

A Study of Children under the Age of Six Years Attending a Rural General Practice — N Naidoo



Dr N Naidoo

MBChB (Natal) MFGP (SA), Dip For Med (SA), MPrax Med (Medunsa)
PO Box 7
Hanover
3440

Curriculum vitae

Dr Neethia Naidoo qualified as a general practitioner from the University of Natal Medical School in Durban. He has been in general practice since 1972 and obtained the MFGP in 1978. He is chairman of the Natal Midland Branch of the South African Academy of Family Practice/Primary Care and is a member of the National Council of the Academy. He was the first President of the National Medical and Dental Association (NAMDA). He is presently chairman of the Dalton and Districts Child and Family Welfare Society and District Surgeon for the magisterial district of New Hanover. He is active in under- and post-graduate education in general practice.

Summary

A descriptive study was undertaken in 1989 of children under 6 years of age, attending a rural general practice. The findings strongly call for urgent attention and help. Aspects which are highlighted, are: breastfeeding, educational level of child-minders, immunisation, sanitation, drinking water, infant mortality, nutrition, health services, etc. Specific recommendations are listed.

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KEYWORDS:

Physician, family; Child Nutrition; Child, preschool; Child Health Services; Infant Mortality.

Introduction

In more recent years a large body of evidence has accumulated to show that rapid progress in child health and well-being, including halving of mortality rates from 100 to less than 50 per 1000, can be achieved in economically poor communities.¹

Many of us are probably aware of the impact of the Alma Ata Declaration of 1978² in those countries who chose to take up this challenge and made a commitment politically, socially and economically to achieve this goal for their people. Many of us are aware of the recommendations made at RIGA in 1988 in the WHO publication, "From Alma-Ata to the year 2000 - Reflections at the Midpoint."²

The GOBI FFF - Strategy is probably

also known to many of us. The potential that this Strategy has to save the lives of about 100 million children in the 1990's and prevent about 500 million children suffering ill health, and the cost effectiveness of this strategy for the world's children may or may not be known to all of us.

This new way forward or "The New Road" is based not on highly specialised medical personnel working in expensive hospitals, with sophisticated technology, but in active communities with their involvement and participation backed by appropriate low cost technologies and well-trained paraprofessional development workers who are themselves supported by a full range of government services ie a political commitment and involvement. Examples of these are the People's Republic of China, Sri Lanka, the two Koreas, Taiwan and Kerala in South India.

Taken together, they represent a persuasive case that in the hands of able and committed leaders and in populations or communities capable of responsibilities for their welfare, well designed and effectively operating projects can reduce infant and child mortality rates by half of their present rates within one to 5 years,³ at a cost of less than equivalent of 2% per capita income, - an amount no greater than what is currently being allocated to health. Thus, community development workers could advise on nutrition, on water supply, help with hygiene and sanitation advice, organise immunisation campaigns; distribute some helpful basic medicines, advise on family spacing and safer child birth, deal with common injuries and illnesses and refer problems to more highly trained or specialised people.

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WHO, UNICEF, and UNESCO have joined over 100 non governmental organisations including MEDUNSA, to bring together today's vital information on child health. This is an international health promotion initiative based on a compilation of ten of the most important areas of child care. The publication called "FACTS FOR LIFE"⁴ represents the most up to date scientific consensus available on practical low cost, family-based ways to improve child health. In other words, this is a measure of a practical opportunity which is now available to family physicians world wide for protecting the lives and the growth of many millions of children with the use of low cost vaccines, oral rehydration therapy and antibiotics. Between them these measures will prevent the majority of child deaths and child malnutrition in the developing world as measles, dehydration and pneumonia will kill at least 50 million children from the 100 million who will die in the

A strong request to implement the "National Plan for Health Services Facilities"

1990s. A significant proportion of children who will die from tetanus, whooping cough and be disabled from polio, malnutrition and who will be illiterate could all be relatively easily treated and these conditions prevented by employing very simple, cost effective measures. Why has this not been effected? Is this a question of money, technology, or a problem of communication? The latter probably plays an important role.

The SA Family Practice journal has carried several editorials and articles in this field. Medical schools have been slow in imparting this knowledge to their students with the result that health professionals and other community organisations are not aware that this strategy is easily applicable and achievable and that

44% of all children were at, or below, the 3rd centile for weight

what is needed is the will and determination to mobilise all possible resources to do it.

Do general practitioners have a role to play in achieving this for the communities we serve? Family physicians are ideally suited for this purpose, forming a vital link as they do between the individual patient, their families and the communities they serve in meeting these primary health care needs. It is a challenge that every South African rural and urban GP should take it up if they are to be a vital link in this country's health delivery system and remain relevant to these issues. The author is convinced that these issues pertain to all rural underdeveloped impoverished areas in South Africa.

Practice Profile

The practice is a private and District Surgeon practice serving all communities in the magisterial district of New Hanover. The present population of 32 391 is made up of 84,5% Blacks (27 369), 8,6% Whites (2 775), 6,7% Asians (2 162) and 0,2% (85) from other groups.

The people live in small villages and on farms and are engaged in mainly agricultural activities related to sugar production, wattle and timber industries, maize and cattle farming.

Health services are provided by five general practitioners. No community health facility, day clinic, hospital etc exists in the magisterial district. Several mobile clinic visits are provided by the district surgeon in his private capacity. Mobile Clinics run by the Department of Health provide weekly services at several visiting points in the district.

Health Committees exist in two villages. Several other villages and settlements are serviced by other services which operate from Pietermaritzburg.

Purpose and Objectives

A descriptive study of children under six years attending the practice over a 12 month period for preventive and curative care, was done to establish their health status.

The objectives of the study were to determine the nutritional and immunisation status of children

Many children could be saved by just employing very simple, cost effective measures

under the age of six years, to assess the level of education and employment status of the child-minders of these children, to assess the type of water and sanitation systems used, to identify the possible areas in need of health care services in

preparation for a community-based health care intervention programme and to highlight the benefit and implications of such studies for Family Practice/Primary Care in South Africa.

Methodology

Two senior practice nurses were briefed on the purpose of the study and the methodology involved. A structured questionnaire was used to eliminate any bias.

The measurement of height, weight and estimation of age were as described by Bac M,³ Ijsselmuiden C,^{5,6} and in the surveys carried out at Gelukspan Community Hospital^{7,8,9}

GPs are ideally suited to implement these necessary health care strategies

and by Morley D¹⁰. The 1976 Standards of the United States' National Centre for Health Statistics were used to assess nutritional status.

The respondents who were either the mothers, the granny or other child-minders were questioned with regard to information contained in the questionnaire and these were recorded at the time of the interview by the practice nurse. All measurements were verified by myself.

The children in the study were seen in the rural clinics in the district and in the New Hanover and Dalton practices.

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Table 1: Age, Sex and Race Distribution of Children

Age (in Months)	Sex		Cum (%)	Race			Total	
	Male	Female		Blacks	Whites	Asians	No	(%)
0-9	194	158	35,2	308	1	43	352	35,1
10-19	157	139	64,7	274	1	21	296	29,6
20-29	90	59	79,6	141	0	8	149	14,9
30-39	48	39	88,3	82	0	5	87	8,7
40-72	73	44	100,0	97	1	19	117	11,7
Total	562	439		902	3	96	1001	100
Percent (%)	56,2	43,8		90,2	0,2	9,6	100	100

Table 2: Child Care: Race and Sex Distribution of Children

Race	Sex		Carer			Total	
	Male	Female	Mother	Granny	Other	No	(%)
Blacks	507	395	508	300	94	902	90,2
Whites	1	3	0	0	3	3	0,2
Asians	54	42	80	9	7	96	9,6
Total	562	439	588	309	104	1001	100

Table 3: Immunization Status: Race and Employment of Minder

Immunization Status Matched for Age	Race			Employed	Unemployed
	Blacks	Whites	Asians		
Fully	656	3	64	312	411
Partly	246	0	32	125	513
Total	902	3	96	437	564

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Table 4: Immunization Status and Educational Level of Minder

Immunization Status Matched for Age	Educational Level			Total	
	Up to Std 2	Std 3-6	Std 7-10	No	(%)
Fully	405	188	131	724	72,3
Partly	148	72	57	277	27,7
Total	553	260	188	1001	100

P Value = 0,025 $\chi^2 = 58,27$

Table 5: Employment Status and Educational Level of Minder

Employment Status	Educational Level			Total	
	Up to Std 2	Std 3-6	Std 7-10	No	(%)
Employed	286	91	60	437	43,6
Unemployed	267	169	128	564	56,4
Total	553	260	188	1001	100

P Value = 0,000 $\chi^2 = 58,27$

Table 6: Nutritional Status: Care and Employment Status

Nutritional Status (Centiles)	Minder			Employed	
	Mother	Granny	Other	Yes	No
3rd & Below (439)	257	139	43	198	241
Above 3rd (562)	331	170	61	239	323
Total	588	309	104	437	564
Percent (%)	58,8	30,9	10,3	43,7	56,3

An in loco inspection of most of the areas where these patients came from, was also undertaken by myself to assess their health facilities.

Results

1. Age, Sex, Race Distribution

Table 1 shows that there were 56,2% males and 43,8% females. Ninety percent (90%) were blacks and 9,6% were Asians. Eighty percent (80%) of the children were under 30 months of age and 35% were under 10 months.

2. Child-minders: their employment and educational levels

Table 2 shows 83% of the Asian children were cared for by their mothers whereas only 56% of the black children were cared for by their mothers. A third of all black children were cared for by the grandmothers and 10% by others, usually the aunt, friend or neighbour. Only 9% and 7% of Asian children were cared for by the granny and other persons, respectively. (Table 3)

Forty three percent (43%) of the child-minders were employed. Fifty seven percent (57%) were unemployed or were housewives.

Table 5 shows that 55% of the care-minders had formal education up to Std 2, 26% had reached a level between Standard 3 and 6 and only 18% had a level of education between Std 7 and 10.

3. Immunisation, Feeding and Nutritional Status

Seventy two percent (72%) of the children were fully immunised

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whereas 28% were partly immunised as shown in Table 3. Twenty seven percent (27%) of the Blacks and 33% of the Asians were partly immunised; 18,7% of children under 19 months were partly immunised as shown in Graph 1. There was no significant difference between the immunisation status and educational status as shown in Table 4. Forty four percent (44%) of all children were at or below the 3rd centile for weight. Fifty six percent (56%) were at or above the 3rd centile for weight.

There were no significant differences between the nutritional status, the employment status, educational level and the number of children in the

The major water sources were not suitable for human consumption

family as shown in Tables 5, 6 and 7. Thirty seven percent (37%) of children under 10 months were being solely breast fed and 34% were only on the bottle; 20% of these children were on bottle, breast and solids as shown in Table 8. There were no significant racial differences in the feeding pattern of these children as shown in Table 9.

4. Child Deaths

One hundred and ninety eight children died in the past five years as shown in Table 12. Forty five percent (45%) of children died from diarrhoea and vomiting. Sixteen percent (16%) died from chest infections and febrile illnesses. Eleven percent (11%) died from severe malnutrition (Kwashiokor). Twelve

Graph 1: Number Fully & Partly Immunized

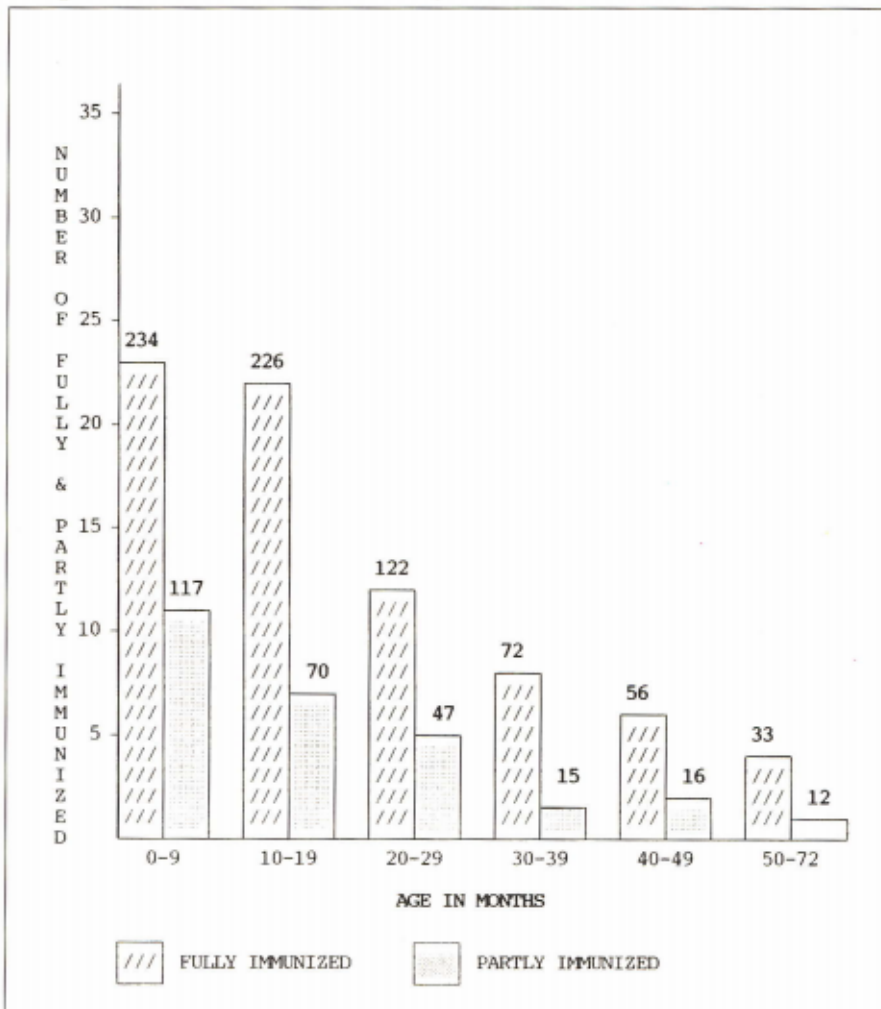


Table 7: Nutritional Status: Educational Status and Siblings in Family

Nutritional Status (Centiles)	Siblings in Family		Educational Level		
	Below 6	Above 6	< Std 2	Std 3-6	Std 7-10
3rd & Below (439)	420	19	259	109	71
Above 3rd (562)	536	26	294	151	117
Total (1001)	956	45	553	260	188

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Table 8: Age and Feeding Pattern of Children

Age (In months)	Feeds						Total	
	Bottle	Breast	Solids	Breast & Solids	Bottle & Breast	Other	No	(%)
0-9	120	131	14	10	63	13	352	35,2
10-19	62	41	116	28	16	33	296	29,6
20-29	10	5	125	3	1	5	149	14,9
30-39	1	3	80	1	0	2	87	8,7
40-72	3	2	111	0	0	1	117	11,7
Total	196	182	446	42	80	54	1001	100

Table 9: Race and Feeding Pattern of Children

Race	Feeds						Total
	Bottle	Breast	Solids	Breast & Solids	Bottle & Breast	Other	
Blacks	177	163	408	32	76	45	902
Whites	-	-	3	-	-	-	3
Asians	19	19	35	10	4	9	96
Total	196	182	446	42	80	54	1001

Table 10: Water Supply for Race Distribution

Race	Water Supply			Total
	Tap	Spring	River/Rain	
Blacks	367	86	499	902
Whites	3	-	-	3
Asians	87	3	6	96
Total	457	89	455	1001

percent (12%) of deaths were due to prematurity and stillbirths. Four percent (4%) of deaths were due to Measles.

5. Environmental and Housing Conditions

The water sources available to the children according to the child minders is shown in Table 10. Only 45% had "safe" tap water. Fifty five percent (55%) obtained water from a spring, or river or depended on rain water. A recent analysis of the water available in several villages in the magisterial district as shown in Table 10(a) and 10(b) shows that the majority of the water sources analysed were not suitable for human consumption. These included the major water sources to the black areas. Quality code A indicates acceptable for human consumption, B substandard for human consumption, C unacceptable for consumption. Ten percent of the Blacks had no sanitation, 88% used a pit system. Sixty one percent (61%) of the Indians had a waterborne system whereas 36% had a pit system as shown in Table 11.

The visit to the affected areas revealed that almost all Asians had reasonable housing which was well constructed with brick or block; whereas in black areas houses were mainly made with mud and wattle poles, corrugated iron, and thatched huts were present. In most cases ventilation was poor.

Discussion

The majority of children were young: 80% were under 30 months. The reason is that most of these children attended for the purposes of immunisation and routine weighing. The preponderance of males is unusual, as most of the studies done

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Table 10a: 02/03/90

Sample Site	Reference Number	Coliforms /100ml	E Coli /100ml	F Strep /100ml	Total 22°C	Counts/ml 37°C	Quality Code
Mpolweni Standpipe 1	X453	50	11	340			C
Mpolweni Standpipe 2	X454	26	10	1			C
Sterk River	X456	400	300	298			C
Injasutu River	X457	300	250	114			C
Noodsberg Sugar Standpipe	X452	0	0	1	0	1	C
Dalton Clinic	X451	20	0	0	2	86	B
Coolair Health Committee	X449	0	0	0	0	8	A
Schroeders Factory	X448	50	0	0	10	288	B
Crammond Garage	X450	10	2	19	62	335	C
New Hanover Clinic	X447	0	0	0	0	0	A

A - acceptable for human consumption B - substandard for human consumption C - unacceptable for human consumption

Table 10(b): 06/03/90

Sample Site	Reference Number	Coliforms /100ml	E Coli /100ml	F Strep /100ml	Total 22°C	Counts/ml 37°C	Quality Code
Noodsberg Standpipe	X492	0	0	0	300	832	X
Dalton Clinic	X495	5	0	3	18	275	C
Dalton Garage	X494	12	0	4	9	287	C
Coolair District Surgeon	Z491	0	0	0	0	0	A
Schroeders Factory	X490	33	1	0	177	422	C
Crammond Garage	X489	9	11	53	2000	2500	C
New Hanover Clinic	X493	0	0	0	0	6	A
Mlalan River	X496	590	420	130			C
Mtulwa River	X497	6000	1050	240			C

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based survey be undertaken to determine the true incidence of the problem of malnutrition and immunisation coverage in this area because of the problem of malnutrition and immunisation in the practice population.

It is recommended that District Surgeons and family practitioners request the implementation of the provisions contained in the National Plan for Health Service Facilities for their areas based on community surveys or studies from their practice population or disease profiles. Community involvement and participation are important in this regard.

Essential child health information contained in "FACTS FOR LIFE"⁴ should be made available to all parents of children in the practice. These facts should be reinforced by regular health education in the community.

An intervention strategy should be implemented as soon as possible as a community based project to address the health care needs of this area. The District Surgeons could monitor and evaluate its effectiveness as an ongoing study.^{10,14,15,16,23}

Conclusion

The socio economic profile and the immunisation and nutritional status, housing and environmental conditions are in keeping with an underdeveloped rural community. The tendency to have large families, the low adult literacy rate, low usage of available services,¹⁷ the quality of child care as assessed by the Mothers' and care-minders' education, the high incidence of maternal employment and the low incidence of breast feeding²² have contributed collectively

to the high incidence of poor growth and inadequate immunisation in this population. The lack of safe drinking water and poor sanitation have probably been a major contribution to the high incidence of underweight children in the black population.

The implications of the above observations with regard to health and social policy formulation are evident.¹⁸ Inadequate growth in children, malnutrition, and recurrent ill-health are the consequences of differences in access to resources, including provision of basic needs of water, sanitation, housing, food and appropriate formal and health education and reasonable health care services.^{11,20}

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References

1. The State of the World's Children UNICEF 1984; 1989; 1990.
2. From Alma-Ata to the year 2000: Reflections at the Midpoint Geneva. WHO 1988.
3. Bac M. Primary Health Care in Practice - Gelukspan Health Ward. An analysis of a rural PHC programme in 1978-1988. Thesis MD.
4. Fact for Life UNICEF, WHO. LA Oxfordshire: UNESCO.
5. Ijsselmuiden CB. Guidelines for the Assessment of Nutrition Status. Elim Hospital 14 April 1985.
6. Ijsselmuiden CB. Protocol for a National Survey of the Nutritional Status of children under the age of 5 years in South Africa. Elim Hospital April 1985.
7. Gimbel HL, De Ruiter IPC. GOBI and Pre-School child health survey in Bophuthatswana. Gelukspan. Community Hospital, Dept of Health and Social Welfare Bophuthatswana 1984.
8. Graal MB, Schmeets IOL. Measuring health in the Gelukspan district Bophuthatswana. Gelukspan Community Hospital. Bophuthatswana 1983.
9. Oosthoek CHA, van Hooft IMS. Analysis on the Health intervention programme for the under six population of the Gelukspan district, Gelukspan Community Hospital, Bophuthatswana 1982.
10. Morley D, Woodland M. See how they grow. Monitoring Child Growth for Appropriate Health Care in Developing Countries. MacMillan 1987.
11. Jinnabhai CC, Dept of Paediatrics, University of Natal Medical School (Personal Communication).
12. Ebrahim GJ. Child Health in a changing environment. MacMillan 1982.
13. National Plan for Health Services Facilities. Dept of Health and Welfare.
14. Feuerstein MT. Partners in Evaluation. Evaluating Development and Community Programmes with participants. McMillan 1986.
15. Development of Indicators for Monitoring progress towards Health for All by the Year 2000. WHO Geneva 1981.
16. Tackling Child Malnutrition in the Community CONTACT CMC, WCC 69. Aug 1982.
17. Clinic and Health Centre Services for Natal/Kwa Zulu Dept of Community Health. May 1984.
18. Sanders D, Carver R. The Struggle for Health Medicine and the Politics of under development. MacMillan 1985.
19. Morley D, Lovel H. My name is Today. An illustrated discussion of child health society and poverty in less developed countries. MacMillan 1986.
20. McKeown T. The Road to Health WHO. Features 13, December 1988.
21. Institute of Natural Resources. Water and Sanitation Technology Transfer Project reports 1988, 1989.
22. Breast feeding for life. CONTACT. CMC WCC 111: October 1989.
23. Amonoo-Lartson R, Ebrahim GJ, Lovel H, Rancken JP. District Health Care. Challenges for Planning. Organisation and Evaluation in Developing Countries. MacMillan 1984.