

Health service utilisation and health status of children aged 12-23 months in Ubombo district, rural KwaZulu-Natal

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This article presents data on child health service utilisation and health status obtained from a maternal and child health survey conducted in Ubombo district, rural north eastern KwaZulu-Natal. Data were collected by interviewing mothers/caregivers of children aged 12-23 months during June-August 1998. The indicators measured were: i) possession of a road-to-health card, ii) vaccination coverage, iii) clinic attendance for growth monitoring and treatment of minor ailments, iv) low birth weight, v) nutritional status and vi) minor ailments for which treatment was sought. Of the 646 children, 95% possessed a road-to-health card. Vaccination coverage ranged from 87.3% for BCG and polio given at birth to 78.2% for measles; 88.5% of children had attended the clinic for growth monitoring and almost all the children had attended the clinic for treatment of minor ailments during the first year of life. There were 6% low birth weight children; 1.2% wasted; 26% stunted and 6.3% underweight. In comparison to previous studies conducted in the same area, the results suggest a high level of child health service utilisation. The rate of low birth weight is probably an under-estimate and requires further attention. Nutritional status shows frequency distributions similar to those reported in South African populations for the past 10-15 years.

Introduction

Recent reports suggest improvement in child health with relation to prevention of vaccine preventable diseases and it is encouraging to know that full vaccination coverage is reaching 2005 national targets.¹⁻³ However, it is worrying to learn that the levels of stunting and low birth weight (LBW) are unacceptably high.⁴ It is also a concern that HIV/AIDS and LBW are the major causes of deaths among infants and under-fives.⁵ This is probably the reason why South Africa is experiencing high levels of infant and under-5 mortality rates.⁶ Furthermore, while improvements in child health have been reported for South Africa as a whole, major discrepancies still exist at provincial and district levels.¹⁻³ This article presents data on health service utilisation and health status indicators of children aged 12-23 months obtained from a maternal and child health survey conducted in a rural district of KwaZulu-Natal.

The study area and population

The study was conducted in Ubombo magisterial district, Umkhanyakude health district, rural northern KwaZulu-Natal province, South Africa. The population of this district is 96% rural with high unemployment and functional illiteracy rates. At the time of the study, Ubombo district had an estimated population of 132,302 and 20% of these were children under five years of age.⁷ The study population comprised mothers/caregivers with children aged 12-23 months who lived in the study area during June-August 1998. The results presented in this article are part of a household survey, which investigated the effect of accessibility on MCH service utilisation and MCH status.

Materials and methods

The study sample was selected from the Malaria Information System (MIS) database, which is a surveillance system used for malaria control and management in the study area and contains mapped homesteads and all health facilities.⁸ Purposive sampling was used to select within the MIS database a cluster of five neighbouring fixed primary healthcare (PHC) clinics from the 12 PHC clinics serving the population of Ubombo district. These five clinics were selected from an area where there were few mobile points and hospitals adjacent to their catchment boundaries that might introduce facility selection bias or confound the results. In addition, the selected clinics served a rural population and were connected to the homesteads by dirt road networks. All five clinics selected offered a similar range and standard of PHC services. From the 7,160 homesteads served by these five clinics, a sample of 685 homesteads was randomly selected. This represented approximately 10% of the rural children in Ubombo district served by fixed PHC clinics excluding those that lived in urban areas and who use clinics connected by tarred road networks.

Data were collected after ethical approval was granted by the Ethics Committee of the Faculty of Medicine, University of KwaZulu-Natal, Durban. Verbal consent was obtained from the respondent or household head and mothers of minors during the fieldwork. Two trained fieldworkers and a local member of the community visited each homestead to interview mothers/caregivers with children aged 12-23 months using a structured questionnaire. During fieldwork all the sampled households were included in the study irrespective of whether the household consists of one or more house structures as long as there was a child aged 12-23 months in that household. In the case where there were more than one child of the required age group per household, the names of all the children were listed and one child was selected randomly from this list. In the absence of children of the required age group, fieldworkers were required to move

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to the nearest adjacent household and to repeat this process until a household with a child of the required age was found.

Information on the age of the child, child's birth weight, vaccination coverage, clinic attendance for growth monitoring and for treatment of minor ailments during the child's first year of life was transcribed from the child's road-to-health card (RTHC). Anthropometric measurements were determined by weighing the children using hanging scales and by measuring their lengths using measuring boards. After the data were checked and verified, they were double entered into a computer using Microsoft Access. Statistical analysis was performed in Epi-Info 6.04b to produce descriptive statistics. Further analysis was performed using maternal age, education, parity, mode of travel, distance, availability of a community health worker (CHW) and child's sex to determine factors associated with child health service utilisation and health status.

Nutritional status of the children was determined by calculating the anthropometric indices using the international growth reference median values possible within Epi-Info. Stunting was measured as length-for-age deficits of <-2 SD; underweight for age was measured as weight-for-age deficits of <-2 SD and wasting was measured as weight-for-height deficits of <-2 SD. LBW was defined as birth weight of less than 2.5 kg. Data on minor ailments for which treatment was sought from the clinic such as diarrhoea, cough including other respiratory tract infections (RTI), sores, rash, worms, eye and ear infections were obtained from the child's RTHC.

Results

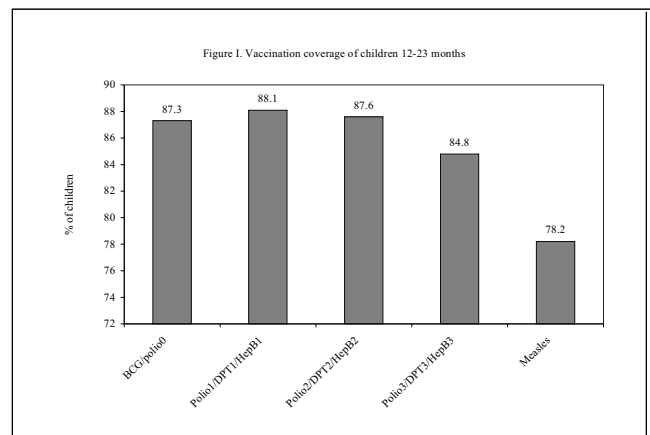
Data were obtained for 646 of the 685 children in the sample giving a 94.3% response rate. There was a fairly even spread in the age range 12-23 months of the children with similar distributions between boys and girls.

Child health service utilisation

The main indicators of attendance at clinic and child health service utilisation were the possession by the mother or caregiver of a RTHC, documented vaccination coverage for BCG, DPT, hepatitis B (Hep B), measles and attendance for growth monitoring and treatment of minor ailments. Although these services should be available in all healthcare settings in South Africa, these indicators predominantly reflect activities conducted at fixed and mobile PHC clinics, particularly in rural areas.

Six hundred and thirteen (94.9%) of the 646 children possessed a RTHC and vaccination coverage was above 80% for BCG and the dose of polio given at birth (Polio 0), three subsequent doses of polio, DPT and Hep B except for measles (Figure 1). The fully vaccinated group comprised those children who have received the full course of BCG/Polio 0, three doses of vaccines for polio, DPT and Hep B and one dose of measles vaccine. This specifically excludes the second dose of measles and the booster doses of polio and DPT. In this study 467 (72.3%) children were fully vaccinated.

Overall 572 (88.5%) children had visited the clinic for growth monitoring and 615 (95.2%) were taken to a clinic during the first year of life for treatment of minor ailments other than for routine vaccinations or growth monitoring. All indicators of



child health service utilisation varied significantly with the age of the mother/caregiver and parity except BCG/Polio 0 and clinic attendance for treatment of minor ailments. For example, the proportions of children who possessed a RTHC, individual vaccination coverage for three doses of polio, DPT, Hep B, fully vaccinated children and clinic attendance for growth monitoring were higher in children of mothers/caregivers aged younger than 35 years and with a parity of less than five births (Table 1). The results remained statistically significant even after controlling for age or parity.

There was little or no association between distance from clinic, maternal education, availability of transport to clinic, child sex and availability of a CHW. Distance was not associated with all the indicators of child health service utilisation except a slight decrease in full vaccination coverage but the results were not statistically significant ($p=0.119$). Transport was not associated with all the indicators. Maternal education was only associated with vaccination for Polio 3 where vaccination coverage increased from 79.6% to 87.3% and to 86.9% with increasing level of education from none, primary and secondary ($p=0.049$). Full vaccination coverage was higher in households visited by CHW than in those that were not visited ($p=0.048$). Similarly, full vaccination coverage was higher in girls (74.8%) than in boys (69.7%) where $p=0.002$. However, clinic visits for treatment of minor ailments were higher in boys (97.5%) than in girls (94.5%) at $p=0.04$.

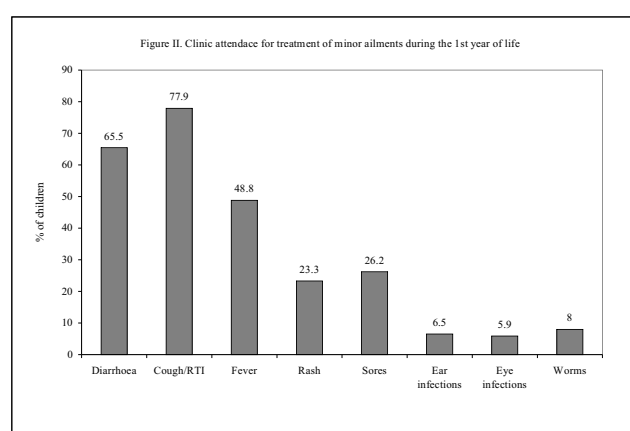
Child health status

Of the 646 children, 6% were LBW, 6.3%, underweight for age, 1.2% wasted and 26% stunted. Children who have not received any vaccination were more likely to be underweight for their age than children who have been vaccinated (results not shown). Six hundred and fifteen children visited the clinic during the first year of life for treatment of minor ailments. Each ailment was measured separately as each child had more than one ailment. Although fever and cough are non-specific symptoms and could therefore be present in more than one illness or health condition, they are recorded here as separate minor ailments as they were entered in the RTHC. The observation is that RTI, including cough, asthma and pneumonia, seemed to be the main reason the children visited the clinic followed by diarrhoea and fever (Figure II). Other common ailments reported were rash, sores that affect any part of the body, including scabies, veld sores and impetigo, and worm infestations (Figure II). Child health status was not associated with distance from clinic, transport,

Table 1: Factors associated with child health service utilisation

Indicator	Maternal age		P-value	Parity			p-value
	< 35 years	≥ 35 years		1	2-4	5+	
RTHC	407 (96.2)	206 (92.4)	0.029	138 (95.2)	299 (96.5)	152 (91.0)	0.039
BCG/Polio 0	374 (88.4)	175 (85.5)	0.170	125 (86.1)	279 (90.0)	138 (82.6)	0.070
Polio1	380 (89.8)	174 (84.9)	0.049	126 (86.9)	283 (91.3)	138 (82.6)	0.020
Polio2	380 (89.8)	172 (83.9)	0.024	127 (87.6)	282 (91.0)	135 (80.8)	0.006
Polio3	374 (88.4)	160 (78.0)	0.006	127 (87.6)	275 (88.7)	126 (75.4)	0.0003
Measles	341 (80.6)	152 (74.1)	0.040	119 (82.1)	252 (81.3)	114 (68.3)	0.002
Fully vaccinated	318 (75.2)	149 (66.8)	0.016	112 (77.2)	233 (75.2)	103 (61.7)	0.002
Growth monitoring	384 (90.8)	188 (84.3)	0.010	128 (88.3)	286 (92.3)	134 (80.2)	0.0006
Clinic attendance for minor ailments	403 (95.7)	212 (96.4)	0.437	138 (95.8)	298 (96.8)	156 (94.0)	0.3600

maternal age, education and parity, child's sex and visit by CHW.



Discussion

Although the sampling technique used in this study was slightly different from the EPI cluster sampling that was used in numerous previous vaccination surveys of children aged 0-5 years in South Africa, the results are similar to those obtained from these surveys in that possession of a RTHC in children aged 12-23 months is high.⁹⁻¹¹ Comparisons of the individual vaccinations show minor differences between polio, DPT, and Hep B at the scheduled vaccination times. These differences are not significant and reflect the occasional, missed dose for one or other of these antigen doses. In general, there is a very small drop-out effect from BCG through Polio 1, 2 and 3 with greatest drop-out effect between Polio 3 and measles. This reflects reasonable attendance at clinics up to and including nine months of age with relatively small drop out between 14 weeks and nine months. The vaccination coverage for the fully vaccinated children is still less than the target of 80% and 90% set respectively for districts and nationally for the years 1999-2004.¹² It is worth noting that although other vaccines are now offered to children for prevention of influenza and pneumonia, at the time of the study in 1998, vaccination routinely provided for children in South Africa was for BCG, polio, DPT, Hep B and measles only.

Of the factors assessed, distance from clinic and transport were not associated with child health service utilisation. This could be partly due to the reason that the provision of additional PHC clinics through the clinic upgrading and

building programme in the area may have improved physical access to the clinics. Negligible effect was found with maternal education, child's sex and visit by CHW. The analysis on child's sex was done to determine whether girl children were systematically worse-off and disadvantaged compared with boy children, as has been the case in south Asia and West Africa.¹³ The few associations that were found are trivial and probably coincidental associations and therefore the results do not appear to support this hypothesis. The results concur with those found in Hlabisa district where it was shown that vaccination coverage was higher in children who lived in areas with CHWs.¹⁴ As shown in the South African Demographic & Health Survey parity and maternal age were associated with all indicators of child health service utilisation.¹⁵

LBW children are considered to be at higher risk for neonatal mortality and for morbidity and disability in infancy and early childhood. In South Africa, LBW is reported to be the second cause of mortality in infants and under-fives.⁵ LBW is an outcome of poor social and environmental conditions, poor maternal nutrition and maternal health status during pregnancy. There is a surprisingly low proportion of LBW children in this sample (6%). A possible explanation for this is that most household members were engaged in subsistence farming that includes crops such as groundnuts, vegetables, fruit and sugarcane, and hence boost the maternal nutrition during pregnancy.

The other possible reason is that this may be a measurement artefact since LBW infants have much higher neonatal and infant mortality rate than normally grown infants; almost 10 times and four times respectively, and as a result a significant proportion of these LBW infants may have died by the time their cohort entered the survey period of children aged 12-23 months.¹⁶ A further investigation of the true level of LBW in this population is required.

The nutritional status patterns from this survey are consistent with those recorded in rural pre-school children over the last 10-15 years.¹⁷⁻²¹ This confirms that chronic undernutrition is the predominant problem in the study area. Improvement of nutritional status is a challenge for the health service providers since indicators such as stunting are a function of social and environmental conditions and cannot be solved with provision of child health services alone. The high attendance at clinics for RTI and diarrhoea is consistent with reports of the top 10 childhood illnesses in South Africa and

the developing countries.^{5, 22} This further confirms the fact that the study area is characterised by poor living conditions and these have remained the same for more than two decades. The recorded percentage of children who attended the clinic for treatment of worm infestations could be an under estimate since the children were not screened for worms. A prevalence of worm infestations above 70% has been recorded.²³

In conclusion, the results suggest a high level of child health service utilisation, but a great deal of effort from all public and private sectors is required to improve health status of rural children in South Africa. The nutritional status of the South African children is expected to improve with the implementation of the *Strategic Priorities for the National Health System 2004-2009* policy which include the strategies on fortifying maize meal and wheat, promoting exclusive breastfeeding, implementing food-based dietary guidelines, poverty alleviation, promoting food security, and preventing and managing malnutrition.³

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