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An assessment of the 'road-to-health-booklet' based on knowledge/perceptions of the clinic nurses and conduct a record review of the completion of the booklets

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An assessment of the 'road-to-health-booklet' based on knowledge/perceptions of the clinic nurses and conduct a record review of the completion of the booklets

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master in Public Health in the field of Rural Health.

Johannesburg
July 2016

Supervisors: **Dr. Richard Cooke**

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DECLARATION

I, Thein Win, declare that this research report is all my own work except to the extent indicated in the reference citations and acknowledgements. It is being submitted for the degree of Master in Public Health in the field of Rural Health, to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination at this or any other University.

The Ethics Committee on Human Research, University of Witwatersrand approved the study unconditionally. The medical ethics clearance certificate number is M 141040.



(Thein Win)

14th July 2016

DEDICATION

To my late mother, Daw Kyi Kyi.

To my family, Theingi Aung and my two sons, Win Htoo Aung and Win Myint Aung, with thanks for not complaining about all the hours spent away from them.

To late U Win Tin, the longest political prisoner of Burma, and life-long non-violent freedom fighter of Burma, who has given me moral inspiration.

To my compatriots, grassroots powerless people and those under the brutality and hardship of the military regime, who were denied basic health and human rights.

ABSTRACT

INTRODUCTION

Poor growth monitoring of children continues to be a major source of early death for children under five worldwide. The RTHB is an indispensable aid for under-five child development and health.

AIM: To explore the knowledge and perceptions of the RTHB by clinic nurses, and to assess the completion of the RTHB booklets in the West Rand rural clinics.

METHODS

This study applied a quantitative and qualitative mixed method design. The first component is a retrospective records review of the 75 RTHBs of the children under-five. The second component is a qualitative study assessing the knowledge / perceptions of the new RTHBs by the nine nurses who provided child health services in the two rural clinics. Quantitative data was analysed using SPSS version 23 to conduct simple descriptive analysis for categorical variables. A thematic analysis was conducted on data collected through interviews with the clinic nurses.

RESULTS

The study found that only immunisation section was fully completed (100 percent). The weight-for-Age growth chart completion was excellent (81 percent). Most of the sections were less than 70 percent fully completed. The two growth charts (Lt/Ht X Age and Wt X Lt/Ht) were only around 30 percent fully completed. The Oral Health section was only seven percent fully completed.

The qualitative interviews reveal six themes reflecting nurses perceptions of RTHB:: value of RTHB, barriers affecting effectiveness of RTHB, functions of RTHB, health system improvement, communication improvement and skills improvement. The value of the RTHB was based on the following: easy navigation; a comprehensive tool for child health information and child growth monitoring; clear scope; comprehensive infant feeding guidelines, and child referral tool. The barriers included poor completion, language, confidentiality, supply and demand, and limited note-making space. Suggested areas of improvement included: equipment availability for child growth monitoring; modifying sections of RTHB; providing mobile oral health services; completion of relevant sections by hospitals and cover change.

CONCLUSION

The study revealed that clinics from the West Rand District experienced problems in using the new RTHB, except for the Weight X Age Chart and Immunisation sections. The major problems were in the completion of child PMTCT/HIV section, the other two growth charts (Weight for Height and Height for Age growth charts) and referral for oral health examination. It is therefore essential to improve the RTHB utilisation in the West Rand District, since it is the cornerstone of the under-five child health care, which is closely related to mortality and morbidity of children. The District Clinical Specialist Team (DCST) should organise training, re-training, fire drills for the usage of RTHB.

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ABBREVIATIONS / ACRONYMS

CoMMiC	Interim Report of the Committee on morbidity and mortality in Children under-five years
DCST	District Clinical Specialist Team
GMP	Growth Monitoring and Promotion
GOBI – FFF	Growth Monitoring, Oral Rehydration, Breast Feeding, Immunisation, Female Education, Family Spacing, Food Supplement
HIV	Human Immunodeficiency Virus
IMCI	Integrated Management of Childhood Illness
MDG	Millennium Development Goal
MUAC	Mid-Upper Arm Circumference
NCHS	National Centre for Health Statistics
PCR	Polymerase Chain Reaction
PHC	Primary Health Care
PMTCT	Prevention of Mother to Child Transmission
RTHB	Road-To-Health-Booklet
RTHC	Road-To-Health-Chart
UNICEF	United Nation International Children's Fund
WHO	World Health Organisation

CHAPTER 1: INTRODUCTION

1.1 Background

Poor growth monitoring of children continues to be a major source of early death for children under five worldwide (UNICEF, 2014). The World Health Organisation (WHO, 2009) describes growth monitoring and promotion (GMP) as an essential nutritional intervention for under-five children. Weight and length/height measurement charts are required for GMP (Chotivichien et al., 2006). An estimated 6.3 million under-five children died, mainly in developing countries, due to common treatable diseases in 2013 (World Health Organisation, 2015). Many of these challenges could effectively be prevented or treated by using simple techniques, such as oral rehydration therapy and measuring the growth of the children.

WHO estimates that 37 percent of the world's children under the age of five will continue to live in Sub-Saharan Africa by 2050 (World Health Organisation, 2015). This means that close to 40 percent of live births are in Sub-Saharan Africa. Children dying before the age of five is, however, more common in developing countries. The African region still has the highest mortality in the WHO database, with the under-five mortality rate being above 100 per 1000 live births (World Health Organisation, 2015).

It is therefore important for all the countries, particularly in Sub-Saharan Africa, to take major cognisance of the wellbeing of the region’s under-five children (World Health Organisation, 2014). The number four goal of the Millennium Development Goals (MDG) highlights three indicators for monitoring a child's health: monitoring (i) the under-five mortality rate; (ii) infant mortality rate, and (iii) the proportion of one-year-old children immunised against measles (United Nations, 2003).

The growth monitoring and promotion programs have been practiced in many developing countries for around 50 years all over the world, including Africa, Latin America, Asia, Europe, and the Caribbean (de Onis et al., 2004). The concept of using a weight chart for growth monitoring was initiated by Morley in 1962 after three years' experience in the village of Ilesha in Nigeria (as cited in Donald and Kibel, 1984). Since then, child-health cards have been successfully introduced throughout the developing world.

Problems with nutrition or health have the potential to affect child growth. Therefore, growth assessment is an important and useful tool for nutrition. (Dietitians of Canada and Canadian Paediatric Society, 2010). The Food Consumption Fortification Baseline survey showed that stunting and underweight are the most common nutritional problems. One in ten children is underweight, one in five are stunted, and overweight/obese children make up four percent of the one to nine age group populations (Cloete et al., 2013, Labadarios et al., 2008). It is essential for the healthy development and growth of the children, especially as the under-fives are vulnerable to malnutrition and infectious diseases.

Conversion from Road-to-Health-Card (RTHC) to Road-to-Health-Booklet (RTHB)

Before 2011 the Road to Health Card (RTHC) was an essential monitoring tool for the under-five child health programme. Proper used RTHC in Primary Health Care was found to improve under-five child health, including growth development (Tarwa and De Villiers, 2007). The Essential National Health Research Conference of 2006 included RTHC among the priorities for health systems research (Lutge et al., 2006).

The main reason for the shift towards the RTHB was that it is able to detect child growth problems early. It allows the health worker at the clinic to observe the trend of the growth charts of the under-five child when the child goes to the clinic. Growth curve lines indicate

the status of the health of the child. It is critical, because a growth curve parallel to the x-axis indicates an early sign of likely deterioration of the child's health. It is also recommended that growth charts should be a focus for interventions as part of health systems development. Well-trained and dedicated personnel are essential for ensuring proper use of the RTHB. Proper use of the RTHB will prevent malnutrition and enhance the health of children. Early detection leads to early diagnosis and management. Early management, in turn, could reduce child mortality.

Apart from the growth charts, RTHB includes essential health information, such as immunisation, head circumference, developmental screening, vitamin A supplementation, PMTCT information, deworming medicine and oral health. The RTHC is a backbone tool of primary health care (PHC), and a useful summary of a child's health during the first five years of life, and thus helps to prevent child morbidity and mortality. The Interim Report of the Committee on Morbidity and Mortality in Children under-five years (CoMMiC 2012) described the ten worst districts of under-five mortality rates.

The second triennial report of the Committee on Morbidity and Mortality in Children under five years (CoMMiC 2014) listed Gauteng province with under-five mortality rate 42.9 per 1000 live births. This is the highest in the country (CoMMiC, 2014). Research in this subject is therefore important for Gauteng Province. Similarly, eight of the ten worst-performing districts were in rural areas (CoMMiC, 2012). For this reason questions around proper completion of the RTHB and knowledge/perception of the clinic nurses in rural clinics are important to consider.

In 2011 the Department of Health, South Africa replaced the Road to Health Card (RTHC) in maternity facilities and PHC clinics with the RTHB (DOH, 2011). Gauteng Province. Circular 9). Several significant changes have been noted in the new RTHB. As mentioned in

Appendix B, these include among other things: new format of the three growth charts (Weight for Age, Weight for Height and Height for Age), developmental milestones, oral health, health promotional messages and hospital admission record.

In the new RTHB health workers can identify the growth status of the child. For instance, it includes child milestone information, such as stunted/severely stunted, wasted/severely wasted and overweight/obese by using height-for-age and weight-for-height growth charts (Table 1.1).

Table 1.1 Classification of malnutrition

Z-score	**Growth indicators**		
	Length/Height for age	**Weight for age**	**Weight for length/height**
Above 3	(child very tall - rarely endocrine disorder)	May be growth problem. Assess from next indicator	Obese
Above 2			Overweight
Above 1			Possible risk of overweight
0 (median)			
Below -1			
Below -2	Stunted	Underweight	Wasted
Below -3	Severely stunted	Severely underweight	Severely wasted

Source: New Road-to-Health-Booklet Presentation, Department of Nutrition, 2012

The RTHB, UNICEF, and WHO Approaches

The RTHB is structured in line with the approaches of UNICEF and WHO. The UNICEF one uses an approach which assesses the following: growth monitoring, oral rehydration, breastfeeding, immunisation, female education, family spacing and food supplements (GOBI-

FFF). With this "GOBI-FFF" approach the UNICEF programme is able to save children, and prevent them from contracting simple and common diseases (UNICEF, 2008).

The Integrated Management of Childhood Illness (IMCI) is a WHO approach, and is the new philosophy of the prevention of the mortality/morbidity of the under-five children, especially from developing countries (UNICEF, 2008). It can save children by preventing simple and common diseases (UNICEF, 2008). Globally, the mortality of under-five children has dropped significantly, from 12 million to 6.9 million in 2011. (United Nations Inter‐agency Group for Child Mortality Estimation, 2011,Pradhan et al., 2013).

Thus there is a close link between GOBI-FFF and IMCI in saving the lives of children. Due to their effectiveness in child monitoring, the IMCI, immunisation, childhood infection prevention, and developmental screening are included in key health promotion activities in South Africa (Saloojee and Bamford, 2006).

The RTHB covers immunisation, growth charts, developmental screening and food supplements, in line with GOBI-FFF and IMCI approaches. Therefore it is an essential child health monitoring tool in the South African PHC sector.

The District Clinical Specialist Team (DCST) is one of three pillars for facilitating the re-engineering of the PHC. It was introduced in 52 districts in South Africa, including the West Rand District (the current study site). In the child health sector of DCST, the RTHB is the key child health record to support and improve the quality of child health care, and addresses child growth issues in line with the GOBI-FFF and IMCI approaches - especially for under-five children in their own district (Ministerial Task Report Team, 2014).

In addition to this, the DCST is expected to conduct appropriate training for neonatal care, severe acute malnutrition, growth and development, and also IMCI and RTHB training at

primary care level and district hospitals. The DCST has to work at district level and focus mainly on PHC, including clinical training, the improvement of clinical services, monitoring, and evaluation (Ministerial Task Report Team, 2014)

1.2 Problem Statement

Since the introduction of the DCST in the West Rand District the team has observed numerous problems around completion of the new RTHB by healthcare professionals. The significant problems are as follows:-

i. Poor completion of the three growth charts
ii. Lack of measurement of the head circumference
iii. Lack of measurement of MUAC
iv. Lack of completion of the developmental screening section
v. Lack of an oral health referrals section, and
vi. Inconsistent supply of the deworming medication section.

The DCST further noted that these challenges could be due to lack of staff training and knowledge of how to complete the RTHB. Furthermore, negative attitudes have been observed in the use of the RTHB. Such negativity is revealed by nurses from clinics, who view the completion of the RTHB as time-consuming and as extra work, which leads to non-completion of other sections of the RTHBs. Against this backdrop, the researcher deems it, critically important to explore nurses' perceptions of the RTHB and its completion, in order to recommend a quality improvement of the new RTHB that would be easy to use by the various healthcare professionals.

1.3 Rationale for the study

The RTHB is an indispensable aid for under-five child development and health. It is essential for any visit to a healthcare worker or facility, including admissions to casualty. The Department of Health regards the appropriate use of the RTHB as paramount (Department of health and social services, 2011). However, the challenge lies in the proper use of the RTHBs in the PHC setting among healthcare workers, including doctors. Incorrect assessment and inappropriate care can have major adverse results.

The researcher noted that only four studies concerning the RTHCs / RTHBs have originated from the Western Cape and Limpopo provinces. These studies were mainly about the perception and knowledge of the completion of the RTHB (Cloete et al., 2013, Harrison et al., 1998, Kitenge and Govender, 2013,Tarwa and De Villier, 2007). Since the RTHB is a new initiative, there are no studies related to its use in the West Rand District. Hence, the researcher would like to assess the completion of the new RTHB in PHC by nurses, and also their perceptions and knowledge about the RTHB in West Rand District - especially in the rural clinics, where there is a shortage of healthcare workers.

1.4 Aim

To explore the knowledge and perceptions of the RTHB by clinic nurses, and to assess the completion of the RTHB booklets in the West Rand rural clinics.

1.5 Objectives

1. To conduct a record review regarding the completion of the RTHBs in the defined rural PHC clinics in the West Rand District.
2. To explore the knowledge and perceptions of the clinic nurses about the use of the RTHB.

1.6 Literature Review

In this section the researcher described previous studies about attitude, knowledge, and completion of the RTHCs, RTHBs, and GMP. These studies are systematic reviews and international and local studies from various journals.

Utilisation of Road to Health Booklet

Numerous studies have been conducted on the perception and utilisation of the RTHB. A study conducted in Nigeria in 2010 on knowledge, attitudes, and practices of the growth monitoring process found that knowledge of growth monitoring was high (95.2%) amongst primary healthcare workers, including nurses from health centres. However, the procedures for growth monitoring skills were inadequate for monitoring under-five children ranging from 29.3 to 49 % (Olugbenga-Bello and Asekun-Olarinmoye, 2010). A study conducted in Thailand showed that one–fourth of the health workers and half of the health care volunteers did not understand the objectives of the GMP. Half of the health care volunteers and workers had inadequate skills to measure the weight of the children. Less than half of the caregivers had an understanding of the growth chart, but had no knowledge of how to plot the weight of the children on the RTHC. The study recommended supervision of health workers and more training (Chotivichien et al., 2006).

Harrison et al (1998) conducted a descriptive prospective study on RTHC in Cape Town. 35 health personnel were interviewed about the perception and knowledge of the RTHC. All the nurses felt that the RTHCs should play an educational role. Antenatal and neonatal details were entered satisfactorily on the RTHCs, but the milestones, such as head circumference and

length measurements, were seldom completed (Harrison et al., 1998). Most of the professional nurses (80 percent) supported the concept of the RTHCs, and recommended the introduction of the book form with more comprehensive instructions. Half of the nurses expressed the view that they were too busy to fill in details, and 37 per cent did not know how to use the weight-for-age chart.

A cross-sectional descriptive study conducted in the Western Cape found that nurses weighed five percent of under-five children fully clothed and with shoes. Although the nurses weighed the children, they did not plot 55 per cent of the children on the weight charts. Among 12 staff only seven (58 per cent) had IMCI training. The RTHCs were not used to their full potential, as poor plotting and poor measurement of the heights of the children was noted (Harrison et al., 1998). In this study the status of wasting and stunting of the children were not assessed, since the height of the children had not been measured (Schoeman et al., 2006).

Tarwa and De Villiers (2007) carried out a study about the RTHCs the aim of which was to find out how the nurses completed the RTHCs. Of 100 nurses, only 14 plotted the weights of the children. The reason for non-completion was that the health workers were overworked. However, the immunisation charts were 80 per cent completed in that clinic (Tarwa and De Villiers, 2007). The University of the Pretoria also conducted a study on utilisation of RTHC in Kalafong Hospital in 2005 - 2006. The findings showed that 71 percent (n = 67) completed a section on vitamin A, and deworming section was 16 percent (n = 38) completed. Weight was plotted for 97 percent and immunisation was completed 87 percent (Mulaudzi, 2012).

Kitenge and Govender (2013) conducted a study in the rural area of the Limpopo Province, assessing the nurses' knowledge of the growth charts. They found that more than 50 per cent

of the PHC nurses felt that staff shortages and lack of equipment were significant challenges. The nurses had inadequate knowledge of growth charts.

More than 50 per cent of participating PHC nurses could identify malnutrition at a late stage only, when the clinical symptoms became apparent. The commonly completed section by PHC professional nurses were EPI, vitamin A supplementation and deworming. Other sections (i.e., head circumference, developmental screening, length / height-for-age, and weight-for-length / height charts) were seldom used (Kitenge and Govender, 2013).

Cloete *et al.,* 2013 conducted a cross-sectional descriptive study about the knowledge and perception of nursing staff on the new RTHB. Outcomes were measured using a self-administered questionnaire. The mean score percentage was 55 per cent for the 12-knowledge questions. Only 38 per cent and 52 per cent of the nursing staff correctly identified the classification of underweight and wasting respectively. Half of the nurses interpreted correctly the faltering growth chart. Nearly half felt it was unnecessary to change from the RTHCs to the RTHB. This study highlighted the fact that the majority of nursing staff have insufficient knowledge about the new RTHB (Cloete *et al.*, 2013).

Roberfroid et al., (2005a) conducted a systematic review about the performance of the GMP. The evidence was weak on the performance of GMP as a screening tool for early detection for malnutrition. This was because the health care providers did not weigh or plot the weight on the graph; there was also a range of faulty plotting, and unreliability of the measurement. The review further revealed that most of the health care facilities were not checking head circumference, length height-for-age, and weight-for-length/height charts, suggesting that developmental screening was not being used (Roberfroid et al., (2005a).

According to the in-depth interviews conducted with an international panel of District Medical Officers (n=19), the District Medical Officers suggested that the GMP failure is partly due to the low motivation of health workers to do GMP activities. Overwork and inadequate competency were also cited as issues that inhibited nursing staff from performing adequately in their GMP activities (Roberfroid et al., 2005a). The major challenges were due to lack of knowledge about GMP, lack of training, shortage of staff, over-work, and negative perceptions.

Since the Department of Health officially implemented the new RTHB in 2011, there is no evidence of any study on the RTHBs in the Gauteng Province apart from being mentioned in the literature review (Roberfroid et al., 2005b). The Literature review showed that in most of the studies, head circumference, developmental screening, and length measurement were seldom completed (Kitenge and Govender, 2013). The reason was mainly due to shortage of staff, overwork and "very busy" in the clinics. Other reasons for inadequately utilisation of the RTHC / RTHB were due to the following:

- Low motivation of the health workers
- Inadequate knowledge about the growth charts and GMP
- Lack of equipment for the procedures

The researcher has noted that all the significant challenges were related to child growth monitoring by the clinic staff. The initial steps are to investigate whether the nurses from PHC are able to complete all the sections of the new RTHB, what perceptions they have, their knowledge levels of how to classify the underweight, wasting and stunted in the new RTHBs, and to explore the reasons for their perceived challenges. The next step would be to investigate reliability/accuracy of completion rates, especially with the growth charts in future studies.

CHAPTER 2: METHODOLOGY

This Chapter describes the methodology followed in conducting the study. It discusses the study design, study sites, study population, sampling strategy, detailed description of data collection, measurement tools, data analysis and ethical considerations.

2.1 Study Design

This study used a mixed-method design, which is divided into two components. The first is a quantitative study which involved conducting a retrospective record review of the RTHB. The second is a qualitative study, which involved conducting interviews with the clinic nurses who provided child health services. These interviews reflected the nurses' knowledge and perceptions of the RTHB.

2.2 Study Site

The study was conducted in two rural Primary Health Care (PHC) clinics, namely: Elandsfontein and Badirile, which fall under the jurisdiction of the Randfontein sub-district municipality, West Rand District in Gauteng Province. In the West Rand District only these two clinics fall into the rural areas of the district. Elandsfontein and Badirile are both in farming areas. Rural clinics have more health problems than urban ones, including shortage of human resources. The researcher is aware of the RTHB's problems in West Rand District because he is also working with the District Clinical Specialist Team in the district. The overall under-five population and number of children (under-five) who used the clinics in 2013 are shown in Table 2.1

Table 2.1 Total population composition, number of clinic visits by under 5s per year and the number of nurses employed

	Badirile PHC	Elandsfontein PHC
Total Population	10,849	2058
Female under-five years	397	75
Male under- five years	396	75
Total under-five years	793	150
Under-fives attending clinic / year	3344	612
Number of clinic visits by under-five children / month (average)	279	51
Professional Nurses	5	2
Enrolled nurses	1	1
Enrolled nurse assistant	1	-

2.3 Study Population

The study population for the qualitative interviews consisted of clinic nurses (professional nurses, enrolled nurses and enrolled nursing assistants) working in the defined two clinics. (A total of ten staff: seven professional staff, two enrolled nurses and one enrolled nurse assistant)

The researcher used the RTHBs of the children under-five who attended these two clinics during the defined period of study.

2.3.1 RTHB Sample size

The population of under-five children in this defined two clinics for the period was 330 (Badirile Clinic 279 + Elandsfontein Clinic 51). The researcher used the RTHBs of the

under-five children who attended these two clinics during the defined period of study. The statistician from the Witwatersrand Health Sciences Faculty assisted with the calculation of the sample size by using the Department of Social Security (DSS) research software. The study used power 0.8 and p-value 0.05.

With this guidance, a sample of 75 RTHB was considered appropriate. A systematic sample, which involved taking samples every Monday and Friday, was used to obtain 75 RTHBs from both clinics. 12 RTHBs were from Elandsfontein and 63 RTHBs were from Badirile.

2.3.2 Nurses sample size

The study population listed for the qualitative interviews consisted of 10 clinic nurses (professional nurses, enrolled nurses and enrolled nursing assistants) working in the two defined clinics. Of the ten, nine were interviewed. The enrolled nurse assistant (ENA) was excluded because she had entered into public health system only two months previously, with no experience in child health, and had never provided children services at the clinic.

2.4 Pilot study

Prior to conducting pilot study the researcher trained two research assistants on how to conduct the interviews. The research assistants were graduate students who held internship positions at the University of the Witwatersrand. Part of their internship involved learning about qualitative and quantitative research methodologies. A pilot interview was conducted with one professional nurse from another district with similar characteristics to the study clinics. During the pilot study the researcher collected data from 15 RTHBs. The results of the pilot study are not included in the main study, but they assisted in improving the structure of the data sheet for the main study and framing of questions for the qualitative interviews.

2.5 Data Collection Tool and procedure

Data collection took place from December 2014- January 2015, a period of two weeks, and this was entirely dependent on participants' availability. Before data collection from the RTHBs, the researcher and the research assistants explained the purpose of the study to the participants. An information sheet outlining the aim and objectives of the study was given to all the participants. Informed written consent was obtained from the participants. Permission for audio recording the nurses' interviews was also obtained (Appendix F, H, & I).

2.5.1 Description of data collection for record review

For the quantitative component of the study the RTHB was the main source of data collection. The study included all RTHB of under five children who received child health services at the two defined clinics within the study period. Details of the study were explained to the mothers/caregivers in a private room. The RTHB was reviewed only after the mother had consented. Inclusion criteria are all RTHB from both clinics, except for excluding criteria:

1. The following sections of the RTHB were excluded in the study because they directly relate to the hospital or maternity obstetric unit (MOU) where the baby was delivered or admitted: . Details of child and family (Page 4)
2. Neonatal information (Page 6)
3. Health promotion messages section (Page 10 to 12)
4. Hospital admissions (Page 19)
5. Clinical Notes (Page 21)

6. RTHBs for children who came from other clinics to receive services at the study clinics. If the mother / caregiver indicated that they do not usually receive child health services from the study clinics, they were excluded.

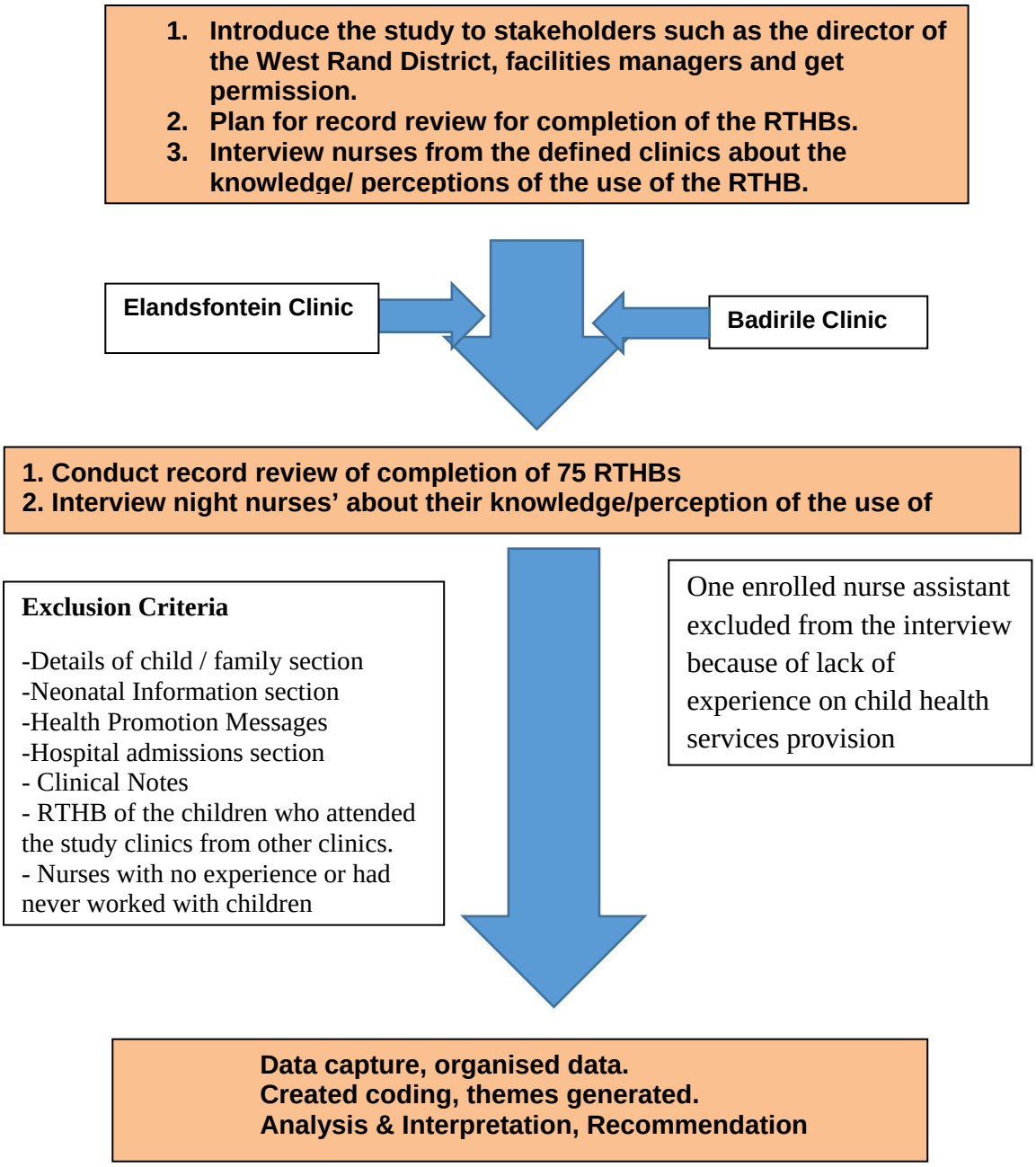


Figure 2.1 Roadmap for the RTHB study

2.5.2 Variables, measurement, and data reviews from the RTHBs

In reviewing the completion of the RTHBs the researcher checked all 14 variables mentioned in Appendix B & C and marked each section of the RTHBs as "fully completed," "not completed" "partially completed "and "not applicable."

"Fully completed" (C): all the requirements of this particular section are entirely completed.

- "Not completed" (N): requirements of the section are not completed.
- "Partially completed" (P): requirements of the section are not entirely completed.
- "Not applicable" (NA): this section or portion is not entitled to be completed due to age.

For instance, a section on head circumference should be completed at 12 months. If a baby visits the PHC at 11 months, it is not entitled to be measured for the head circumference.
If the baby is not "HIV-exposed," its PMTCT information (page 8) column does not need to be completed, as it is "Not applicable."

Developmental screening (page 13) should be checked according to the instructions from the RTHB. The Weight-for-Age (WXA) growth chart (page 14 to 16) should be completed at every visit. The mother or caregiver should bring the child every month until 12 months for weight measuring. The baby above 12 months old should return every two months up to 24 months. From 24 months to five years the interval is three months The Length/Height-for-Age (L/HXA) (page 17) and Weight-for-Length/Height (WXL/H) (page 18) growth charts should be completed every six months. The MUAC should be completed every six months from the age of six months. Oral Health Examinations (page 20) should be referred to a dentist, dental technician or oral hygienist from the appearance of the first tooth annually until five years of age.

Data accuracy was determined by checking double entry, consistency and logical sequence, and recorded in the data sheet and into electronic format.

The researcher also measured the variation of knowledge/perception of RTHBs based on the years of experience, designation, attendance of related training and their suggestions/comments on the new RTHB from the qualitative aspect.

2.5.3 Description of data collection for the qualitative data

Semi-structured interviews were conducted with nine nurses (professional and enrolled) about their perceptions of the RTHB. The interview questions were open-ended and non-directive, focusing on nurses' experiences and perceptions of using the RTHB; understanding the RTHB; understanding of child growth monitoring charts and recommendations for improvement to the RTHB (Appendix D). To generate comprehensive accounts of nurses' experiences, specific probes relating to the main interview questions were used. The interviews were conducted with professional nurses who have been offering child health services for more than six months. Nurses with no experience of completing RTHB or who had never worked with under-five children were excluded. Each interview was tape-recorded, and lasted 45-60 minutes. The interviews were conducted in a quiet and comfortable room provided by the facility manager.

2.5.4 Recruitment of research assistants

Two graduate research assistants were recruited from the University of the Witwatersrand working as research interns in the Family Medicine Department. They were selected on the basis of being bilingual speakers of Setswana and English. (Setswana is the native language in the area of study). Almost all the interviews were conducted in English, since all interviewees were fluent in English. Only one interview was conducted in Setswana. Prior to

data collection the two research assistants were trained on how to conduct qualitative interviews for this research.

2.6 Data Analysis

The data analysis process for the RTHB was in line with the predetermined variables and measurement table (Appendix B). Data was captured on Microsoft Excel 2010, and exported to SPSS version 22 statistical software for quantitative analysis. Although the research protocol referenced the planned use of Epi-Info 2000 statistical software for data analysis, the researcher decided to use the SPSS software for data analysis for learning purposes.

Simple descriptive data analysis was performed on demographic data. Categorical data was presented using percentages. Comparison of categorical data was performed looking at the "fully completed", "partially completed", "not completed" sections. Data was presented using appropriate tables and graphs to enhance its meaning. A statistician from the University of the Witwatersrand assisted with the data analyses and interpretation of the results.

For the qualitative component of the study the recorded interviews were transcribed verbatim. Only one interview was translated from Setswana to English, as most interviews were conducted in English.

In analysing the qualitative data a thematic analysis was conducted. This involved the researcher familiarising himself with the data by reading interview transcripts a number of times (Braun, et al., 2006). This was followed by inductive coding of data, which involved identifying key issues that were emerging. The emerged codes were then grouped according to their similarity. This led to generation of themes and subthemes of key issues regarding nurses' perceptions of the RTHB. In order to ensure data trustworthiness, coding discrepancies were rechecked by the researcher.

2.7 Ethical Considerations

Ethical approval for the study was obtained from the Human Research Ethics Committee (HREC) Witwatersrand University. The HREC Clearance Certificate Number is 141040 (Appendix J, K). The researcher also obtained permission to conduct the study from the West Rand District Research Committee (Appendix H, I). Permission to conduct the study was also obtained from the facility managers of Elandsfontein and Badirile PHCs.

All participants were given the information sheet, together with the consent form prior to participation in the study. (Appendix C, D, E, F, G). No mother refused to participate in this study. Confidentiality and anonymity for all the participants (nurses) was assured. No names were recorded as part of data collection (this includes children's names on the RTHB). This was done by ensuring that the data collection tool did not include the name of the child. Data would only be handled by the researcher, supervisors, and a statistician. The researcher will keep all data and audio-recorded data in a locked cupboard for a period of five years. Plagiarism was avoided by acknowledging the original references.

CHAPTER 3: RESULTS

3.1 Introduction

This chapter provides a description of both quantitative and qualitative findings. The quantitative section is primarily focused on 14 variables that will be described in the findings. The qualitative section will provide a thematic analysis of the nurses' perceptions of RTHB.

3.2 Demographic Characteristics

As described in the methodology section, the researcher conducted a record review of 75 RTHBs. 14 sections (variables) were included in the study. Table 3.1 below shows the completion rate of the RTHB by the health providers, and the sections are marked as "fully completed", "partially completed", "not completed", and "not – applicable".

"Valid percentage" was calculated based on the combination of "fully completed," "partially completed" and "not completed", but excluding "not applicable". "Total percentage" was calculated including "not applicable."

The highest "fully completed" is the "Immunisation" section, which is all 75 booklets (100%), and the lowest is the "Oral Health Examination" section, with only one booklet completed (seven %)

Table 3.1 Recording status of the 14 sections of the RTHB (n = 75)

SN	Section	Fully Completed (Valid Percent)	Partially completed (Valid Percent)	Not completed (Valid Percent)	Not applicable (Total Percent)
1	Well Child Visits (page 2,3)	58 (77)	16 (22)	1 (1)	0 (0)
2	Immunisations (page 5)	75 (100)	0 (0)	0 (0)	0 (0)
3	Head Circumference (page 5)	41 (58)	2 (3)	27 (39)	5 (7)
4	Mother PMTCT/HIV (page 7)	59 (78)	8 (11)	8 (11)	0 (0)
5	Child PMTCT/HIV (page 8)	16 (47)	4 (12)	14 (41)	41 (55)
6	Vitamin A (page 9)	32 (65)	3 (6)	14 (29)	26 (35)
7	Deworming (page 9)	17 (52)	2 (6)	14 (42)	42 (56)
8	Developmental Screening (page 13)	42 (62)	8 (12)	18 (26)	7 (9)
9	Weight X Age Chart (page 14 to 16)	61 (81)	5 (7)	9 (12.0)	0 (0)
10	Length/Height X Age (page 17)	28 (37)	1 (1)	46 (62)	0 (0)
11	Weight X Length/Height (page 18)	25 (33)	0 (0)	50 (67)	0 (0)
12	Mid-upper Arm Circumference (MUAC) (page 19)	38 (57)	4 (6.0)	25 (37)	8 (11)
13	Name of Clinic Visited (page 19)	46 (61)	0 (0)	29 (39)	0 (0)
14	Oral Health Examination (page 20)	1.0 (7)	0 (0)	13 (93)	61 (81)

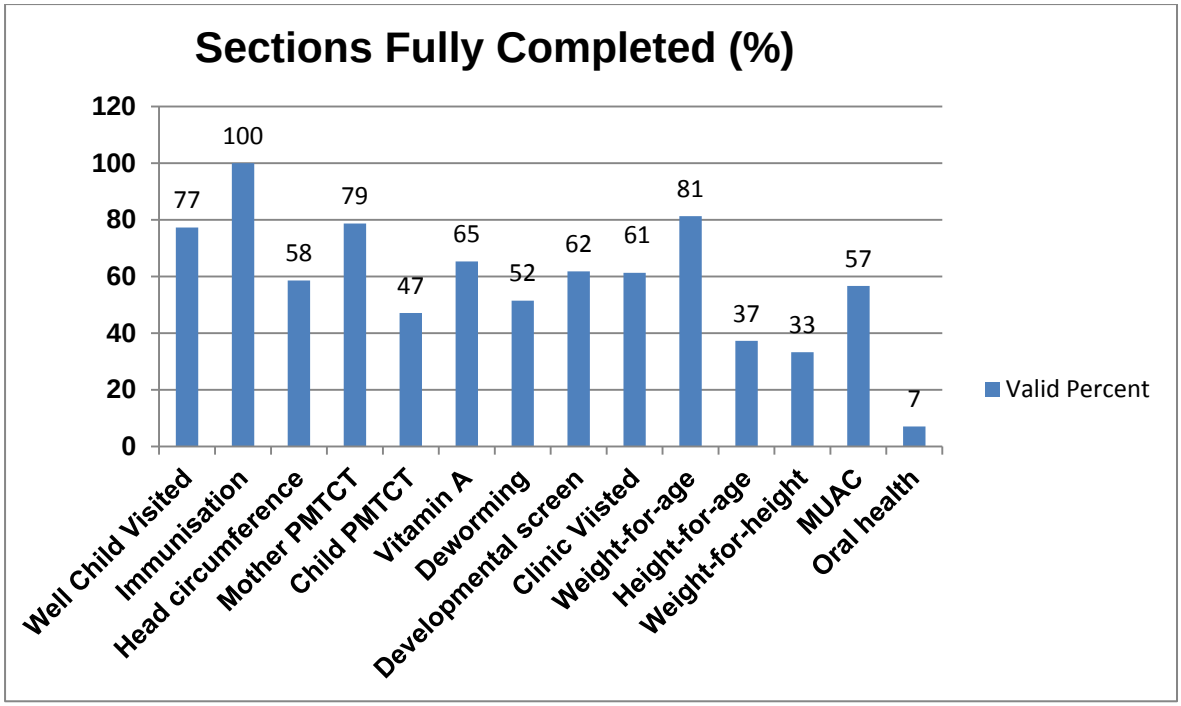


Figure 3.1 Histogram of the "fully completed" sections of the RTHB

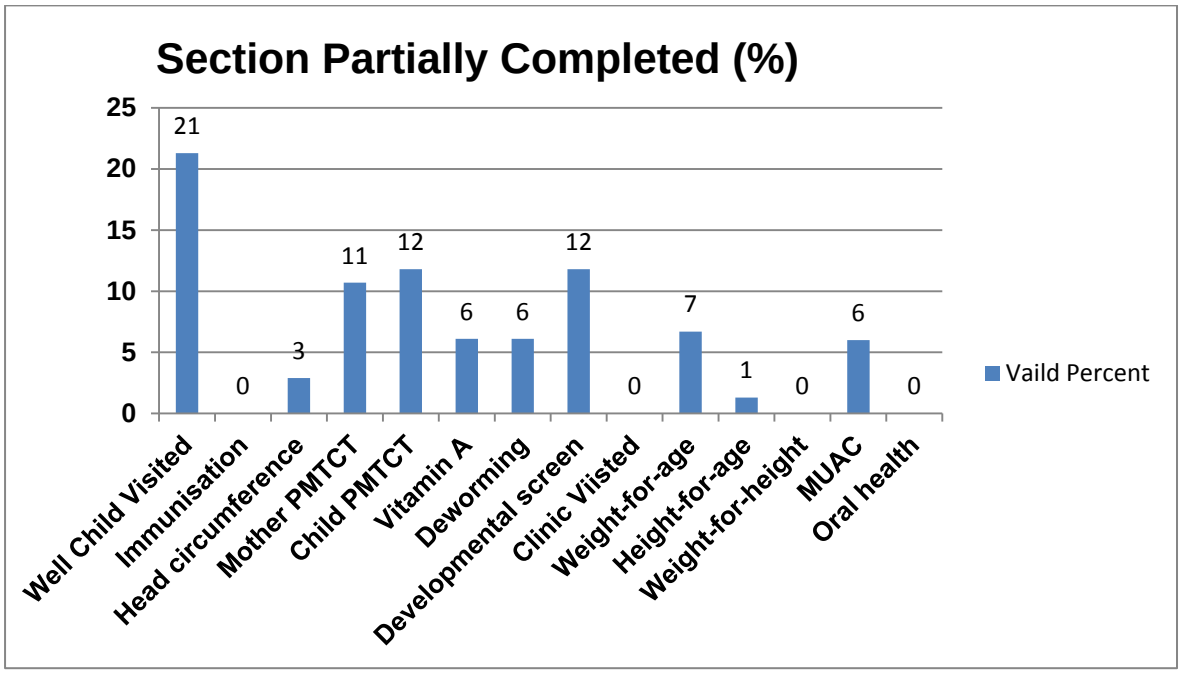


Figure 3.2 Histogram of the "partially completed" sections of the RTHB

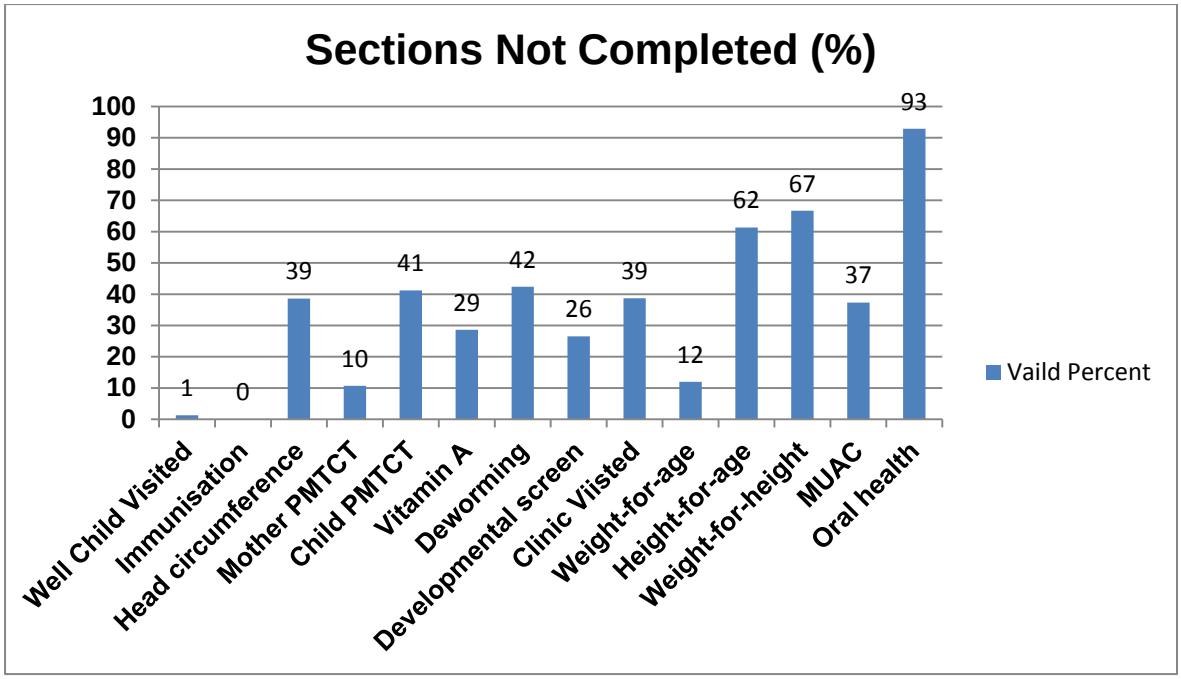


Figure 3.3 Histogram of the "not completed" sections of the RTHB

3.3 Designation and years of experience

Most of the nurses interviewed were professional nurses, most of whom had been working for more than 20 years (44%) as shown in Table 2.2.

Table 3.2 The number of nurses who participated in the interview

		Elandsfontein Clinic	Badirile Clinic	Total
Gender	**Male**	**0**	**0**	**0**
	Female	**3**	**6**	**9**
Nurses	**Professional Nurse**	**2**	**5**	**7**
	Enrolled Nurse	**1**	**1**	**2**
Total years of services (Professional Nurse)	**10-20 years**	**1**	**2**	**3**
	➢ 20 years	**1**	**3**	**4**
Total years of Services (Enrolled Nurse)	**10-20 years**	**1**	**1**	**2**

3.4 Participants' training

The qualitative study consisted of nine female participants, seven of whom were professional nurses, and two enrolled nurses. Five nurses (56%) had received RTHB training, two (22%) had received IMCI training (RTHB is a small part of the IMCI training), one (11%) had received both types while the other nurse (11%) had never attended training related to RTHB (Figure 3.4).

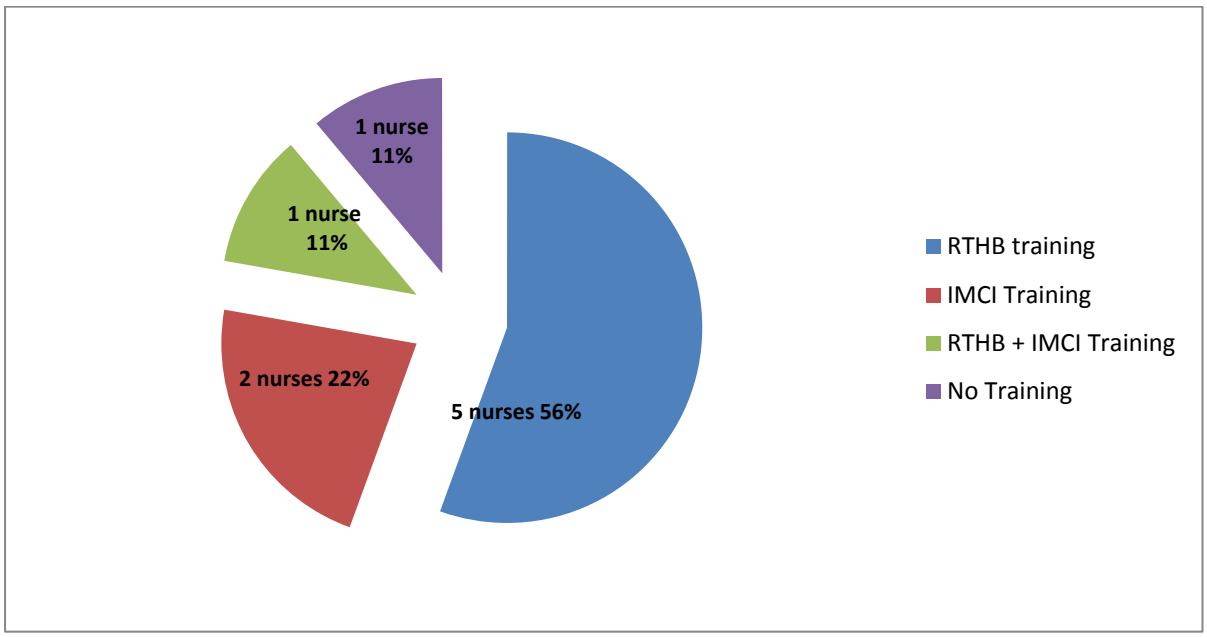


Figure 3.4 Proportion of RTHB / IMCI Training of nurses in the study

3.5 Nurses' knowledge and perception of using RTHB

3.5.1 Road to Health Booklet users

The nurses' experiences of using RTHB reveal two types of users namely: occasional and frequent users. Participants indicated that "occasional users" refers to clinic nurses who provide under-five services on a less regular basis. Their responsibility is to provide services to adult, chronic, and antenatal patients, and also doing administrative work. They usually see the under-five children when the nurses responsible for the children are not available at the

clinic for various reasons. On the other hand, participants referred to frequent users of RTHB as clinic nurses who are dedicated to providing services for the under-five children on a daily basis, except when they are not available for various reasons.

This study reveal six key themes, discussed under different sections of the results in this chapter. The themes are: 1) value of the RTHB, 2) barriers affecting effectiveness of the RTHB, 3) functions of the RTHB, 4) health system improvement, 5) communication improvement and 6) skills improvement.

3.5.2 Experiences and perceptions of using RTHB in a rural setting

The results reveal two themes associated with nurses' experiences of using the RTHB. Theme one is about the value of the RTHB. Five sub-themes fall within it. Theme two is about barriers affecting RTHB utilisation. Six sub-themes have been identified.

3.5.2.1 Theme 1: Value of RTHB

Theme one highlights numerous benefits that participants shared regarding the value of the RTHB. The five sub-themes provide a descriptive account of participants' experiences. They are as follows: easy navigation and comprehensive health information, clear scope, comprehensive tool for infant feeding guidelines, comprehensive child health monitoring tool, and feasibility of child referrals.

- **Easy navigation and Comprehensive health information for nurses**

Most participants considered having a comprehensive health information on the HIV/PMTCT information section to be a good thing about the RTHB. Such a section is useful in providing information about child health status.

> *"This book is guiding you already to check the status [of the child]. [It provides answers on whether] the child is exposed to TB? Is the child exposed to HIV? You just know and page seven, you already know if the mother is HIV positive. When the child*

comes to the clinic at six weeks, you already know that you must do PCR testing. So you can't miss the underlying disease…" (Interview 2; clinic 2)

"This is for the PMTCT it will show whether the child is exposed to HIV and will also help when dealing with the mother, did she ever speak to someone and receive counselling it will help you. This page looks at the child's PCR, the follow up PCRs..." (Interview 9; clinic 2)

- **Clear scope**

One participant indicated that the RTHB is good because it provides a clear scope, with comprehensive guidance for the nurses.

"I personally believe it's a good book to use because now it actually directs you as to what is it that you need to do and what is it that you need to ask the mother and what is it that you need to look out for on a child.." (Interview 3, clinic 2)

- **Comprehensive tool for Infant feeding guidelines for mothers**

Health promotion messages are included in the RTHB, such as infant feeding, how to correct dehydration etc. Therefore, some participants understood RTHB as a "Health promotion tool." They use these messages for health education to mothers, as well as encouraging them to read these messages. A few participants highlighted the importance of this.

"This page is for health promotion where the mother is taught about the child, how they should feed the child, and when she should introduce solids. The book teaches the mother because it also shows how she must hold the child. If the child has diarrhoea we give them the mixture, but if the child has diarrhoea and the clinic is closed the book shows them how to make the mixture." (Interview 9, clinic 1; Interview 2, clinic 2.)

"….From here is health education to teach the mother, what should they do at six months and what they should start eating and also different milestones." (Interview 9, Clinic 1).

- **Comprehensive Child health monitoring tool**

All the participants remarked that the RTHB is a good booklet because it includes child monitoring growth and development. It is a comprehensive childcare tool because it is inclusive of all important childcare issues, such as underweight, wasting, stunt, HIV/PMTCT, immunisation, developmental screening, vitamin A and oral health. One participant illustrated this point clearly:

> *"…. Already on the first page is everything you must check. Is time for vitamin A? Now you are safeguarding the nutritional status of the child. Is this child HIV positive, Is it time for PCR but today you are looking at weight but now the book, the blocks are saying is it time for PCR today. Is this child exposed? How is the feeding? Now we check everything, is it immunization? Is it due today? Now we check. So we just protect the child holistically." (Interview 2, Clinic 1)*

Another one said:

> *"PMTCT [section in the RTHB shows] the mother's status, [it indicates] if the child is exposed or not. [It also shows if] the child exposed to TB or not. Feeding if the child is being breastfed or on formula or are they on solids if they have already grown. Then immunization we tick, according to the months that they should be receiving the immunization. The vitamins, deworming then the developmental stages, which show the different milestones at a certain month, can the child stand, can they see and can they do everything…" (Interview 8, clinic 1)*

- **Feasibility of child referral**

Some nurses indicated that RTHB was good because it can assist and guide the referral decision by the nurses. For instance, it allows the comparison of weight and length:

> *"This is the one… we compare weight to length. Now this one will guide us whether the child is getting obese, overweight, or the child is very wasted, then also from primary level … We start identifying such things, and we refer them. (Interview 2; clinic 2)*

Another participant said that the RTHB assisted with the referral to the next level using the above or lower level measurement of normal range in head circumference.

> *…. So if on week 14 [the head circumference] is less than 38 cm or above 43 cm then we have to refer (There is an instruction in the RTHB for head circumference*

measurement. If the head circumference is out of the range (38 - 43 cm) we should refer to the next level care).Interview 9; clinic 2)

3.5.2.2 Theme 2: Barriers affecting effectiveness of RTHB

Theme two highlights numerous barriers affecting the effectiveness of RTHB. There are six sub-themes which provides a descriptive account of participants' perspectives on barriers affecting the effectiveness of RTHB. (Figure 3.5)

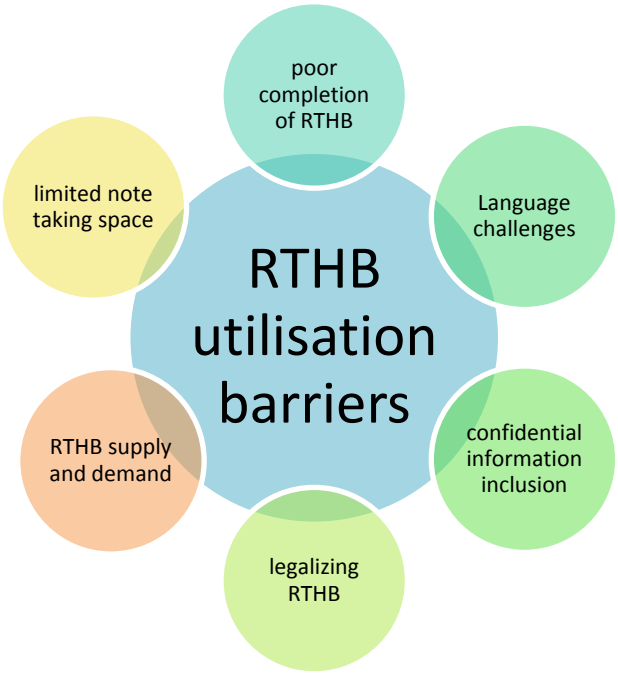


Figure 3.5 RTHB utilisation barriers

- **Poor completion of RTHB booklet**

Most of the participants noted that some sections of the RTHB are not completed, and gave reasons for this. The study revealed that 67 percent (n = 9) of the clinic nurses said all sections of RTHB were not completed. This correlates with findings from the record review. The excerpts below give the opinions of two participants:

"For the weight and length to see if the baby is underfed or overfed, but like I said I don't think you will get lot of this books actually being filled. (It means Weight X Age

and Weight X Height graphs not plotting)" "I never see anybody fill this part. [Referring to HIV/PMTCT sections] (Interview 5; clinic 2)

"Then the oral health, most of the books when you go to oral health [section], this part is [usually] not filled in. (Interview 8; clinic 1)

The time taken to complete the RTHB was also considered a source for non-completion. Two participants said:

".. there are a lot of things to be filled by the nurses. Some of the things I don't do as well…. you know what; we don't always have time that is why this is not filled. (Interview 6, clinic 2)
"I think there is too much information which is not being used. (Interview 1; clinic 2)

- **Language problem**

Most participants thought that the health promotion messages section should be written in other African languages rather than English language only. Some arguments presented by participants are that:

"…it is in English and most of our patients speak Tswana and we have a lot of patients that speak Shangaan and Portuguese, you know they come from Mozambique" (Interview 1,& 9; clinic 2)

"They [patients] don't understand….they must write it in other languages. So that it makes sense to the mothers…." (Interview 1; clinic 2)

"…. *because they [patients] can't read, so this is just in English and all the books… I don't know if they can't make it in all 12 languages but it is going to be better. (Interview 6; clinic 2)*

"I think the language issue, but to me this book is good. The language, if it can be written in especially health promotion messages if it would be in African languages" (Interview 9; clinic 2)

- **Confidential information inclusion**

Most of the participants mentioned challenges regarding the inclusion of the HIV/PMTCT information section in the booklet. This is because HIV is still a social challenge for many

people in the community. According to the participants, the HIV status of the mother as well as the baby is regarded as sensitive information appearing in the booklet. It is generally seen as a privacy issue. For instance, participants indicated that parents do not want to mention their HIV status, while other refused to write it in the booklet, some did not tell the truth and some scratched and rewrote the HIV status as negative. Below are the descriptions given by the participants regarding the sensitivity of HIV information inclusion in the RTHB:

> *"…some people [mothers] are just concerned about privacy issues because they don't want the [HIV] status to be written on page 7 (Interview 2, clinic 1)*

Another participant said the mother did not want to tell the truth when she was asked.

> *"The mother might not tell you the truth but should she brings the book, the book will reveal the truth. (Interview 8; clinic 1)*

One participant also indicated that

> *"… because they take this (child's RTHB) to the child's crèche. So somebody will open …...then they'll see that they're HIV positive. So they still don't want." (Interview 9; clinic 2)*

Four participants also indicated that some RTHB HIV section was missing because parents tore the section with sensitive information.

> *"Most of the mothers some of them have torn the page (HIV section) and hid it… (Interview 2, 6, 7, 8; clinic 1 & 2)*

- **Legalising the RTHB**

Another negative experience about the RTHB was that other entities (school, home affairs) viewed it as a legal document. Some schools request it when they enrol the child.

> *"… when the child goes to grade 1, they need this book; ... If they go to make a birth certificate they need this book, at home affairs they need this book. (Interview 7; clinic 1)*

- **RTHB supply and demand ratio**

One participant added another critical issue about shortage of RTHB.

"The only thing is that you find that they run out of them [RTHB] and then some mothers bring the old card." (Interview 9, clinic 1)

Limited note taking space

A few participants also noted that the line space between the clinical notes, and growth charts, was narrow. As such, this makes it difficult to record, as alluded to by the two participants:

"…this one is like I don't know, you do it on top of the line and it's like there in the middle. It's confusing. I don't know if it is too small or? But you must really look there to plot whatever it is you need to plot (growth charts)." (Interview 1; clinic 2)

"… but the only thing is the spaces are too small in the clinical notes because we had one child where the clinical notes were full so you have to add on so I think that's the only thing, that the space is not enough for." (Interview 8; clinic 1)

Finally, participants indicated another challenge that relates to the oral health section. They indicated that an instruction in that section says "Refer child if scheduled examinations have not been done." However, there is no space for a referral note. This means that referral notes are not recorded in this section, as indicted by one participant who said:

".. oral health [section] indicates that you must refer the mother when the first tooth comes out. You know there is no space where I as a professional nurse will write when referring, yeah if you check it is only for people of oral health but to say that I have referred there is no where it is indicated." (Interview 9; clinic 2)

3.6 Nurses' understanding of the growth charts and MUAC

3.6.1 Theme 3: Functions of the RTHB

The overarching theme regarding participants' understanding of growth charts and MUAC was mainly on the functions of the RTHB. Three sub-themes emerged, which refer to the functions of the RTHB: weight-for-age growth monitoring, height/length for age growth monitoring and weight-for-height/length growth monitoring. All participants described the

growth charts according to child's age/height/weight, and some participants described the mid-upper arm circumference measurement.

- **Weight-for-age growth monitoring**

All participants described the Weight-for-Age growth chart. Participants had an understanding that they have to observe at least weight related to ages. If the weight is not in line with the graph, that suggests that the child has problem with growth related to the age. This point is made clear by one participant who said:

> *"The growth charts that's where we see whether the child is gaining weight. This child, if the height and length corresponds, or is the child malnourished so that if we see the weight going down then we can refer them to the hospital….If the weight, length is going down we refer the child to the hospital." (Interview 9, clinic 1)."*

> *"My understanding [about the RTHB is that] it really monitors the growth and development of the child. [it assists us to] pick up if the child does not grow according to the weight or according to the age, basically the chart will tell you exactly what is happening" (Interview 4; clinic 2)*

Only one participant discussed the implication/use of the Weight-for-Age growth chart. Some discussed the indication of the referral if the Weight-for-Age growth chart was not in line with normal range. One participant said

> *"This first one is the weight for age chart; you know generally a child of a certain age must be what weight and then using this chart…" (Interview 4; clinic 2)*

- **Height/length for age growth monitoring**

Some participants described Height/Length-for-Age growth chart. Only one participant discussed the implication/use of the Height/Length-for-Age growth chart. A few participants discussed the indication of the referral if the Height/Length-for-Age growth chart was not in line with the normal range. One participant:

> *"At a certain age you would expect a child to be at a certain height so there are children who like somehow its interrelated..." (Interview 3; clinic 2)*

- **Weight-for-height/length growth monitoring**

A few participants described the Weight-for-Height/Length growth chart. Only one participant discussed the implication/use of the Weight-for-Height/Length growth chart. Only two participants discussed about the Weight-for-Height/Length growth chart and mentioned about the referral to the next level care if the Weight-for-Height/Length growth chart showed not in line with normal range.

"With the length to height, well it's a prerequisite, it must be done." (Interview 3; clinic 2)

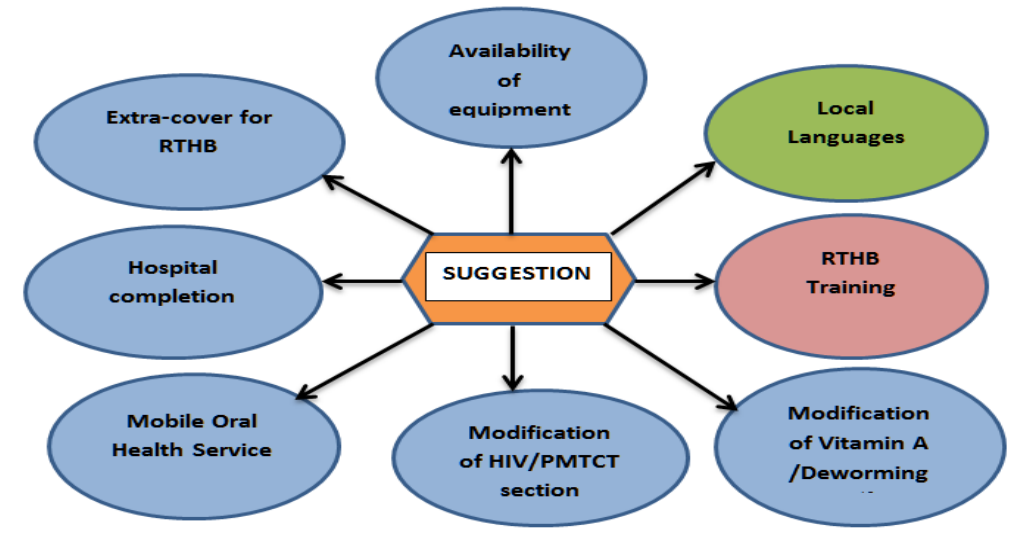
> *"This child if the height / length corresponds, or is the child malnourished so that if we see the weight going down then we can refer them to the hospital". (Interview 9; clinic 1)*

Another participant mentioned what the charts shows about head circumference measurements and MUAC

> *"It actually talks to a lot of aspects, it's not only about the height and the weight and the head circumferences, and the MUAC, it's got something to do with the MUAC I know. (Interview 3; clinic 2)*

3.7 RTHB improvement strategies

The study further describes suggestions made for improving the RTHB. Figure 3.5 highlights three themes showing improvement strategies for the RTHB: health system, communication and skills improvement.



Health System improvement

Communication improvement

Skill improvement

Figure 3.6 Nurses suggestions for RTHB improvement

3.7.1 Theme 4: Health System improvement

- **Modification of HIV/PMTCT information**

A few participants discussed the modification for HIV/PMTCT information section because of negative experiences, which are mentioned in table 3.4.

- **Modification of Vitamin A/Deworming**

One participant suggested that the Vitamin A/Deworming section should be adjacent to the immunisation/head circumference section. The reason was that when the child comes to the immunisation/head circumference measurement it is more convenient to complete vitamin A and Deworming at the same place.

- **Availability of Equipment**

Another participant said the clinic has no appropriate equipment for measuring height and weight.

"With the length to height, well it's a prerequisite, it must be done. But given the circumstances where we are functioning, equipment is not there to do the length and height especially with the ones that are above two years because there is that flip measuring thing for the little ones, but the others who are a little bit bigger in terms of that there's a challenge when it comes to that because our scale, is not, the height thing is not up to standard". (Interview 3; clinic 2)

- **Extra cover for RTHB**

Other participants indicated that the health information at the back of the booklet is obscured because the mother covers the booklet with fancy paper to protect the RTHB from damage. One participant:

"*We can also try to put an extra cover. Shame some of the moms are very cute they try to cover this beautiful paper and then all of this information is gone, and they paste it here, you know so it makes it very difficult and then you feel so bad just taking it off. Just for them to put an extra cover. (Interview 1; clinic 2)*

- **Mobile oral health services**

One participant said parents were reluctant to go to the oral health clinic because of the transport and financial challenges. It would be better to improve mobile oral health service. The participant said

"We can also try to put an extra cover. Shame some of the moms are very cute the try to cover this beautiful paper and then all of this information is gone and they paste it here, you know so it makes it very difficult and then you feel so bad just taking it off. Just for them to put an extra cover." (Interview 1; clinic 2)

"*If there was an oral mobile [mobile health service] it would have been easy…" (Interview 8; clinic 1)*

- **Hospital Admission section**

Hospital staff should complete the "Hospital Admission" section in the RTHB (page 19) before the child was discharged from the ward. One of the participants mentioned this as follows:

"*I've never seen. Never ever seen the chart, this part the hospital admissions. I've never seen anyone who wrote anything there, Never" (Interview 1, clinic 1)*

3.7.2 Theme 5: Communication improvement

- **Use of African languages for health promotion messages**

Some participants suggested using other African languages for health promotion messages because the majority of people do not understand English.

3.7.3 Theme 6: Skill improvement

- **RTHB training and re-training**

A few participants suggested more RTHB training and retraining. The reason is most of the staff have limited knowledge. Retraining should be provided for the staff who are not in touch with the children in daily practice.

CHAPTER 4: DISCUSSION, RECOMMENDATIONS & CONCLUSION

4.1 Introduction

This chapter provides a detailed discussion of results, followed by conclusion and recommendations. The aim of the study was to assess the knowledge and perceptions of the RTHB by rural clinic nurses, and to assess the completion of the RTHB booklets in the West Rand.

4.2 Record Review of the RTHB

Completion of three growth charts & MUAC (page 14 to 19) (Appendix O, P)

The most important part of the RTHB is the three growth charts. They are the essential part of the identification of underweight/severely underweight, stunted/severely stunted, wasted/severely wasted and overweight/obese. (Table 1.1). It is mentioned in the RTHB that if the MUAC is < 11.5 cm, that this indicates severe acute malnutrition. If ≥ 11.5 cm and < 12.5 cm, this indicates moderate acute malnutrition. This means that the MUAC reflects severe acute malnutrition and moderate acute malnutrition based on the measurement. (Appendix P)

This study also reveals that the weight-for-Age growth chart completion was excellent (81%). This chart can detect Underweight or severely underweight of the child by plotting on the chart.

Although this study did not include measuring the accuracy of the plotting of chart, other studies highlighted poor plotting and unreliability of weight measurement (Chotivichien et al., 2006).

This study further found that the Length/Height-for-Age and Weight-for-Length/Height growth charts were significantly low (37% and 33%), compared to the Weight-for-Age growth chart (81%). These could be because the previous RTHC only included the Weight-for-Age growth chart, and not Those for Length/Height-for-Age or Weight-for-Length/Height. The nurses are not used to it.

The findings reveal a lack of understanding of the Length/Height-for-Age and Weight-for-Length/Height growth charts. This could be due to the fact that these growth charts have recently been added in the new RTHB. It has been noted that it is a major challenge for the nurses to complete new RTHB, especially the Length/Height-for-Age and Weight-for-Length/Height growth charts. This means that the clinics have missed the opportunity of identifying stunted, wasted, and overweight children at an early stage. The nurses have also missed the opportunity to identify severe acute malnutrition that needs to be referred urgently to next-level care. According to the RTHB instruction, if the child's MUAC is less than 11.5 cm, it indicates the child has severe acute malnutrition. The clinic nurse should therefore refer the child to an appropriate hospital urgently.

The study therefore reveals that neither clinic measured enough MUAC. Not knowing the measurement of MUAC means that the nurses could not identify if the child had severe or moderate malnutrition. This seems a major flaw in the RTHB, the whole intention of which is to reduce the high infant mortality rate.

Similarly, a study carried out in the rural area of the Limpopo Province (Kitenge and Govender, 2013) also found that the sections on Length/Height-for-Age and Weight-for-Length/Height growth charts were seldom used. Previous studies also noted difficulties in identifying wasting and stunting, since the nurses did not plot the Length/Height-for-Age and Weight-for-Length/Height growth charts (Schoeman et al., 2006). PHC nurses could only

identify malnutrition when the clinical signs/symptoms developed, which is too late for management (Roberfroid et al., 2005a, Kitenge and Govender, 2013).

Completion of immunisation section

According to (Massyn et al., 2013a or b)**,** the national target for immunisation was 90 percent in 2013/14. In this study the immunisation section was 100 percent completed. The supporting factor is likely to be that the nurses are used to completing the immunisation section in the old RTHC over many years.

This finding is similar to other studies, which found that immunisation section was completed very well (Kitenge and Govender (2013); Tarwa and De Villier (2007). Kitenge and Govender, (2013) also found in their Limpopo Province study that the clinic staff completed immunisation section with good coverage. In contrast, the study conducted by the University of the Pretoria in Kalafong Hospital, reflected an immunisation rate of 87. In 2007 Tarwa and De Villier, also found that immunisations were 80 percent completed in their study.

Completion of Head Circumference section

Measuring the head circumference can provide early awareness of hydrocephaly and microcephaly. In this study this was missed in more than one-third of the children.

Completion of Developmental Screening

The findings reveal that the opportunity for the detection of developmental delays of the children that can prevent the further developmental problems had been missed for one-third of the children. This is similar to the study conducted in Limpopo Province which found that the developmental screening and head circumference were not completed by the clinic staff (Kitenge and Govender, 2013).

Completion of Mother & Child PMTCT/HIV information (Appendix N)

In the current study, some caregivers / mothers did not give consent to the nurses to write their HIV status on the RTHB especially if they were HIV reactive. In cases where consent was provided, the caregivers/ mothers would either remove the page from the RTHB that reflect their HIV status or cross it out with a pen.

In this section “not applicable” means the mother was HIV non-reactive. (Only HIV-exposed children need to complete the Child PMTCT/HIV section, according to the RTHB instruction). The findings reveal that a total of 41 RTHBs were marked “not applicable” in the specified section. This suggests that 34 mothers were HIV positive. Among them, 41 percent (14 babies) of HIV-exposed children did not have information recorded about the PCR testing. This finding reveals an important missed opportunity for the improvement of the PMTCT indicators.

Completion of Oral Health Examination Section for Referral

The first routine referral for oral examination should start with the appearance of the first tooth and every year thereafter. In this study a total of 14 referrals should have been made, but only one (1%) was noted in the RTHB. This reflects poor oral health care in these clinics. It could be argued that the non-referral could be due to the fact that Oral Health referral is a new section in the RTHB. At present, appropriate referral is significantly low. Notably, there is not enough space to write the referral note. This observation was noted by the nurses who were interviewed.

Completion of Vitamin A Supplementation & Deworming Treatment

This study found that 65 percent of the vitamin A section was completed. This is higher than the Gauteng Province (44.3 percent in 2013/14) in children of 12 to 59 months. It is also higher than the National target, which is 60 percent (Massyn et al., 2013a or b). Poor administration of vitamin A has been noted to have detrimental effects on children. For instance, the WHO estimates that vitamin A was responsible for six percent of deaths under five in Africa, and eight percent in South-East Asia (Global Health Risks, World Health Organisation, 2009).

Vitamin A supplementation should start from six months old, and deworming treatment from 12 months. After that, both should be given every six months until 60 months. Full completion of these two sections should be more or less the same, but the deworming section in the current study was only 51 percent completed, which is even less than the vitamin A section (65%). The completion rate of the deworming section for this study is higher than that of the University of Pretoria, which was 16 percent. This is even lower than the Vitamin A completion (Tarwa and De Villier, 2007). According to these findings, deworming is carried out much less than Vitamin A supplementation, although the frequency of schedule is more-or-less the same. It is probably due to the Mebendazole medication (for deworming) being out of stock.

Well Child Visits

The Well Child Visits section is presented in the form of a checklist for the whole RTHB, suggesting that completion should be fairly easy. This study found that about 22% of the RTHB were not fully completed. It means that the nurses did not appropriately use this section as a check list. In the previous studies, the “Well Child Visits” section is not included.

4.3 Nurses’ qualitative perceptions of RTHB

This study reveals six key themes regarding nurses' knowledge/ perceptions of the RTHB namely: 1) RTHB value, 2) barriers affecting its effectiveness, 3) Functions of RTHB, 4) health system improvement, 5) communication improvement and 6) skill improvement. Theme one noted that the value of the RTHB lay in the following: easy navigation; a comprehensive tool for child health information and child growth monitoring; clear scope; comprehensive infant feeding guidelines, and child referral tool. This study found that nurses were knowledgeable about the purpose of the RTHB. However, not all of the nurses were aware that it is an important tool for health promotion and general child health care. It is essential to be aware that it consists of three important tools.

The themes were generated using question 2-5 of the interview guide on Appendix B. The analysis on the biographical information and question 1 of Appendix B was quantitatively analysed under 3.4 "Participants Training" sections of the report.

The effectiveness of the childcare could be compromised by PHC nurses' lack of awareness of the RTHB. Although theme one mentions the value of the RTHB, the review results do not seem to endorse this. For instance, while the review suggests that there are no referrals, a few nurses indicated that the RTHB is supporting the feasibility for the under-five child referral. The low completion rate noted on various sections indicates that the nurses' understanding of the value of the RTHB is limited. Previous studies also indicate that the RTHCs should play a health educational role (Harrison et al., 1998).

Although the new RTHB has benefits for GMP, the second theme highlights barriers affecting its effectiveness. The following challenges were noted with regard to its use: poor completion, language, confidentiality, supply and demand, and limited note-making space. According to the nurses, the poor completion of RTHB was due to time constraints due to

high patient volume, high workload, shortage of staff and also lack of understanding/knowledge. This finding is in line with other studies, which found similar reasons (Roberfroid et al., 2005a or b, Cloete et al., 2013, Chotivichien et al., 2006, Schoeman et al., 2006, Tarwa and De Villier, 2007, Harrison et al., 1998). Although the immunisation section (100 % completed), and the weight-for age-graph (81%), the rest of the sections were poorly completed. The other contributing factors for non-completion could be related to lack of initial and repeat trainings (Cloete et al., 2013, Kitenge and Govender, 2013).

The effectiveness of the RTHB is also affected by patient privacy issues in relation to the child's HIV status. Not knowing the child's HIV status leads to poor completion of the RTHB. As noted above, the infant PCR information was frequently missing. Running out of stock also has a negative impact. Non-completion could also be due to limited space provided for writing clinical notes. Previous studies did not include the HIV section.

Language challenges were also raised by the nurses. The health promotion messages are written in English. Many people have migrated from other countries such as Zimbabwe, Mozambique to the West Rand District. The results seem to suggest that language plays an important part in mother/caregivers' understanding of the health-promotion messages. The mother tongue of 22.7 percent of South Africans is isiZulu, followed by isiXhosa (16 %), Afrikaans (13.5%), English (9.6%), Setswana (8%), Sesotho (7.6%). The other official languages amount to less than 5% of the population, according to the census of 2011. Therefore, English does not seem to be appropriate to be used in the RTHB, especially in rural areas.

With regard to nurses' understanding of growth charts and MUAC, this study found that all of the participants described growth charts according to age/height/weight. Few nurses

plotted on the Weight-for-Height or Height-for Age. This finding suggests that most nurses lack the skills to plot these charts and/or a shortage of staff with a high volume of patients.

The study further revealed important findings regarding improvement of the RTHB. It highlights a need for improvements in the health system which will focus on the following: equipment availability for child growth monitoring; modifying the Vitamin A and deworming section; modifying the PMTCT section; providing mobile oral health services; ensuring that hospitals complete the relevant sections, and improvement of the general appearance of the RTHB. Although the benefits of the RTHB are noted, this study shows that challenges persist. The suggested areas of improvement provide solutions for dealing with challenges to the utilisation of the RTHB.

4.4 Limitations

- There are four sub-districts in West Rand. This study was conducted only in the Randfontein sub-district. Therefore, the findings for this study do not represent the whole West Rand.

- The study is based on a record review of the RTHBs. The inaccuracy of the records (i.e. measurement error) might affect the quality of the results.

- The findings might be biased because these two clinics were visited three months previously for RTHB support by the DCST team, and emphasis placed on growth charts before this study was implemented.

4.5 RECOMMENDATIONS

The following recommendations are based on a problem-solving and integrated approach by stakeholders of the West Rand Health Department.

i. DCST should organise activities, together with the district nutritional programme, maternal & child health programme, PHC programme and monitoring & evaluation quality control programme in the district to develop guidelines fo proper completion of the RTHB.

ii. It is essential to conduct RTHB/growth parameters (growth charts /MUAC) training for clinic nurses. However, such training should not be allowed to compromise service delivery.

iii. Ongoing follow-ups should be made after the training. Regular re-training/fire-drill at the individual clinics is needed.

iv. Regular audits on the completion of the RTHB should be implemented.

v. DCST should considered a PDSA (Plan-Do-Study-Action) approach (The Aurum Institute) if the problem in the use of the RTHB persists.

vi. Production of health promotion messages in the most common languages of the various provinces.

vii. Further research is recommended for a holistic approach to cover the four sub-districts.

viii. Further study ought to be conducted on the quality of plotting of the growth charts and MUAC.

ix. Facility managers should determine the underlying reason for poor completion of the deworming section, which is much lower than the Vitamin A section. It should be

investigated at the district pharmacy whether it is a shortage of supply of the deworming drug from Gauteng Province or failure of the clinics to place orders.

4.6 CONCLUSION

The study revealed that clinics from the West Rand District experienced problems in using the new RTHB, except for the Weight X Age Chart and Immunisation sections. The major problems were in the completion of child PMTCT/HIV section, the other two growth charts (Height for Weight and Height for Age growth charts) and referral for oral health examination. It is therefore essential to improve the RTHB utilisation in the West Rand District, since it is the cornerstone of the under-five child health care, which is closely related to mortality and morbidity of children. The District Clinical Specialist Team (DCST) should organise training, re-training, fire drills for the usage of RTHB.

REFERENCES

BRAUN, V. AND CLARKE, V. (2006) Using thematic analysis in psychology. Qualitative Research in Psychology, 3 (2). pp. 77-101. ISSN 1478-0887

CHOTIVICHIEN, S., THARMAPHORNPILAS, P. & SINAWAT, S. (2006) *Evaluation of growth monitoring and promotion (GMP) surveillance system Thailand 2002*. [Online] *Asia Pac J Public Health,* 18 (2)**,** 42-5. http://aph.sagepub.com/content/18/2.toc [Accessed: 30th January 2015]

CLOETE, I. et.al. (2013) *Knowledge and perceptions of nursing staff on the new Road to Health Booklet growth charts in primary healthcare clinics in the Tygerberg sub-district of the Cape Town metropole district. South African Journal of Clinical Nutrition,* 26**,** 141 - 146.

COMMITTEE ON MORBIDITY AND MORTALITY IN CHILDREN UNDER 5 YEARS (2012) *The Interim Report of the Committee on morbidity and mortality in Children under-five years (CoMMiC): 2012*

COMMITTEE ON MORBIDITY AND MORTALITY IN CHILDREN UNDER 5 YEARS (2014) *2nd triennial report of the committee on morbidity and mortality in children under 5 years (CoMMiC): 2014*

DE ONIS, M., WIJNHOVEN, T. M. & ONYANGO, A. W. (2004) *Worldwide practices in child growth monitoring. J Pediatr,* 144**,** 461-5.

DEPARTMENT OF HEALTH. (2012) *District Clinical Specialist Teams in South Africa: Ministerial Task Team Report to the Honourable Minister of Health, Dr Aaron Motsoaledi.* Pretoria.

DEPARTMENT OF HEALTH REPUBLIC OF SOUTH AFRICA (2012) *Road To Health Girls / Boys*. *In:* DEPARTMENT OF HEALTH REPUBLIC OF SOUTH AFRICA (ed.). Department of Health Republic of South Africa.

DEPARTMENT OF HEALTH. (2012) *Road To Health Girls/Boys.* Pretoria: (81/300759)

DEPARTMENT OF HEALTH AND SOCIAL SERVICES. (2011) *Implementation of new road to health booklet.* Johannesburg: Gauteng Province (Circular 9)

DIETITIANS OF CANADA AND CANADIAN PAEDIATRIC SOCIETY (2010) P*romoting optimal monitoring of child growth in Canada.*[Online] Available from: https://www.dietitians.ca/Downloads/Public/tcg-position-paper.aspx [Accessed; 2nd January 2015]

DONALD, P. R. & KIBEL, M. A. (1984) *The child health card - a cornerstone of preventive and promotive paediatrics*. [Online] *South African Medical Journal.,* 65**,** 423 - 424. [Accessed: 12th October 2014]

HARRISON, D. et.al. (1998) *An assessment of the 'road-to-health' card based on perceptions of clinic staff and mothers*. [Online] *S Afr Med J,* 88**,** 1424-8. [Accessed: 12th October 2014]

KITENGE, G. & GOVENDER, I. (2013) *Nurses' monitoring of the Road to Health Chart at primary healthcare level in Makhado, Limpopo province*. [Online] *South African Family Practice,* 55**,** 275-280. [Accessed: 11th February 2015]

LABADARIOS, D. et al. (2008) *Executive summary of the National Food Consumption Survey Fortification Baseline (NFCS-FB-I) South Africa, 2005*. *S Afr J Clin Nutr.*

LUTGE, E., FRIEDMAN, I. & MBATHA, T. (2006) *A Review of Health Research in South Africa from 1994 to 2007.* Durban: Health System Trust.

MASSYN, N. et al. (2013a) District Health Barometer. *In:* GERRITSEN, A. (ed.) *Immunisation.* Durban.

MASSYN, N. et al. (2013b) District Health Barometer. *In:* BAMFORD, L. (ed.) *Child Health.* Durban.

MINISTERIAL TASK REPORT TEAM (2014) *District Clinical Specialist Team in South Africa.* Pretoria.

MULAUDZI, M. (2012) Road to Health. [Handout]. *Road to health chart / booklet, Update 2012.* Department of Paediatrics and Child Health. University of Pretoria, Kalafong Hospital, 2012.

OLUGBENGA-BELLO, A. I. & ASEKUN-OLARINMOYE, E. O. (2010) *Primary Health Care Workers' Role in Monitoring Children's Growth and Development in Nigeria, West Africa. Global J Health Sci.* 3**,** 30-39.

PRADHAN, N. A. et al. (2013) *Insight into implementation of facility-based integrated management of childhood illness strategy in a rural district of Sindh, Pakistan*. *Glob Health Action,* 6**,** 20086.

ROBERFROID, D. et al. (2005a) *Do growth monitoring and promotion programs answer the performance criteria of a screening program?* A critical analysis based on a systematic review. [Online] *Trop Med Int Health,* 10**,** 1121-33. [Accessed: 10th November 2014]

ROBERFROID, D. et.al. (2005b) *Perceptions of growth monitoring and promotion among an international panel of district medical officers*. [Online] *J Health PopulNutr,* 23**,** 207-14. [Accessed: 12th October 2014]

SALOOJEE, H. & BAMFORD, L. (2006) *Key Childhood Health Promotion and Disease Programmes*. *In:* IJUMBA P & A, P. (eds.). Durban: Health System Trust.

SCHOEMAN, S. E. et.al. (2006) *The targeting of nutritionally at-risk children attending a primary health care facility in the Western Cape Province of South Africa*. [Online] *Public Health Nutr,* 9**,** 1007-12. [Accessed: 19th November 2014]

TARWA, C. & DE VILLIER, F. P. R. (2007) The use of the Road to Health Card in monitoring child health. SA FamPract, 49, 15 to 15d.

THE AURUM INSTITUTE *How to guide for quality Improvement,* Johannesburg, The Aurum Institute.

UNICEF (2008) THE STATE OF AFRICA'S CHILDREN 2008. *Child Survival.* Nairobi, Kenya: UNICEF. Book or website?

UNICEF (2014) Learning from Nutrition Programme Evaluations: *A Thematic Evaluation Synthesis Report.* [Online] Available from: http://www.unicef.org/evaluation/files/Final_learning_from_nutrition_17_07_2014.pdf [Accessed: 9th January 2015]

UNITED NATIONS (2003) Indicators for Monitoring the Millennium Development Goals. *Definitions Rationale Concepts and Sources.* New York: United Nations.

UNITED NATIONS INTER‐AGENCY GROUP FOR CHILD MORTALITY ESTIMATION (2011) *Levels & Trends in Child Mortality*. 3 UN Plaza, New York, New York, 10017 USA.

WORLD HEALTH ORGANISATION (2009) GLOBAL HEALTH RISKS: *Mortality and burden of disease attributable to selected major risks*. [Online] Geneva, Switzerland: WHO. Available from: http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf [Accessed: 10th January 2015]

WORLD HEALTH ORGANISATION (2014) *Global Health Observatory (GHO)* [Online].WHO. Available: http://www.who.int/gho/child_health/mortality/mortality_under_five_text/en/ [Accessed: 12th January 2015].

WORLD HEALTH ORGANISATION (2015) *Global Health Observatory (GHO)* [Online].WHO. Available from: http://www.who.int/gho/child_health/mortality/mortality_under_five_text/en/ [Accessed: 21st January 2015].

APPENDICES

APPENDIX A: DATA SHEET (DATA COLLECTING TOOL)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Serial Number	**Well Child Visits (Page 2)**	**Head Circumference (Page 5)**	**Immunisations (page 5)**	**Mother PMTCT Information (page 7)**	**Baby PMTCT Information (page 8)**	**Vitamin A (page 9)**	**Deworming (page 9)**	**Developmental Screening (page 13)**	**Wt X Age (pag14,15,16)**	**Ht/Lt X Age (page 17)**	**Wt X Ht/Lt (page 18)**	**MUAC (page 19)**	**Clinic (s) visited**	**Oral Health (page 20)**	**Comment**
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															

Data will enter as Completed = C; Not Completed = NC;

Partially Completed = PC; Not Applicable = NA

APPENDIX B: GUIDING FRAMEWORK: ASSESSING NURSES KNOWLEDGE /PERCEPTION OF THE USE OF RTHB (INTERVIEW QUESTIONS)

Staff Designation: 1. Professional nurse/midwife □ 2. Staff/Student nurse □

Years of experience: 1. < 5 years □ 2. 5 -10 years □ 3. > 10 years □

Date:

1. Have you received training on the use of the RTHB? No □ Yes □

2. What are your experiences of using RTHB?

_____
_____
_____
_____

3: What do you understand about growth charts which are included in RTHB?

_____
_____
_____
_____

4: What do you understand about RTHB?

_____
_____
_____
_____
_____
____

5: How can RTHB be improved?

_____
_____
_____
_____
_____
_____

APPENDIX C: INFORMATION DOCUMENT FOR MOTHER / CAREGIVER

Study title: An assessment of the 'Road-To-Health-Booklet' based on knowledge / perceptions of the clinic nurses and conduct record review of the completion of the booklets

Dear Sir / Madam

My name is Dr T Win and I am doing a study on completion of RTHB. This study aims to conduct a research towards achieving the proper completion of RTHB and the knowledge /perception of the clinic nurses about the RTHB in the West Rand rural clinics. We will therefore learn about the quality of the completion of the RTHB in the clinics.

Invitation to participate
I am therefore asking for your permission to assess your child's RTHB for this research study.

What is involved in the study
This study and its procedures have been approved by the Human Research Ethic Committee (HREC) of the University of the Witwatersrand and West Rand District, Department of Health in Gauteng Province. There will be **no risks** in this study because I will only use your child's RTHB. The research will not physically involve your child and will not record your name as well as your child's name. This study **may** benefit the staff of the clinics and it **may** improve the quality of care for under five children.

Participation is voluntary.
You can discontinue participation at any time and there will be no penalty or loss of benefits to which you are entitled to as the participant.

Confidentiality
Efforts will be made to keep personal information confidential. You will not be requested to participate in an interview. Your child and your name will not record and used for the study and I will hold your information strictly confidential.

Contact details of researcher/s – for further information please contact me. My mobile number is 072 838 6999 or my email is drtheinwin@iafrica.com

Contact details of HREC administrator and chair – for reporting of complaints / problems. Tel: 011-717-2700 or Zanele Ndlovu, Room SH1005, 10th Floor Senate House, East Campus at 011-717-1252 Fax: 011-717-1265

APPENDIX D: INFORMED CONSENT LETTER FOR MOTHER/CAREGIVER

Title: An assessment of the 'Road-To-Health-Booklet' based on knowledge / perceptions of the clinic nurses and conduct record review of the completion of the booklets

I understand the information given to me. It is voluntary and that am free to withdraw in the study without penalty. I hereby give my consent for the researcher to conduct record review of the RTHB for my child.

_____ _____

Signature of subject Signature of Witness

Date /12/2014

APPENDIX E: INFORMATION SHEET FOR NURSES

Study title: An assessment of the 'Road-To-Health-Booklet' based on knowledge / perceptions of the clinic nurses and conduct record review of the completion of the booklets

Dear Staff
My name is Dr T Win and I am doing a study on completion of RTHB. The aim of the study is to assess proper completion of RTHB and to obtain knowledge/ perception of the clinic nurses about the RTHB in the West Rand rural clinics. We will therefore learn about the quality of the completion of the RTHB in the clinics in future. Mr. Papikie Makhuba and Ms Mapula Adams who are my independent research assistants will conduct the interview. The research assistants were for this particular interview.

Invitation to participate:
I would therefore like to invite you to participate in this study.

What is involved in the study?
The study will be assessing the use of the new Road to Health Booklet (RTHB) for children under- five. The research assistants will conduct an interview with you about the new RTHB. This study and its procedures have been approved by the Human Research Ethic Committee (HREC) of the University of the Witwatersrand and West Rand District, Department of Health in Gauteng Province. There are **no** risks because you will only be interviewed about RTHB anonymously and your personal details will not be used. This study may benefit the staff of the clinics and it may improve the quality of care for under- five children.

Participation is voluntary
Refusal to participate will involve no penalty or loss of benefits to which you are entitled. You may discontinue participation at any time without penalty. Efforts will be made to keep personal information confidential. I will hold your information strictly confidential. The interview will take approximately 30 – 45 minutes.
Contact details of researcher – for further information please contact me. My mobile number is 072 838 6999 or my email is drtheinwin@iafrica.com

Contact details of HREC administrator and chair – for reporting of complaints / problems. Tel: 011-717-2700 or Zanele Ndlovu, Room SH1005, 10th Floor Senate House, East Campus at 011-717-1252 Fax: 011-717-1265

APPENDIX F: INFORMED CONSENT FOR PARTICIPATION IN THE STUDY

Study Title: An assessment of the 'Road-To-Health-Booklet' based on knowledge / perceptions of the clinic nurses and conduct record review of the completion of the booklets.

I, the undersigned agree to participate in this research study: “An assessment of the 'Road-To-Health-Booklet' based on knowledge / perceptions of the clinic nurse and conduct record review of the completion of the booklets.”

Name of Staff _____

Signature: _____

Witness Signature: _____

Date: /12/2014

APPENDIX G: INFORMED CONSENT FOR AUDIO-RECORDING IN THE RESEARCH STUDY

Study Title: An assessment of the 'Road-To-Health-Booklet' based on knowledge / perceptions of the clinic nurses and conduct record review of the completion of the booklets.

I, the undersigned hereby give my consent to be audio-recorded during this interview for the purposes of the study only.

Name of Staff _____

Signature: _____

Witness Signature: _____

Date: /12/2014

Appendix H: Ethics application letter to the West Rand District

Dr T Win
P O Box 269
FOURWAYS NORTH
2086
Mobile 072 838 6999

16th July 2014

Chairperson of the Ethics Committee
Department of Health
West Rand District

Attention: Dr G Shaikh

Dear Dr Shaikh

RE: Application for approval for conduct research

I am an MPH 2nd year student at the University of the Witwatersrand University. As part of my degree, I will be conducting research study on "An assessment of the 'Road-To-Health-Booklet' based on knowledge / perceptions of the clinic nurses and conduct record review of the completion of the booklets." I will conduct this study in Elansfontein and Badirile clinics. I will be conducting interviews with the clinic nurses staff about their knowledge and perceptions about RTHB at the clinic. I will also conduct an audit record review of completion of RTHBs.

I wish to complete this data collection November and December 2014. I would like to assure you that all the information gathered would be only used for the purpose of this study. I have attached the copy of the Ethics Committee's approval for the research protocol, a copy of the research instruments that will be used and the letter from the university confirming proof of registration as a student.

Yours sincerely

Dr. T Win
Student No. 0112677R

Approved / not approved by

Chairperson of the Ethics Committee
Department of Health, West Rand District

Appendix I: Permission to conduct research in West Rand District

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Enquiries: Dr Shaikh G K
Tel: 0828571925
Fax: 0866004183

Dr Thein Win
District Specialist Team
West Rand District

RE: PERMISSION TO CONDUCT RESEARCH IN WEST RAND DISTRICT.

Your correspondence on the above matter refers.
Thank you for your request to conduct research in West Rand District.

Permission is hereby granted to you to conduct research in West Rand District. I am anticipating that you will conduct your research with the knowledge of all relevant Managers. You are expected to share the findings and recommendations with the district in order to improve the service delivery to people of west rand.

I hope you find the above in order.

Yours faithfully,

MS PULENG MUSO
DIRECTOR
WRDCA
DATE: 6/12/2014

Appendix J: Confirmation of study approval from HREC (Medical)

Human Research Ethics Committee (Medical)

Research Office Secretariat: Senate House Room SH 10005, 10th floor. Tel +27 (0)11-717-1252
Medical School Secretariat: Medical School Room 10M07, 10th Floor. Tel +27 (0)11-717-2700
Private Bag 3, Wits 2050, www.wits.ac.za Fax +27 (0)11-717-1265

07 November 2014

To Whom It May Concern

SUBJECT: CONFIRMATION OF STUDY APPROVAL

Protocol Ref No: M141040

Protocol Title: An assessment of the "Road to Health" booklet based on knowledge/ perceptions of the clinic nurses and conduct record review of the completion of the booklets

Principal Investigator: Dr Thein Win

School of Public Health

This letter serves to confirm that the Human Research Ethics Committee (Medical) has approved the above mentioned study. In order for a clearance certificate to be issued, the researcher is required to submit written approval to conduct the study in your district/institution.

Should you have any queries, you may contact me at tel 011 717 1252/1234/2700 or by email Zanele.ndlovu@wits.ac.za

Yours Faithfully,

Ms Zanele Ndlovu
Administrative Officer
Human Research Ethics Committee (Medical)

UNIVERSITY OF THE WITWATERSRAND
OFFICE OF THE DEPUTY VICE CHANCELLOR RESEARCH
07 NOV 2014
RESEARCH OFFICE
JOHANNESBURG

Appendix K: Clearance certificate from HREC (Medical)

R14/49 Dr Thein Win

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M141040

NAME: (Principal Investigator)	Dr Thein Win
DEPARTMENT:	Public Health Medical School
PROJECT TITLE:	An assessment of the "Road to Health" booklet based on knowledge/ perceptions of the clinic nurses and conduct record review of the completion of the booklets
DATE CONSIDERED:	31/10/2014
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Dr Richard Cooke
APPROVED BY:	Professor P Cleaton-Jones, Chairperson, HREC (Medical)
DATE OF APPROVAL:	27/03/2015

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.**

Principal Investigator Signature

Date 29/03/2015

Appendix L: Approval for changing title of the research report

Faculty of Health Sciences
Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Ms Thokozile Nhlapo
E-mail: thokozile.nhlapo@wits.ac.za

14 October 2014
Person No: 0112677R
TAA

Dr T Win
P O Box 269
Fourways North
2086
South Africa

Dear Dr Win

Master of Public Health: Change of title of research

I am pleased to inform you that the following change in the title of your Research Report for the degree of **Master of Public Health** has been approved:

From:

To: **An assessment of the 'road-to-health-booklet' based on knowledge/perceptions of the clinic nurses and conduct record review of the completion of the booklets**

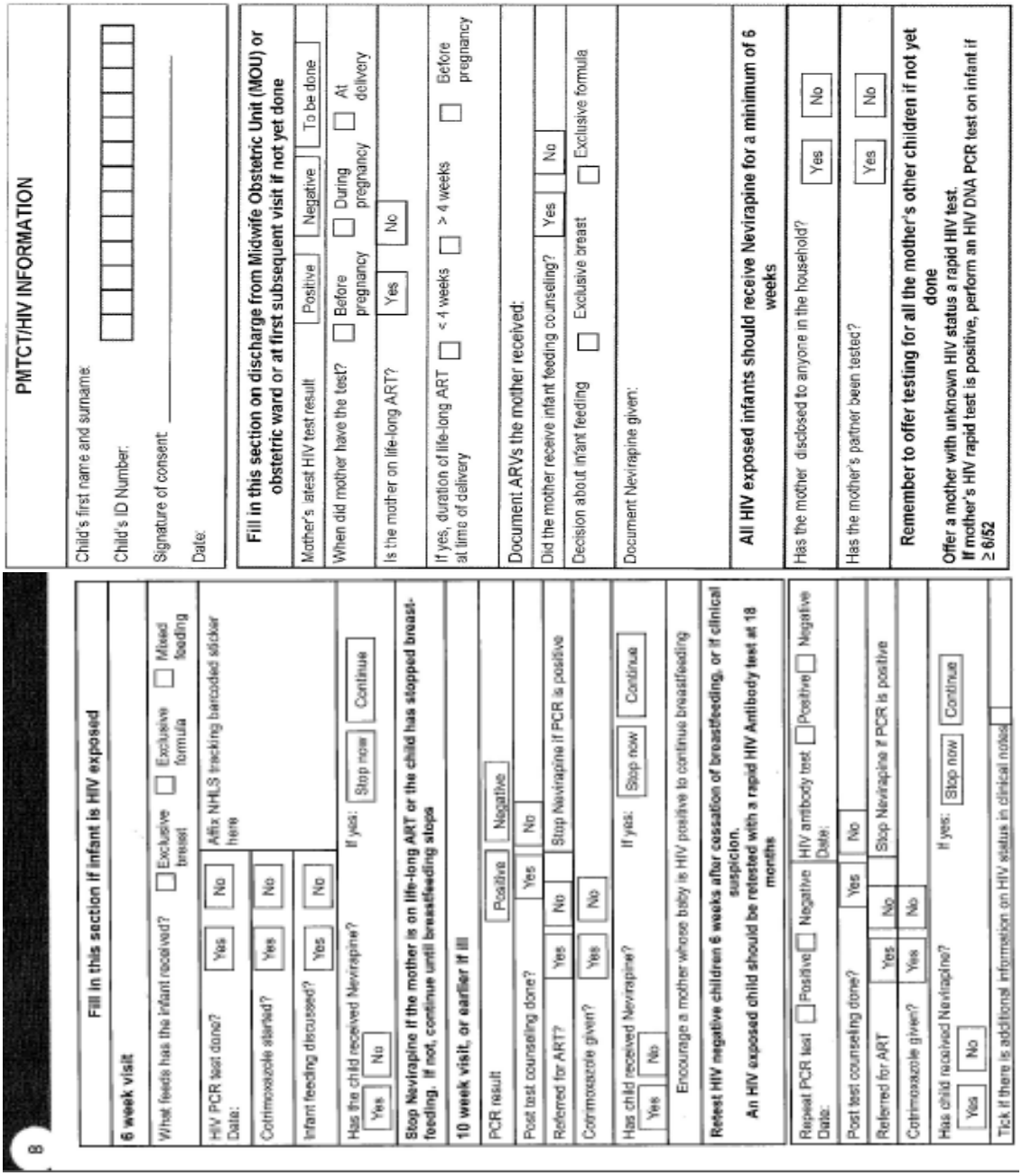
Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

Appendix M: Developmental Screen

DEVELOPMENTAL SCREENING			
	VISION AND ADAPTIVE	**HEARING AND COMMUNICATION**	**MOTOR DEVELOPMENT**
ALWAYS ASK	Can your child see?	Can your child hear and communicate as other children?	Does your child do the the same things as other children of the same age?
14 weeks	Baby follows close objects with eyes	Baby responds to sound by stopping sucking, blinking or turning	Child lifts head when held against shoulder 
6 months	Baby recognises familiar faces	Child turns head to look for sound	Child holds a toy in each hand 
9 months	Child's eyes focus on far objects Eyes move well together (No squint)	Child turns when called	Child sits and plays without support 
18 months	Child looks at small things and pictures	Child points to 3 simple objects Child uses at least 3 words other than names Child understands simple commands	Child walks well  Child uses fingers to feed
3 years	Sees small shapes clearly at 6 metres	Child speaks in simple 3 word sentences	Child runs well and climbs on things
5-6 years: School readiness	No problem with vision, use a Snellen E chart to check	Speaks in full sentences and interact with children and adults	Hops on one foot  Able to draw a stick person
REFER	**Refer the child to the next level of care if child has not achieved the developmental milestone. Refer motor problem to Occupational Therapist/Physiotherapist and hearing and speech problem to Speech therapist/Audiologist if you have the services at your facilities.**		

Appendix N: HIV / PMTCT Information



PMTCT/HIV INFORMATION

Child's first name and surname:

Child's ID Number:

Signature of consent: _____

Date:

Fill in this section on discharge from Midwife Obstetric Unit (MOU) or obstetric ward or at first subsequent visit if not yet done

Mother's latest HIV test result: Positive | Negative | To be done

When did mother have the test? ☐ Before pregnancy ☐ During pregnancy ☐ At delivery

Is the mother on life-long ART? Yes | No

If yes, duration of life-long ART ☐ < 4 weeks ☐ > 4 weeks ☐ Before pregnancy at time of delivery

Document ARVs the mother received:

Did the mother receive infant feeding counseling? Yes | No

Decision about infant feeding ☐ Exclusive breast ☐ Exclusive formula

Document Nevirapine given:

All HIV exposed infants should receive Nevirapine for a minimum of 6 weeks

Has the mother disclosed to anyone in the household? Yes | No

Has the mother's partner been tested? Yes | No

Remember to offer testing for all the mother's other children if not yet done

Offer a mother with unknown HIV status a rapid HIV test.
If mother's HIV rapid test is positive, perform an HIV DNA PCR test on infant if ≥ 6/52

8

Fill in this section if infant is HIV exposed

6 week visit

What feeds has the infant received? ☐ Exclusive breast ☐ Exclusive formula ☐ Mixed feeding

HIV PCR test done? Yes | No — Affix NHLS tracking barcoded sticker here

Date:

Cotrimoxazole started? Yes | No

Infant feeding discussed? Yes | No

Has the child received Nevirapine? Yes | No — If yes: Stop now | Continue

Stop Nevirapine if the mother is on life-long ART or the child has stopped breast-feeding. If not, continue until breastfeeding stops

10 week visit, or earlier if ill

PCR result: Positive | Negative

Post test counselling done? Yes | No

Referred for ART? Yes | No — Stop Nevirapine if PCR is positive

Cotrimoxazole given? Yes | No

Has child received Nevirapine? Yes | No — If yes: Stop now | Continue

Encourage a mother whose baby is HIV positive to continue breastfeeding

Retest HIV negative children 6 weeks after cessation of breastfeeding, or if clinical suspicion.

An HIV exposed child should be retested with a rapid HIV Antibody test at 18 months

Repeat PCR test ☐ Positive ☐ Negative — HIV antibody test ☐ Positive ☐ Negative — Date:

Post test counseling done? Yes | No

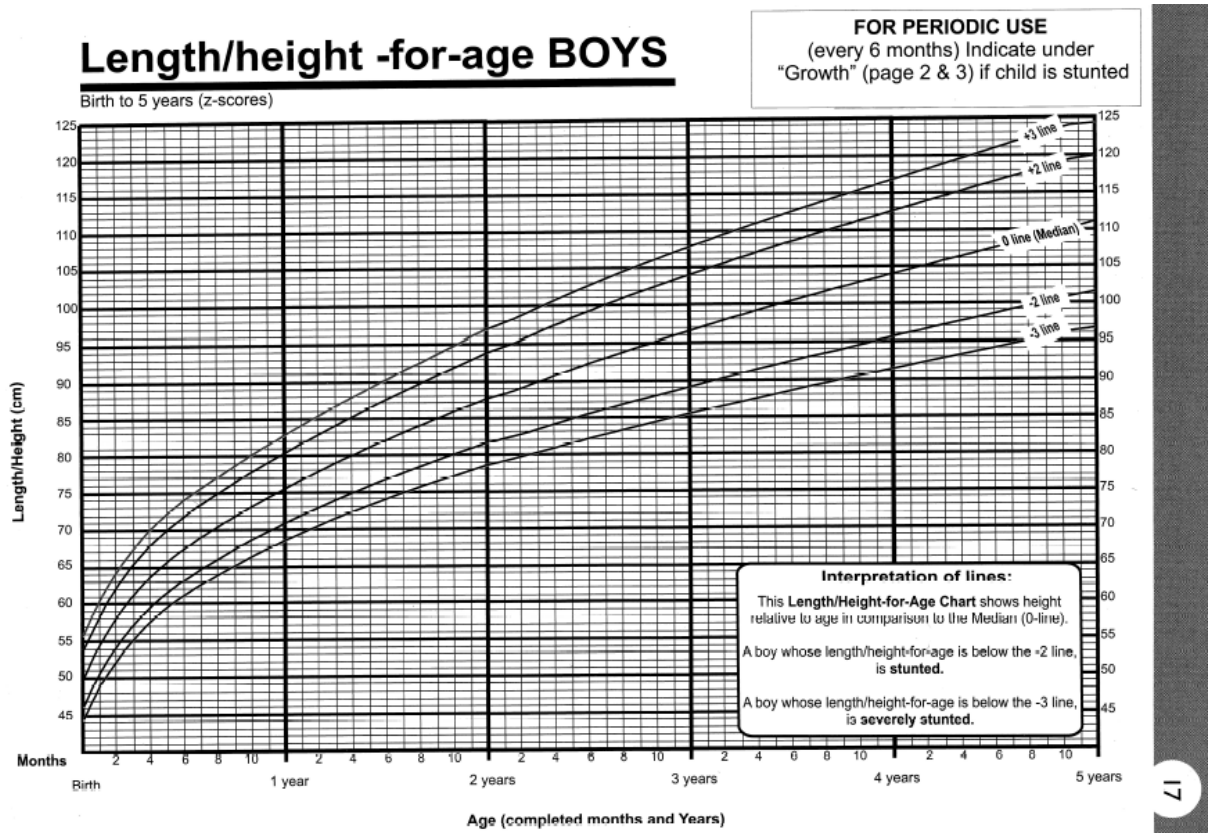
Referred for ART Yes | No — Stop Nevirapine if PCR is positive

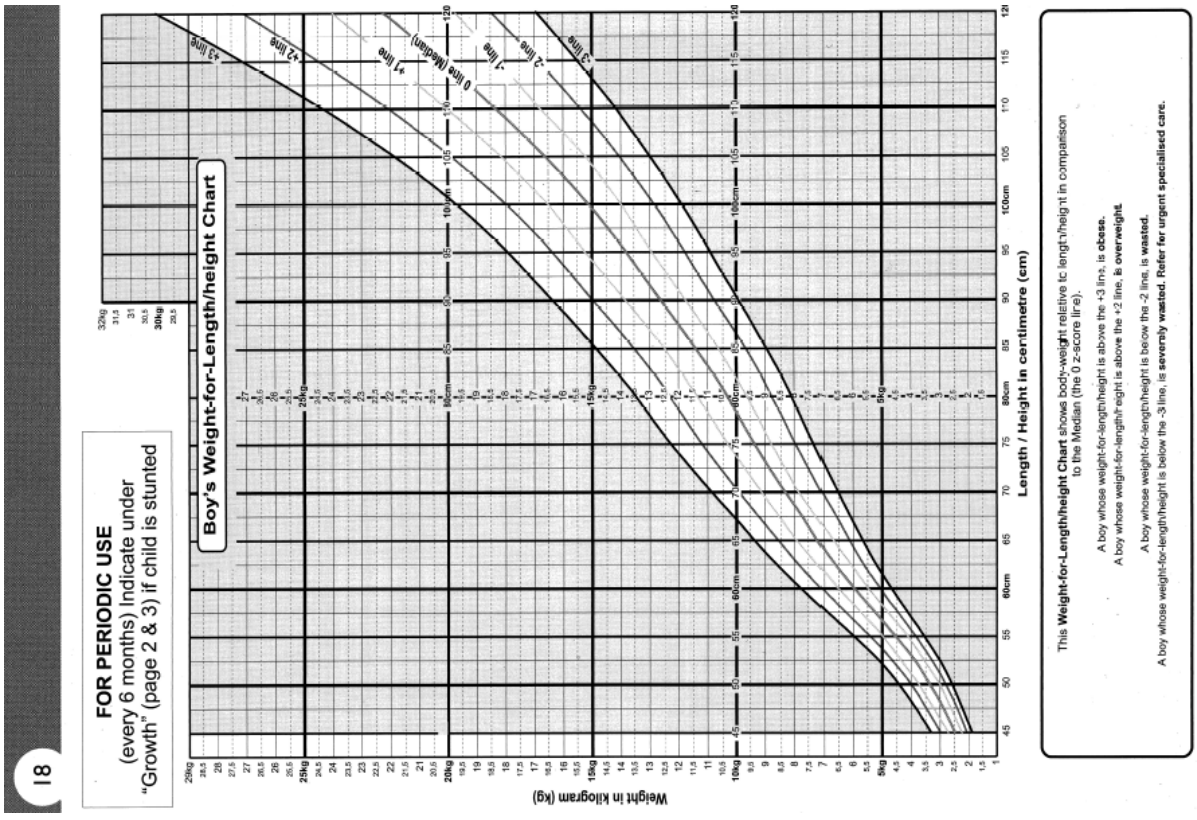
Cotrimoxazole given? Yes | No

Has child received Nevirapine? Yes | No — If yes: Stop now | Continue

Tick if there is additional information on HIV status in clinical notes

Appendix O: Length for Age & Weight for Height Graph





Appendix P: Head Circumference, MUAC,& Oral Health Examination

MID-UPPER ARM CIRCUMFERENCE (MUAC) (Every 3 months)							
Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC	Date of visit	MUAC
< 11.5 cm indicates severe acute malnutrition (REFER urgently) ≥11.5 < 12.5 cm indicates moderate acute malnutrition (Manage as in IMCI guidelines)							

HEAD CIRCUMFERENCE AT 14 WEEKS AND AT 12 MONTHS

14 Weeks: _____ (Range: 38 - 43 cm) **12 Months:** _____ (Range: 43.5 - 48.5)

REFER if head circumference is outside range

