

The use of the Road to Health Card in monitoring child health

Tarwa C, MBChB, DCH, MMed

Department of Paediatrics and Child Health, Faculty of Medicine, MEDUNSA Campus, University of Limpopo

De Villiers FPR, MMed, FACP, FCPaed, PhD

Department of Paediatrics and Child Health, Faculty of Medicine, MEDUNSA Campus, University of Limpopo

Correspondence to: Professor FPR de Villiers, e-mail: johnchild@medunsa.ac.za

Abstract

Background

The Road to Health Card (RTHC) provides a simple, cheap, practical and convenient method of monitoring child health. The RTHC could assist in improving health through vaccine compliance and early identification of growth faltering. The purpose of this study was to assess whether the RTHCs are completed and interpreted adequately at primary, secondary and tertiary care levels in South Africa.

Methods

The study was carried out at a primary, secondary and tertiary care centre. A questionnaire was administered to 100 subjects at each centre to obtain demographic information, information on whether the RTHC had been brought along and, if not, why it had not been brought.

Results

Most children were brought to the centres by their mothers. The RTHC was not brought to 48% of the consultations; of these respondents, about 72% thought that bringing along the RTHC was not necessary. Health workers seldom asked to see the RTHC in the primary and secondary care settings, but 50% of them did so at Ga-Rankuwa Hospital ($p = 0,002$). In only eight cases overall were the children below the third percentile of weight for age. Approximately 20% had incomplete immunisations.

Conclusion

Many parents believe that the RTHC is only required for visits to the Well-baby Clinics, and not for consultations. The RTHC is not often asked for at consultations; the fact that this is more often done at the tertiary care centre may be the result of the service being supplied by paediatricians-in-training. Health workers should ask to see the RTHC in order for mothers to understand the importance of the information contained in it. The study showed that the RTHC is not used to its full potential.

The situation in private general practice was not investigated, but is not expected to differ much from that described in this article. Although many family physicians do not offer immunisations as a service, they all deal with sick children and if the general practitioner asks mothers to produce the RTHC and then discusses its reference to her child's current problem, the mothers are more likely to understand the importance of the RTHC as a tool in monitoring child health.

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Introduction

The physical growth and development of children are sensitive indicators of the health of a population. Development and learning are most rapid in the early stages, during which the child is vulnerable to adverse environmental influences such as infections or deficiencies in nutrition and stimulation. Growth and development need to be monitored closely in children so that early corrective steps can be taken to ensure normal growth. This issue has been an interest of the World Health Organisation (WHO) since 1951.¹

The Road to Health Card (RTHC) provides a simple, cheap, practical and convenient method of monitoring child health. When it is used properly, this home-based record has a significant, positive contribution towards improving child health.² Growth monitoring is desirable throughout childhood, but is emphasised particularly in children under the age of five.³ The RTHC can be seen as a mobile databank. In some circumstances it may be the only reliable source of information, particularly in a population with fragmented health services or migrating families, which are common in developing countries. It contains relevant records of the child's important health events, including information such as identifying data, details of the mother's pregnancy and antenatal care, details of birth, size at birth, family and sibling history, immunisation history, infant feeding guidelines, family planning practices, growth weight plotting, developmental milestones and illnesses.

The two old adages, that a healthy child grows well, and that children who are growing well are healthy, imply that growth monitoring is worthwhile.³ The ethos behind these expressions justifies the regular, frequent, longitudinal weight measurement of every child. The child should also be assessed and weighed each time that he/she visits for immunisation and consultation. Such surveillance is an important aspect of the monitoring of child growth in developing countries, where growth failure is a common phenomenon.^{4,5,6} Malnourished children experience significantly greater morbidity and mortality from diarrhoea, measles and other infections. These illnesses may result in permanent cognitive and development deficits and reduced physical capacity, which ultimately have implications for the future growth and prosperity of the nation.⁵

Changes in the weight of children are easily measured even under difficult

conditions. The information obtained facilitates the assessment of both the current weight and the trend of growth. The RTHC also records developmental skills achieved at specific ages, which means that non-achievement indicating delayed progress is identified early. Every health worker should consider all clinical encounters with children as opportunities to screen for needed vaccines and, when indicated, to immunise the children.⁷ The RTHC allows space for immunisation records, the dates they should be administered, supplementary information and appointments. The parents and health workers should be encouraged to not avoid immunisations and to promote the policy of all-opportunity immunisation.⁸ Failure to use the card contributes to delayed immunisation and to low immunisation coverage. This can lead to outbreaks of disease among unvaccinated children.^{7,9}

The successful use of the RTHC requires that it should be brought along every time that the child is brought to the clinic, and that all health workers, and not only paediatricians, who come into contact with the child should use the card. The card should be updated and interpreted correctly so that the information is translated into appropriate advice and action. Despite its contribution to child health, growth monitoring is frequently not carried out correctly and does not always fulfil the purpose of helping health workers to understand the growth pattern of the child.¹⁰ It is unrealistic to expect useful results from the RTHC if it is not used properly.

The purpose of this study was to assess whether the RTHCs are completed and interpreted adequately at the primary, secondary and tertiary care levels in South Africa.

Methods

The study was carried out at three different centres. The primary care centre was Soshanguve III Clinic, which is situated in a high density residential area about 28 km north of Pretoria. Patients from Soshanguve III Clinic are referred to Ga-Rankuwa or Odi Hospital. The secondary care centre used for the study was Jubilee Hospital. This is situated about 55 km north of Pretoria and serves the high density semi-rural areas of Temba and Hammanskraal. Patients are transferred from Jubilee Hospital to Ga-Rankuwa Hospital for tertiary care. Ga-Rankuwa hospital was the tertiary centre; it is 30 km north of Pretoria, near Soshanguve.

Verbal consent for their participation in the study was obtained from the adults accompanying children younger than five years of age to consult at one of the three centres mentioned above. The request was made in her/his preferred language. No-one declined to participate in the study. The protocol to conduct the study was approved by the Research, Ethics and Publications Committee (REPC) of the Medical Faculty of MEDUNSA.

All the adults who accompanied children younger than five years of age were eligible for the study, except those who brought children to specialist clinics such as cardiology, oncology, neurology or asthma follow-up clinics, those who brought children to the Well Baby Clinic, those who brought children for emergency care, for example after being involved in motor car accidents, and health personnel.

The first author collected the data. A nurse occasionally helped with interpreting. A one-page questionnaire, written in English, was used as the research tool and included questions on the age of the accompanied child, the relationship to the child of the accompanying adult, the sex of the adult and whether the RTHC was present or not. If the RTHC had not been brought with, then the reason for not bringing it was elicited. Questions regarding the completeness of weight plotting, immunisations and other health events were also asked. The RTHC was studied to ascertain whether the child's weight had been plotted, any missed vaccinations had been identified and administered and the necessary notes had been made. Notes made at the Well Baby Clinics, as well as those made during consultations for illnesses, were identified. After data collection, the cover of the child's outpatient file was marked to prevent the same child from being included in the study more than once. The study was first performed at the Ga-Rankuwa Hospital outpatients department. The data were collected over a three-month period.

The data were analysed using Epi Info 6 (a descriptive statistical analysis program). The frequency distribution of the data was obtained. A chi-square test was used to compare the differences between the responses at different centres. The level of significance employed was $p < 0,05$.

Results

The adults who accompanied children to a consultation were interviewed. A total of 300 respondents were inter-

viewed, 100 from each centre. Almost all the respondents were female – all of those from Ga-Rankuwa Hospital, 98 at Soshanguve III Clinic, and 96 at Jubilee Hospital. Table I shows the relationships of the respondents to the children whom they accompanied. Most children were brought in by their own mothers. The difference between the groups with regard to the number of mothers (vs. other caregivers) accompanying children was statistically significant ($p = 0,0001$).

Of the children seen, 70% of those at Soshanguve III Clinic, 32% at Jubilee Hospital and 42% at Ga-Rankuwa Hospital did not have their RTHCs. This difference was highly significant ($p = 0,0000002$). However, amongst those who did not bring the RTHCs, approximately the same proportion (Soshanguve 75,7%, Jubilee 62,5%, Ga-Rankuwa 78,6%, $p = 0,2560$) thought that the RTHCs were not needed for such visits. The different reasons for not bringing the RTHCs are shown in Table II. Some respondents did not have access to the RTHC because the child's mother was not at home (four at Soshanguve III Clinic and three at Jubilee Hospital), because the child was visiting a relative when he/she became ill (one at Soshanguve III Clinic) or the respondents forgot to collect the RTHC (nine at Soshanguve III Clinic and five at Jubilee Hospital). Some children did not have the RTHCs because they had been lost (three at Jubilee Hospital), burnt in the house (one at Soshanguve III Clinic) or the child had never had one (three at Soshanguve III Clinic).

Health workers seldom asked to see the RTHC during a consultation. Thirteen respondents at Soshanguve III Clinic, 16 at Jubilee Hospital and 50 at Ga-Rankuwa Hospital had been asked to produce the RTHC at the previous visit (the difference between Jubilee Hospital and Soshanguve III Clinic was not significant, but the difference between Ga-Rankuwa Hospital and the other two institutions was significant at the 1% level). Table III shows the different responses given concerning the children's RTHC at the previous visit.

Patients who attended at Soshanguve III Clinic and Jubilee Hospital kept their clinic or hospital outpatient files at their homes. More children at Jubilee Hospital (30) had their RTHCs pinned to their outpatient files that were kept at home than at Soshanguve III Clinic (1) (chi square = 32; $p = 0,000$).

The child's weight was considered to have been plotted if it was recorded anywhere on the child's RTHC. Weight

Table I: Relationship to child of accompanying adult

	Soshanguve III Clinic	Jubilee Hospital	Ga-Rankuwa Hospital
Mother	74	87	95
Grandmother	5	5	3
Aunt	13	3	2
Father	2	4	0
Neighbour	2	0	0
Sister	4	1	0

Table III: Whether the RTHC was asked for at the previous visit

Response	Soshanguve III Clinic	Jubilee Hospital	Ga-Rankuwa Hospital
Last visit was to consult and RTHC was asked for	13	16	50
Last visit was to consult and RTHC was not asked for	56	32	50
Last visit was to the Well Baby Clinic and RTHC was used	13	11	0*
RTHC was pinned to outpatient file	1#	30#	0
No information could be given by the respondent	17	6	0
First time to consult (not yet seen for consultation or at the Well Baby Clinic)	0	5	0
Total	100	100	100

Table II: Why is the RTHC not available today?

	Soshanguve III Clinic	Jubilee Hospital	Ga-Rankuwa Hospital
Lost	0	3	3
Forgot at home	2	3	5
Not important to bring	53	20	33
No access to it	7	3	1
Visitor to this place with no RTHC	4	3	0
Burnt in the house	1	0	0
Never had RTHC	3	0	0
Subtotal	70	32	42
Brought RTHC: Question not applicable	30	68	58
Total	100	100	100

* There is no Well Baby clinic, as this is a tertiary hospital.

At these centres, the outpatient file is a patient-held record, while at Ga-Rankuwa Hospital it is hospital based.

that was recorded anywhere else, such as on the child's file or appointment card, was not considered as correctly recorded. Health workers seldom plotted the child's weight during the consultation. Weight was plotted more often at Ga-Rankuwa Hospital (36) and

Jubilee Hospital (27) than at Soshanguve III Clinic (14) (chi square = 12,82; $p = 0,002$).

Of those whose RTHCs were plotted for weight at the previous visit, none had RTHCs that showed weight below

the third percentile at Soshanguve III Clinic. At Jubilee Hospital, two children had poor weight gain on the RTHC, where the weight remained below the third percentile in one case and there was growth faltering in the other. The mother of the child whose weight remained below the third percentile knew that her child was not growing well because the child was infected with HIV. The child whose growth was faltering had not been identified for intervention by the health workers, and the mother did not know that her child was losing weight. At Ga-Rankuwa Hospital, six children were below the third percentile and, in two cases, the accompanying adult did not know the child was growing poorly.

The immunisation coverage at Soshanguve II Clinic (80%) and Jubilee Hospital (82%) was high. At the previous visit, there had been a missed opportunity to perform an immunisation in nine cases at Jubilee Hospital, five at Soshanguve III Clinic and five at Ga-Rankuwa Hospital. Three respondents at Soshanguve III Clinic, three at Ga-Rankuwa Hospital and two at Jubilee Hospital knew that the immunisation schedules were incomplete. These were the children's own mothers.

Discussion

Growth monitoring programmes in developing countries have not been successful in reducing under-nutrition due to the exclusion of the mother from this process. It is an essential prerequisite, however, that mothers participate more.^{5,11,12,13} A study in Lesotho showed that the mothers who understand the RTHC used the clinics more for growth monitoring.¹⁴ Their children achieved a better vaccination status and weight gain compared with those who did not use the RTHC.^{15,16} A community survey done in Winterveld, north of Pretoria, also showed that 76,5% of children attending the under-five year clinic were accompanied by their mothers.¹⁷ These are opportunities for health workers to interact with and educate the mothers on health issues. Our study showed that mothers were present at most consultations. As the level of care increased, so did the proportion of mothers bringing their children to the facility. This may be due to the effect of working mothers having greater concern about the child's condition when going to a more sophisticated health facility.

In this study, a high proportion of respondents did not bring the RTHCs

when they brought the children to consult (Table II). In the Winterveld community survey, 97% of the children had their RTHCs at the Well Baby Clinics.¹⁷ Many parents responded that they believed the RTHC was needed for the Well Baby Clinic visits and not for consultation. In other studies, 35% of the respondents thought that the card was used only when the child was ill, 32% believed it was to obtain medicines, 13% believed it was for the health of the child, 11% to obtain milk and 7% for the weight of the child.¹⁸

This study also showed that health workers often do not ask for the RTHC at the consultation. Thirty children seen at Jubilee Hospital had their RTHCs pinned to their outpatient files. This may be why fewer respondents were asked for the RTHCs there. The RTHC was asked for in a much higher proportion of consultations at the tertiary hospital than at the two other institutions. The reason for this may be that much of the service at the tertiary hospital is delivered by paediatricians-in-training. At all the centres the respondent was sometimes not asked for the RTHCs even when he/she had it. Such respondents are likely to stop carrying the RTHC to future consultations, since it had not been used by the health worker at the previous visits.

The child's weight was seldom plotted at the consultation. Malnutrition is common in developing countries, and in South Africa it varies from 13% in some urban areas to 60% in specific rural environments.¹⁹ A community survey on the nutritional status of children under five years conducted in Winterveld from October 1996 to May 1997 also showed a high level of under-nutrition, with 27% of the children being stunted.¹⁷ Of those children whose RTHCs were available, none at Soshanguve III Clinic and only one at Jubilee Hospital showed weights that were plotted and found to be below the third percentile at their previous visits. Sometimes the weight plotting is inaccurate or interpreted wrongly.²⁰ Inaccurate weight plotting may be as high as 80% in some places.¹¹ This is partly because some health workers, including doctors, are unable to complete the growth card even when they have the relevant data.²¹ Overworked clinic workers may omit weight plotting. It has been observed that, although a persistently motivated health worker could increase the clinic attendance of children, this does not lead to a corresponding increase in weight plot-

ting.²² In this study, of the children at Jubilee Hospital whose weight had been plotted, two had poor weight, but only one had been identified by staff for intervention. At Ga-Rankuwa, six of the children whose weight had been plotted were found to have poor weight, and two had not been identified for intervention. The skill of accurately measuring and plotting weight must be matched by an ability to interpret it and act appropriately. This requires considerable training and supervision of the health workers.^{4,5,23,24}

Approximately 80% of the children had an up-to-date immunisation status. A study in Venda in 1989²⁴ and a community survey in Winterveld¹⁷ also showed a high immunisation coverage. It is known that immunisation coverage is inadequate in many places, including in developed countries.^{7,25,26,27} The information provided by the accompanying adult cannot be relied upon to determine accurately which children's immunisation was delayed.²⁸ Without the RTHCs being present at the consultation, missed immunisation opportunities may occur. In one survey, where 84% of the mothers had brought immunisation cards, 55% were up to date with immunisation. According to a household survey, only 61% had immunisation cards and only 45% were up to date.²⁵ In a Swaziland study, almost three-quarters of the children without health cards had missed vaccinations and these children constituted over one-third of total missed vaccine opportunities.²⁹ Missed opportunities for immunisation may be due to caregivers omitting to bring the children for immunisations, or due to provider problems and the system.³⁰ The commonest reason for failure to complete the series in time was that the child had been sick and therefore not brought for vaccination.³¹ Mothers may be unaware of the fact that, in order to confer the maximum benefit, vaccinations should be completed by a certain time. Between 5% and 9% of the children in our study had an incomplete immunisation status that had not been noticed at their last visits.

The following are important recommendations that emanate from this study. For the RTHC to be effective as a tool to contribute to child wellbeing, time should be allocated for educating the mothers, including on issues such as the benefits of bringing the RTHC to the child's consultations, diet, immunisation and family planning. It is recommended that the RTHC should

be brought to all consultations. The rate of compliance could be improved by pinning the card to the patient-kept outpatient file. Health workers should ask caregivers for the RTHC and be trained to plot weight accurately and to identify children for interventions. RTHCs assist in keeping up to date with vaccine schedules, but a problem is that, in some centres, immunisations are not administered daily but only on particular days, at specific times and places,²⁷ as was the case at Soshanguve III Clinic and Jubilee Hospital. To improve immunisation coverage, immunisation should be available daily and the hours should be extended or changed to accommodate working mothers.

The study showed that the RTHC is not used effectively as a curative, preventive and promotive tool in monitoring child health in public hospitals. Its success is dependent on the knowledge, dedication and cooperation of the mothers, caregivers and health workers, as discussed in the paragraph above.

The situation in private general practice was not investigated, but is not expected to differ much from that described in this article. This study is of value to healthcare practitioners, both in hospitals and private practice. Although many family physicians do not offer immunisations as a service, they all deal with sick children. Several of the recommendations discussed in the previous paragraphs could also be implemented by the family physician. In particular, if the general practitioner asks mothers to produce the RTHC and then discusses its reference to her child's current problem, the mothers are more likely to understand the importance of the RTHC as a tool in monitoring child health.

References

1. Report on the second session of the joint FAO/WHO Expert Committee on Nutrition. WHO Technical Report Series 1951;44.
2. Hart RH, Belsey MA, Tarimo E. Integrating maternal and child health services with primary health care. Geneva: WHO; 1991.
3. Ebrahim GJ, Ahmed AM, Khan AA. Maternal and child health in practice - training modules for middle level workers. Sisingstoke: Macmillan Publishers; 1988.
4. Chopra M, Sanders D. Growth monitoring - is it a task worth doing in South Africa? S Afr Med J 1997;87(7):875-8.
5. Wagstaff L. Growth monitoring - is it a task worth doing in South Africa? S Afr Med J 1997;87(10):1391.
6. Krug A, Wittenberg DF. Growth monitoring - do not throw the baby out with the bathwater. S Afr Med J 1998;88(1):61-2.
7. Holt E, Guyer B, Hughart N, et al. The contribution of missed opportunities to childhood under-immunization in Baltimore. Pediatrics 1996;97(4):474-80.
8. Brugha R. Missed opportunities for immunization at curative and preventive health care visits. Trans R Soc Trop Med Hyg 1995;89(6):698.
9. England L, Shelton R, Schubert CJ. Immunizing preschool children : beliefs and practices of pediatric residents. Clin Pediatr 1997;36(3):129-34.
10. Brookes H. Maternal involvement in growth monitoring. Curationis 1995;18:1.
11. Senanayake MP, Gunawardena MK, Peiris DS. Maternal comprehension of two growth monitoring cards in Sri Lanka. Arch Dis Child 1997;76(4):359-61
12. Sohal H, Wilkinson D, Morley D. Growth monitoring teaching aid to improve mothers understanding. Lancet 1997;350:562-3.
13. Sohal H, Wilkinson D, Morley D. The growth monitoring teaching aid rapidly improves mother's understanding of growth curves. Trop Doct 1998;28(3):160-2.
14. Asuzu MC. A comparative study of the commonly used nutritional assessment tools for primary health care. East Afr Med J 1991;68(11):913-22.
15. Aden AS, Brannstrom I, Mohamud KA, Persson LA, Wall S. The growth card - a road to health card? Maternal comprehension of the growth monitoring cards in two Somali villages. Paediatr Perinat Epidemiol 1990;4(3):340-50.
16. Van Oyen HJ. Weight gain variation in infants of an impoverished community: Bellanse, Haiti. *Int J Epidemiol* 1991;20(1):187-92.
17. Saasa-Modise ML. Nutritional status of children in Winterveld. A community survey. Unpublished report, Pretoria; Medicos undated.
18. Grant K, Stone T. Maternal comprehension of a home-based growth card and its effect on growth. J Trop Paediatr 1986;32:255-7.
19. Pettifor JM, Hansen JDL. Malnutrition. In: Kibel MA, Wagstaff LA, editors. Child health for all. Cape Town: Oxford University Press; 1996. p. 96.
20. Morley D. Will growth monitoring continue to be part of primary health care? S Afr Med J 1994;84(suppl 15):6.
21. Ruel MT, Pelletier DL, Habicht JP, Mason JB, Chobokoane CS, Maruping AP. Comparison of two growth cards in Lesotho: health workers' ability to understand and use them for action. Am J Public Health 1991; 81(5):610-5.
22. Editorial. Growth monitoring : Intermediate technology or Expensive Luxury? Lancet 1985;2:1337-8.
23. Buch NA, Hassan M, Bhat IA. Parental awareness and practices in acute diarrhea. Indian Pediatr 1995;32(1):73-6.
24. Schoub BD, Johnson S, McAnerney JM, et al. Integration of Hepatitis B vaccination into rural African primary health care programs. BMJ 1991;302:313-6.
25. Gindler JS, Cutts FT, Barnett-Antinori ME, et al. Success and failures in vaccine delivery: evaluation of the immunization delivery system in Puerto Rico. Pediatrics 1993;91(2):315-20.
26. Fairbrother G, Friedman S, Hanson KL, Butts GC. Effect of the vaccine for children program on inner city neighbourhood physicians. Arch Pediatr Adolesc Med 1997;151(12):1229-35.
27. Mitra J, Manna A. An assessment of missed opportunities for immunization in children and pregnant women attending different health facilities at a state hospital. Indian J Public Health 1997;41(1):31-2.
28. Goldstein KP, Kviz FJ, Daum RS. Accuracy of immunization histories provided by adults accompanying preschool children to a pediatric emergency department. JAMA 1993;270(18):2190-4.
29. Daly AD, Nxumalo MP, Biellik RJ. Missed opportunities for vaccination in health facilities in Swaziland. S Afr Med J 2003;93(8):606-10.
30. Szilagyi PG, Roghmann KJ, Campbell JR, et al. Immunization practices of primary care practitioners and their relation to immunization levels. Arch Pediatr Adolesc Med 1994;148(2):158-66.
31. Binkin N, Salamina G, Carrieri MP, et al. Childhood vaccination coverage in Italy: results of a seven-region survey. The Italian vaccination survey working group. Bull World Health Organ 1994;72(6):885-95.