to cut-off points recommended by Waterlow.⁵³ i.e:

Stunting :	< 90% height for age
Underweight:	< 80% weight for age
Wasting:	< 80% weight for height

Estimation of family's socioeconomic status was done using the monthly per-capita food expenditure index [MPCFE] which in this case was the amount of money spent on food per month divided by the total number of people in the household,

i.e $MPCFE = \frac{\text{Total amount of money (R) spent on food by household per month}}{\text{total number of people in the household}}$

Although this measure fails to accommodate the needs of children as compared to adults, it nevertheless throws some light on the socioeconomic status of the families from which the subjects were recruited. Appropriate statistical tests of significance were performed on the data. Regarding the evaluation of some GOBI factors, the following definitions were used:

- (i) Diarrhoea was taken to mean a history of two or more loose stools within 24 hours during the preceding two weeks.
- (ii) The mother/carer's knowledge of preparation of the sugar salt solution was estimated using the Transkei standard composition (1 litre water + 8 teaspoonfuls sugar + 1 teaspoonful salt).
- (iii) Supplementary feeds meant any other feeds other than breast milk and water.

demographic data of the family and the maternal/carer's knowledge, attitudes and practices of the GOBI package], the team interviewed the mothers/guardians and then proceeded to take anthropometric measurements [weight and height]. This exercise completed, they then moved to the next household similarly recruiting subjects and taking the measurements until a total of twelve children was obtained. To obtain representativeness, the number of children recruited per household was limited to three randomly selected children.

2.6.2 ANTHROPOMETRIC MEASUREMENTS

All subjects were weighed with minimum clothing [underwear and no shoes] using Salter hanging scales for children aged 0-2 years and bathroom scales for older children. Daily correction adjustments and checks on the scales used were made to ensure the correctness of calibrations and systematic accuracy.

Inter and intra-observer variation between different assistants was assessed by taking alternate weights by different assistants and sometimes taking two measurements for standardisation purposes. Somatometres were used to measure height for infants while modified measuring rods [straight rods with tape measure attached] were used for taking heights for older children. For older children, heights were taken while standing erect against a vertical wall with heels and occiput touching the wall. Heights were taken to the nearest 0.1 cm.

Age was obtained from road to health charts [RTHC] and where these were not available, other sources such as birth/baptism certificates were used. Where none of these was available, major historical events were used to help the mother/guardian's memory in identifying the approximate age of the child.

The immunisation coverage for all children was analysed from RTHCs. For purposes of estimating the vaccination coverage however, only results of children aged 12-23 months (the WHO recommended immunisation coverage assessment age group) were analysed and presented. Children without RTHC were presumed non-immunised.

$$\text{Therefore } N = \frac{1,96^2 \times 0,66 (1 - 0,66)}{0,05^2}$$

$$= 344,6 \text{ or approx. } 345 \text{ children}$$

Since this was per zone of 30 clusters, each cluster would have $345/30 = 11,5$ or 12 children. And for 30 clusters, 360 children per zone; i.e 1080 children in the three zones.

2.4 ADMISSION CRITERIA :

All children found in the sampled households aged under five years who were de facto residents of the household (resident here was taken to mean person who normally lives in the household and not a visitor) and who had a mother or mature guardian to act as a respondent to the questionnaire, were admitted to the study.

2.5 EXCLUSION CRITERIA :

Children not fulfilling any of the above criteria were excluded. The most affluent residential suburbs in the urban area (Fortgale, South Ridge Park and Southernwood) were not included in the study because of poor accessibility of the study subjects to the researchers. It was also felt that these areas had the lowest risk for disease and adequate access to health services.

2.6 STUDY PROCEDURE :

2.6.1 HOUSE TO HOUSE SUBJECT RECRUITMENT:

Three groups of Xhosa-speaking trained assistants supervised by a senior nurse and a doctor (the principal investigator) carried out the survey. The starting household for each cluster was randomly selected using the standard WHO procedure.⁵⁴ Following a detailed preformatted interview schedule (see appendix) [which among other things included the basic

3. **RURAL :** All locations/settlements lying beyond 10km from the town centre, and not within the municipality boundaries.

The above classification strictly applies only to the study area concerned and may not necessarily be applicable to other towns. From the above sampling frame, a total of 90 clusters were selected by simple random sampling [30 clusters per zone]. In each stratified cluster, twelve children were admitted into the study.

2.3 SAMPLE SIZE DETERMINATION:

The method used to determine samples size was based on the recommended descriptive studies sample size determination technique,³¹ and also on the assumption that there is some comparability between the cluster sampling technique used here and a random sample. South African regional estimates for the prevalence of stunting were used in defining the sample size necessary to detect a difference in nutritional status of 10% among the groups.

- 1 Estimating p, i.e the prevalence of the problem in the population [Moosa and Coovadia estimated stunting in black South African children to be ranging from 30 - 66% ¹⁴]
Taking p = 66%
- 2 If we decide on the confidence level at 95 %
- 3 And determine the Z - value corresponding to the desired confidence level.

For 95 % confidence level the Z value = 1,960

Therefore
$$N = \frac{Z^2 p (1 - p)}{c^2}$$

where N = sample size

Z = Z. value

c = (1 - confidence level)

p = prevalence

CHAPTER 2: METHODS

2.1 STUDY DESIGN

This was a comparative cross-sectional community based descriptive survey of randomly selected clusters from the urban, peri-urban and rural areas of Umtata district.

2.2 STUDY AREA DEMARCATION AND CLUSTER SAMPLING

To meet the requirements of a comparative study, the district was divided into 3 zones; urban, peri-urban and rural. Because of lack of current maps, aerial photographs or any other reliable sampling frame, the area was remapped and stratified into urban, peri-urban and rural. From these three zones, clusters were then stratified accordingly creating a new sampling frame for each zone.

On ground site surveys determined the total number of houses/shacks in each area and from these, clusters were proportionately demarcated according to the estimated number of houses or shacks. This was very crucial because even where aerial photographs did exist, they did not show the shacks or tent dwellings and also missed families staying in garages. The haphazard and recent mushrooming of shacks also made it difficult to depend on these photographs.

For the purpose of this study, the following classification was used to demarcate study zones:

1. URBAN : was that area classified so by the local municipality authorities.
2. PERI-URBAN : All those locations, squatter camps or townships lying within 5-10 km of the town centre whether classified as peri-urban by the local municipality authorities or not.

health, few have categorically focused on nutritional status.²¹ This study aims to provide a glimpse of some health problems affecting children of the Umtata district as a sample of other areas in Transkei.

1.3 OBJECTIVES:

The objectives of this study were to:

- [i] describe and compare the nutritional status of preschool children in rural, peri-urban and urban areas.
- [ii] identify socio-cultural factors/variables associated with protein-energy malnutrition [PEM] in the study areas.
- [iii] investigate the maternal knowledge, attitudes and practices of UNICEF's GOBI child survival revolution package.
- [iv] to identify groups/areas in need of intervention.
- [v] to suggest recommendations for the promotion of better child health through the GOBI package.

1.22 IMMUNISATION STATUS

The vaccination coverage for the five common vaccine preventable diseases of childhood has also been extensively studied in South Africa and in various homelands.³⁴⁻⁴⁴

In children, many preventable diseases especially measles, still contribute to the high infant mortality rate. Infantile gastroenteritis, tuberculosis and other childhood diseases of poverty still account for high hospital admission rates. Various factors affecting immunisation coverage highlighted in these studies, included poor communication and access to health services, poor cold chain maintenance, lack of a single national immunisation policy and poverty among vulnerable rural communities.

The common denominator regarding immunisations in the region is that coverage still needs to be improved especially in remote rural areas where the majority of the needy children live.

Though the morbidity and mortality data for Transkei like for the rest of South Africa underestimate the true picture, available records indicate that preventable diseases head the list of childhood top ten killers.

1.2.3 DIARRHOEA AND ORT

As mentioned above, gastroenteritis still heads the list of the causes of child mortality. In their comprehensive reflections on mortality patterns in South Africa Bradshaw et al⁴⁵ put gastroenteritis and respiratory tract infections to be primary causes of death in children. Focusing on the impact of diarrhoeal disease on childhood death Yach et al⁴⁶ again showed that there had been no significant improvement regarding this problem in a decade; diarrhoea was still a major child killer. The Hewu district mortality survey in Ciskei similarly pointed to gastroenteritis as being responsible for many child deaths.⁴⁷ This realisation ushered in a series of studies on the preventive and therapeutic potential of oral rehydration therapy.⁴⁸⁻⁵⁰

It is however, worth noting that although some of these studies cited above have correlated the changing socio-cultural and environmental factors associated with urbanisation with child

Nutritional studies done elsewhere in Africa ²⁵⁻²⁷ on rural preschool children have categorically indicated a common association between the environment, socioeconomic status, intestinal helminths [especially *Ascaris* spp.] and PEM. Byarugaba²⁵ found a significant association between intestinal helminths and PEM in the Kenyan coastal districts. Stephenson et al²⁶ had earlier specifically attributed such PEM to *Ascaris* infestation. Jansen in a more protracted longitudinal assessment of the growth of Akamba children in Machakos, Kenya ²⁷ highlighted the catch-up in growth that frequently followed intensive deworming programmes. These studies emphasised the environmental impact on malnutrition.

Observations from other parts of the world on children of similar age group²⁸⁻³⁰ have also shown that many preschool children in developing countries have one form or another of chronic PEM that may be tied to subsequent morbidity and mortality. These children on the nutritional crisis borderline are rarely clinically conceived to be abnormal. Their unsuspecting parents may never know that their children have a problem until disease strikes and they succumb to infection. As UNICEF³¹ put it :

" Most malnourished children live in homes where there is no absolute shortage of sufficient food to provide an adequate diet for a small child", and that :

"... most malnutrition is caused not so much by lack of food as by repeated infections which burn up calories, depress the appetite, drain away nutrients in vomiting and diarrhoea, and often induce mothers to stop feeding while illness lasts".

This continuous cycle of malnutrition and infection has been exhaustively studied, and in Africa, the Kasango project in Zaire revealed that common growth deceleration among preschool children is not only strongly associated with childhood diseases such as measles³² but is also closely associated with high subsequent risk of childhood mortality from these diseases, that would not otherwise have affected normal children so significantly.³³

Although the standard EPI "7x30" methodology was not used in this study, the results nevertheless give a background idea regarding immunisation coverage in Umtata district in particular and in Transkei in general.

Table VII shows the benefits and costs of urbanisation on child health in the three zones. Though oversimplified, the indicators highlight some of the gross disparities regarding aspects of child health in the three zones studied. These disparities associated with different socioeconomic levels should act as catalysts for observing the impact of urbanisation on child health.

3.5 NUTRITION STATUS OF STUDY POPULATION

Table IV shows the nutritional status of the study population specifically the distribution of different nutritional problems by region. It is clear from this table that the major problem in the study population was nutritional stunting with acute PEM [wasting] being the lowest.

Regarding the prevalence of underweight children per region, it is crucial to note that while underweight was predominant in all areas, there was no statistical difference in the areas [$\chi^2 = 1.30$ $p = .53$ $df = 2$].

Stunting however was significantly more than twice as common in rural areas compared to urban zones [$\chi^2 = 42.4$ $p < 10^{-6}$ $df = 2$].

Acute PEM [wasting] was rare in all zones but was noticeably interestingly more common in peri-urban and urban areas than rural areas though the difference was not statistically significant [$\chi^2 = 4.97$ $p = 0.08$ $df = 2$].

3.6 IMMUNISATIONS STATUS

Table V outlines the distribution of RTHC and history of measles disease in children aged 12-23 months the age group recommended by the WHO for EPI vaccination coverage evaluation.⁵⁴ There was no difference in the availability of RTHC in the three zones ($\chi^2 = 2.3$ $p = 0.3$ $df=2$). Some mothers/carers did claim that some children had RTHC but which were not available. An interesting finding was the history of measles in this age group particularly in the peri-urban fringes and even in urban areas.

Though the inter-zonal difference was not statistically significant ($\chi^2 = 5.8$ $p = 0.05$ $df=2$), there was a higher prevalence of measles in peri-urban areas a factor that might be strongly attributed to the high degree of overcrowding in these areas as well as the constant inflow of migrants (both internal and external). Table VI is a summary of all vaccinations given.

TABLE VII: ADVANTAGES/DISADVANTAGES OF URBANISATION ON CHILD HEALTH BY ZONE FOR UMTATA TRANSKEI

INDICATOR	URBAN (n=360) %	PERI-URBAN (n=360) %	RURAL (n=360) %
Income (MPCFE)	+++	+	—
ORS*	—	—	—
Clean water source	+++	++	—
Breast-feeding	—	+/_	+++
Nutritional status	+	—	—
Education	+++	++	—
Immunisations	+	—	—

* Knowledge of how to prepare a sugar-salt solution.

NB: The +s have no numerical value. They are for qualitative interpretation.

TABLE VI: PERCENTAGE ZONAL DISTRIBUTION OF IMMUNISATIONS IN CHILDREN AGED 12-23 MONTHS

VACCINATION	URBAN (N=91) %	PERI-URBAN (N=86) %	RURAL (N=65) %
BCG	80.2 (72 - 88.4)	79.1 (70.5 - 87.7)	73.9 (63.3 - 84.5)
DPT1	80.2 (72 - 88.4)	81.4 (72.8 - 89.7)	72.3 (61.4 - 83.2)
DPT2	79.1 (70.7 - 87.5)	75.6 (66.6 - 84.6)	70.8 (59.8 - 81.8)
DPT3	76.9 (68.2 - 85.6)	68.6 (58.8 - 78.4)	69.2 (58.0 - 80.4)
POLIO1	80.2 (72 - 88.4)	80.2 (71.7 - 88.7)	72.3 (61.4 - 83.2)
POLIO2	78.0 (69.5 - 86.5)	73.3 (63.9 - 82.7)	67.7 (56.4 - 79.0)
POLIO3	75.8 (67.1 - 84.5)	63.9 (53.8 - 74.0)	63.1 (51.4 - 74.8)
MEASLES1	69.2 (59.7 - 78.7)	70.9 (61.3 - 80.5)	60.0 (48.1 - 71.9)
MEASLES2	3.3 (0 - 6.8)	4.7 (0.2 - 9.2)	3.1 (0 - 7.2)

95 % confidence intervals in parentheses

TABLE IV: PERCENTAGE PEM DISTRIBUTION BY ZONE

INDICATOR	URBAN (n=360) %	PERI-URBAN (n=360) %	RURAL (n=360) %
Weight for age [Underweight]	8.1 (5.3-10.9)	10.3 (7.3 - 13.3)	10 (7.0 - 13.0)
Weight for age [Stunting]	13.6 (10.0 - 17.2)	28.9 (24.2 - 33.6)	33.8 (28.9 - 38.7)
Weight for height [Wasting]	3.9 (2.0 - 5.8)	5.0 (2.7 - 7.3)	1.9 (0.5 - 3.3)

* 95 % confidence intervals in parentheses

TABLE V: PERCENTAGE DISTRIBUTION OF RTHC AND HISTORY OF MEASLES DISEASE IN CHILDREN AGED 12-23 MONTHS BY ZONE

VARIABLE	URBAN (N=91) %	PERI-URBAN (N=86) %	RURAL (N=65) %
Had RTHC (seen)	80.2 (72.0 - 88.4)	83.7 (76.0 - 91.4)	73.9 (63.3 - 84.5)
Had RTHC (not seen)	7.7 (2.2 - 13.2)	7.0 (1.6 - 12.4)	3.1 (0 - 7.2)
Had no RTHC	12.1 (5.5 - 18.7)	9.3 (3.2 - 15.4)	23 (12.8 - 33.2)
Had had measles disease	8.8 (3.0 - 14.6)	16.3 (8.6 - 24)	4.6 (0 - 9.6)

* 95 % confidence intervals in parentheses

3.4 GOBI - BREASTFEEDING PRACTICES AND USE OF SUPPLEMENTARY FEEDS

Table III illustrates the distribution of breastfeeding practices. While most mothers did start breastfeeding especially in the first year of life, the major problem was the early stopping of the practice which occurred more in urban and peri-urban mothers than in rural area mothers. By the age of one year more urban mothers had stopped breastfeeding compared to a smaller proportion of their counterparts in rural areas

[$\chi^2 = 48.7$ $p = <10^{-6}$ $df = 2$]. This practice was concurrently associated with early introduction of supplementary feeds in urban zones. This fashion was also reflected in the peri-urban and rural areas where most babies had been introduced to supplementary feeds by the age of 1 month [$\chi^2 = 4.4$ $p = 0.11$ $df = 2$]. By the age of 4 months, almost all babies in all zones were on supplementary feeds.

TABLE III: BREASTFEEDING PRACTICES AND SUPPLEMENTARY FEEDS:

VARIABLE	URBAN (n=360) %	PERI-URBAN (n=360) %	RURAL (n=360) %
Child ever breastfed (%)	89.8	91.4	91.9
% Mothers stopping b/feeding by 1yr:*	85.3	75.8	62.6
% Mothers starting supplementary feeds by 1 month:**	64.5	54.9	51.1
% Mothers starting supplementary feeds by 4 months:	94.2	88.5	91.4

* $\chi^2 = 48.7$; 2df; $P < 0.0001$

** $\chi^2 = 4.4$; 2df; $P < 0.11$

3.3 GOBI - ORAL REHYDRATION SOLUTION

Table II shows that diarrhoea was highly prevalent in all three zones but was more prevalent in peri-urban fringes. The maternal/carer's awareness of the sugar salt solution was equally universally encouraging ranging from 61.1% in towns to 77.2% in rural areas [$\chi^2 = 13.1$ $p < 0.001$ $df = 2$] But while a good proportion of mothers/carers admitted to having used the solution to treat diarrhoea especially those from peri-urban and rural areas [$\chi^2 = 33.1$ $p < 0.0001$ $df = 2$], hardly any of them could constitute the solution properly (only 2.5% of all mothers knew how to prepare the solution properly i.e 1 litre water, 8 teaspoonfuls sugar & 1 teaspoon full salt or its electrolyte equivalent). This lack of knowledge was universally shared and the difference in all three zones was not statistically significant [$\chi^2 = 1.5$ $p = 0.45$ $df = 2$].

The availability of clean water for human consumption [defined here as the safest water supply available in terms of treatment] indicates the shift in benefit of better social services being higher in urban areas and progressively getting lower in peri-urban zones and being lowest in rural areas. The association of diarrhoea and the availability of clean water source was statistically significant [$\chi^2 = 13.1$ $p = 0.022$ $df = 5$] indicating a close relationship between the prevalence of diarrhoea and the water source.

TABLE II: DIARRHOEA, ORS PREPARATION AND MAJOR WATER SOURCE

VARIABLE	URBAN (n=360) %	PERI-URBAN (n=360) %	RURAL (n=360) %
Child had Diarrhoea in past 2 weeks;*	18.3	24.9	19.2
Water Source:**			
In the home(tap)	98.6	20.3	1.4
Community tap	0.6	38.7	45.8
Spring/river	0.8	41.0	43.9
Other	—	—	8.9
Mother/carer's ORS knowledge:***	65.1	68.1	77.2
ORS - ever used to treat diarrhoea:****	46.4	55.6	67.2
ORS-actual knowledge of preparation:*****	3.3	2.2	1.9

* $X^2 = 5.6$; 2df; $P = 0.062$

** $X^2 = 838.3$; 10df; $P < 0.0001$

*** $X^2 = 15.2$; 4df; $P = 0.004$

**** $X^2 = 33.2$; 2df; $P < 0.0001$

***** $X^2 = 1.5$; 2df; $P = 0.45$

ORS = Oral rehydration solution.

The educational status of mothers interviewed was on average well distributed with urban mothers enjoying more years at school than their rural counterparts. Educated rural mothers however were most likely to migrate towns for employment.

As for the MPCFE, the skewed lognormal distribution of the income variable showed that universally people spent little money on food with 50% of all children coming from families spending R21 per person per month on food. The situation was worst in rural areas with a median MPCFE of R 16.6 compared to R18.7 in peri-urban and R33.3 in urban zones.

3.2 DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION

Figure I shows the age distribution while Figure II illustrates the gender distribution of the subjects in all three areas. One year age groups were used in order to separate out various problems recurring in different age groups which would otherwise be masked by aggregation of all age groups into one single classification.⁴³ The majority of the subjects in all zones were infants (Fig. 1). There was a gradual fall off in percentages in all three areas. Table I displays major socio-demographic characteristics that affect the child. While the number born in hospitals and clinics was high in all areas the number of home deliveries especially in rural areas were nevertheless still unacceptably high [$\chi^2 = 98.5$ $p < 0.00001$ $df = 2$] particularly given the fact that there were no trained traditional birth attendants.

Most children were looked after by their mothers in both the peri-urban and rural areas compared to urban area [$\chi^2 = 50.7$ $p < 0.0001$ $df = 2$]. This would most likely be attributed to changing patterns of lifestyle with more mothers in towns being employed than in peri-urban and least employed in rural areas [$\chi^2 = 205$, $p < 0.0001$ $df = 2$]. A comparison of the mother's state of employment with who cares for the child most of the time was statistically strongly significant [$\chi^2 = 135.1$ $p < 0.0001$, $df = 4$].

Thus the shift from maternal care in towns to maids may have affected other aspects of child care such as breastfeeding leading to associated early introduction of formula and other supplementary feeds. There was no statistical difference between the maternal marital status in all the areas [$\chi^2 = 4.82$ $p = 0.89$ $df = 2$] but most fathers in rural areas were not staying at home compared to urban and peri-urban areas [$\chi^2 = 74.9$, $p = < 0.0001$, $df = 2$].

This again might be attributed to rural-urban migration for employment. When it came to fathers supporting their children however, there was no statistically significant difference in all three zones [$\chi^2 = 4.5$, $p = 0.105$, $df = 2$]. This emphasizes the high degree of dependency on remittances in rural areas from fathers/relatives working far away from home.

TABLE I: SUMMARY OF SOCIO-DEMOGRAPHIC VARIABLES BY ZONE

VARIABLE	URBAN (n=360) %	PERI-URBAN (n=360) %	RURAL (n=360) %
<u>Place of birth</u>			
Hospital/Clinic	95.8	74.9	67.2
Home	3.9	25.1	32.8
<u>Usual child carer*</u>			
Mother:	28.8	57.1	75.1
G/Mother	4.4	22.8	17.8
Maid	57.3	12.5	2.8
Other	9.5	7.6	4.3
Married (mother)	66.5	59.3	65.0
Employed (mother)*	72.0	35.4	21.0
Supports child (Father)	77.5	70.9	73.0
Living with family (father)*	64.5	47.9	32.5
<u>Educational status of mother</u>			
(yrs schooling)**			
Median	10	6	5
Interquartile range	2	3	3
<u>MPCFE</u> ***			
Median	33.3	18.7	16.7
Interquartile range	26.6	15.2	13.9

Tests comparing three regions

* $P < 0.00001$

** Kruskal-Wallis: $X^2 = 332.1$; 2df; $P=0.0001$

*** Kruskal-Wallis: $X^2 = 194.2$; 2df; $P=0.0001$

7.3 SOCIO-ECONOMIC

- 7.3.1 Community rural development programmes. Provision of basic services such as clean water, communication, sanitation and environmental hygiene as well as basic education all aimed at promoting rural child health. Municipal provision of basic necessities like running water and sewers in peri-urban slums would diminish diarrhoeal morbidity and mortality.
- 7.3.2 Creation of job opportunities in rural areas so as to check the continuous rural urban migration. This could be done through promotion of sound community capacity building/community empowering/self help projects as well as promotion of agricultural development concerns which, as has been shown in Transkei, (some viable projects such as the Nqora Irrigation Scheme and the Magwa Tea Co-operation) attract a lot of local workers thereby giving them income while at the same time keeping them in rural areas. This however might be controversial since attempting to keep people in rural areas in a rapidly urbanising environment might not be economically realistic.
- 7.3.3 All the above are only possible with full backing of government authorities. A change in the socio-political orientation and specifically in the redistribution of resources to address the current gross social inequalities would be a step in the right direction. Adaptation and implementation of primary health care policies should start now.

CHAPTER 7: RECOMMENDATIONS:

This was basically a cross-sectional descriptive survey. Most of the observations made are therefore descriptive and can only serve in hypothesis formulation. A protracted longitudinal survey would demonstrate better the seasonal variations of some conditions described and provide more conclusive proof of cause and effect. Taking into account this fact and the limitations cited above, the following recommendations would be a step in the right direction:

7.1 RESEARCH

7.1.1 Planning and implementing a more comprehensive longitudinal survey specifically targeted at the high risk areas mentioned in this study. Comparison of two cohorts of children one receiving nutrition supplements and another without would clarify the debate locally of the impact of food supplementation on PEM.

7.2 HEALTH SERVICES AND EDUCATION

7.2.1 In all zones, a more participatory health education system is required to let mothers/guardians understand practically the preparation of oral hydration solutions, balanced diets and proper weaning foods. Emphasis should thus be put on Community empowerment health programmes that promote use of available resources and less dependency on the clinical staff who might not be easily accessible particularly in rural areas.

7.2.2 Promotion and revival of breastfeeding information groups and the strengthening of rights of breastfeeding mothers, especially at the work place such as encouraging breastfeeding breaks during working hours. The efficacy and practicality of such programmes however would also require evaluation studies.

7.2.3 Creation of a National Immunisation policy to standardise schedules, formulate and co-ordinate policy and training and above all, remove the artificial barriers between "states" which vaccine preventable diseases don't seem to respect.

CHAPTER 6: METHODOLOGICAL LIMITATIONS

As Yach et al⁶⁷ stipulated there are many methodological shortcomings encountered when conducting research in a rapidly urbanising community. Some of the problems encountered during the study particularly in its embryonic phases were:

- (i) **Study area demarcation:** The major obstacle here was the classification of which areas were urban, peri-urban and rural. As has been previously mentioned, there were no current maps available from the Surveyor-General or from any other source. The available old maps (1976) had been caught up by the city's rapid rate of expansion and development, that what had been originally marked as farms were now heavily populated bustling townships growing bigger by the day. There were no aerial photographs as well and even where these did exist (as has been mentioned) they failed to keep up with the daily mushrooming shacks especially in peri-urban areas and even those of the proper city missed the families that stayed in car garages. It was discovered during this survey that a good percentage of families in urban and peri-urban areas used these garages as their homes.

In some cases the municipal authorities did not want to acknowledge the existence of shack dwellings a factor that had to be carefully handled by the researchers while visiting these areas because of the sensitivity of the inhabitants especially towards people associated with these authorities.

- (ii) **The estimation of the monthly per-capita food expenditure (MPCFE)** was difficult particularly in rural and peri-urban areas where daily rations were bought depending on the availability of money. In the field mothers did not feel comfortable discussing their economic problems. It was while trying to elicit any information regarding the socioeconomic status that the researchers realised the extreme degree of dependency on the migrant labour force in rural areas. Sometimes failure of arrival of remittances might mean starvation to a family. The question of family separation also crept in. As is seen in Table III most young able-bodied men had left the rural areas and though many mothers were principally married, they never lived with their husband who had migrated in search of work.

- [vi] The immunisation coverage of the studied communities seemed to be improving but there were still many measles cases especially in the rural and the overcrowded peri-urban areas.
- [vii] The various socioeconomic problems affecting child health could not be addressed in isolation. They could not be divorced from the socio-political environment which bred and sustained most of them, ⁶⁵⁻⁶⁶

CHAPTER 5 : CONCLUSIONS

This study demonstrated the relationship between socio-economic and environmental factors (associated with urbanisation on one hand and rural life on the other) with some aspects of child health in three geographical zones of Umtata district in Transkei. From the observations discussed above, the following could be deduced:

[i] There was a fundamental decline in child health from urban, peri-urban to rural areas. The socioeconomic (MPCFE), environmental sanitation, water supply, maternal education/employment, nutritional status and immunization coverage were all shown to be inferior in rural areas.

The picture in urban areas was however sometimes grim with absolute inadequacy of necessary amenities especially in the overcrowded peri-urban areas.

[ii] The maternal/carer's knowledge of ORS did not tally with the actual ORS preparation skills irrespective of geographical location.

[iii] Breastfeeding was inadequately practised in urban areas and the contributing factors were probably the changing patterns of lifestyle in towns and peri-urban areas such as maternal employment as well as over-exposure to formula feeds.

[iv] The maternal educational/working conditions had left the child to be cared for more by the maids especially in urban areas.

[v] The nutritional status of preschool children especially the chronic forms of PEM were still rampant in rural areas while acute PEM was as common in peri-urban fringes. Urban children though exposed to better social amenities still suffered from malnutrition which indicated that its causes were multifactorial.

direct food intervention diverts attention from the social, economic and political causes of malnutrition with the result that attempts to solve the more difficult but basic problems such as income redistribution, unemployment and land reform, may be postponed."

Thus nutritional supplementation should be considered with the background knowledge of its advantages and disadvantages lest the very people it is intended to help get caught up in its resultant dependency trap.

4.6 IMMUNISATION STATUS

The results of immunisation coverage as shown in Table VI are a reflection on the coverage in the selected age group. They could however also be used as indicators for other districts especially those with bigger townships like Butterworth and Ezibeleni near Queenstown since the distribution of peri-urban fringes is similar. For all immunisations given, the percentage coverage is lowest in rural areas. An earlier more comprehensive survey³⁶ revealed major community socioeconomic problems as well as the government's operational difficulties associated with vaccination coverage. Given the poor socioeconomic status discovered in rural areas in this study and the poor vaccination status of migrant Transkeian children found in Cape Town³⁹⁻⁴⁰ it is time that a more nationally comprehensive immunisation policy was launched to improve the situation. The findings in the above studies done in Cape Town showed an increasing number of poorly vaccinated children to be coming from the Transkei. In general most families which migrate to Cape Town and other cities are from impoverished rural areas where the availability of clinics as well as the affordability of transport to take the child for vaccinations are still critical problems. As long as the rural communities remain economically isolated from the rest of the country, rural urban migrations will continue and along with them the chain of disease transmission especially measles will stretch from the Transkeian rural areas to Cape Town, Johannesburg and other metropolitan areas where job opportunities exist.

Recent recommendations on measles control, suggested: improving clinic infrastructure in general, tightening up on "missed opportunities" in the curative sector, solving the regular inadequacy of vaccine supply and the introduction of a two dose Edmonstson-Zaghen vaccine which targets high risk children at six months.¹

covered the most comprehensive area and involved 7931 black under-five children discovered that 9.8% of all these children were underweight, 27.2% were stunted and 2.0% were wasted. In this survey we found that 9.5% of our subjects were underweight, 25.5% were stunted and only 3.8% had the severe acute PEM form [wasting]. It appears therefore that the most prominent and prevalent problem in the region is chronic PEM [stunting] with acute PEM representing just a tip of the iceberg of the nutritional problem.

It is crucial to note however that acute PEM cases are the ones seen routinely in hospitals and account for the high admission rates in most wards. A longitudinal survey would detect better the possible seasonal changes in incidence and prevalence of acute PEM.

The regional distribution of PEM is also remarkable in that more children were underweight and stunted in peri-urban and rural areas than in towns. This corresponded with lower median monthly per capita food expenditure for these areas compared to urban zones, a factor confirmed by earlier researchers in Yemen.²⁰

Wasting however appeared to be more prevalent in peri-urban fringes than in other areas. This again highlighted the fact that the urban poor might even be worse off in many aspects than their counterparts in rural areas. More detailed studies will be required to assess this aspect in greater depth.

Regarding nutritional intervention programmes such as government emergency food subsidies towards vulnerable high risk groups, the question is still controversial. The Department of National Health and Population Development recently estimated that 2.3 million South Africans should be considered for emergency nutritional assistance.⁶² Raczynski's protracted observations in Chile⁶³ showed that nutrition supplementation programmes targeted at the poorest sectors of the community did temporarily prevent decline of nutritional status among preschool children. He noted however a gradual increase in malnutrition among children of school going age. Other research workers⁶⁴ have questioned the cost effectiveness of nutrition supplementation compared to medical care provision in reducing child mortality. They noted that "supplementation programmes are said to be associated with a reduction in breastfeeding, and cause greater dependency on imported food". They further argued that

the only chance to breastfeed is at night. And that is only with mothers who stay with their babies in towns and peri-urban areas. This issue requires further careful study to determine the nature of health rights accorded to mothers and their children in the work place not only in Transkei but even in the rest of South Africa.

Because of housing shortages and overcrowding, as well as most maids being generally unpredictable in that they tend to change from job to job very frequently, most working mothers will only breastfeed for a short time, start the baby on supplementary feeds and probably send it home to stay with an aunt or grandmother.

Rural mothers on the other hand do breastfeed for a longer period. Though most mothers could hardly afford to buy food for the family [median MPCFE = R16.7], 51.1% of all children in rural areas had started supplementary feeds by 1 month of age and 91.4% by the age of 4 months. This was probably aggravated by the aggressive advertising and marketing strategies run by formula feeds companies.

With poor water sources and use of the feeding bottle still in practice, diarrhoea and associated malnutrition are almost inevitable. As Ntoane⁶⁰ described while focusing on rural women and health, profound problems still face mothers and children and these need to be urgently addressed if national health has to improve.

4.5 NUTRITIONAL STATUS:

The use of simple anthropometric measurements to assess the nutritional status of a community has proved to be a practical cost-effective technique especially in developing countries. Though some of these measures are less accurate than clinical and biochemical techniques they nevertheless provide best screening guidelines for further research and nutrition intervention programmes.⁶¹

Many nutritional studies done in South Africa⁸⁻¹⁶ in recent years on preschool children and mainly focusing on the black population have highlighted the severity of protein energy malnutrition [PEM] especially the high prevalence of its chronic forms with stunting accounting for the highest proportion of the problem. The Rhosa Nutrition Survey¹³ which

administration of this simple solution might mean the difference between life and death. The use of VHW in GOBI-FFF programmes not only improves community understanding but also its acceptance.⁵⁰

4.3 WATER SUPPLY AND DIARRHOEA:

Despite 1981-1990 being declared the United Nations Decade of International Drinking Water Supply and Sanitation with the objective of having "clean water and adequate sanitation for all by the year 1990", recent DBSA findings⁵⁷ indicate that only 25% of homes in Transkei have access to improved water supply or to adequate individual sanitation.

The close association between clean water source and diarrhoea in this study also showed that rural water distribution schemes as part of development, were critically essential. Many rural areas had no access to clean water and had to depend on unprotected springs, wells and rivers where they shared the dirty water with their animals.

The usual theory of boiling drinking water could hardly work in these areas either. Eberhard⁵⁸ in a recent study pointed out that 99% of rural homeland households used wood as energy source. But Wilson and Ramphole⁵⁹ found that "in rural areas increasing deforestation means that women must walk further and further distances at increasing danger to gather enough wood for cooking ... and that given that the amount of time consumed in the act of providing fuel, more time is spent on food preparation than food production."

4.4 GOBI - BREASTFEEDING AND SUPPLEMENTARY FEEDS

The changing patterns of employment referred to earlier, with mothers in urban areas being engaged more in active employment during the day have disrupted family life in general and child care in particular. Although the factors determining employment were not part of this study, the researchers came to understand that most employers strongly resent pregnant mothers and many women lose their jobs when they fall pregnant. There is also no maternity leave in most working places and with the job as the only source of income, mothers return to work during puerperium. The working hours do not encourage breast feeding breaks and

of household subsistence level in major urban centres of RSA.⁶⁸ Given that the study population was from Umtata district, which is the capital and economic nerve centre of Transkei, the situation is not likely to be any better in remote poorer districts of the country.

4.2 GOBI - DIARRHOEA AND ORAL REHYDRATION SOLUTION

That diarrhoeal disease and its consequent morbidity and mortality in preschool children is a major problem in this subcontinent has been well documented.⁴⁶⁻⁴⁷

This survey showed that no less than 20,8% of all children studied had diarrhoea in the two weeks prior to the interviews. It was disheartening however to learn that while a good proportion of all mothers/guardians in all areas surveyed had heard and knew about the use of ORT [oral rehydration therapy], and while a high proportion claimed to have used it to treat diarrhoea, hardly any of them knew the proper method of constituting the solution as had been explained at the clinic. This factor deserves more study to find out a more understandable technique that would not confuse mothers especially from rural areas. This finding however is not isolated for even "among health workers who do advocate the use of Oral Fluid Therapy [OFT], there is a considerable disagreement and confusion regarding the choice of oral diarrhoeal disease solution [ODDS]".⁴⁸ It should be noted however that this knowledge was not necessary where prepacked ORS sachets were easily accessible and available. This is on the assumption that the mothers/carers followed the instructions written on the sachets while preparing the solution.

In the Hewu district of neighbouring Ciskei however, the use of village health workers in teaching mothers how to safely prepare the sugar/salt solution has not only met with astounding success, but has also led to a gradual reduction in diarrhoea related mortality.⁴⁹

In view of the changing emphasis from the curative school of thought to more preventive community oriented primary health care, it is critical to consider the use of village health workers [VHW] in this region to try and reduce the diarrhoea related morbidity and mortality especially in poverty stricken rural areas where poor communication and accessibility of health services usually delay the arrival of a dehydrated child to hospital. The timely

common to find a rural child whose educated mother was living and working in town (actual figures not available), living with a grandmother. This affected the child indirectly with the separation breaking the maternal bonding and the grandmother/aunt sometimes unable to provide all the child's nutritional requirements.

In this part of the world where the level of subsistence dependency is minimal and where the subsistence economy has been virtually replaced by modern cash economy, even the most remote villagers survive on town-based foodstuffs. Thus employment is very crucial for survival. Yet unemployment is rampant with an estimated 5 million blacks in South Africa currently unemployed of whom nearly 60% are under the age of 30.⁵⁵ Although no statistics exist for the level of unemployment in Transkei, the situation is likely to be worse than that in South Africa.

While most fathers actively supported their children, lack of family coherence and changing family structures brought about by migratory labour have increased dependency on remitted wages. As Jinabhai and Coovadia⁵⁶ put it:

"...the migrant labour system has caused the collapse of family and kinship systems which had traditionally provided a measure of support. The denial of social and educational means to achieve skills and expertise, and the suppression of labour movement have kept Blacks unemployed and underpaid. Food shortage compels Blacks to seek wage employment. This swells the supply of workers which in turn keeps wages low. Therefore malnutrition is related to the creation and maintenance of a cheap labour force."

Our experiences in this survey made us realise that these remitted wages were either not constant enough or when they did arrive it was sometimes too late to take a sick child for treatment or for immunisations.

The family's socioeconomic status as indicated by the monthly per capita food expenditure [MPFE] was generally poor. The lognormal distribution [skewed] indicated that the majority of families survived on very little money for food [median R21] with poverty worse in peri-urban and in rural areas. This was similarly pointed out by Potgieter in his evaluation

CHAPTER 4. DISCUSSION

The findings of this survey revealed major challenges in the field of correlating child health with the various stages of urbanisation and socio-economic development in the study areas.

4.1 DEMOGRAPHIC CHARACTERISTICS:

The universal finding of young mothers (Fig. III) in all study areas along with many young children is typical of the population explosion stage of the demographic transition.

The discovery of many home deliveries in rural areas far greater than in urban and peri-urban zones shows that the home delivery rate (almost ten times as that in urban areas) has not improved much since the 1982 study²⁴. This may be a reflection of the poor availability and accessibility to these services in rural areas. Whatever the reason for under-utilisation of health services, there is a need to address either the establishment of more health delivery points in these areas, and/or training Traditional birth attendants to serve the community in the primary health care context. In view of the fact that some mothers in rural areas are likely to continue using Traditional birth attendants even with future social developments, it would be strategic to address their training more seriously. The acceptability of such birth attendants should however first be assessed before embarking on largescale implementation of their training.

Regarding child care, this survey demonstrated a new development where the maid had become a foster "mother" in urban areas. Because of the mother's employment and changing work patterns there appeared to be a shift from maternal care in towns to maicare. This is likely to have profound implications regarding some aspects of child care such as breastfeeding and even the baby-mother bonding relationship.

The availability of employment for the mother was closely related to the maternal education and as expressed in Table II urban mothers profoundly enjoyed more working facilities and educational level than their counterparts in rural areas. Even the few educated mothers in the rural areas did not want to live there since there were no job opportunities. It was thus

21. Where does your household get its water from?

Home tap	1
Communal tap	2
Well	3
Protected spring	4
Unprotected spring	5
River	6
Other (specify)	7
.....	

62

16. Does the child have any siblings? (any)

Yes	
No	2

	50
--	----

17. IF YES, what type of employment?

Paid on monthly basis	1
Paid on weekly basis	2
Casual/daily basis	3

	51
--	----

18. Is the mother married?

Yes	1
No	2

	52
--	----

19. Does the child's father live here?

Yes	1
No	2

	53
--	----

20. Does the child's father support this child?

Yes	1
No	2

	54
--	----

21. How much money does the family spend on food in one month (rand)?

R _____

			57
--	--	--	----

22. How many adults live in this house?

		58
--	--	----

23. How many children and babies live in this house?

		61
--	--	----

10. How long has the child been at home? (in months)

Less than 1 month	1
1-3 months	2
4-6 months	3
7-11 months	4
One year or more	5

42

11. In which town or village was the child born?

Here	1
Other (specify)	2

43

12. Who cares for this child most of the time?

Mother	1
Grandmother	2
Brother/sister	3
Naid	4
Other (specify)	5

44

13. Does the child's mother live in this village/town?

Most of the time	1
Sometimes	2
Never	3

45

14. What was the highest standard that the child's mother completed at school?

47

15. How old is the mother? _____ years

49

1. DATE: 7

2. FIELD WORKER: 18

3. CHILD'S FIRST NAME: 31

4. District No 32

5. Cluster No 34

6. Child No (within cluster) 36

7. Who is answering the questions?

Mother	1
Grandmother	2
Brother/sister	3
Other (specify)	4
.....	

37

39

8. Sex

Male	1
Female	2

40

9. Was the child born in a:

Clinic	1
Hospital	2
Home	3
Other (specify)	4
.....	

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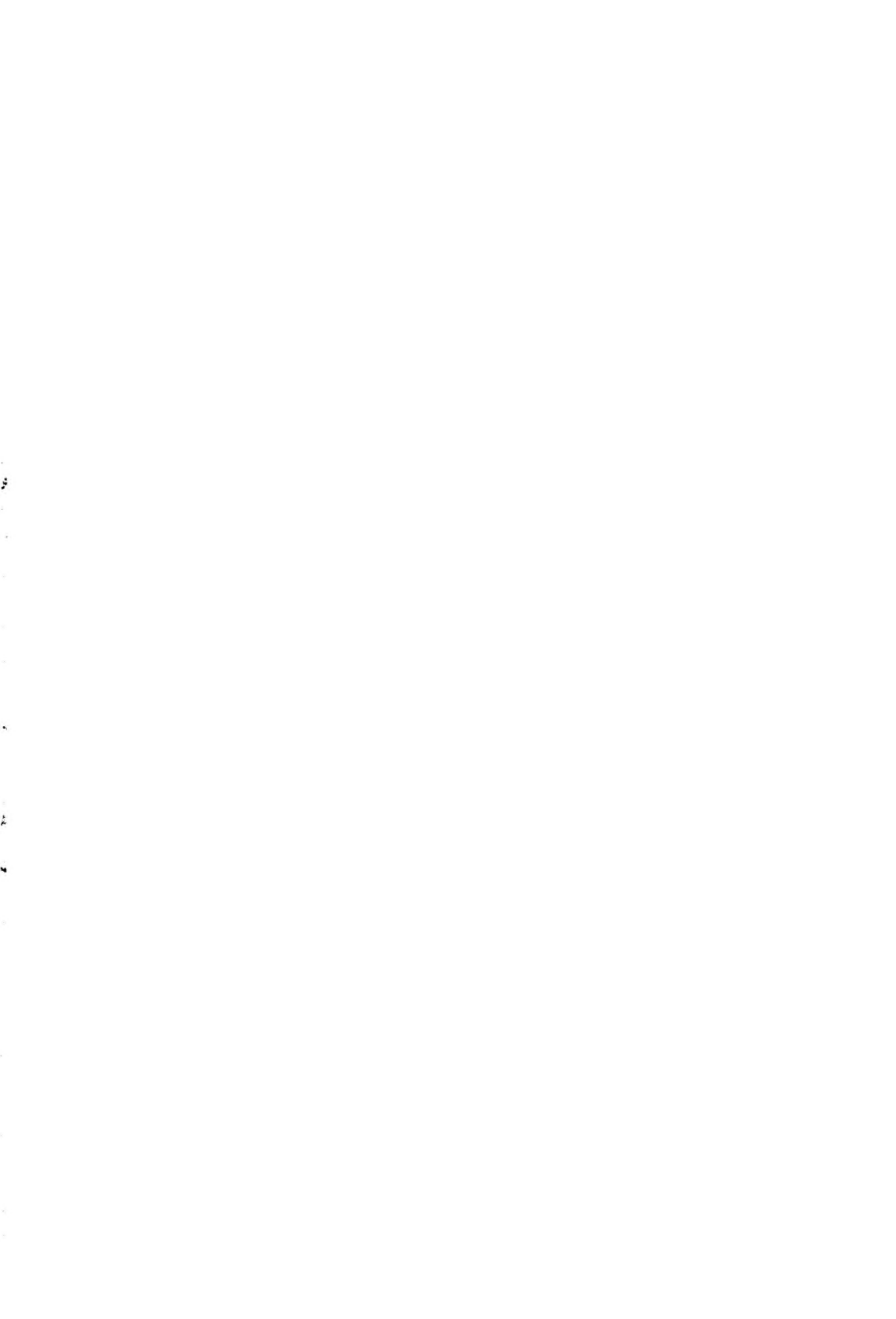
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36. Was this child ever breastfed?

Yes	1
No	2
Not sure	3

30

37. Is this child still being breastfed?

Yes	1
No	2

33

38. IF NO, how old was the child when he/she stopped breastfeeding?

_____ years _____ months

35

39. At what age was this child first given feeds or water or milk other than breast milk?

_____ months

36

32. Has this child had any diarrhoea during the past two weeks?

Yes	1
No	2

20

33. Do you know about the sugar/salt solution (SSS)?

Yes	1
No	2
Not sure	3

21

34. IF YES, have you ever used it to treat diarrhoea (local word)?

Yes	1
No	2

23

35. IF YES,

How much water
How much saltteasp
How much sugarteasp

				27
			29	
			31	

25. Does this child have a clinic card?

Yes (seen)	1
No	2
Yes but not available	3

26. IF CARD SEEN, what is this child's date of birth on card?

D	D	M	M	Y	Y

27. IF CARD NOT SEEN, what is child's date of birth?

D	D	M	M	Y	Y

28. Source of date of birth?

Birth certificate	1
Memory	2
Date of birth unknown	3

29. If date of birth not known, what is the child's age?

_____ years _____ months

30. Has this child ever had measles disease?

Yes	1
No	2
Don't know	3

31. IF YES, how old was the child when he/she had measles?

_____ years _____ months

1

2

8

14

15

17

18

20

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