

SECOND CARNEGIE INQUIRY INTO POVERTY
AND DEVELOPMENT IN SOUTHERN AFRICA

Gastro-enteritis in the Ciskei

by

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Introduction

Gastro-enteritis is the second most common cause of death in Blacks in South Africa. The urban mortality due to Gastro-enteritis has been estimated to be 86 per 100 000. (Dept. of stats, Report on Bantu deaths in selected magisterial districts 1976). The vast majority of these deaths are in young children.

At Cecilia Makiwane Hospital 17.6% (884) of paediatric admissions (July 1981 to June 1982) were for Gastro-enteritis. Of these 3% died and it is thought that for every child that dies in hospital many more die in the community.

Cecilia Makiwane Hospital is the only hospital in Mdantsane - a township of about 500 000 people. It also serves the surrounding rural areas and acts as a referral centre for other hospitals in the Ciskei. The hospital has 1000 in-patients and employs 60 doctors including army doctors. The population served are mainly Xhosa speaking.

Methodology

This is an analytic retrospective study. The samples are hospital based cluster samples. The gastro group included all children under three years of age admitted to the hospital requiring intravenous rehydration because of gastro-enteritis during specific periods of time in December 1982 and January 1983. The control group consisted of children, under three years of age, admitted over the same time periods for reasons other than gastro. Most of the controls were admitted for respiratory tract infections.

Data was obtained by interviewing the guardian admitted with the child, using a questionnaire requiring both yes or no and descriptive answers. Interviews were conducted by the author &|or one of the five members of hospital staff assisting in the study. The interviews took place in the ward and answers were not corrected however wrong we thought them to be.

The results were analysed for statistically significant differences by calculating chi squares on simple 2x2 or 3x2 tables. Values of $P < 0.05$ were taken as significant.

Limitations of the Study

The sample is biased by being hospital based. Poorer people associate the hospital with being asked for money and may thus avoid it and people who live at a distance from the hospital are less likely to use it.

We asked 6 people who had lost children the place of death and found that 5 out of 6 had died at home as opposed to in hospital. The sample is too small to be generalizable, but does suggest that more children die in the community than in the hospital.

Having a hospital based control group means that we are comparing two groups of sick children and thus factors associated with the control group are not to be associated with good health, but simply with a decreased risk of gastro-enteritis.

Spontaneity of answers may have been affected by lack of privacy in the ward during interviews and the official uniforms of the interviewers, but this is not thought to be of enough significance to invalidate the findings.

Results and Findings

Nutrition

The following are weights on admission to hospital and exclude babies less than one month old.

Table of Weights for Ages

	Under third centile	Over third centile	Total
Gastro babies	48 (53%)	42 (47%)	90
Controls	20 (44%)	25 (56%)	45

Chi squared = 0.948 0.10 < P < 0.5

Two control children whose weights were not recorded were excluded from this analysis. More of the gastro children than of the control children seem to have been severely underweight for their age, but the weights of the gastro children - on average 5% dehydrated have not been corrected for dehydration. The difference in weights for ages is not significant at the 5% level, but it is significant at the 10% level & a larger study that included more children might show a difference that was significant at a 5% level. A comparison of the weights for ages of all children over the age of one month admitted to the hospital over a one year period again showed no significant difference between those admitted for gastro-enteritis and the paediatric admissions as a whole. One must also take into account that the controls were part of a hospital population - many suffering from debilitating diseases or malnutrition.

Breast Feeding

Babies were divided into three groups - those who were entirely breast fed, those who were partially breast fed and supplemented by powdered milk, fresh milk or amaa, and those who were not breast fed at all.

Table comparing Breast feeding practises

	Entirely	Partially	Not	Total
Gastro	5 (6%)	28 (31%)	57 (63%)	90
Control	4 (9%)	16 (34%)	27 (57%)	47

Complete or partial breast feeding compared to no breast feeding. $\chi^2=0.439$
 $P>0.50$

Completely breast fed compared to partial or no breast feeding. $\chi^2=0.451$
 $P>0.5$.

There is no significant difference between gastro and control groups with regard to breast feeding entirely, partially or not at all.

There was also no significant difference between the number of gastros and controls who had never been breast fed.

Reasons given for supplementing breast milk were that the mother worked during the day or believed that the child would grow faster if breast milk was supplemented. Reasons given for having stopped breast feeding were often dubious:- The baby did not like breast milk or refused to suck. A few mothers had been told that breast milk was bad for their babies.

When asked about the ideal diet for a baby under one year, most mothers mentioned a particular brand of formula feed - the more expensive it was, the more status it was given. However, when directly asked which is preferable - breast milk or powdered milk, the vast majority said breast milk.

Reasons given for using formula feeds were :- 'It makes the baby big and fat'; 'It is like mothers milk'; 'It is stronger than breast milk'; 'It has medicine in it' - This demonstrates the influence that formula feed advertising has had.

When asked the ideal diet for a child under one year, given ideal circumstances - enough money, time, etc, the foods mentioned were invariably different from, and more nutritious than, the foods actually given. Many mentioned eggs and vegetables. Processed cereals - Nestum and Cerelac - were high on the list. The most common weaning foods actually used were 'umvumbo' - crumbled bread and amaas; 'inembe' - flour roasted till brown and then steamed with salt and sugar. 'Nomvubo' - amaas and mealie-meal was used to a lesser extent.

Powdered milk was often overdiluted or ran out and the child given black tea, glucose water, or plain water. Grandparents seem to be the greatest sources of advice in the feeding of their grandchildren.

Support from Fathers and from Clinics.

There was no significant difference between gastro and control groups with regard to paternal support. In total 46% of fathers were not supporting their children - either because they were not working or because they had 'deserted'.

There was also no significant difference between the two groups with regard to receiving free or partially subsidised milk from the clinics. 26% of the total were receiving milk from the clinics. Partially or entirely subsidised milk is given to children who are malnourished or have particular social problems. Children entitled to milk did not always get it - either the milk had run out at the clinic or the guardian could not get to the clinic to fetch it.

Hygiene

Almost all the mothers said that they washed their hands in the morning &|or after coming from the toilet &|or after changing a nappy &|or before preparing food. This shows that the knowledge of hygiene is present, however if all one's water is fetched by bucket from a river or dam, as it is in 34% of those who prepare milk for their children, It is unlikely that it will be used to wash hands which seem clean.

Water Supply

There was no significant difference between gastro and control groups with regard to a piped water supply. 61% of the entire sample had piped water, 20% obtained water from a river, 12% from a bore hole or dam and 8% were not asked the question as they did not use water to mix milk for their babies. However, of those with access to taps, significantly fewer of the gastro sample had taps inside their homes. This means that although the water supply was just as clean in the gastro group as in the control group, it was less accessible in the gastro group. People would therefore use less of it as it had to be carried in buckets from the community tap to the house. It would thus seem that quantity or availability of water is more important than quality.

Table comparing position of Taps.

	Tap inside	Tap outside	Total with taps
Gastro	5	25	30
Control	7	8	15

Chi squared = 4,60 P<0.05.

Toilets

The toilet facilities of the gastro children's house-holds were significantly poorer than those of the controls. Gastro house-holds were more likely to have no toilets.

	Flushable or Pit	No toilet	Total
Gastro	74 (82%)	16 (18%)	90
Control	43 (91%)	4 (9%)	47

Chi squared=4.403 0.02<P<0.05

Of those who had toilets there was no significant difference between the number of flushable and pit toilets in the two groups.

Previous Health

There was no significant difference between the two groups as to whether or not the children had had gastro-enteritis previously. However the gastro children had an increased frequency of previous attacks. The attack with which they were presenting at the time of the survey was not included.

Average Frequency of Gastro-enteritis

	More than once per year	Less than once per year	Total with past Gastro-enteritis
Gastro	15 (79%)	4 (21%)	19
Control	2 (20%)	8 (80%)	10

Chi squared = 9.38 0.001 < P < 0.01

Death Rate amongst Siblings

This was calculated as total number of siblings that had died, divided by total number of siblings in the sample. There was no significant difference between the death rates in the two groups.

Sibling Death Rate

Gastro	13/135 (9.6%)
Control	3/64 (4.7%)

Chi squared = 1.434 0.10 < P < 0.50

The average number of children per family differed from 3 in the control group to 3.5 in the gastro group which is not significant. Children with gastro-enteritis had not had significantly more infections over the three months prior to admission compared to the control group. 59% of the gastro babies had concomitant infections. The commonest being Otitis Media (Ear infection), respiratory infections, Thrush and skin infections.

Action Sought when Child fell ill with Diarrhoea

Fourty percent of guardians said that they had tried to treat the baby themselves before seeking help from Western medical services. 23% of gastro babies had been given enemas. This is more than likely an underestimation - Most interviewees being aware of western medicine's attitude towards traditional medicine. Most of the enemas given were soapy water - Sunlight or 'blue soap' being used. One third were herbal and one was salt water.

Types of Enemas given

Soap	11 (52%)
Herbal	7 (33%)
Salt water	1 (5%)
Not specified	2 (10%)

9% of gastro babies had been given half strength Darrows solution - obtained from the clinic for a previous attack or for use in case of an attack. Western medicines such as Aspirin, Panado and vitamin syrup had been given to 7% of the gastro babies. Three gastro babies had received salted water orally - Most likely misinterpreted homemade Darrows or a compromise - salt being cheaper than sugar.

Home treatment given to babies with gastro-enteritis

Darrows	8 (9%)
Other fluid	3 (3%)
Change in diet	0
Western meds	6 (7%)
Enemas	21 (23%)
Total	37

For the majority the first line of Western treatment was the clinic. Most of the babies reffered from the clinics had been given Darrows orally, but

only a few had been put onto intra-venous drips. Thirty percent came straight to the hospital, and four percent went to a private doctor first.

Discussion

Toilets, of any type, have proved their worth - they are more than just pleasing to Western aesthetics, they have a role in preventing the spread of faecally-transmitted disease. It is important when encouraging communities to build them that they realise this, or, as has happened before, they may be built purely to pacify health workers and not actually used.

The importance of quantity or availability of water over quality has been shown. When asked what they could do to make water clean for drinking, almost all mothers said that they boiled it, some knew that adding 'Jik' purified it. It is not good enough to have piped water if people still have to carry it to their homes in buckets - people are then limited to the amount that they can carry. It also means that although they may obtain water from a piped supply, in effect once the water enters the home it becomes stagnant. It lies around in the bucket and the same water may be used for any number of reasons.

The fact that the gastro group had had more frequent previous episodes of gastro-enteritis enhances the validity of these results i.e. we are not dealing with chance events, but a group of children more predisposed to the disease for whatever reason. This means that children admitted for gastro form an at risk group for developing gastro at a later stage and it is thus important that their circumstances be investigated and their care-takers given appropriate advice. Our experience with incorrectly made-up home oral rehydrationfluid emphasizes that anything taught as health education needs to be well taught.

It was surprising to find no significant difference between the number of children being bottle fed in the two groups. One expects breast fed babies to have less gastro-enteritis as breast milk contains antibodies and as it needs no preparation it has less chance of being contaminated.

A likely explanation is that the squalid conditions in which these children live are such that the potentially increased risk of infection due to bottle feeding is in fact negligible. i.e. children living in such unhygienic conditions with poor water and toilet facilities have so many potential sources of infection that bottle feeding will not make a significant difference to their getting gastro-enteritis. It is only as conditions improve above a certain level that bottle feeding adds significant risk.

The dangers of enemas (They exacerbate the fluid loss) needs to be made known. I feel that once mothers have knowledge of alternative ways of dealing with gastro-enteritis - Darrows or home-made oral rehydration - the use of enemas will fade.

Clinics, being the first line of Western treatment sought in the majority of cases deserve some attention. The hospital has nineteen clinics in the areas it serves. These are staffed by sisters and nurses, who have not had any special training as 'Primary Health Care Nurses', and they are visited once a month by a doctor. Treatment with oral rehydration by the clinics is very important, but may be inadequate in children who have severe diarrhoea and/or vomiting and in those where there will be any delay in reaching a hospital. Thus any sister working in a clinic should be competent in putting up intra-venous lines in children.

The general problems of the community are complex. Most mothers knew about good diets for their children, but lack of money prevented them from implementing these diets; They know about home and personal hygiene, but inaccessibility of water makes it difficult to put into practise; they answer that breast milk is superior, but the need to return to work which offers no child care facilities, or the pressure of formula feed advertising forces bottle-feeding.

Conclusions

This study has shown, with statistical evidence, that factors associated with gastro-enteritis as opposed to other diseases of children requiring hospitalization, include:

- Lack of toilets
- Lack of taps inside homes
- More frequent previous attacks of gastro-enteritis.

We have also gained some insight into the problems of the community in general and how they are dealt with.

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AppendixPresenting Complaints of the Control Group. (1982)

Pneumonia	14
Bronchitis	
Bronchiolitis	7
Nutritional	6
Otitis Media	4
Measles Pneumonia	4
Mild Gastro	3
Poison Ingestion	2
Thrush	2
Worms	2
Thrush	2
TB Contact	1
Rash	1
Fits	1
Social	1
Cardiac Murmur	1
Ricketts	1
Scabies	1
Conjunctivitis	1
Pharyngitis	1
Delayed	
Milestones	1
Sores in mouth	1

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Quoting (in context) from these preliminary papers with due acknowledgement is of course allowed, but for permission to reprint any material, or for further information about the Inquiry, please write to:

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