

A review of infant and young child feeding practice in hospital and the home in KwaZulu-Natal Midlands

P Seonandan^{ab*} and NH McKerrow^{ab}

^aDepartment of Health, KwaZulu-Natal, Pietermaritzburg, South Africa

^bDepartment of Paediatrics, Nelson R Mandela School of Medicine, College of Health Science, University of KwaZulu-Natal, Durban, south Africa

*Corresponding author, email: pratheeshas@gmail.com

Background: Malnutrition remains a major health burden globally. To date the focus in South Africa has been on exclusive breastfeeding from birth to 6 months, with less attention on feeding of the infants beyond 6 months.

Objectives: To describe infant and young child feeding practices at home and in hospital in KwaZulu-Natal Midlands, South Africa, and determine if feeding practices conform to national feeding policies. No statistical correlation was done.

Methodology: A descriptive study, using structured questionnaires for mothers of infants and young children up to the age of five years, and healthcare professionals in state hospitals, was conducted in 2011 in 12 hospitals in the KwaZulu-Natal Midlands, South Africa.

Results: Seventy-six percent (76%) of infants were ever exclusively breastfed with just 36% being exclusively breastfed beyond three months. Complementary feeds were commenced in 84% of infants younger than 6 months of age. Age-specific meals were provided for children below 2 years (93%) and for participants above 2 years (78%). Approximately 61% of infants and children between 6 and 24 months received more than three cups of milk per day in hospital with only 26% of children between 2 to 5 years receiving any milk. Majority of children (48%) aged 2 to 5 years received only one snack per day, which is suboptimal.

Conclusion: Feeding messages focus on breastfeeding. Breastfeeding rates have improved in this region since 2003, but exclusive breastfeeding is of limited duration. Early complementary feeding is a problem in the Midlands. This study has identified that age-specific feeding of infants and young children is not recognised in state hospitals, due to the inadequate frequency of feeding. There is a discrepancy between intention and practice among healthcare professionals in feeding infants and young children. Feeding messages have to expand beyond breastfeeding and complementary feeding, with ongoing training of healthcare professionals in this field.

Keywords: Infant, young child, feeding, malnutrition

Introduction

Globally, over 6 million children under the age of five years died in 2013. Those in sub-Saharan Africa had a fifteen times greater mortality, with forty-five percent (45%) of these deaths associated with malnutrition.¹ The World Bank estimated that the 2012 under-five mortality in South Africa was forty-five per 1000 live births, with half of these children being malnourished.² Local statistics from the Department of Health from the MRC Report on Rapid Mortality Surveillance (2012), showed a decrease in under-five mortality from 56 deaths per 1000 live births in 2009 to 42 in 2011.³

The effects of malnutrition are multi-layered, impacting the individual and the broader population. Stunting is associated with a lower intellectual ability in affected individuals with a negative impact on a country's economy. In the rural areas of the Eastern Cape and KwaZulu-Natal, the 2010 prevalence of stunting was 20.5% in infants aged 6 to 11 months, and 30.9% in those between 1 to 2 years.⁴ According to the latest national data of 2011, 26% of boys and 25% of girls between 1 to 3 years old are stunted (SANHANES).⁵

Breastfeeding is a key child survival strategy preventing approximately 13% of deaths in countries with a high under-five mortality rate. It is also associated with a decreased incidence of diarrhoea, respiratory infections and neonatal sepsis – three of the

five leading causes of under-five mortality.⁶ The 2002 Global Strategy for Infant and Young Child Feeding included the provision of safe and appropriate complementary foods at six months.⁷ However, this component did not receive much attention, with the major focus of education being on breastfeeding.

Many policies regarding feeding of children have been promulgated in South Africa since 1994. These include the Infant and Young Child Feeding (IYCF) program and the Mother Baby Friendly Initiative (MBFI). Although current policies and programs have focused on breastfeeding in the 0 to 6 month age category, breastfeeding rates remain low. The 2003 South African Demographic and Health Survey (SADHS) found exclusive breastfeeding rates of only 12% up to 3 months of age and 2% from 4 to 6 months of age. Twenty percent of infants were not breastfed at all,⁸ suggesting that although policies exist, their implementation has been unsuccessful. Poor knowledge and skills among healthcare professionals in breastfeeding support as well as inconsistent training have been identified as obstacles to successful breastfeeding. Staff shortages coupled with the lack of support groups in facilities or at the community level have further rendered breastfeeding support unsustainable.⁹

Whilst information is available on the level of malnutrition in South Africa, and the social determinants thereof, there is little knowledge of infant and young child feeding practices beyond complementary breastfeeding.

The aim of this study was to describe feeding practices of infants and young children up to the age of five years at home and in selected hospitals in the KwaZulu-Natal Midlands, and to determine if this practice conforms to national feeding policies. However, no statistical correlation was done.

Methodology

A descriptive study was conducted in the children's wards of public sector hospitals in the KwaZulu-Natal Midlands in 2011. District and regional hospitals in the KwaZulu-Natal Midlands, which together serve approximately three million people, were selected.¹⁰ Psychiatric hospitals and hospitals without a dedicated children's ward were excluded.

The study population included healthcare professionals and caregivers (mothers and grandmothers). The intention was to interview one dietician, one professional nurse and nine caregivers in each hospital. The caregivers were divided into three groups according to the age of their child: less than 6 months; 6 to 24 months; and 2 to 5 years.

To limit the variability of interpretation by different participants, a single fieldworker collected data during interviews. The interviews were conducted in the home language of the participant. Two questionnaires were tested in one non-participating hospital prior to commencing the study: one for the caregivers and one for the healthcare professionals.

The questionnaire for healthcare professionals focused on the hospital feeding practices for each of the three age categories. Caregivers were interviewed to determine if they had ever been informed on how to feed their child, what they practiced at home, and if this differed from how their child was fed in hospital.

Informed consent was obtained from each participant. This included a briefing on the reason for the study, what their participation would entail, and assurance that their participation, or lack thereof, would not affect the child's ongoing care in hospital.

Data was entered into Excel spreadsheets. Differences in the frequencies by nurse, caregiver education level or child age

group were assessed using a Pearson chi-square (χ^2) test. A Fisher exact test was performed if fewer than 5 observations were noted. A *p*-value of < 0.05 was deemed statistically significant. These analyses were performed using Stata Statistical Software, version 13.0 (StataCorp LP, USA).

The Biomedical Research Ethics Committee, University of KwaZulu-Natal, granted ethical approval for the study.

Results

Twenty-three hospitals in KwaZulu-Natal were invited to participate in this study, but only twelve public sector hospitals (nine district and three regional) agreed to participate. Half of these hospitals were accredited as "mother and baby friendly", implying that provisions existed to encourage and support exclusive breastfeeding.

Eleven dieticians (D), fourteen professional nurses (PN) and ninety-four caregivers were interviewed. The latter included forty-one with infants less than 6 months of age; twenty-six with infants 6 to 24 months of age, and twenty-seven with a child 2 to 5 years of age.

Table 1 reflects the timing as well as the content of information regarding feeding received by caregivers. Caregiver education level was also included.

Approximately 82% of mothers had an educational level greater than grade 7. There were no statistically significant differences between the three groups of caregivers. In terms of feeding practice, the majority (91%) had received messages regarding infant and young child feeding as seen in Table 1. Most received information from healthcare facilities or professionals (95% less than 6 months; 84% 6 to 24 months and 88% in 2 to 5 years). Other sources included family and friends. All received messages either during pregnancy or at the time of the baby's birth, and none outside of this period. Fewer mothers with children between 6 and 24 months reported receiving messages on the frequency of milk feeds, the introduction of complementary feeds and the number of meals to be provided, but this was not significant.

Table 1: Feeding information received by caregiver per age category

	< 6 Months (%) (n = 41)	6 –24 Months (%) (n = 26)	2 – 5 Years (%) (n = 27)	<i>p</i> -value ^a
Caregiver Education Level				
< Grade 7	9 (21.0)	1 (0.04)	6 (22.0)	
> Grade 7	32 (78.0)	25 (96.0)	21 (77.0)	0.31
Received Information	40 (97.6)	23 (88.5)	24 (88.9)	
When information received				
During Pregnancy	31 (75.0)	14 (53.0)	15 (55.0)	
At Birth of Baby	20 (48.0)	11 (42.0)	9 (33.0)	
Information Included:				
Type of milk	35 (85.4)	20 (76.9)	22 (81.5)	0.92
Frequency	33 (80.5)	17 (65.4)	22 (81.5)	0.41
Duration	34 (82.9)	22 (84.6)	22 (81.5)	0.80
Complementary Feeding	35 (85.4)	19 (73.1)	23 (85.2)	0.51
Number of meals	30 (73.2)	15 (57.7)	22 (81.5)	0.19
Type of food	31 (75.6)	19 (73.1)	23 (85.2)	0.39
Followed messages	33 (80.5)	18 (69.2)	19 (70.4)	0.55

^aFisher's exact as expected cell counts with < 5 observations.

Table 2: Current feeding practices at home

Feeding practice per age group		n (%)
Under 6 Months (n = 41)		
Exclusive breastfeeding (no specified time frame)		32 (78.0)
Exclusive breastfeeding > 3 months		15 (36.5)
6 to 24 months (n = 26)		
Receiving milk		21 (80.7)
>4 cups per day		13 (61.9)
Complementary feeds (26) commenced before 6 months of age		22 (84.6)
	1	3 (13.6)
Meals per day (22)	2	7 (31.8)
	3	12 (54.4)
Snacks per day (21)	1 snack/day	16 (76.1)
	2 snacks/day	4 (19.0)
	3 snacks/day	1 (4.7)
2 to 5 years (n = 27)		
Receiving milk		7 (25.9)
	1 snack/day	13 (48.1)
Snacks per day	2 snacks/day	4 (14.8)
	3 snacks/day	3 (11.1)

Table 2 describes the feeding practices at home. The majority of infants younger than 6 months of age were exclusively breastfed, but only 36% of these were exclusively breastfed beyond 3 months. All infants older than 6 months were receiving complementary feeds, which, in 84.6% of infants, were introduced before they reached 6 months. Approximately 60% of children between 6 and 24 months, and all those above 2 years, ate the same meal as the rest of the family (data not shown). The meals included meat, starch and vegetables, but the frequency of meat consumption in the home was not determined. Ninety-nine percent of children aged between 6 and 24 months received snacks (yoghurt, fruit, and milk), although 76% received just one snack per day. In contrast, only 74% of those over 2 years of age received snacks, and most of these children had a single snack per day.

Caregivers reported a difference in how their children were fed in hospital compared with their practice at home (71% under 2 years; 77% 2 to 5 years). The differences were in the number of complementary feeds (40% under 2 years; 50% 2 to 5 years), and composition of meals (60% under 2 years; 50% 2 to 5 years). They received more frequent meals at home and some caregivers reported more starch in the diet. However, none of these were statistically significant.

Table 3 reflects the responses from hospital staff showing the difference in response between professional nurses (PN) and dietitians (D)

The intention in all facilities in hospitals, according to dietitians, is to provide age-specific meals, snacks and milk for children less than 2 years of age, but not for those over 2 years. Professional

Table 3: Provision of feeds in hospital per age category by health professional

	Total		p-value
	PN (n = 14)(%)	D (n = 11)(%)	
6 months – 2 years			
> 3 milk feeds	10 (71.0)	8 (73.0)	0.44
Age-specific meals	13 (93.0)	10 (91.0)	1.00
1 snack	2 (14.2)	0 (0.0)	
2 snack	1 (7.1)	5 (45.4)	0.12
3 snack	8 (57.1)	5 (45.4)	
> 3 snacks	3 (21.4)	1 (9.1)	
2 years – 5 years			
Milk provided	10 (71.4)	11 (100.0)	0.11
> 3 milk feeds	2 (14.2)	6 (54.5)	0.08
Age specific meals	11 (78.5)	9 (81.8)	1
< 3 snacks	10 (71.0)	9 (81.8)	0.66

Notes: PN = professional nurse; D = dietitian.

*Fisher's exact as expected cell counts with < 5 observations.

nurses reported that, in actual practice, infants less than 6 months of age are able to breastfeed on demand only in one third of facilities (not reflected in table). Infants above 6 months and children received milk, including formula, milk powder mixes and cow's milk. Fewer professional nurses reported giving age-specific meals to children above two years of age and they merely provided smaller portions of adult meals; however, the frequency of these meals were inadequate. Provision of snacks in terms of number per day varied between professional nurses and dieticians, but the difference was not statistically significant.

Discussion

Seventy-eight percent of infants below 6 months of age were exclusively breastfed before 3 months of age, with almost half of these feeding for longer. This is much higher than the 8.3% of infants younger than 6 months in the 2003 SADHS,⁴ and may reflect changing practices with increased counselling and a greater focus on breastfeeding in this area. However, exclusive breastfeeding beyond 3 months in this study remained suboptimal (36%). In a low-income area of the Western Cape in 2011, 69% of infants were breastfed, but this was exclusive in only 6% at 6 months. Goosen and McLachlan also noted that maternal HIV status influenced feeding choice with all HIV infected woman (14% of their study population) electing not to breastfeed at all.¹¹ We did not enquire about HIV exposure. It is possible that the provision of free formula milk to HIV exposed babies nationally, prior to the adoption of the Tshwane Declaration in 2011, may have influenced the low breastfeeding rate. Data from Bangladesh in the same year revealed an exclusive breastfeeding rate of 64% in infants less than 6 months.¹² The 2013/14 performance indicators from the District Health Information system (DHIS) showed a national breastfeeding rate of 49% at 14 weeks,¹³ which is higher than the 36% reported in this study.

Complementary feeding was commenced before 6 months in 84% of the infants, despite approximately 81% of caregivers reporting having received information on complimentary feeding previously. De Lang looked at factors contributing to malnutrition in the Northern Cape and identified early complementary feeding in 73.5% of infants with 49% of their caregivers having received information.¹⁴ The main reason for early initiation from other studies was the belief that breastfeeding alone was not sufficient to satisfy the infant.^{15,16} All children who received meals consumed a variety of foods. However, the frequency of consumption of protein rich foods, such as meat and dairy or fruit, was not ascertained. Fabre and Benade found that 6 to 12 month old infants in rural KwaZulu-Natal did not frequently consume food from animal sources.¹⁷

Approximately 82% of the caregivers interviewed in this study had an education level greater than grade 7, but this did not affect their feeding practice positively, as evidenced by the high suboptimal exclusive breastfeeding rates at 6 months and the high rate of early initiation of complimentary feeding. Although mothers with a higher educational level in the Northern Cape reported providing their children with more high protein and less sugary foods, de Lang did not find any significant association between maternal education levels and nutritional status.⁹

Almost all caregivers received information on feeding of their child during their pregnancy or at birth. None of the caregivers recalled receiving further counselling once their child was older. The main source of information were health facilities, including clinics and hospitals, as well as healthcare professionals, and

none of the caregivers acknowledged any media messages on proper infant feeding practices. In Limpopo, the source of information was similar, but 3% of caregivers received information via the media.¹⁰

Information collected from dieticians was considered to be the intended practice for infant and young child feeding in hospital, while that from the nurses was the actual practice. The discrepancies between and within the cadres may reflect poor knowledge overall among healthcare professionals as, previously, a major part of their training revolved around breastfeeding.

Though there have been some improvements, the feeding of infants and young children both in hospital and at home, remains suboptimal.

Infant and young child feeding have recently been included in the nursing curriculum in KwaZulu-Natal, and regular in-service training occurs in hospitals and clinics; although, the focus remains breastfeeding or the management of the malnourished child. Ongoing training either by dieticians or other nursing staff is necessary to ensure that this knowledge is not lost, and is complimented with information on feeding of the well child. Lack of resources, especially staff shortages, may contribute to an inadequate service delivery, where there may not be enough time spent on counselling mothers about proper nutrition. This shortcoming can be overcome by the use of community caregivers (CCG) and lay counsellors. Time and effort invested in educating them will ensure that proper information is cascaded to all without having to overload healthcare facilities. CCGs also have better access to family elders, especially the grandmothers – the people that have great influence on the running of the household.

The revised Road-to-Health Book (RTHB) of 2011 and the Infant and Young Child Feeding (IYCF) guidelines of 2013 are two resources that now provide information on feeding beyond exclusive breastfeeding.

Conclusion

Breastfeeding rates have improved but the duration of exclusive breastfeeding remains suboptimal. Mothers have received information on feeding, with the focus on breastfeeding the infant, but none has been given on feeding toddlers and young children. Current home practice shows the early introduction of complementary feeding. There is recognition for age-specific feeding in children younger than 2 years among healthcare professionals, but not for those between 2 and 5 years. Too few snacks are provided across all ages. This study did not demonstrate relevance between caregiver educational levels and feeding practice. There is some disparity between intention (dietician) and practice (professional nurses) within hospitals.

Recommendations

Feeding messages have to expand beyond breastfeeding to include toddlers and preschool children. Training of healthcare professionals needs to be strengthened and ongoing to ensure that correct information is imparted to the public.

Media and technology are two arenas that may be utilised more optimally to disseminate information to caregivers. Although all households do not have access to internet, the majority has a radio, television set, or a cellular phone. Messages regarding proper feeding of infants and young children need to be emphasised at every opportunity. These methods will ensure that caregivers are reminded of such messages even between scheduled clinic visits.

References

1. WHO. Children: reducing mortality rates [cited 2014, Sep 19]. Available from: www.who.int/mediacentre/factsheets/fs178/en.
2. World Bank. Mortality rate, under-5 (per 100 live births) [cited 2014, Jul 20]. Available from: Data.worldbank.org/indicator/SH/DYN.MORT/
3. National Department of Health Annual Report 2012/2013 [cited 2015, Dec 6]. ISBN: 978-0-621-41127-0.
4. Lesiapeto MS, Hanekom MS, Du Plessis J, et al. Risk Factors of poor anthropometric status in children under five years of age living in rural districts of the Eastern Cape and KwaZulu-Natal provinces, South Africa. *South African Journal of Clinical Nutrition* 2010;23(4):202–7.
5. Shisana O, Labadarios D, Rehle T, et al. South African National Health and Nutrition Examination Survey (SANHANES-1). Cape Town: HSRC Press; 2014.
6. Jones G, Steketee RW, Black RE, et al. How many child deaths can we prevent this year? *Lancet*. 2003;362:65–71.
7. WHO, UNICEF. Global strategy for infant and young child feeding. Geneva: WHO, 2003.
8. Department of Health, Medical Research Council, OrcMacro. South African Demographic and Health Survey 2003. Pretoria: DoH, 2007 [cited 2014, Jul 20]. Available from: www.measuredhs.com/pubs/pdf/FR206/FR206.pdf.
9. Final evaluation Report: Short Diagnostic/Implementation Evaluation of Nutrition Interventions for Children from Conception to Age 5. 2014, Mar 31 [cited 2015, Dec 7].
10. Census 2011 Census in brief / Statistics South Africa. [cited 2015, Mar 16] www.statssa.gov.za/census2011/Products/Census_2011_Census_in_brief.pdf
11. Goosen C, McLachlan MH. Schübl. Infant feeding practice during the first 6 months of life in a low-income area of the Western Cape Province. *South African Journal of Clinical Nutrition* 2014;8(2): 50–54.
12. Muhammad Hanif HM. Trends in infant and young child feeding practices in Bangladesh, 1993–2011. *International Breastfeeding Journal* 2013 [cited 2014, Aug 20];8: 10. Available from: www.internationalbreastfeedingjournal.com/content/8/1/10.
13. DHIS: District Health Information System Database. National Department of Health; 2014 Sep. Available from: <http://his.org/>
14. de Lang JC. Factors Contributing to Malnutrition in Children 0–60 months Admitted to Hospitals in the Northern Cape. *Magister Degree Dietetics: University of the Free State*; 2010.
15. Mushaphi LF, Mbhenyane XG, Khoza LB, et al. Infant feeding practices of mothers and the nutritional status of infants in the Vhembe District of Limpopo Province. *South Afr J Clin Nutr*. 2008;21(2):36–41.
16. Ghuman MR, Saloojee H, Morris G. Infant feeding practices in a high HIV prevalence rural district of KwaZulu-Natal, South Africa. *South Afr J Clin Nutr*. 2009;22(2):74–9.
17. Faber M, Benade AJS. Breastfeeding, complementary feeding and nutritional status of 6-12-month-old infants in rural KwaZulu-Natal. *South Afr J Clin Nutr*. 2007;20(1):16–24.

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