UNIVERSITY OF KWAZULU-NATAL

EXPLORING THE PRACTICE OF THE HEALTH CARE WORKERS REGARDING THE USE OF THE CHILD GROWTH AND DEVELOPMENT MONITORING TOOL (ROAD TO HEALTH CARD) IN THE ETHEKWINI METROPOLITAN AREA

DOREEN SENOGE

EXPLORING THE PRACTICE OF THE HEALTH CARE WORKERS REGARDING THE USE OF THE CHILD GROWTH AND DEVELOPMENT MONITORING TOOL (ROAD TO HEALTH CARD) IN THE ETHEKWINI METROPOLITAN AREA

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A thesis submitted in the fulfillment of the requirements

of the Masters degree

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DECLARATION

I, Morogadi Doreen Senoge declare that this is my own work, entitled"exploring the practice of the health care workers regarding the use of the child growth and development monitoring tool (road to health card) in the eThekwini metropolitan area".

This work has not been submitted for any degree examination purposes before.

All resources referred to in this text have been acknowledged by means of references.

Morogadi Doreen Senoge

Signature:…….. **Date:……**

Supervisor

…….. **Date:……**

(Prof. B.P.Ncama)

DEDICATION

ALL PRAISE AND GLORY TO THE LORD MOST HIGH WHO MADE EVERY STEP OF THE PROCESS POSSIBLE FOR THE COMPLETION OF THIS DISSERTATION

ACKNOWLEDGEMENTS

I would like to express my gratitude to all the people who helped me directly and indirectly to complete this dissertation.

I want to thank the management at the KwaZulu-Natal College of Nursing (KZNCN) for granting me the 50-50 study leave to complete my course work over two years, and also to thank management and my colleagues in the Community Health Nursing Science component at Addington Nursing Campus for their cooperation when I needed to attend the lectures and the related projects for my studies.

Thanks to the UKZN's Ethics Committee whose members drilled me during my proposal's presentation, I acknowledge it was worth it.

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ABSTRACT

Purpose: To explore the knowledge, attitudes and practices of the Health Care Workers (HCWs) regarding the use of the child growth and development monitoring tool which is commonly known as the road to health card (RTHC)for the under- fives.

Methodology: Based on the positivist paradigm**,** a descriptive approach was undertaken to explore the HCWs knowledge, attitudes and practices regarding the use of the child growth and development monitoring tool also known as the road to health card (RTHC) for growth monitoring and promotion in EThekwini metropolitan area. Sampling was prepared in two stages; probability random sampling to obtain seventeen clinics and non-probability purposive sampling technique was followed to obtain the study's participants.

Fifty-one self-developed, structured questionnaires were distributed of which forty were completed and returned. This was followed by conducting one hundred and seventy observations in the clinical areas, which means ten observations per clinic**.**

Data was analysed using the Statistical Package for Social Sciences (SPSS 18) software.

Findings: The average score for the respondents' knowledge regarding the use of the RTHC for GMP was 62%, and that score was classified as unacceptable according to this study.

The participants' responses regarding their attitudes about GMP tended to favour statements that indicated good practices for the use of the RTHC.

However, when GMP practices/activities were observed in the clinical areas, it became apparent that the answers provided in the instrument to rate the HCWs attitudes, were not a true reflection. Some of the practices observed were good, but the average score for the observations was69%, which was also classified as unacceptable.

Conclusions: HCWs knowledge, attitudes and practices regarding the use of the RTHC for GMP activities were found to be unacceptable.

GLOSSARY OF TERMS

BMI	**Body Mass Index**
GMP	**Growth monitoring and promotion**
HCWs	**Health care workers**
Infant	**A child from birth to twelve months**
IMR	**Infant mortality rate**
INP	**Integrated Nutrition Programme**
KZN	**KwaZulu-Natal**
MDG	**Millennium Development Goals**
M& E	**Monitoring and Evaluation**
NCHS	**National Centre for Health Statistics**
PEPFAR	**Presidential Emergency Plan for AIDS Relief**
RTHB	**Road to Health Book**
RTHC	**Road to Health Card**
UNDP	**United Nations Development Programme**
Under-fives	**Children from birth to five years.**

LIST OF TABLES **PAGE NUMBER**

Table 2.1---------- **20**

Table 2.2 ---------- **21**

Table 3.1 ---------- **48**

Table 4.1---------- **54**

Table 4.2 ---------- **55**

Table 4.3---------- **58**

Table 4.4---------- **59**

Table 4.5---------- **60 - 65**

Table 4.6 ---------- **70 - 71**

Table 4.7 ---------- **71 - 73**

Table 4.8 ---------- **76 - 77**

Table 4.9 ---------- **85**

LIST OF FIGURES **PAGE NUMBER**

Figure 2.1---------- **15**

Figure 4.1---------- **55**

Figure 4.2---------- **56**

Figure 4.3---------- **57**

Figure 4.4---------- **66**

Figure 4.5---------- **67**

Figure 4.6---------- **68**

Figure 4.7---------- **69**

Figure 4.8---------- **74**

Figure 4.9---------- **75**

Figure 4.10---------- **78**

Figure 4.11---------- **79**

Figure 4.12---------- **80**

Figure 4.13 ---------- **80**

Figure 4.14---------- **81**

Figure 4.15---------- **82**

Figure 4.16---------- **84**

LIST OF APPENDICES **PAGE NUMBER**

Appendix A: Information sheet ---------- **110-111**

Appendix B: Informed Consent ---------- **112**

Appendix C: Section One; Demographic Information ---------- **113-114**

Appendix C: Section two; Part one: Knowledge questionnaire ---------- **114-124**

Appendix C: Section two; Part two: Likert Rating Scale attitudes ---------- **125**

Appendix C: Section three; Observations' Checklist ---------- **126**

Appendix D: Ethical Clearance Approval Letter---------- **128**

Appendix E: Letter Requesting Permission to Conduct the Study---------- **129**

Appendix F: Letter from EThekwini Authorities Granting Permission

To conduct the study----------**130**

Appendix G: Letter from EThekwini Authorities Informing the Clinics on

Permission granted for the intended study---------- **131**

Appendix H: Letter to EThekwini Authorities to inform Clinics about further

Intention to collect data ---------- **132**

Table of Contents

TITLE PAGE ……..i

Declaration……ii

DECLARATION iii

DEDICATION iv

ACKNOWLEDGEMENTS v

ABSTRACT vii

GLOSSARY OF TERMS viii

LIST OF TABLES ix

LIST OF FIGURES x

Table of Contents xii

CHAPTER ONE: BACKGROUND TO THE STUDY 1

1.1 Introduction 1

1.2 Challenges in utilizing the RTHCs 6

1.3 Initiatives to improve Growth Monitoring and Promotion (GMP) and the use of the Growth monitoring and development tool also known as the road to health card (RTHC). .8

1.4 Problem Statement 9

1.5 Purpose of the Study 10

1.6 Research Objectives 10

1.7 Research Questions 11

1.8 Significance of the Study 11

1.8.1 Nursing Practice 11

1.8.2 Nursing education 12

1.8.3 Nursing Research 12

1.9 Operational Key Concepts 12

1.9.1 Health care worker 12

1.9.2 Growth monitoring and promotion (GMP) 12
1.9.3 Infant 12
1.9.4 Road to Health Card 12
1.9.5 Documentation 13
1.10 Conclusion 13
CHAPTER TWO: LITERATURE REVIEW 14
2.1. Introduction 14
2.2 Principles of Documentation and the Road to Health Card 14
2.2.1 Application of documentation principles to the use of the RTHCs by HCWs 16
2.3 Feeding Practices and Malnutrition 18
2.4. Growth Monitoring and Promotion 25
2.4.1 Weighing 27
2.4.2 Measuring length/height 29
2.4.3 Measuring the head circumference 29
2.5. The Health Care Workers (HCWs) 30
2.6 The Parent(s)/caregiver 31
2.7 Immunization 32
2.7.1 Vitamin A supplementation (VAS) 35
2.8 Developmental Milestones 36
2.9 Conclusion 40
CHAPTER THREE: RESEARCH METHODOLOGY 41
3.1 Introduction 41
3.2 Research Paradigm 41
3.3 Research Approach 41
3.4. Research Design 42
3.5 Research Setting 42

3.6. Study Population 43
3.7 Sampling 43
3.7.1 Sampling of the clinics 43
3.7.2 Sampling of the HCWs and the eligibility criteria 44
3.8 Data Collection Process and Instrument 44
3.8.1 Scoring 46
3.9 Reliability & Validity of the Measuring Instrument 47
3.10 Ethical Considerations and Approval 48
3.11 Data Analysis and data Management 49
3.12 Limitations 50
3.13 Internal validity 51
3.14 Conclusion 51
CHAPTER 4 DATA ANALYSIS 53
4.1.Introduction 53
4.2 Socio-demographic Characteristics of the Respondents 53
4.2.1 Age of the Respondents 54
4.2.2 Gender distribution of the respondents 55
4.2.3 Qualification distribution of the respondents 56
4.3. Assessing the Extent of the Knowledge of HCWs Regarding the Use of the RTHCs 58
4.3.1 Analyzing questions relating to knowledge 60
4.3.1.1 The RTHC which is currently in operation 66
4.3.1.4. Eye testing at six weeks 67
4.4 Assessing the Attitudes of the HCWs Regarding the RTHCs 68
4.5 Frequencies' Scores of Observations 82
4.5.1 Overall score analysis: 82
4.5.2 Percentile scores 83
4.5.3 Minimum and maximum scores 83

4.5.4 Clinic scores 84
4.5.4.1 Clinic score values 84
4.6. Conclusion 85
CHAPTER FIVE: DISCUSSION, RECOMMENDATIONS AND CONCLUSION 86
5.1 Introduction 86
5.2. Major Conclusions from the Study 86
5.2.1 The Demographic Characteristics of the Respondents 86
5.2.2 The knowledge of the HCWs 86
5.2.3 The attitudes and observed practices of the HCWs 86
5.3.1 The Demographic Characteristics of the Respondents 87
5.3.2 Findings regarding the knowledge of the HCWs 88
5.3.3 Findings regarding the attitudes of the HCWs 90
5.3.4 Findings of the Prevailing Growth Monitoring and Promotion (GMP) Practices using the RTHCs 91
5.4 Recommendations 93
5.4.1 Recommendations relating to nursing education. 93
5.4.2 Recommendations Relating to Nursing practice 93
5.4.3 Recommendations Relating to Nursing Research 94
5.5 Study Limitations 95
5.6 Conclusion 96
6. REFERENCES 97

CHAPTER ONE: BACKGROUND TO THE STUDY

1.1 Introduction

Globally and over the years, measurements, classification and interpretation of children's growth differed considerably with regards to the type of growth charts used. Regular growth monitoring by means of weighing was advocated in the 1850s by Guillot (Tanner, 1991). This author states that in the 1870's, Cnopf in Nuremberg was the first to weigh infants systematically, and the idea for growth standards and infants' well-being was the brain child of Russow in St Petersburg.

Various approaches of assessing child development were being practiced in different parts of the world. Regular child weighing and practical advice to the mothers/caregivers were provided by volunteers between 1910 and mid-1920s in Jamaica (Williams, 1986). The city of Iowa in the United States Of America used a growth chart that was developed by Meredith in the 1940's while Boston City used the Harvard & Tanner growth chart version around 1960s and 1970s (WHO 1978; and Yip, 1996).

In 1951, a number of health service sectors from the World Health Organisation (WHO) such as the Food and Agricultural Organisation (FAO) and the WHO Expert Committee on Nutrition stirred criticisms to the World Health Organisation's Headquarters regarding the use of these growth charts, prompting the WHO to develop a chart that could be used internationally to monitor, measure and interpret the growth and development of the infant and child (WHO, 1978, Garza and De Onis, 2007).

Due to the above mentioned concerns/criticisms about the growth chart, the WHO conducted a survey between 1972 and 1975 in 55 countries of its six regions using the data compiled by

the National Health and Nutrition Examination Surveys (NHANES) I, II & III; the United States Vital Statistics; the Missouri Vital Statistics; and the Fels Research Longitudinal Study for the purpose of developing a growth chart that could be used as an international standard growth chart. The product thereof was the 1977 National Centre for Health Statistics (NCHS) growth charts (Garza and De Onis, 2007).

Literature has revealed that when the 1977 NCHS growth charts were developed, the NCHS task force recommended that they be periodically revised (WHO 1978; and Yip, 1996). Therefore, newer versions of the growth charts have since been introduced, namely the Centre for Disease Control (CDC) 2000 growth charts and New Child Growth Standards charts, which were revised in 2006 (Garza and De Onis, 2007; CDC,2008).

According to Tanner (1991), the first reference to growth charts was introduced in England in 1906, while the name, The Road to Health Chart, originated in Malawi. Cuthberts and Morley, (1962) reported that David Morley and colleagues were primarily responsible for encouraging monitoring of growth in developing countries carrying out these practices in Ilesha, Nigeria. Furthermore, Winjhoven and Onyango, (2004) from Geneva, reiterated that Growth Monitoring and Promotion (GMP) practices have been implemented for over three decades using NCHS charts in countries around Africa, Europe, Asia, Latin America and the Caribbean.

In Africa, Ruel, Pelletier, Habicht, Mason, Chobokoane and Maruping (1990; 1991) cited that for a time two types of growth charts were used in Lesotho (Africa) where facilities of the Ministry of Health in that country used the 1977 NCHS growth charts while the Catholic Relief Services used the Growth Surveillance (GS) chart which was developed specifically in Africa to accommodate African traditions and cultures. Since the two growth charts were

being used simultaneously in one country, the Lesotho Ministry of Health together with maternal and child health experts decided to use one version only and recommended to use the chart that contained the NCHS/WHO reference values (Ruel et al., 1991).

In South Africa the growth chart, which was updated and improved by the National Directorates for Nutrition, Child and Youth Health and by the provincial contributions, was introduced in Cape Town in 1971 and is currently referred to as the Road to Health Card(RTHC) (Harrison, Heese, Harker and Mann, 1998; Department of Health, 2000;2003).

Guidelines on how to use the RTHCs are enclosed in every packet of 100 RTHCs. These guidelines promote a relationship between the Health Care Workers (HCWs) and mothers/caregivers; they further state that the RTHC should be used to identify children needing special care. The RTHC accommodates the movement of children from one area to the other (DOH, 2000; 2003).

Since 1994, a comprehensive primary health care approach was adopted by the SA health authorities. This system is based on the principles of primary health care where pregnant women and children under six are consulted free of charge at government institutions. The Directorates for Maternal and Child Health Care and Integrated Nutrition were established to combat the escalating deaths of children under five from preventable diseases resulting from inadequate immunization and underweight(DOH,1997;Mhlanga, 2006).Mhlanga, (2006) further stated that over 60% of children who died in 2006 were underweight and that 35% were severely malnourished. Muniz et al., (2007) reiterated that children under five are vulnerable to health problems and should be prioritized in the delivery of primary health care.

South Africa is one the 191 United Nations member states that has pledged to meet the UN Millennium Development Goals (MDGs) by 2015. The MDG which are most significant to

this study are goal 4 which is: “reduce child mortality, reduce by two thirds the mortality among children under five”, and goal5, which refers to the improvement of maternal health and reads as follows, “reduce by three quarters the maternal mortality ratio” (United Nations Development Programme (UNDP), 2007).

Globally, child mortality has fallen by 30% since 1990 and the pace of change is accelerating. These trends are attributed to improvements in nutrition, immunization coverage and access to safe water (WHO, 2010). However, the national Minister of Health, Dr. A. Motsoaledi, when being interviewed by Anso Thom of Health –e on the 10th March 2010, emphasized that SA should focus on preventative primary health care rather than curative care which is costly to the country. He further raised a concern that SA is one of the ten countries worldwide which has failed to reduce its child mortality in line with countries like Pakistan and Bangladesh (Thom, 2010).

President J.G. Zuma of SA addressed the African Union (AU) on the 25th June 2010 in Kampala, Uganda, and indicated that African leaders were concerned about the joint Africa report by The Africa Economic Commission, the Africa Development Bank, the UNDP and the African Union Commission of 2009, which stated that the maternal and infant mortality statistics for AU countries are poor and show slow progress in achieving the fourth and fifth MDGs in spite of the aid from philanthropies like the Global Fund and Presidential Emergency Plan For AIDS Relief(PEPFAR), to mention but a few. He stated that AU member countries need to adopt speedy actions to meet the achievement of the MDGs (Health Systems Trust, 2010).

Tarwa and De Villiers (2007) from Pretoria, SA, regard the RTHC as a simple, convenient, cheap method to monitor the growth and development of the infant or baby and state that

assist in improving health through compliance to immunizations and identification of growth faltering. They further stated that the RTHCs are meant to serve as an accurate home-based care record which can be used by all categories of HCWs. These sentiments are shared by Chopra et al., (1999) in the Eastern Cape, while Roberfroid, Lefevre, Horèe and Kolsteren (2005) in Belgium regard it as a communication tool between HCWs and parents/caregivers.

However, the findings of an unpublished study by Balbadan, Davies and Naicker, (2005) in a clinic in Cato Manor (Durban, KZN) revealed that of the 25 RTHCs that were assessed, 68% had not been documented, 24% were incomplete and only 8% contained full and completed recordings done by the HCWs to indicate the consultations that had been carried out.

Apart from monitoring the child's growth and stages of development, the importance of the RTHC cannot be underestimated because the RTHC is one of the prerequisites for entry into the education system and it can also be requested at a later stage as the child progresses into the other levels of the education system (DOH, 2010).

It is also used as a framework to identify children that need to be included in the school and clinic feeding programmes and to further identify those who were either not immunized or who did not complete the intended immunization schedule. The newly launched RTHB has a page that contains information pertaining to PMTCT (Preventing Mother-to-child Transmission) and the HIV status of both the mother and child, and this page should be torn out and handed over to the school authorities when the child commences school. The KwaZulu-Natal Nutrition Directorate carried out a survey in three clinics between September and October of 2009 to assess acceptability of the above mentioned information being disclosed and the following tables show the results.

Comfortable with child's status being known:

Clinic	Very comfortable	Very uncomfortable
Inanda	68.3%	18.3%
Imbalenhle	86.7%	10%
KwaDukuza	91.5%	-

(KZN DOH: 2010)

Comfortable with own HIV status being recorded:

Clinic	Very comfortable	Very uncomfortable
Inanda	70%	23.3%
Imbalenhle	86.5%	8.3%
KwaDukuza	93.2%	-

(KZN DOH: 2010)

1.2 Challenges in utilizing the RTHCs

Since its inception, the RTHC has been inundated by a number of challenges relating to its utilization. Staff training has been cited in the articles by Chopra et al., (1999);Roberfroid et al., (2005); Tarwa and De Villiers, (2007);Faber, Schoeman, Smuts, Adams and Ford-Ngomane,(2009),who were also supported by Charlton, Kawana and Hendricks, (2009) in Lusaka, Zambia.

Chopra et al., (1999) and Charlton et al., (2009) associated the problem of utilizing the RTHC to lack of monitoring and evaluation. Contrary to that study, the findings of a study regarding the training of primary health care nurses that was conducted in KwaZulu-Natal (KZN) by Mariani, Gcaba and Dalton,(2003) revealed that a quarter of the participants regarded training

in primary health care as having no benefit to the HCWs since there was no follow up and support from the authorities and 40% reported that they had not been visited for mentoring by an area manager in a year and that was demotivating them to an extend that may were leaving the country.

Roberfroid etal., (2005) and Ben-Joseph, Downshen and Izenberg, (2009) identified literacy, race, socio-economic status and gender as factors which hinder growth monitoring and promotion (GMP).Maruping et al., (1991) also mentioned gender, while Schoeman, Dhansay, Spinnler-Benade, Fincham and Kunneke, (2003) reported that there was a lack of cooperation by some parents in the rural districts of the Eastern Cape and KwaZulu-Natal.

Another challenge is the shortage of the supply of RTHCs. In 2010, the Sunday Tribune reported a shortage in the EThekwini Life Health Care private hospitals (Sunday Tribune 2010:10). The confusion was apparently due to the concept of who was to blame and who was responsible to foot the bill as initially the RTHCs used to be supplied by the provincial Department of Health to these private institutions. To clarify this matter, the KZN Integrated Nutrition Programme (INP) directorate has since issued a statement that when all the old RTHCs have been used and all HCWs in both public and private sectors have been trained on the use of the new Road to Health Book (RTHB) the latter can be ordered from the Supply Chain Management and private institutions will foot their own bill.

Because the current RTHC cannot accommodate new developments like the new Expanded Programme on Immunization schedule and other anthropometric measurements, a new Road to Health Book (RTHB) was introduced from the 01st October 2010 by the Integrated Nutrition Directorate of KZN on behalf of the national directive. The current RTHCs will be phased out when stocks are finished.

1.3 Initiatives to improve Growth Monitoring and Promotion (GMP) and the use of the Growth monitoring and development tool also known as the road to health card (RTHC).

Following are the reports of the initiatives to improve GMP practices during the utilization of the RTHC by the HCWs. After the introduction of the Centre for Diseases Control 2000 Growth Charts, the American Association of Paediatrics (AAP) formulated a policy statement which required that all the physicians of North Carolina should conduct an annual Basic Metabolic Index (BMI) to plot and calculate GMP of all their consultations (Perin, Flower and Ammerman, 2004).

A computerized tracking system was initiated which utilised the RTHC to detect immunization defaulters in North Carolina, and a study conducted between 1992 and1993on the outcomes of that initiative revealed that the dropout rate of immunization defaulters had improved since the system had been implemented (Lieu and Black, n.d).

Tarwa and de Villiers (2007) made recommendations in their study that was conducted in Pretoria to have in-service education of HCWs to improve the use of the RTHC, and, Tversky and Morrison were cited by Ben-Joseph et al., (2009) as saying that it is imperative to provide training to mothers/caregivers regarding the importance of the RTHC. This view was supported by Chopra and Sanders (1997), Schoeman et al., (2003), and Maruping et al., (1990). The need to monitor and evaluate programmes by management and policy makers was advocated by Chopra et al, (1999) in the Eastern Cape, Mariani et al., (2003) in KwaZulu-Natal, and by Faber et al., (2009).In Lusaka, Charlton etal. (2009) revealed that imparting skills to the wider community by training the volunteers would improve GMP practices.

As mentioned previously, the new Road to Health Book (RTHB) for S.A was launched in October 2010 by the Integrated Nutrition Directorate of KZN in the EThekwini District. This RTHB gives a better indication of how children should grow and is based on data from six countries (Brazil, Ghana, India, Norway, Oman and the USA) and because its health indicators for growth and development are Z Scores instead of centiles for anthropometric measurements, these growth standards can be used to assess children anywhere, regardless of ethnicity (WHO, 2006; DOH, 2010).

The rationale for amending the RTHCs in SA for growth monitoring is:

- To adopt the WHO growth standards which were introduced by CDC in 2006;
- To use length/height-for-age and weight-for-length/height in addition to weight-for-age to identify stunting, wasting and overweight/obesity respectively and;
- To have separate RTHBs for boys and girls with gender specific growth charts because girls and boys of the same age have different readings when measured (DOH, 2010)

Although the new WHO standards are expressed as Z-score lines and not percentiles that were previously used in the RTHC, facilities in EThekwini will continue to use the current RTHC until the stock is finished. Furthermore, the Department of Health is still training HCWs in both the public and private sectors about the new RTHB (DOH, 2010).

1.4 Problem Statement

Literature revealed that 10-20% of children from developing and underdeveloped countries will die from preventable and avoidable health problems before they reach the age of 5 (Bick

2006; WHO, 2006; UNDP,2007).In South Africa, 60% of the children who died in 2006 were underweight and 35% were severely malnourished (Mhlanga, 2006).

The RTHC improves the identification of children that require extra care and is a communication tool between HCWs (DOH, 2000&2003). Some authors regard the RTHC as a simple and logical instrument which is able to monitor the child's health and development and this information should be communicated to parents/caregivers (Chopra et.al., 1999; Ruberfroid etal., 2005).

The road to health card is used as a communicative tool used to assess indicators in the peri-natal period of the infant/child's life up to the age of five. What prompted the researcher's interest in this regard were the observations made during the clinical accompaniments of the learners who are registered for the R425 four year course leading to registration as a nurse in General, (Community, Midwifery) and Psychiatry in the KwaZulu-Natal College of Nursing, since the learners join the primary health care team stream when they qualify.
Documentation/ recording of the indicators like weight, milestones, immunizations' schedule and counseling that is necessary to the mother/caregiver, was found to be lacking in the road to health card, hence the study was undertaken to avert confusion and ensure quality care to infants and children in the clinical area.

1.5 Purpose of the Study

The purpose of the study is to explore the utilization and documentation of RTHCs by HCWs during GPM practices in the EThekwini metropolitan area

1.6 Research Objectives

The objectives of this research are;

To explore the extent of the knowledge of HCWs regarding the RTHC;

To observe the prevailing practices and explore the attitudes of the HCWs for GMP when using the RTHC;

To explore documentation in the RTHCs; and

To identify and describe the training needs of HCWs in GMP.

1.7 Research Questions

What do the HCWs know about the RTHCs?

How do they feel about the GMP practices?

What are the prevailing practices of GMP when using the RTHCs?

What is documented/ recorded in the RTHCs?

What are the training needs of HCWs with regard to GMP?

1.8 Significance of the Study

The findings of the study will contribute to the following aspects:

1.8.1 Nursing Practice

GMP for child growth and development will help to identify potential health problems of infants and children at an early stage so that corrective measures/steps can be taken (Ben-Joseph etal., 2009; Chopra etal., 1999; Harrison etal., 1998; WHO, 1978).

The findings of the study will evoke awareness of health authorities in the Maternal and Child Health and Nutrition directorates to emphasize planning GMP in the clinical practice in terms of in-service education to HCWs which would further help improve documentation and achieve MDG number four.

1.8.2 Nursing education

The findings of the study will contribute to creating awareness of the nursing education curricular planners to emphasise the teaching and evaluation of GMP in both the clinical and theoretical fields.

1.8.3 Nursing Research

The findings and recommendations of the study will form the baseline or platform for further research and discussion about the topic which will improve the health of infants and children, by the HCWs and the community.

1.9 Operational Key Concepts

1.9.1 Health care worker

In this study, a HCW refers to any person who is involved in the provision of health services to the mother/caregiver and is registered by the South African Nursing Council (SANC) as a Professional Nurse (PN), Enrolled Nurse (EN) or Enrolled Nursing Auxiliary (ENA).

1.9.2 Growth monitoring and promotion (GMP)

These are the regular measuring, recording and interpretation of an infant/child's growth and development in order to counsel or to take action when abnormalities are detected for the purpose of contributing to the infant/child's quality of life.

1.9.3 Infant

An infant is any person from birth to twelve months.

1.9.4 Road to Health Card

A Road to Health card is a client-held card that can be used as an educational tool between HCWs and the information it contains is communicated to mothers/caregivers of children

from birth to 5 years to monitor and visualize the infant/child's growth and development. A Road to Health card includes the following information:

i. Demographic and social details;
ii. Perinatal history;
iii. Health indicators (vision, language and voice screenings, immunizations, vitamin A supplementation and deworming);
iv. Growth chart for plotting the weight of the child; and
v. A record/documentation of consultations/visits or hospitalizations.

1.9.5 Documentation

Documentation is the accurate and legible recording of growth monitoring and promotional practices by HCWs in the RTHC during each and every consultation of an infant or child under five years of age. Documentation includes the descriptions of the infant/child's past history, clinical observations, healthcare interventions and medication/immunization history

1.10 Conclusion

This chapter introduced the historical developments around the growth and development monitoring tool, which is also known as the road to health card, and highlighted the debates and suggestions for the continued improvement of the newer versions especially for growth monitoring around the world, in Africa and South Africa.

Challenges and improvements in its utilization were discussed, as well as the purpose of the study, research objectives and research questions, further on the significance of how the study would contribute to nursing practice, education and research were discussed and the chapter was finished off with the study's key operational concepts.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter discusses child growth and promotion practices with regard to the developments and usage of the RTHC globally and in S.A. A literature review identifies different subheadings that emerge and the discussion is guided by the conceptual framework which looks at the principles of documentation.

Resources that were used were books, newspapers and journals from the libraries, as well as the Internet. Electronic journals were retrieved using different data bases such as Biomed Central, CINAHL, Pre CINAHL, Federated search, Nursing/Academic Editor, The Lancet, Science Direct, WHO's website and its related reports and bulletins, Medline and Pub Med. All references are acknowledged using the Harvard referencing guide.

2.2 Principles of Documentation and the Road to Health Card

Health care documentation is serious and has a legal aspect. It needs to be systematic because a client's safety may be affected by inadequate documentation. The researcher modified the conceptual framework from a document by a workgroup on health information titled, "Principles of documentation: A Report on Information Capture and Report Generation" by Waegemann, Tessier, Blumenfeld, Borden, Brinson, Cooper, Elkin, Fitzmarice, Helbig, Jackson, Maisel, Mohr, Rockel, Sheiner, Sullivan and Weber (2002).

The framework displays the steps which are depicted in **figure 2.1** as important aspects to consider in health care documentation in order to help health care policy makers and leaders to create policies and guidelines that will improve the clients/patients' quality of care:

Figure 2.1: Steps of the Conceptual Framework modified from Waegemann et al., (2002)

Waegemann et al., (2002) suggest that these principles be implemented on a national/international basis to help with optimal information capture and report generation in health care documentation. The authors believe that **patient identification** by the staff will ensure patients' safety and **authenticity** of the document; this will further secure **accountability,** whereby the demographic details including social history if recorded

timeously and legibly after each consultation will further ensure completeness and accountability. They further assert that accuracy and legibility of the document require the use of standard terminology which can be easily **retrievable** and understood by other users through the usage of common abbreviations and codes that will improve communication between health care workers and further promote quality care of the infant/child. The DOH has set out guidelines that are in line with the WHO guidelines regarding the use of the RTHCs by HCWs which confirm that **patient identification** should be completed accurately, legibly and on time (WHO, 1978; DOH, 2000; 2003 & 2010).

2.2.1 Application of documentation principles to the use of the RTHCs by HCWs

Tarwa and De Villiers (2007) and Chopra et al., (1999) reported inconsistencies regarding documentation in the RTHCs in different institutions around the city of Pretoria and the Eastern Cape respectively. The findings of the study conducted by Chopra etal., (1999)revealed some faltering regarding the usage of the RTHCs and these authors suggested that it may be difficult to attain quality health care of the infant/baby if the HCWs fail to use the RTHCs accurately. These sentiments about record keeping and documentation are shared by Berman, Synder, Kozier and Erb, (2008), who believe that a record should describe the full range of activities done on or for the patient or client irrespective of the prescribed standards of the institution. They continue by stating that recording and documentation is a reminder of what happened and that it forms an integral part of clinical practice and legal requirements. Kibel and Wagstaff, (2003) and Ben-Joseph et al., (2006) emphasise that the RTHC is the best home-based routine growth monitoring and promotional tool and the quickest method for early detection of diseases, infant/child's development, nutritional problems and children needing extra care. Kibel and Wagstaff, (2003) say it serves as a mobile data bank for the benefit of the child, thus promoting continuity of care.

The card should be issued at birth by the health care institution where the child was born, and the HCW issuing it should endorse his/her signature. Parents/caregivers should be taught about the annotations and the fact that the RTHC should be presented to the HCW at every visit in SA. The infant/child's progress should be documented to improve decision making of the mother/caregiver and health facility management or to inform interventions (DOH, 2000 and 2003).

The DOH requires that the following information should be documented on the RTHCs:

- The demographic information, which includes the child's full names, identification number and gender;
- Parents or caregiver's names;
- The name of the health worker who issued the RTHC;
- The peri-natal/antenatal information and the activities done before, during delivery and after birth as well as the gestational age and any complications during pregnancy. It should also include the APGAR scoring.
- The infant/child's date and place of birth, and whether the birth took place at a clinic, hospital or at home;
- The infant's birth weight, body length and head circumference should be documented both on the front page and plotted on the growth chart;
- The number of siblings born and those alive should be recorded and if any had died, the reason for death should be indicated;
- The growth monitoring graph to record the weight progress starting from birth weight;
- Visual and hearing screening, which should be assessed from 6 weeks. A child should be able to follow horizontal moving objects like a pen with both eyes to assess vision;

De worming and Vitamin A supplements, indicating the date and signature of the nurse who gave them;

- All immunisations that have been administered should be documented indicating the name of the vaccine, the batch number, the date and site, and the signature of the HCW who administered it.
- Children at risk are in need of special care, and all details should be filled in; and
- Cconsultations and hospitalisations (DOH, 2000&2003).

The new RTH Book, which has different versions for boys and girls, also includes the following information:

- Updated Expanded Programme on Immunization (EPI) schedule;
- Vitamin A supplementation;
- Well child visit;
- Oral health;
- Updated WHO anthropometric measurements sheet for growth with weight-for age, length/height-for-age;
- Mid upper arm circumference (MUAC);
- Head circumference at 14 weeks and twelve months;
- PMTCT/HIV; TB status, feeding, developmental milestones and oral health (DOH,2010)

2.3 Feeding Practices and Malnutrition

Malnutrition is defined as "an impairment of health resulting from a deficiency, excess or imbalance of nutrients which includes over-nutrition which is excess of one or more

nutrients, usually of energy, and under-nutrition, and refers to a deficiency of energy and / or one or more essential nutrients" (DOH, 2008). According to Goosen and Labuschagne (2011), insufficient nutrient intake can cause impaired growth and lead to malnutrition. The WHO reported that 60% of the deaths of children under 5 are due to malnutrition that occurred in developing countries, authors like Faruque; Ahmed; Ahmed; Islam; Hossain; Roy; Alam; Kabir and Sack,(2008)further concur that inappropriate infant and young child-feeding practices (breastfeeding and complementary feeding) have been identified as a major cause of malnutrition. Those statements aresupported by Coutsodis, (2001) reported in Lancet, 2000). From the study that she conducted in KZN she reported that half of the deaths amongst children under the age of 5 years are associated with malnutrition or lack of optimal breastfeeding. According to Coutsoudis, Coovadia, and King,(2009), exclusive breastfeeding, compared with mixed breastfeeding has been shown to be associated with reduced incidences of diarrhoea, respiratory infections and allergy, and these authors emphasise that breastfeeding is a key child survival strategy in resource-poor countries

UNICEF's press release (2010) on malnutrition states that The World Food Programme (WFP) and UNICEF have initiated programmes to help developing countries with malnutrition to achieve the fourth MDG. Statistics have shown a decline in some developing countries regarding stunting and underweight from 40% to 29 % from the period 1990 to 2008.Similarly, the statistics revealed a slow decline in the same period in the Eastern and Southern Africa regions where the progress was a slight decrease from 38 to 34%. Mozambique, Botswana, Angola and Swaziland are reported to be on track with some of the problems of stunting and under nutrition according to this report.In South Africa's malnutrition contributed an average of 18% for the Under five Mortality Rate in 2005 further statistics from the KZN Integrated Nutrition Programme directorate (INP) states that

KwaZulu-Natal had an estimated increase in infant mortality rate (IMR) of 68/1000 and the under-five mortality rate (U5MR) of 124/1000, the directorates' report further states that 5% of all children aged between 1 and 9 years in KZN were stunted, which is indicative of a chronic malnutrition problem (DOH, 2008; Unicef, 2010).

The following are tabulations of the 2008 data for the under-fives mortality in the some developed and developing countries, followed by comparison in SA's provinces.

Table 2.1

Country	**U5MR**	**IMR**	**Under 5 deaths pa**
Canada	**6**	**5**	**2 000**
Australia	**5**	**4**	**2 000**
UK	**6**	**1**	**4 000**
Japan	**3**	**3**	**4 000**
Brazil	**22**	**18**	**67 000**
South Africa	**67**	**48**	**73 000**
China	**21**	**18**	**365 000**
Egypt	**23**	**20**	**45 000**
Bolivia	**54**	**46**	**14 000**
Senegal	**108**	**57**	**49 000**
India	**69**	**52**	**1 830 000**
Uganda	**135**	**84**	**190 000**

(WHO, 2010)

Table 2.2 Average prevalence of malnutrition for children under 5 years by province

Western-Cape	**Eastern Cape**	**Northern Cape**	**Free State**	**KwaZulu-Natal**	**North West**	**Gauteng**	**Mpumalanga5.4**	**Limpopo**	**Average for RSA**
3.8 %	**8.1%**	**9.8%**	**5.1 %**	**13.3%**	**9.45 %**	**6%**	**5.4%**	**4.4%**	**7.8%**

(DOH, 2010)

Mohamed, (2010) reported in the Citizen Newspaper that The Democratic Alliance (DA) (which is an opposition political party to the ruling party in SA), had consulted South Africa's Human Rights Commission to probe the high infant mortality rate through the country's health ministry's office and to deal with the escalating incidence of high infant and child mortality since 1998.

The DA is reported to have been concerned that SA will not reach the target for the fourth MDG because the infant/child mortality rate in South Africa is five times higher than it should be (Citizen, 2010).

The Minister of Health (MEC) for KwaZulu-Natal, Dr. S Dlomo, issued a report to the KZN Legislature on the 28th October, 2010 on key initiatives in health. In this report he stated that to achieve MDG 4, the national target should be 20 per 1000 and the infant mortality (IM) target for 2015 should be 14.3 per 1000. The MEC stated that currently SA's under five mortality rate is standing at 87.7 per 1000 and IM is 55.5 per 1000(DOH, 2010).

The escalating death rates are attributable, amongst other causes, to the high incidence of HIV in this country (Mhlanga, 2006; Le Roux, 2010). New developments in South Africa show that the Department of Health has adopted the new breastfeeding recommendations of the WHO, where an HIV positive pregnant woman with a CD4 count of 350 or less is put on ART and counseled on feeding options with the aim of encouraging breastfeeding by showing the benefits of breastfeeding beyond six months without abruptly stopping which used to be the case. This practice has proven to reduce HIV related deaths and improve infants' health and survival. Mothers who choose not to breast feed are eligible to receive commercial formula feeding for six months from the Preventing Mother-to-child Transmission (PMTCT) programme which has been implemented in this country (Goosen and Labuschagne, 2011).

The DOH (2008) asserts that breast feeding is a child survival strategy that could save infant deaths if it was initiated within one hour after birth and sustained beyond two years to combat malnutrition which contributes to 60% of all deaths amongst children.

Due to the above literature and the notion that mixed feeding contributes to increase morbidity, the DOH has also adopted a policy to promote exclusive breast feeding for six months without the introduction of solids/fluids, except when that has been recommended by the health facility, this after the WHO revealed that the breast fed infants and children had more advantages to combat infections over formula fed infants (DOH, 2010; WHO, 2010).

In a longitudinal study that was conducted in Mexico to assess the growth patterns of breast-fed infants and formula fed infants from birth to six months, NCHS reference values were used and the findings revealed that breast fed infants had advantages over formula fed infants in that they had less infections and were taller than their formula fed counterparts

(Villalpando and Lopez-Alacon, 2000). This is in contrast to a study that was conducted in Nigeria to examine the growth patterns of babies who were exclusively breast-fed for six months where the results revealed that there was a slower growth gain of these babies from the age of four months as compared to formula-fed infants which led to premature discontinuation of breastfeeding by mothers who opted for hasty weaning (introduction to complementary foods). Eventually the Nigerian government adopted the WHO and UNICEF's recommendations to promote breast feeding for six months exclusively, which would then be followed by introduction of solids while continuing breast feeding into the second year (Amuso, Oyewole, Amuso and Ojo, 2010).

The South African Demographic and Health Survey (DHS) studied the breastfeeding tendencies in SA in 2007-2008 using the area, age, socio-economic status and ethnicity to determine the duration of breastfeeding as their variables, and the results were as follows:

- 86,5% (91% in rural and 83% in urban areas) breast fed for an average of three years;
- Teenage mothers tended to breastfeed for periods shorter than three months, especially in urban areas (these results caution the reader to note that the interpretation of this particular aspect was by recall method);
- The breast-feeding rates for the various ethnic groups were: Asian 89,8%, Black 87,1%, Coloured 86,5% and White 77%; and

  The mean duration of breastfeeding also varied by ethnic group: On average, Blacks breastfed for 17 months, Coloureds 11 months, Asians 5 months and Whites 1 month.

The DHS reports that the above statistics are in contrast to the 1998 results which revealed that less than 1% of children younger than 3 years of age were exclusively breastfed and 50% of mothers on the PMTCT programme chose to breastfeed only (DOH, 2008).

McKerrow and Mulaudzi dispute the results from the DHS as they are concerned that the DHS only gathers statistics from public hospitals. These authors maintain that these hospitals have poorly trained data capturers and therefore their results do not indicate the true causes of mortality while statistics obtained from primary health care institutions are a true reflection of what intervention measures can be taken to avert the escalating under five mortality rates.

There are various policies and programmes to support the trend for growth monitoring and promotion with the aim of reducing under-fives morbidity and mortality in SA. These include:

- A selective Primary Health Care strategy implemented by UNICEF referred to as GOBI – FFFF. This strategy promotes growth monitoring, oral rehydration, breast-feeding and immunization along with other aspects that advocate for community involvement in care, which arefemale education; food supplementation; family spacing and first aid(Dennill and Swanepoel, 2008);
- Integrated Management of Childhood Illnesses (IMCI), which was introduced with the aim of reducing mortality and morbidity of children less than five years of age caused by diarrhoea, acute respiratory infections, measles, malaria and malnutrition. The programme adopts an integrated strategy which takes into account the variety of factors that place children at serious risk. It speeds up the urgent treatment of seriously ill children and emphasises the prevention of disease through immunisation and improved nutrition, including micronutrient supplementation and exclusive breastfeeding.HCWs' skills are improved and parents/ caregivers become involved in the effective care of their children at home to increase the involvement of the community WHO 1999: Victora, Huicho, Amaral, Armstrong-Schellenberg, Manzi, Mason and Scherpbier, 2006; DOH, 2008).

- The Prevention of Mother-to-child Transmission(PMTCT)programme; which is reported to have improved access of HIV positive people to Anti-Retroviral treatment (ART) from 9% in 2004 to 45% in 2008 (Goosen & Labuschagne, 2011);
- Treatment of severe malnutrition, which incorporates steps to improve and completely treat severely malnourished children by concentrating on hypo glycaemia, hypothermia, dehydration and eventually cautiously feeding the infant to avoid overloading the infant/child's system(DOH,2008);
- The Baby Friendly Hospital Initiative (BFHI), which stipulates ten steps to successful breast-feeding;
- The Infant and Young Child Feeding Policy, which promotes breast-feeding and creates the screening of at risk infants/children so as to include them in the institution's energy dense nutrition programme.
- The Health Facility Based Nutrition Intervention Strategy is coordinated by the INP directorate with the main focus being to reduce the high prevalence of malnutrition and micronutrient deficiencies, especially in children and women. Community Health Workers are trained on nutrition education, growth monitoring and counselling follow up to assess the progress and who are sometimes referred to as Community home based carers (DOH, 2008).

2.4. Growth Monitoring and Promotion

Literature reveals that growth monitoring can provide an entry point into preventive and curative health care and was part of the reduction in malnutrition and mortality in some countries (Huttley,Victoria, Barros, Teixeira and Vaughan, 1991; De souza, Peterson,Cufino, Gardner, CraveiroandAscherio,1999; , Winjhoven and Onyango, 2004; et al., 2004) Anthropometric measurements for nutritional assessment of the under-fives involves

weighing, checking the height/length and head circumference (DOH, 2000 ; 2003 and 2010). The new RTHB, which is separate for boys and girls and uses the new WHO growth standards that were designed to indicate how children should grow, utilizes different health indicators to monitor growth and measure extremes which are recorded as Z- scores and not percentiles like the 1977 NCHS values which were found to be prescriptive because their data came from one source (CDC 2008; DOH,2010; and Yip,2004)There are set procedures to assess the above mentioned indicators, for example, weighing starts off with ensuring that the equipment is in good working order (Perin, Flower and Ammerman, 2004; et al., 2004; DOH, 2008; and CDC, 2008).

The 2006 Child Growth Standards evolved as a result of the debate over the sensitivity of the CDC 2000 charts whose sample was found to be inadequate as it concentrated on aspects of ethnicity of the European study participants from the USA and could therefore not be generalized. Even although there are individual differences amongst children, the newly adopted 2006 Child Growth Standards consider many factors in the use and interpretation of growth such as feeding practices, and have taken into account that breast-fed infants growing under favorable conditions is one of the norms for growth and development. One of the assumptions in the development of these charts is that irrespective of the country, in which a child is born, the child can achieve the desired growth if given an optimum environment and the recommended feeding practices are carried out, health care and good nutrition. Thus the Multi Growth Reference Study (MGRS) used children from USA, Brazil, India and Oman, amongst others, to develop these new growth standards (WHO, 2006; et al, 2004; Perin et al., 2004). Perin et al., (2004), however, do not dispute the fact that genetics play part a in the makeup of the infant.

The new WHO growth charts were tested in Lusaka, a district of Zambia, for effectiveness, using both qualitative and quantitative studies. The HCWs and parents/caregivers' knowledge, attitudes and practices were also assessed with the aim of evaluating whether the outcomes of the weight or nutritional status of children would improve with training (Charlton, Kawana and Hendricks, 2009).

2.4.1 Weighing

The Department of Health in SA (2002; 2003 & 2010) has set out guidelines that should be adhered to by the HCWs for the weighing procedure, and these deal with storage, transportation and maintenance of the weighing equipment where the HCW should check the scale daily, or at the most weekly, by paying attention to the following points:

1. The scale should be balanced, calibrated and balanced before taking each weight;
2. The mother or caregiver should help keep the infant/child still throughput the procedure to ensure accurate reading;
3. The infant/child should be weighed with minimal clothing, and wet nappy removed;
4. The child should be placed firmly for comfort;
5. The weight should be interpreted to the nearest last completed unit; and
6. The child's birth and subsequent weights should be recorded in the RTHC.

Infection control measures during GMP activities like weighing should involve the following:

i. Washing of the weighing scale daily with soap and water;
ii. If there are spillages –wash the scale immediately;
iii. Clean the scale in between each baby with hibitane70%/alcohol/spirits;
iv. Line the scale with paper towel or linen saver; and

v. Change the linen-saver in between babies (DOH, 2010).

A studycarried out by Faber et al, (2009) evaluating community-based growth monitoring in rural districts of the Eastern Cape and KwaZulu-Natal provinces of South Africa found that with regard to weighing, the above recommendations were not adhered to. Of the 13 scales that were observed at the sites of that study, only 77% (n=10) were in a good working order. Two (2) scales needed to be serviced, one (1) could not be used because the batteries were flat, and a volunteer from the community of the UMkhanyakude district told the researchers that their site did not have a scale to weigh children and that they were no longer weighing children.

The authors found children being weighed wearing heavy clothing in some sites, while in others the children were weighed naked, both instances being contrary to point 3 mentioned above. The authors stated further that at some of the sites, the project volunteers who did the weighing interfered with the child while it was being weighed by wiping the child's nose or holding the child and that small children were being weighed seated with their feet touching the ground. Furthermore, the authors observed that the babies' nappies were removed in all three of the districts and that some of the babies passed urine while on the scale. There was no disinfectant nearby, which is a health risk.

In all three districts an A4 hard-cover exercise book was used to record the growth information of the children. The UMkhanyakude and Zululand districts used a new page for every session and would compare the child's weight with the previous session's reading. The project volunteers doing the weighing were not allowed to plot the child's weight on the RTHC in most of the sites of the KZN districts. The sites of the OR Tambo district further used a register with columns to record and compare the birth weights from January to

December to register the child's name, date of birth and sex which was done to ensure that documentation of the anthropometric measurements was not lost (Faber et al., 2009).

2.4.2 Measuring length/height

The Department of health stipulates the following when measuring length/height:

1. If the child is less than two years old, recumbent (lying down) length should be taken, and if the child is two years or older then the height should be measured;
2. Height/length should be measured immediately after weighing while the socks are off, and anything that will interfere with the measurements such as hair pieces or accessories should be removed;
3. The plotting of length/height is to be done on the vertical line and not in between the lines;
4. Points are to be joined to observe the trends and to interpret both the weight and height/length;
5. The use of measuring tapes is discouraged;
6. Infection control should be maintained throughout in between babies (DOH, 2010)

2.4.3 Measuring the head circumference

The DOH's guidelines to HCWs stipulate the procedure for measurement of head circumference as follows:

1. A narrow, flexible and non-stretch tape made of fiberglass, steel or cardboard should be used;

2. The infant's head should be positioned facing the person who is doing the measurement;

3. With the head in a horizontal position, the tape should be placed above the supra-orbital ridges, frontal bulge and over the occipital;

4. The tape should be pulled tightly on each side to compress the hair; and

5. Recording and infection control should be practiced in between cases (DOH, 2010)

2.5. The Health Care Workers (HCWs)

Literature indicates that the routine use of the road to health card by the health care workers can improve the quality of health care to the under-fives in growth monitoring and promotional activities (WHO 1978), WHO further accents that the RTHC is a visual tool that can be used to assess the indicators associated with growth monitoring and promotion, those sentiments are shared by Tarwa and De Villiers, (2007).

Recommendations of the study conducted in the Eastern Cape, SA, about the use of the RTHCs are that the morale of HCWs would improve if they are trained on how to use RTHCs which would subsequently improve the quality of care provided that is provided to the children under five years (Chopra and Sanders (1997), a sentiment that was shared by Chopra etal. (1999.

Findings of a world-wide study which was carried out on behalf of the WHO's Nutrition Department by De Onis et al., (2004) revealed that most HCWs encountered the following problems when using the growth charts: (i) Difficulty in interpreting the growth curves; (ii) Difficulty in understanding the concept of the at risk child; (iii) Difficulty in plotting measurements on the charts; (iv) The meaning of reference curves not well understood; (v) Not producing accurate anthropometric measurements; (vi) Mothers not bringing children to the facilities; and (vii)Lack of trained personnel regarding GMP.

The above sentiments are shared in the findings of a study conducted by Amosu, Oyewole, Amosu and Ojo (2010) on growth faltering among exclusively breast-fed infants in Nigeria.

This study revealed that the HCWs had not given adequate information to mothers about exclusive breast feeding which led to the mothers erroneously believing that they were providing a good practice. Because they had not been given a proper demonstration to empty both breasts, it led to stunting and under nutrition in the babies that was reflected on the growth charts brought in by the mothers. Therefore, it was recommended that HCWs be trained in GMP and a systematic review should be in place to assess low effectiveness of staff (Chopra and Sanders, 1997; Tarwa and De Villiers, 2007). In another study conducted in the Seychelles errors of measuring and recording weight by the HCWs were observed whichresulted in unacceptable misclassification of nutritional status equivalent to a weighing error in infants of ± 2 kg (Dixon and Sutton, 1994)

2.6 The Parent(s)/caregiver

A study conducted in Pretoria by Tarwa and De Villiers, (2007) concluded that not all parent(s)/caregivers knew that they had to carry the RTHC every time the child is assessed and parent(s)/caregivers thought that the RTHC should only be brought for well-baby clinics. The study by Mudau, (2010) in Makhado (Limpopo) found that parents/caregivers had limited knowledge about the RTHC with 68% of them thinking that if babies are not well they should not be immunised. The same researcher goes on to say that caregivers in her study area were not informed about the importance of the developmental milestones of their children and did not receive the necessary guidelines to care for their children.

Chopra and Sanders (1997) advocate the education of the public regarding growth monitoring (GM) which requires training the HCWs who then communicate their skills to the

parents/caregivers and the wider community. Thus training of HCWs should be used as a health promotion measure which would further be used as a screening tool and surveillance of the nutritional status for GM.

As previously mentioned, the findings of a descriptive cross-sectional study that was conducted in Nigeria to assess growth patterns of exclusively breast-fed infants and children using the health indicators of weight and height/length)on the RTHCs found faltering growth in those babies. Nearly all the mothers in the study did not know the conditions of exclusive breast-feeding which means that neither water nor should pacifiers be given to the infant for six months unless it contained medication prescribed from the health facility. The study's conclusion was that faltering growth was due to the mothers' lack of knowledge about letting their infants suck both the fore and behind milk. The mothers were not aware that babies should empty the breasts completely because sucking the fore milk quenches the thirst only, while the hind milk contains mainly fat, which is required to supply the necessary energy for a growing infant. Furthermore, their knowledge on breast feeding techniques was also lacking as they could not demonstrate the correct positioning of the infants/children (Amosu et al., 2010).

2.7 Immunization

Immunisation is the process of introducing a disease passively or actively into the body with the aim of stimulating the body's own immune response against vaccine preventable diseases (Kibel and Wagstaff 2003; DOH, 2005). Cameron, (2007) and Dennill and Swanepoel,(2008) report that over 5 million children die in developing countries due to vaccine preventable diseases. After the introduction of the WHO's growth standards and in order to accommodate the introduction of the new Expanded Programme on Immunisation (EPI) vaccines, SA

revised the RTHC into a RTHB that can be used comprehensively to promote growth and development (DOH, 2010).

A RTHC is used as a tool to record and assess the immunization status, faltering growth, and missed opportunities of the infant/child and the immunization schedule is also annotated on the growth chart in the RTHC(Tarwa and de Villiers, 2007; Cape Gateway,2003;DOH;2010)

The DOH (2000; 2003&2010) recommends that the following be recorded in the RTHC following immunization;

1. Age of the infant/child;
2. The name of the vaccine/s given;
3. Batch number of the vaccine;
4. The site where the immunization was administered;
5. The actual date that it was given;
6. To come back date; and
7. The signature of the person who administered the vaccine/s.

The new RTHB in SA makes provision for page 06 to be detached and handed to the school when the child enters the education sector (DOH, 2010).

A study on immunization by Ravhengani, Manfe, Makinta, Teffo; Maseko and Ntuli-Ngcobo, (2007) in Gauteng revealed that 50% of the parents/caregivers did not know or were not aware of the diseases that are prevented when immunising children, These authors were concerned about increased dropout rates and wanted to increase the immunization coverage in Mozambique. Jani, De Schacht and Bjune,(2008) conducted a cross sectional study of 668 mothers in therural setting of Southern Mozambiquewho were in possession of RTHCs and

used the RTHCs to assess the reasons for missed opportunities and incomplete vaccinations so as to help the mothers in the region not miss the vaccination dates. Of the 700 mothers who were visited in that study for Mozambique, 32 were excluded from the study because they did not meet the criteria since they did not have a RTHC or had not lived in the area for more than nine months. Findings of that study revealed that missed opportunities were related to the following factors: teenage mothers who went back to school could not take their infants/children for immunization appointments; migration; lack of transport; mothers not understanding the importance of EPI disease preventing vaccines; and problems of long waiting periods in the health facilities. Another study utilized the RTHCs by considering factors that contributed to missed immunizations, here, Boyle, (2006) reported that more than 30 million children worldwide are unimmunised because of factors such as unavailability of vaccines, parents not being informed of the return dates and the lack of health education that should be provided following the administration of immunisation/s (Boyle 2006). These sentiments were shared by Foder, (2002), in Cambodia when assessing the attitudes of the HCWs for GMP.

Reasons for failed immunizations were mentioned by Robeifroid et al., (2005) in their qualitative descriptive study that was conducted in Belgium where they interviewed District Medical Officers who were supposed to implement GMP practices. That study revealed that the respondents tended to be very technical when they were in contact with parents/caregivers. Although the respondents were concerned that GMP was not reaching the target that the Belgian authorities had set, the interviewees failed to realize that they consistently treated parents/caregivers as subjects and that their aloofness contributed to GMP goals not being reached. Mhlanga, (2006) affirmed that children die from preventable

causes and poor sanitation, unsafe water and inadequate immunization against preventable diseases such as tetanus, measles and pertussis, amongst others.

2.7.1 Vitamin A supplementation (VAS)

The national DOH (n.d.;2002; 2003and 2010) emphasised that every child under the age of five who visits a clinic should have his/her Road to Health Chart reviewed to check their status of Vitamin A supplementation from the age of six months and six monthly thereafter.

Who Needs Vitamin A?

Everybody needs Vitamin A to protect his/her health and vision.

Women who breastfeed need Vitamin A to help them stay healthy and to pass the Vitamin A on to their children through breast milk.

Young children need Vitamin A after they are weaned to help them grow, develop normally and stay healthy.

Why Do We Need To Improve Vitamin A Status?

- It has other health benefits;
- It prevents night blindness, xerophthalmia, corneal destruction, and blindness;
- It may reduce birth defects;
- It's good for epithelial tissues and skin;
- It's very cost-effective;
- It's just a few cents per capsule. Also minimal extra cost for fortified foods;
- It reduces health costs by lessening hospital and clinic visits; and
- It's easily integrated into existing public health/immunization programmes (DOH, 2010).

2.8 Developmental Milestones

Literature reveals that assessing developmental milestones for cognitive, language, social-emotional, and neuro-motor development is a low cost intervention strategy to address malnutrition and iron deficiency, and can improve mother/caregiver relationships and establishment of community based rehabilitation (Grantham-McGregor, Cheung and Cueto, 2007). This sentiment is shared by Ilgi, Derya, Canan, Sevim, Ayliz, Gulsum, Nilgun, Tugba, Sevgi and Domenic, (2008) who regard developmental milestones as important contributors to morbidity across the life span. These authors designed a tool in Turkey, which is a guide for low and middle income countries to use to assess children's milestones, especially for the under twos, where development is crucial. The authors do state, however, that unfortunately the guide is limited for use in poorer countries and concur that The American Academy of Paediatrics recommends its members to use the standardized guide to assess the language, socio-emotional, cognitive, behavioural and functional capacity of their patients.

The DOH, (2000; 2002 and 2010) requires that the RTHC be produced at every consultation, be it for a well-baby or a sick child clinic, to evaluate whether the infant/child is growing according to his/her developmental milestones.

The training package for HCWs on the RTHC and the newly introduced RTHB requires assessment and recording of the following age appropriate developmental milestones and appropriate interventions.

Age	**Milestones**	**Advice to the mother/caregiver**
Six weeks	Reflexes:, sucking, rooting	*Put your clean finger at the corner of baby's mouth; * Sight is important, provide brightly coloured objects *advice on the next development stage, e.g. for hearing
Ten weeks	• Rooting is normal until three months	Touch the baby's cheek and head will turn towards the stimulus
Fourteen weeks	• Moro reflex is normal from birth until 6 months and is normally associated with loud noise	HCW to enquire about hearing The response is like an embrace with abduction and extension of arms which will be followed by adduction of the arms
6 months	Expect more babbling, laughs and screaming	May turn from strangers with anxiety, advice on the socio-

	when upset. Sitting with support	emotional relationship
9 months	• Child's eyes can focus on far objects • Eyes move well together, no squint • Child turns head when called • Child sits and plays without support • Throws objects	Fine and gross motor development Play and communicate with the child
Twelve months	• Child looks at small objects and pictures • Child uses three simple words and points at the objects	Provide appropriate toys
18 months	• Child uses fingers to feed • Understands simple commands	Allow the independence

2-3 years	• Child speaks in simple sentences • Runs well and climbs on things • Rides a tricycle	Do not mimic the childish talk, speak normally
4 years (Pre-school)	• Speaks in full sentences • Constantly asks questions • Mood swings and aggression may be observed	Engage in communication and tell bed time stories; Peer group experience is important; Teach the do's and don'ts
5 years(School readiness)	• Interacts with children and adults • Able to draw; • Throws and catches ball well; • Knows days of the week	Engage in group cooperation like pre schooling

(DOH, 2010; Whaley& Wong, 1996)

Vision should be tested and recorded from six weeks of age. Hearing, voice screening, sitting, standing, crawling, walking, talking and gross and finer motor skills should all be assessed at the appropriate times. For example, at nine months the child should focus on far objects with eyes moving well together (meaning that there is no squint) and the child should turn when called and sit without support. The infant or child should be referred to the next level of care if age appropriate milestones have not been reached.

2.9 Conclusion

Literature publicised diverse topics that are covered regarding the road to health card dealing and child growth monitoring and the child's development practices. Incorporated were the principles of documentation which demonstrated that the road to health card is a tool that can be communicated between parents and health care workers to monitor the growth and development of the infant from birth to five years.

This chapter displayed to the researcher that growth monitoring and promotional activities are associated with utilization of the road to health card.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this chapter is to discuss the overview of the methodology with focus on the following areas; design, study setting, study population, study sampling, the instruments and associated reliability and validity, the data collection procedure, data analysis, ethical considerations, limitations, data management, and data storage and its disposal.

3.2 Research Paradigm

A positivist paradigm was adopted in this study. A positivist paradigm is often associated with quantitative research and refers to the traditional paradigm underlying the scientific approach which assumes that there is a fixed, orderly reality that can be objectively studied (Polit and Beck, 2008). Positivists believe that phenomena are not haphazard or random events, but rather have causes established deductively through formal statistical testing (Weaver, 2005).

3.3 Research Approach

According to Burns and Grove (2009), quantitative research is a formal, objective, systematic process in which numerical data is used to obtain information about the world, describe variables and examine relationships among variables.

This study was undertaken to explore the knowledge, attitudes and practices of the health care workers with emphasis on specific concepts (variables) relating to growth monitoring practices which are stipulated in the guidelines for the use of the Road to Health Cards which were developed by the WHO and modified for the health care workers by the Department of Health (WHO, 1978; DOH, 2000; 2003& 2010).

3.4. Research Design

A research design is an overall plan for obtaining answers to the research questions during the research process and is followed to maximize the researcher's control over factors that may interfere with the validity of the findings (Polit and Beck, 2008; Burns and Grove 2009). A descriptive exploratory design was used to provide information about how the Road to Health Card was utilized by the HCWs in the clinics of the EThekwini Metropolitan area. There was no intention of establishing a cause and effect relationship, but the variables, which are the GMP practices in the RTHC, were used to guide and identify problems. Polit and Hungler (1995); Polit and Beck, (2004 & 2008); and Burns and Grove (2009) emphasize that this design is appropriate because the researcher can observe and describe aspects of the phenomenon as they naturally occur.

This design assisted the researcher to identify factors influencing the prevailing practices and attitudes of HCWs and their knowledge of the RTHCs during their contact with the under-fives and also assisted the researcher when she was analysing the data.

3.5 Research Setting

The study was conducted in 17 randomly selected primary health care clinics of the EThekwini metropolitan area. These clinics provide services to children less than five years. They are categorized according to their geographic area and mostly operate from eight to five. These clinics are sometimes referred to as the ‘’one stop shop’’ where all the services pertaining to the under-fives care are rendered. After the clinics had been randomly selected from the population, they were assigned codes to maintain confidentiality.

3.6. Study Population

The term population refers to the aggregate, totality or people who conform to a set of specifications or who meet the criteria which a researcher is interested in (Brink, 2006; Polit and Beck, (2004& 2008). The study population, therefore, included all the health care workers in the 58 primary health care clinics of the EThekwini metropolitan area. The staff complement of HCWs in each clinic ranged between 5 and 7.

3.7 Sampling

Sampling is defined as the process of selecting a portion of the population to represent the entire population so that inferences about the population can be made (Polit and Beck, 2008). In this study, sampling was done in two stages:

3.7.1 Sampling of the clinics

Probability, a simple random sampling technique, was used to ensure that each and every one of the fifty eight clinics had a chance of being selected and included in the study (Brink, 2006).This author asserts that probability sampling is more likely to represent the population and allows the researcher to estimate the sampling error and reduce sampling bias. The researcher obtained the sampling frame, which is the number and names of the clinics, from EThekwini District Office and assigned them codes. This aspect is in line with the notion that the researcher should know every element of the population in probability sampling (Brink, 2006).

The researcher used a table of random numbers, which she generated from the computer, to select the clinics randomly. She chose a starting point using a pen without looking and moved horizontally on the list to select the seventeen clinics, duplicated clinics were ignored.

3.7.2 Sampling of the HCWs and the eligibility criteria

Eligibility criteria specify the characteristics of the population that would be included or excluded in the study (Polit and Beck, 2008).From the seventeen randomly selected clinics; the researcher followed the non-probability, purposive sampling technique which is also called judgmental sampling. On-probability sampling helps the researcher to choose subjects who know best about the phenomenon in question (Brink, 2006).

The purposive sampling technique was used based on the fact that the clinics rendered services to the under-fives, and even though they are 'one stop shop clinics', many of the HCWs in the sample were directly involved with the phenomenon under study, i.e. RTHC and GMP practices (Brink, 2006; Polit and Beck, 2008). The HCWs in the sample who were dealing with other specialties, such as the psychiatric clients, were excluded from the study. Therefore the recruited participants (HCWs) all met the criteria that the researcher was interested in because they attended to the under-fives. In other words they are the experts in the field of child GMP and the utilization of the RTHCs.

The researcher based her interest on how the HCWs' knowledge, attitudes and practices would prevail regarding the utilization of the RTHCs.

3.8 Data Collection Process and Instrument

A self-developed questionnaire was used to collect the data. This questionnaire was based on the guidelines provided by the WHO on how the RTHCs should be utilized by HCWs in SA.

A pilot study, which is regarded as a small scale version of the bigger study, was conducted in two clinics that were not part of the main study to determine the reliability, validity and usability of the instrument (Burns and Grove, 2009). Minor changes were made to the

questionnaire following the pilot study. For instance, the researcher found out that some professional nurses were specific that they were either senior nurses or nursing services mangers and not just professional nurses, and an item was added to the demographic section of the questionnaire so this aspect could be categorized.

Permission to conduct the study was requested and obtained from EThekwini authorities who later notified the respective clinics about the researcher's intended visits. As in some instances, clinics operated differently and there were no babies, please see the attached correspondence regarding this aspect in the annexure section.

The following documents were distributed to the participants:

- An information sheet (See Appendix A);
- The informed consent (See Appendix B); and
- The questionnaire (See Appendix C)

The questionnaire consisted of three sections, which were made up as follows:

1. Section one was the demographic information;
2. Section two was the questionnaire with two parts, pertaining to the two domains of knowledge and attitudes respectively.
    - There were 23 items rating the knowledge and awareness domain;
    - There were 10 Likert scale rating items.

3. Section three of the instrument was an observational checklist with 29 items ranging from numbers 35 to 62, which related specifically to GMP practices which are the guidelines to be adhered to by the HCWs.

The structured observational checklist was used in each clinic. In accordance with the positivist paradigm the researcher remained neutral at all times and avoided giving cues like nodding the head.

3.8.1 Scoring

Scoring for the domains was as follows:

Knowledge

- The data related to knowledge was added and the average obtained;
- an averages core below 80% was classified as unacceptable;
- An average score between 80% -100% was classified as acceptable.

Attitudes

- The respondents' responses were summarized according to their agreements or disagreements with the statement which appeared on the Likert scale. Participants could choose from the following options:

1. SD = Strongly Disagree
2. D = Disagree
3. U = Undecided/ neutral
4. A = Agree
5. SA = strongly agree

Practice

- To explore this domain, the correct growth monitoring and promotion practices were rated and the average score obtained;
- an average score below 80% was rated as unacceptable;

- an average score between 80% -100% was rated as acceptable

3.9 Reliability & Validity of the Measuring Instrument

A pilot study was conducted in a clinic that was not part of the major study to ensure that the instrument measured what it was supposed to measure. Following the pilot study, minor changes were made in the instrument and the following experts were consulted.

- The Ethics Committee of the School of Nursing at UKZN;
- Dieticians in the Integrated Nutrition Directorate at EThekwini district office; and
- The Maternal and Child Health care team, also stationed in the District Office.

Table 3.1 content validity.

The following table shows which questions relate to the different research objectives.

CONTENT VALIDITY	
Research objectives	**The corresponding questions in the instrument were:**
To assess the extent of the knowledge of the HCWs regarding the RTHCs	Q1, Q 2, Q4, Q6, Q7, Q9, Q10, Q12, Q14, Q15, Q22, Q23.
To assess the attitudes of the HCWs regarding the RTHCs	Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38
To observe the prevailing practices of GMP when using the RTHCs.	Q24, Q25, Q40, Q53, Q55, Q59, Q61
To identify and describe the documentation in the RTHCs	Q34,Q36, Q38,Q39, Q52, Q57
To identify and describe the training needs of HCWs in GMP.	Q3, Q5, Q17, Q18, Q34

3.10 Ethical Considerations and Approval

The following are the fundamental Ethical Principles applied: Respect for others; Beneficence; Justice; Autonomy; Voluntary Information; Informed Consent; Understanding

and comprehension; Choice; Privacy; and Permission. The option for termination was also discussed.

Informed consent was received from the participants and the researcher assured them that confidentiality would be maintained and that the data would not be shared with any other person. Reporting on the results was general and without reference to any specific individual or any specific institution.

Ethical clearance approval was obtainable from the Ethics Committee of the University of KwaZulu-Natal.

Permission to conduct the study was sought personally, in writing and via an e mail as a follow up from EThekwini authorities who then informed the clinics about my intended visits to their clinics

I then met with the clinic managers to explain the purpose and procedure of the study. Respondents were assured that participation was voluntary and that they had the right to refuse to give the information if they so wished or could withdraw anytime.
Informed written consent of the respondents was obtained.

3.11 Data Analysis and data Management

The data was collected from the seventeen clinics and each clinic was given a code and the participating clinics were numbered. Fifty-one (51) structured questionnaires were distributed between June and September 2011 (three per clinic), and forty (40) questionnaires were completed and returned. The researcher conducted one hundred and seventy (170) growth monitoring and promotional observations (ten per clinic).

The questionnaires were scrutinized for completeness (data cleaning) and the data was organized and analyzed using theStatistical Package for Social Sciences (SPSS 18) software. Data was analyzed using the descriptive statistics test to determine the frequency distribution and percentages and categorized according to the domains in the instrument, i.e. the knowledge, attitudes and practices of the HCWs.

Data was stored in a locked place to ensure confidentiality. Analyzed data has been saved in a computer protected by a password known only to the researcher and will be destroyed by fire five years after the report has been written..

3.12 Limitations

Various limitations to the study have been noted. It became apparent that staff at the sites modified their behaviour in the knowledge that they were being observed. Some HCWs displayed obvious changes like cleaning the weighing scale just as the researcher arrived at the clinic, which indicated that the scales had not been cleaned for infants or babies that had been weighed earlier on before the researcher arrived. This is known as the Hawthorne Effect.

Another factor was the HCWs did not always wear their distinguishing badges of rank and during some observations it was difficult to identify whether the HCW was a professional nurse or not.

Obtaining consent and ethical clearance from the EThekwini Ethics committee took from February until June 2011 and involved a fair amount of phoning and follow up for permission to be granted. E-mails in some clinics were either not working or not checked and therefore when the researcher arrived for her intended visit she had to wait for the clinic managers to

confirm with the authorities that permission to conduct the study had been granted, despite the letter she had to show that permission had indeed been granted.

Funds to buy the necessities, travelling cost and time had an impact on the researcher since the clinics were far from one another. On some occasions she had to go back to the same clinic three times as, depending on the time of the visit, there had been no babies on the previous occasions or not enough clients. The clinics organize their activities to see different clients on different days/times. For example, when the researcher arrived at one of the clinics at 08h00, the clients being attended to were the geriatrics only, but coming back about three hours later as advised by the clinic staff, the researcher found mothers/caregivers starting to arrive and congregating in one corner to be attended to when the HCWs had finished with all the geriatrics.

3.13 Internal validity

The health department launched a new Road to Health Book in October 2010 with added information to accommodate different growth charts for both boys and girls which was supposed to come into effect when the stock of the current stock of 2002 RTHCs was finished. The researcher found out that clinics use both versions, with mothers of newly born babies bringing either the new RTHB or the old one. The HCWs are not all conversant with the new RTHB in which the growth is charted and not plotted in the graph.

3.14 Conclusion

In this chapter, the quantitative methodology was used, followed by the procedure for sampling which happened in two stages to obtain both the clinics and the health care workers for the study.

Data collection process was narrated. Validity and reliability of the instrument were depicted with tables so as to account for the objectives and the research questions of the study. Ethics was considered and the study's limitations discussed, the next chapter will account for the data analysis.

CHAPTER 4 DATA ANALYSIS

4.1.Introduction

This chapter presents the summary of the findings of the research which was conducted to explore the knowledge, practices and attitudes of health care workers (HCWs) regarding the use of the child growth and development monitoring tool also known as the Road to Health Card (RTHC) for growth monitoring and promotion in the clinics of the EThekwini metropolitan area. The results were analyzed and categorized applying the principles of documentation which are embedded in the conceptual framework of the study.

The data was analyzed from both the structured questionnaires and observations that were carried out for growth monitoring and promotion (GMP) practices using descriptive statistics of the SPSS 18 and the results are summarized and presented in the form of tables and graphs.

4.2 Socio-demographic Characteristics of the Respondents

I distributed fifty-one (51) self-developed structured questionnaires in seventeen clinics (3 questionnaires per clinic); the clinics are situated in the surroundings of the EThekwini metropolitan area. Their geographic locations are as follows; three are situated in the south, two in the south-west, three in the west, three in the north-west, three are central and the remaining three are in the north.

The aim of the study was to explore the knowledge, awareness, practice and attitudes of the HCWs with regard to their utilization of the RTHCs.

From the fifty-one (51) distributed questionnaires, forty (40) were completed and returned; and the researcher carried out one hundred and seventy (170) growth monitoring and

promotion practice observations (10 observations per clinic) to explore the utilization of the RTHCs while the HCWs were consulting infants/children under five years of age.

The researcher would like to bring to the attention of the reader that the observations conducted were necessarily not from the same respondents who completed the forty previously mentioned questionnaires, but were of respondents who met the characteristics and eligibility criteria of the population for the study.

4.2.1 Age of the Respondents

The following is a summary of the age distribution of the respondents which shows that from the forty (40) returned questionnaires 40% (n=16) of the respondents were between the ages of 40-49, followed by 38% (n=15) who were between the ages 50-59, while 12% (n=5) were between 20-39 years of age, 7% (n=3) were 60 years of age or older and 2% (n=1) was younger than 20 years of age.

Table 4:1 age distribution of the HCWs

	Frequency	Percentage
less than 20	1	2%
between 20-39	5	12%
40-49	16	40%
50-59	15	38%
60 and older	3	7%
Total	**40**	**100%**

4.2.2 Gender distribution of the respondents

Table 4.2 below shows that 95% (n=38) of the respondents were females and 5% (n=2) were males. Figure 4.1 immediately below the table displays the same information as a pie graph.

Table 4.2the gender distribution of the respondents

Gender of the HCWs	N = 40	%
Gender	Females= 38 Males = 2	95% 5%

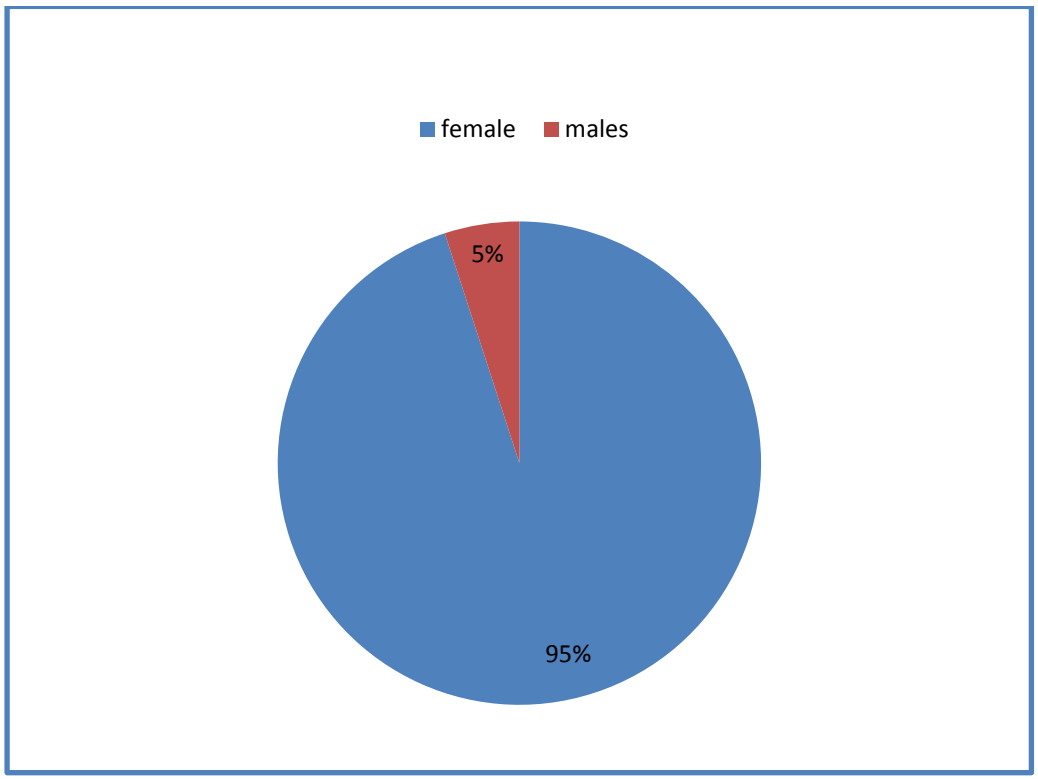

Figure 4:1 The pie graph displaying the HCWs' gender distribution.

4.2.3 Qualification distribution of the respondents

The findings showed that 73% (n=29) of the respondents were professional nurses while 27% (n=11) were enrolled nurses. See figure 4.2 below;

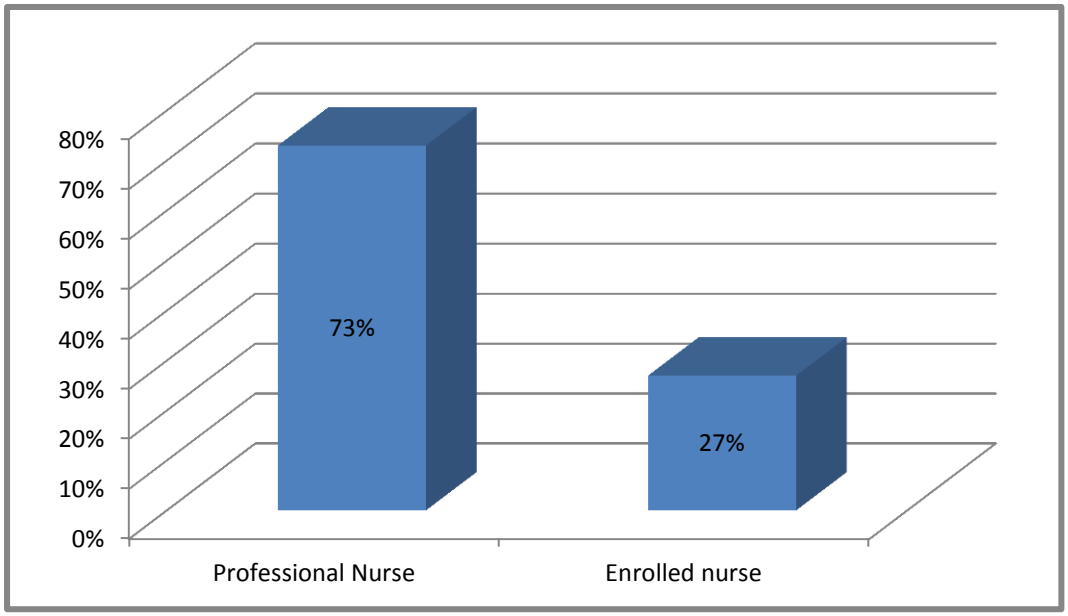

Figure 4.2 Qualifications of the HCWs

The following figure describes a further categorization/ranking of the professional nurses. As mentioned above, the majority of the respondents were professional nurses (73%), of these, 10 were senior professional nurses, 2 were operations managers, 2 were nursing services managers and 15 were professional nurses.

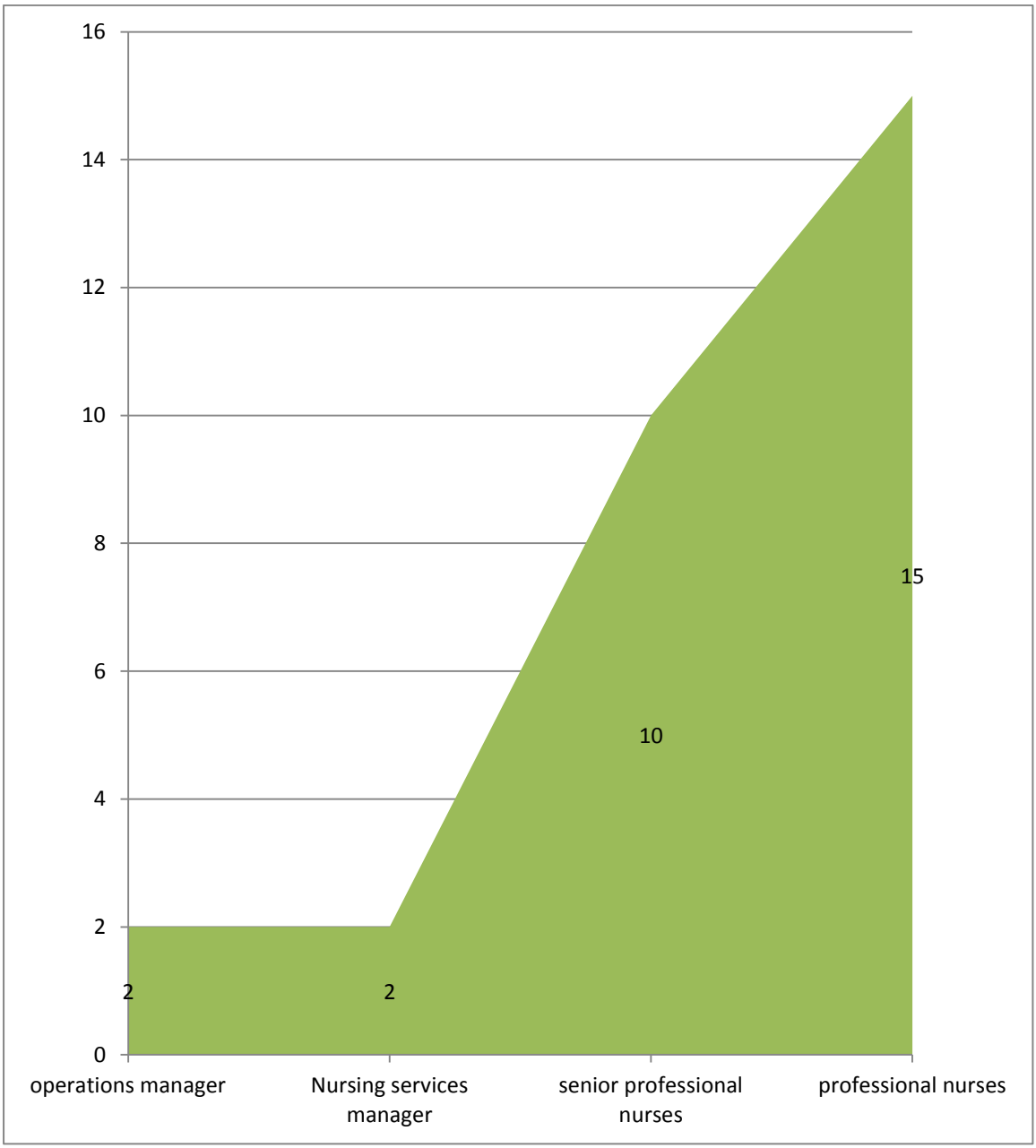

Figure 4.3 the ranks of the professional nurses

Table 4:3 Represents the years of work experience of the HCWs with children under five

Number of years of experience working with children under the age of five.	Frequency	Percentage
2-3 years	5	12.5%
3-5 years	5	12.5%
7 years and more	30	75%
Total	**40**	**100%**

Table 4.3 shows that 75% (n=30) of the respondents have had experience of 7 years and more working in the under-fives' section, 12.5% (n=5) have had between 3-5 years of experience and 12.5% (n=5) had an experience of between 2-5 years.

4.3. Assessing the Extent of the Knowledge of HCWs Regarding the Use of the RTHCs

The HCWs were asked to indicate where they had received their training to utilize the RTHCs. Different variables were used to determine these sources and were scored individually. Participants were requested to reply either yes or no as to whether they had

received in service training, training from a mentor, the internet or from directives from the INP directorate. 72% (n=29) of the respondents answered yes to the question regarding formal in service training and 27% (n=11) said no;35% (n=14) answered yes to the question regarding training from a mentor and 65% (n=26) answered no and 7.5% (n =3) responded yes that the source of training was from the directives of the nutrition directorate while 92.5% (n=37) said no they had not learnt about the RTHC from this source. No one responded in affirmation to the option of the internet being their source of training,

The above paragraph indicates that the majority of HCWs (72%, n =29) received their training from formal in service, while 35% (n =14) indicated a mentor as their source and 7.5% (n = 3) indicated that their training came from the directives and brochures of the Integrated Nutrition directorate.

Table 4.4Asummary of the HCWs responses about where they had received their training for utilizing the RTHCs.

Variable	**attribute**	**Frequency**	**percentage**
Formal in-Service training	Yes	29	72.5%
	No	11	27.5%
	total	**40**	**100%**
Mentor	Yes	14	35%
	No	26	65%
	Total	**40**	**100%**
Internet	Yes	0	0%

	No **Total**	40 **40**	100% **100%**
Directives of the nutrition directorate	Yes No **Total**	3 37 **40**	7.5% 92.5% **100%**

4.3.1 Analyzing questions relating to knowledge

Table 4.5 below reflects the respondents' scores relating to the knowledge items that appear on the questionnaire.

The percentage for all the correct responses regarding the HCWs knowledge were tabled and scored

Table 4.5 Frequency percentages of knowledge items

Questions	Correct responses	score
1. Does the department of health supply the RTHC?	95%	Acceptable
2. Would you photocopy another RTHC if the mother/caregiver brings the infant/child to the clinic without one?	85%	Acceptable
3. Should the demographic details be	37.5%	Unacceptable

recorded during a two week consultation?		
4. Should birth weight be recorded during a two week consultation?	65%	Unacceptable
5. Should a pencil test's results be recorded after a six weeks consultation?	37.5%	Unacceptable
6. Should the immunization details be recorded after a six weeks consultation?	97.5%	Acceptable
7. Does a single mother need support?	35%	Unacceptable
8.Should the obstetrical history of the mother be considered as an item for 'In need of special care'	35%	Unacceptable
9. Should missed immunization date/s be	65%	Unacceptable

checked?		
10. Should an infant/child be weighed during an immunization visit?	27.5%	Unacceptable
11. Should an infant be weighed when a mother/caregiver requests so?	12.5%	Unacceptable
12. Should an infant be weighed monthly?	92.5%	Acceptable
13. Should the weighing scales be transported with care?	27.5%	Unacceptable
14.Weighing scales should be serviced annually by the supplier	57.5%	Unacceptable
15. Should the weighing scale be calibrated and balanced monthly?	65%	Unacceptable

16. Should the weighing scale be calibrated and balanced at the most weekly?	27%	Unacceptable
17. Do you report to the mother that the growth curve is faltering?	65%	Unacceptable
18. Do you record in the RTHC when the growth curve is faltering?	85%	Acceptable
19. Do you provide health education to the mother/caregiver when the growth curve is faltering?	92%	Acceptable
20. How should infection control be ensured for weighing? by washing the scale with soap and water daily	40%	Unacceptable

21. How should infection control be ensured for weighing? By disinfecting with Biocide D solution?	60%	Unacceptable
22. How should infection control be ensured for weighing? By cleaning hands in between babies with a disinfectant?	72.5%	Unacceptable
23. How should infection control be ensured for weighing?; by Changing lines savers/ paper towels in between babies?	85%	Acceptable
24. The recumbent height should be measured at which age group?	42%	Unacceptable
25. When should the infant be able to see?	82.5%	Acceptable
26. At which age should an infant be able to sit with support?	85%	Acceptable

27. When should solids be introduced (Weaning)?	95%	Acceptable
28. When should the infant/child get the deworming medication?	77.5%	Unacceptable
29. When should Vitamin A supplementation be commenced?	70%	Unacceptable
30. When should PCR test be performed?	85%	Acceptable
Average for the correct responses:= 62% **Score = unacceptable**		

The HCWs' average score on knowledge regarding the use of the RTHCwas62%, this score shows an unacceptable classification for this study.

4.3.1.1 The RTHC which is currently in operation

When asked whether they are still using the 2000/2002 RTHC that uses percentiles, 85% (n=34) of the respondents answered that they are still using that version, while 15% (n = 6) indicated that they do not use it.

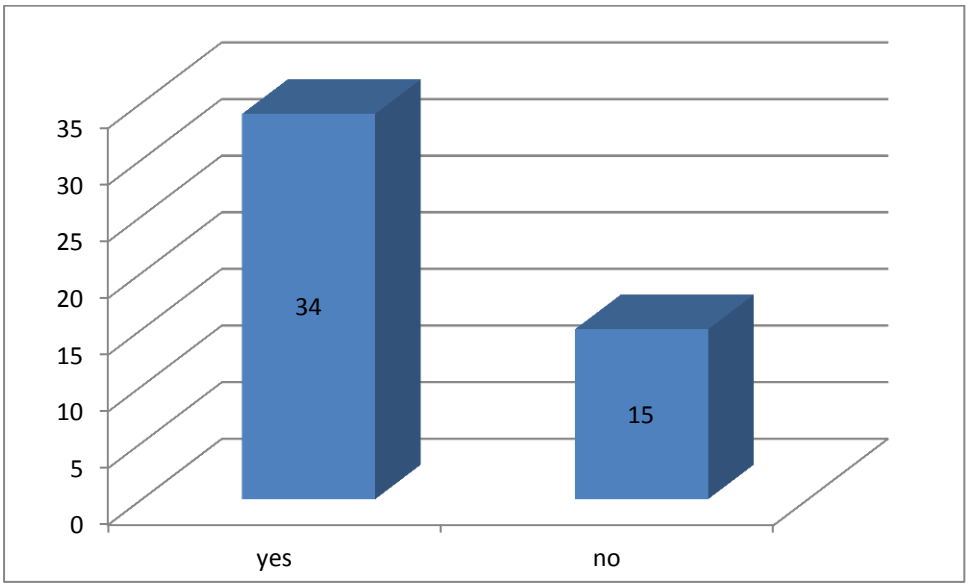

Figure 4.4 Respondents' answers as to whether they are still using the 2000/2002RTHC

4.3.1.2The New Road to Health Book

The respondents were asked whether they use the new RTHB which uses Z scores. 77,5% (n=31) replied that they did not use the new Road to Health Book, while 22.5% (n=9) answered that the new RTHB was used in their facilities.

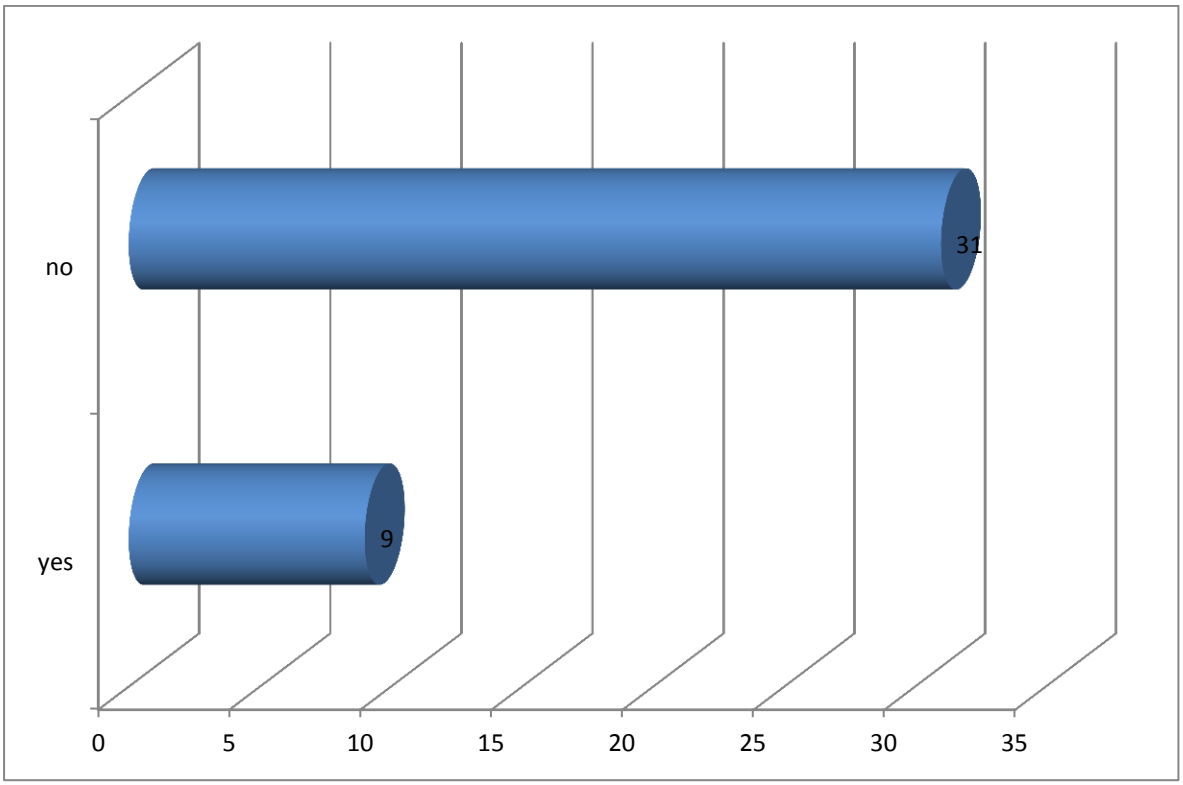

Figure 4.5 Respondents' answers as to whether they use the new RTHB.

4.3.1.4. Eye testing at six weeks

When asked whether pencil testing should be performed for vision at six weeks only 8% (n=3) said yes, 35% (n=88%) said no and 5% (n=2) did not provide an answer.

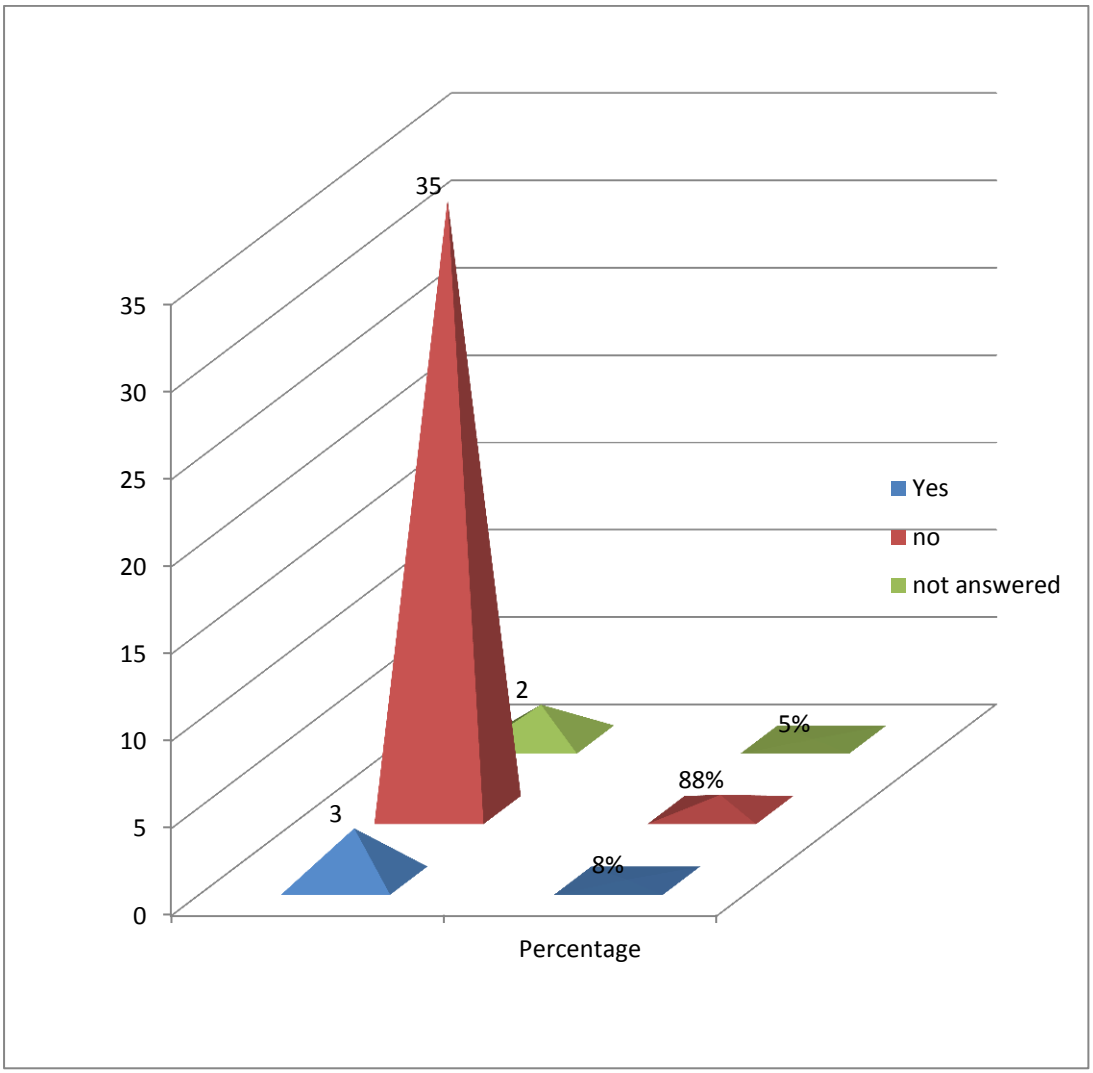

Figure 4.6 Eye testing during six weeks' consultation

4.4 Assessing the Attitudes of the HCWs Regarding the RTHCs

This section addresses two of the study's objectives (objectives 2 and 5, respectively) and presents an assessment of the HCWs attitudes and training needs.

Various statements were put on a Likert rating scale to assess the HCWs' responses. HCWs were requested to read the statements and then indicate whether they strongly agreed (SA); agreed (A); were neutral/undecided (N/U); disagreed (D) or strongly disagreed (SD). The following figure represents the HCWs responses to the statements relating to their attitudes which tended to be positive to the expected GMP practices.

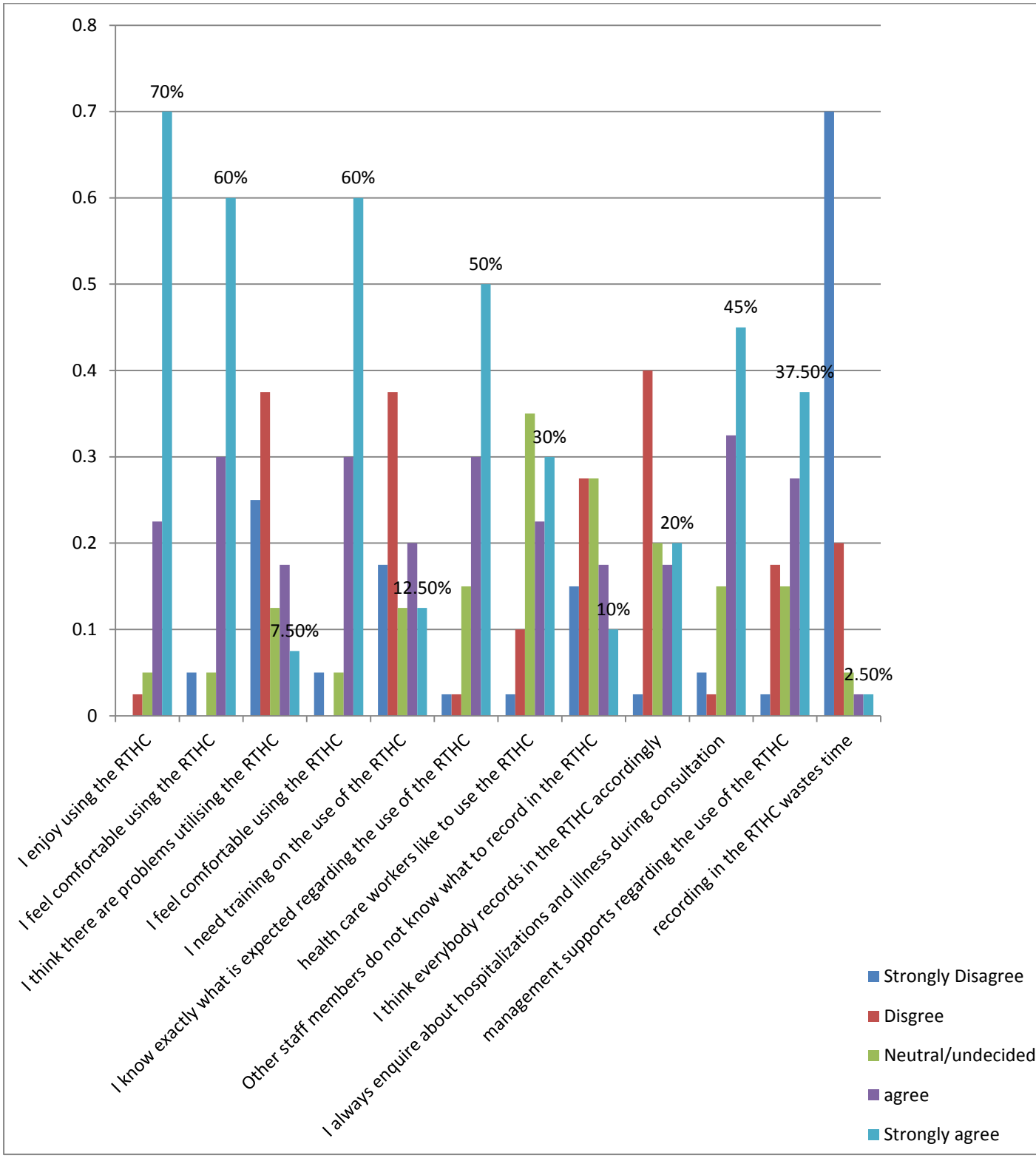

Figure 4.7 Attitudes statements and Likert's rating scale responses.

Table 4.6 Attitudes statements with percentages of statements that are inclined to favour GMP practices

Statement	Number of respondents who were in favour of the statement or significantly undecided	Percentages	Answer
1. I enjoy using the RTHC	24 8	60% 20%	SA A
2. I feel comfortable using the RTHC	24 11	60% 27.5%	SA A
3. I know exactly what is expected regarding the RTHC	19 12	47% 30%	SA A
4. I need training on the use of the RTHC	14 6	35% 15%	SD D
5. Other HCWs do not know what to record in the RTHC	6 10 11	15% 25% 27.5%	SD D **N**
6. Everybody records in the RTHC	7 7	17.5% 17.5%	A SA

accordingly	8 15	20% 37.5%	**N** D

Table 4.6 shows that the respondents were inclined to be agreeable to most of the statements. However, the fifth and sixth statements were to do with recording in the RTHCs. When the statement was put to them that other HCWs do not know what to record in the RTHCs, 15% of the respondents strongly disagreed and 25% disagreed and when asked whether recording is generally done accordingly, 37.5% of the HCWs disagreed while a significant 20% were neutral with this statement These two statements have significantly higher numbers of neutral responses as compared to the rest of the other responses that have been provided.

Table 4.7 Summarises some of the observations' check list items which were scored according to the expectations of the study**.**

As I mentioned earlier, I conducted one hundred and seventy observations to obtain the percentages of each item, the percentages obtained would then be scored as either acceptable or unacceptable. The findings will be discussed further in the next chapter.

	Yes	**No**	**Score**
1. Did the HCW ask for the RTHC?	96%	4%	Acceptable
2. Was the last visit's consultation checked?	89%	11%	Acceptable
3. Were the personal details of the infant/baby confirmed?	51%	49%	Unacceptable

4. Did the HCW discuss the peri-natal history?	6.5%	93.5%	Unacceptable
5. Did the HCW discuss the social history?	7%	93%	Unacceptable
6. Was age screening appropriate performed?	2.4%	97.6%	Unacceptable
7. Did the HCW ask about the age appropriate developmental milestones?	37.5%	62.5%	unacceptable
8. Was the mother/caregiver advised about the next developmental milestones?	2.4%	98.2%	Unacceptable
9. Was the infant for special need identified?	.6%	99.4%	Unacceptable
10. Was the immunization status checked?	76.5%	23.5%	Unacceptable
11. Did the HCW check the Vitamin A supplementation?	65.3%	34.7%	Unacceptable
12. Did the HCW discuss deworming?	62.9%	37.1%	Unacceptable
13. Was weighing done?	92.5%	7.1%	Acceptable

14. Was the weight correctly plotted?	40.6%	59.4%	Unacceptable
15. Was the weight interpreted?	34.1%	65.9%	Unacceptable
16. Was the growth curve discussed with the mother/caregiver?	30.6%	68.8%	Unacceptable
17. Did the HCW practice infection control measures when weighing the baby?	29.4%	70.6%	Unacceptable
18. Was recumbent height length taken?	5.3%	94.7%	Unacceptable
19. Did the HCW record the length?	5.9%	94.1%	Unacceptable
20. Did the HCW discuss feeding practice?	58.8%	41.2%	Unacceptable
21. Did the HCW discuss the HIV status of the infant/child	68.8%	31.2%	Unacceptable

The average score of GMP practices was 69.6%. The HCWs' practices were therefore rated as unacceptable since an average score below 80% is rated as unacceptable in this study.

In the following figure, 75.9 % (n=129) of the HCWs gave the mother/caregiver a date to come back for the next consultation, 13.5% (n=23) provided health education following immunization; 1.8% (n=3) referred the infant/baby to the next HCW in the same facility; 1.2% (n=2) provided information on dental care to the mother/caregiver and.6% (n=1) spoke to the mother/caregiver about compliance to medication

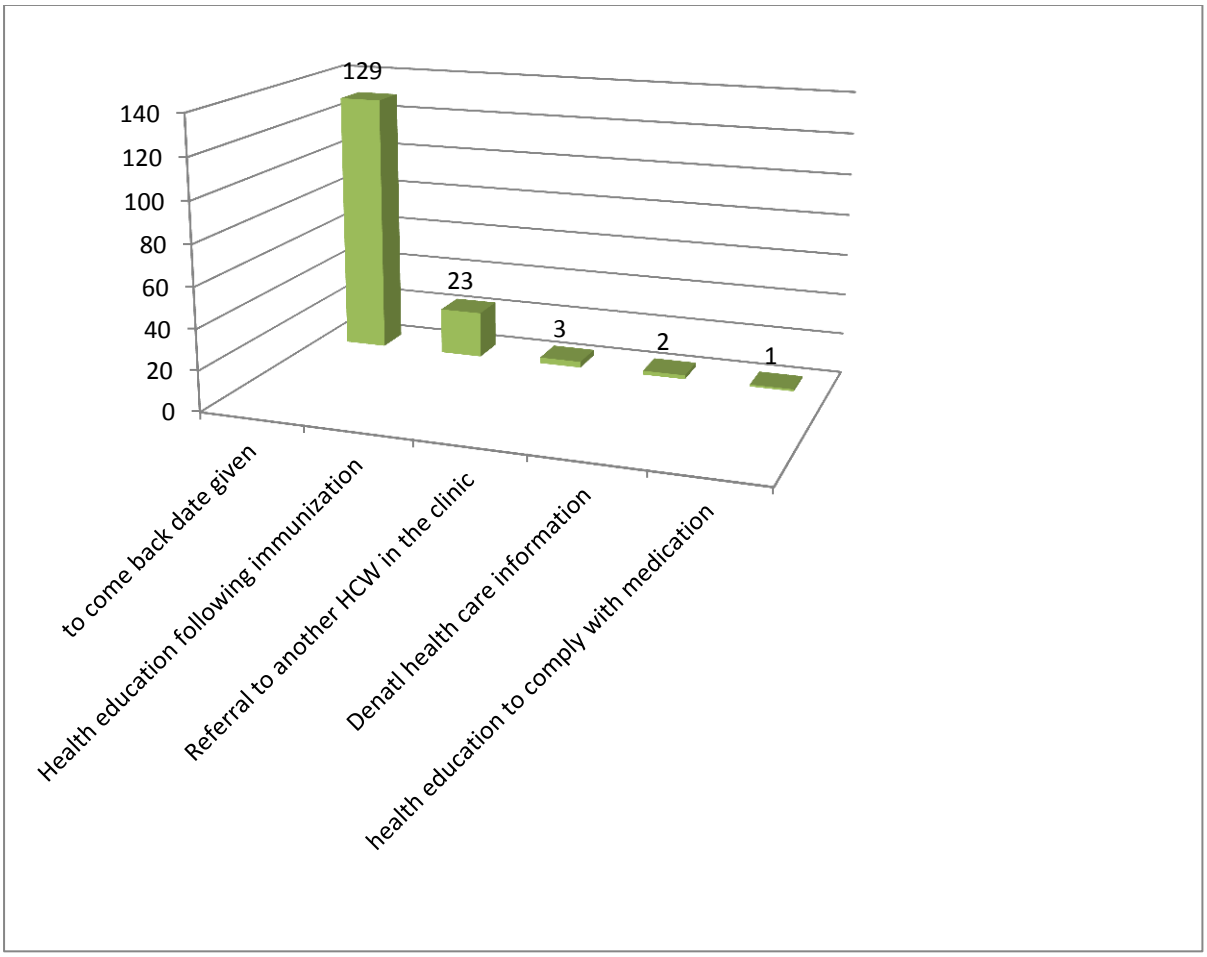

Figure 4.8 Other activities that were carried out during the consultations, which apply to the principle of completeness in documentation.

When asked whether they would photocopy a RTHC, 12.5% (n=5) of the respondents said yes, they would photocopy a RTHC; while 85% (n=34) said that no they would not do that. This applies to accountability and authenticity principles of documentation.

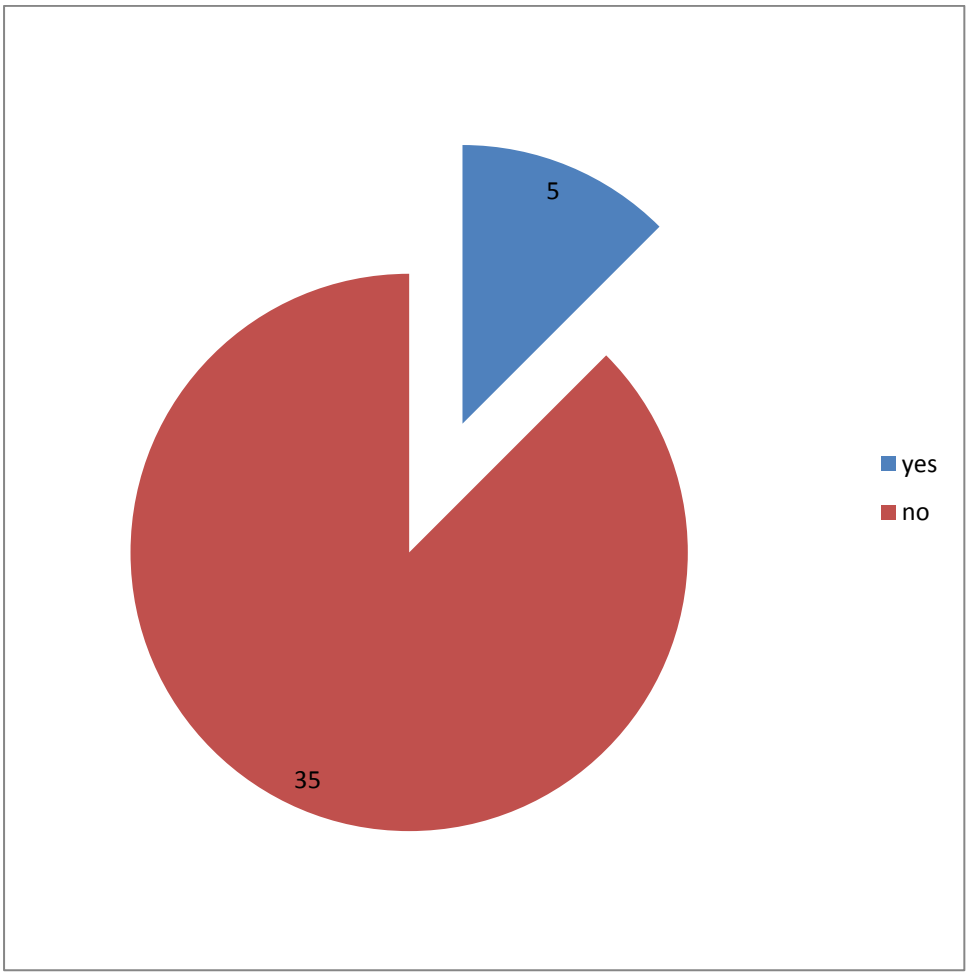

Figure 4.9 Photocopying a RTHC, applies to the authenticity principle

Table 4.9 below presents a summary of the documentation principles which applies to the GMP practices.

The following summary indicates some of the items from the observations' check list that were mentioned in table 4.8 previously. The attributes' frequencies are shown as well, Incorporated further in the fifth column of the table were the applicable study's conceptual framework's principles.

Table 4.8 anthropometric measurements

Variable	Attribute	Frequency	Percentage	Applicable Conceptual framework principle/s
Weight, was it done?	Yes No **total**	158 12 **170**	92,9% 7.1% **100%**	Patient identification & accuracy principles
Was the weight recorded?	Yes No **Total**	69 101 **170**	40.6% 59.4% **100%**	Timeliness; Audit; accountability; Completeness and legibility principles.
Was infection control practiced during and in between weighing?	Yes No **Total**	50 120 **170**	29.4% 70.6% 100%	Accountability principle
Was the weight interpreted?	Yes No **Total**	58 112 **170**	34.1% 65.9% 100%	Accuracy; Completeness principles
Was the weight discussed with the mother or caregiver?	Yes No **Total**	53 117 **170**	31.2% 68.8% **100%**	Timeliness; Accountability; Completeness principles

Was length taken?	Yes No **Total**	10 160 **170**	5.9 % 94.1% 100%	Timely; Accuracy
Was length recorded?	Yes No **Total**	10 160 100%	5.9 % 94.1% 100%	Audit ability; timeliness; legibility; and accountability principles

More applications of the conceptual framework's principles are presented below and are incorporated with a show of figures. For example, the next figure shows that 88.8% (n=151) of the HCWs checked the previous consultation of the infant/child while11.20% (n=19) of the HCWs did not, this activity applies to patient identification, audit ability, accountability and legibility.

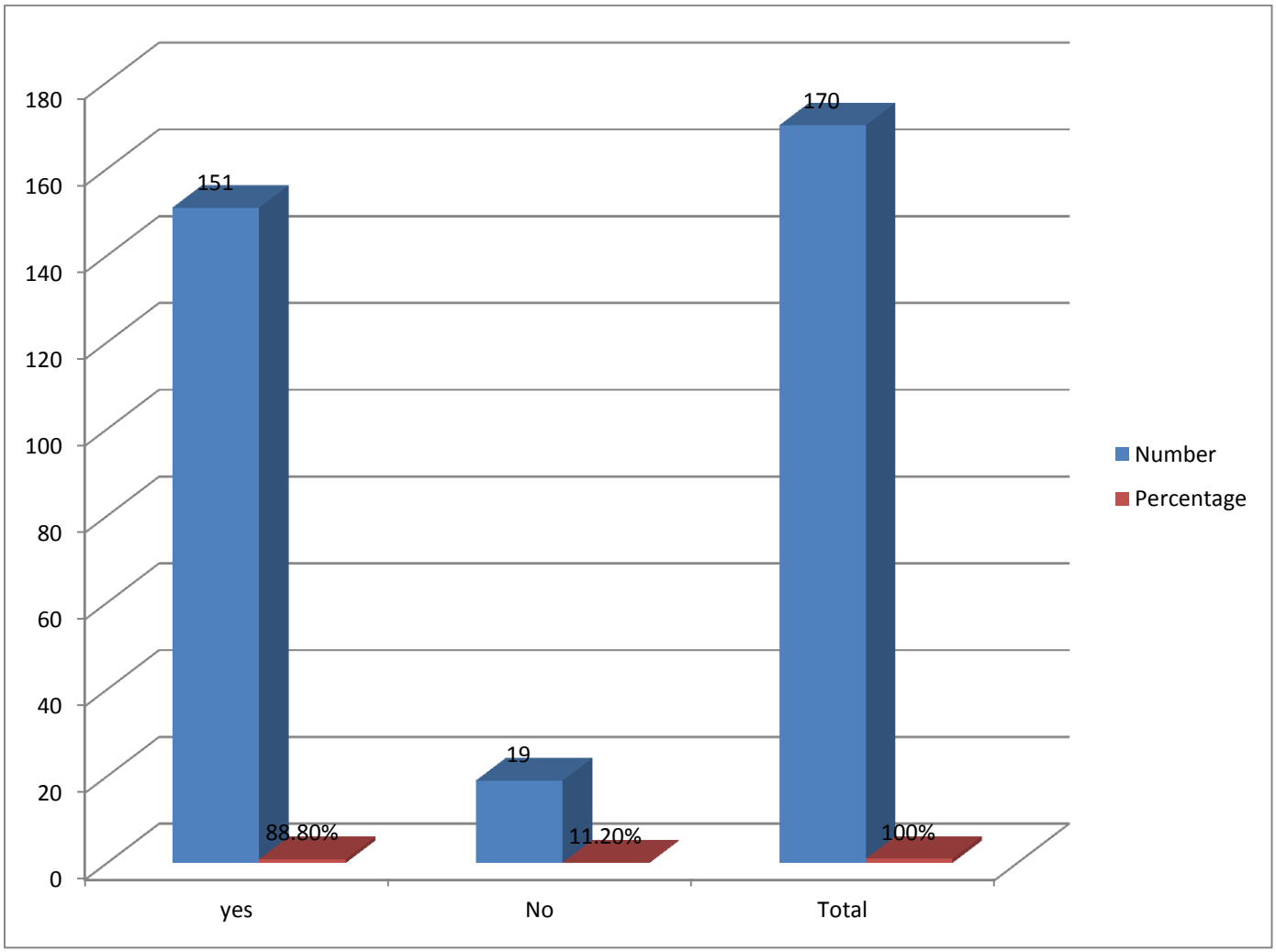

Figure 4.10 Previous consultation

50% (n = 86) of the HCWs enquired about the infant/child's personal details while 49% did not**,** this activity applies to patient identification and accuracy principles.

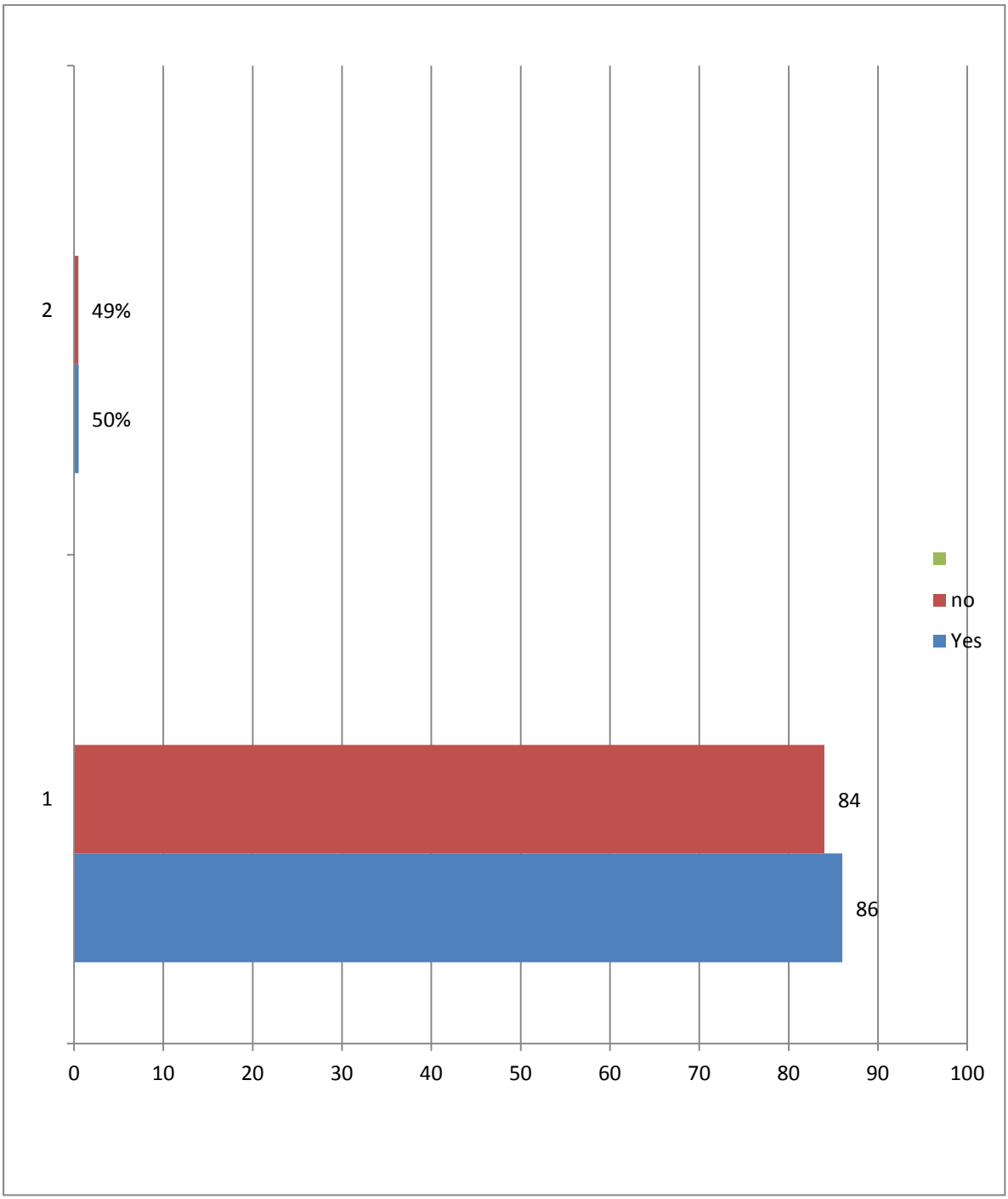

Figure 4.11 Personal details

Figure 4.12, below, illustrates that 59% (n=100) of the respondents enquired about the infant/child's feeding practices, while 41% (n=70) did not.

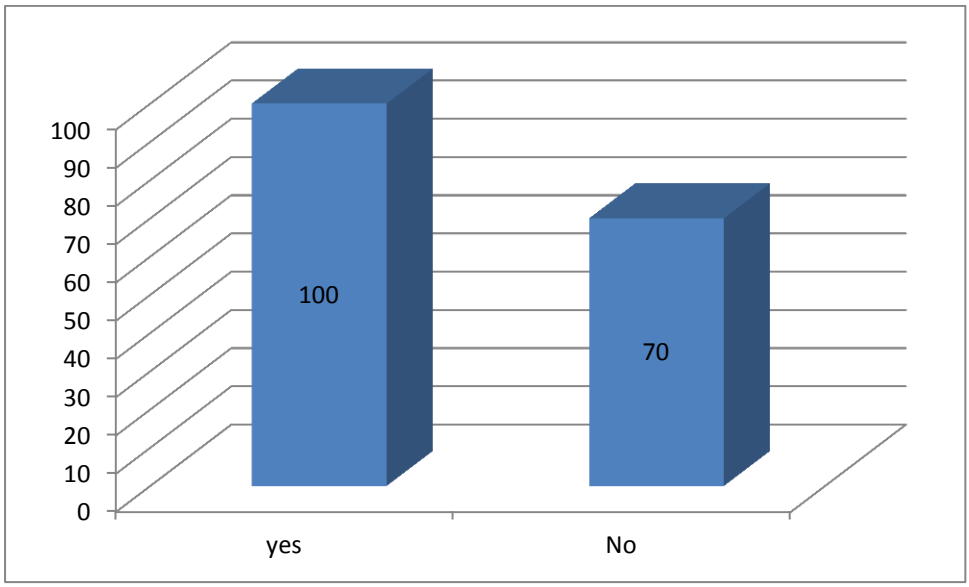

Figure 4.12 Feeding practices

Figure 4.13 shows 71% (n=120) of the participants practiced infection control measures during weighing, while 29% (n=50) did not.

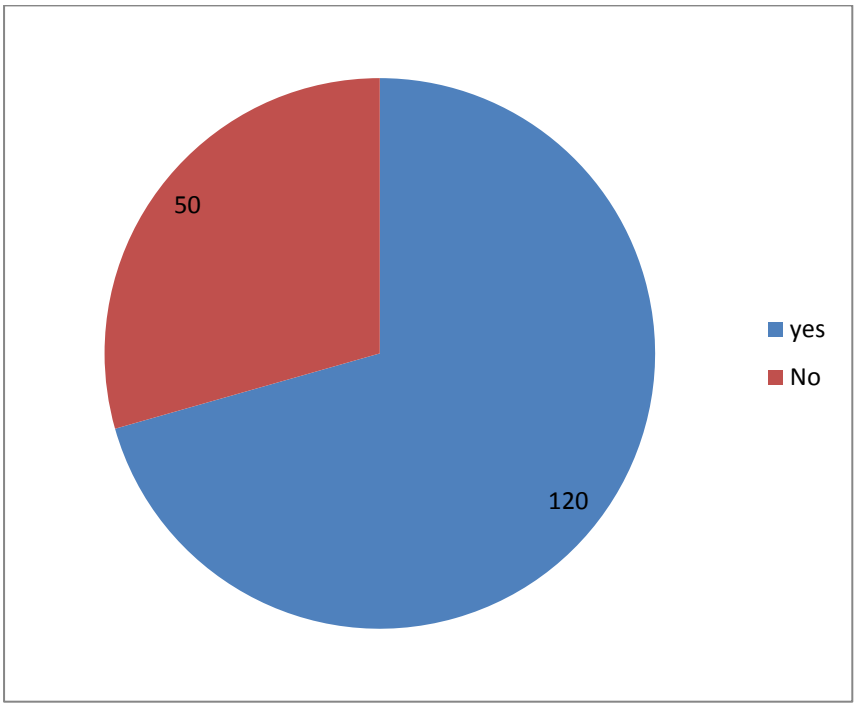

Figure 4.13 Adherence to infection control measures

Figure 4.14 below is a representation of how often HCWs discussed the peri-natal history of the infant/child with the mother/caregiver during consultations.

During the observations that were carried out, 6.5% (n=11) HCWs discussed the peri-natal history with the mother/caregivers and 93.5% (n=159) did not engage that discussion.

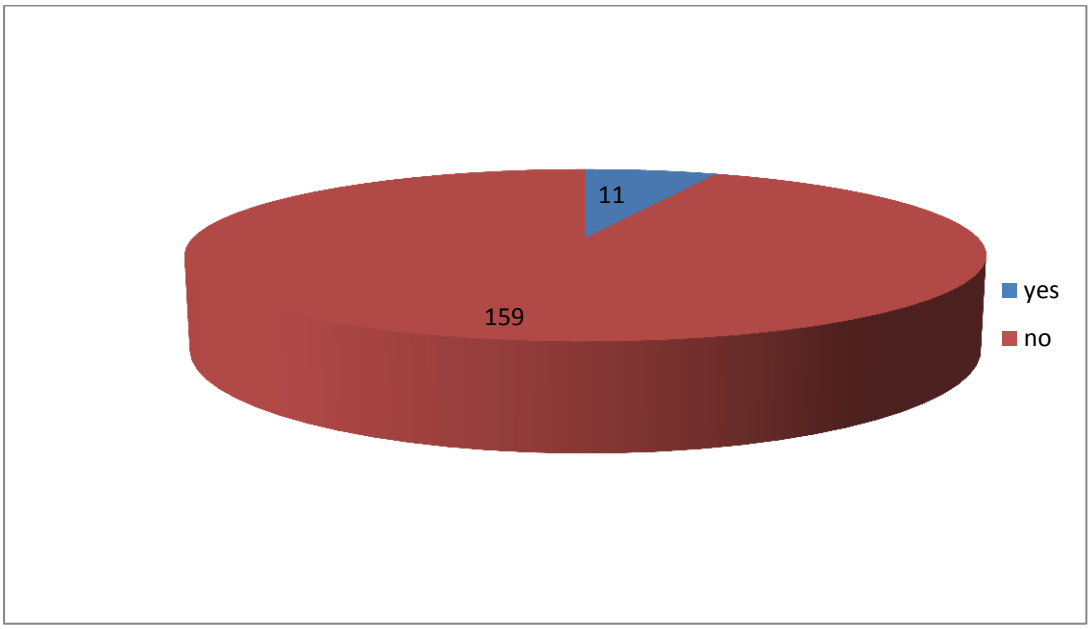

Figure 4.14 Peri-natal history

The next figure shows that only 2% (n=4) of the HCWs examined the infant/child to assess whether it had attained the required developmental milestones and advised the mother/caregiver accordingly, while 98% (n=166) neither screened the infant/child nor advised the mother/caregiver of the developmental milestones or their stimulations, applies to timeliness and accuracy principles.

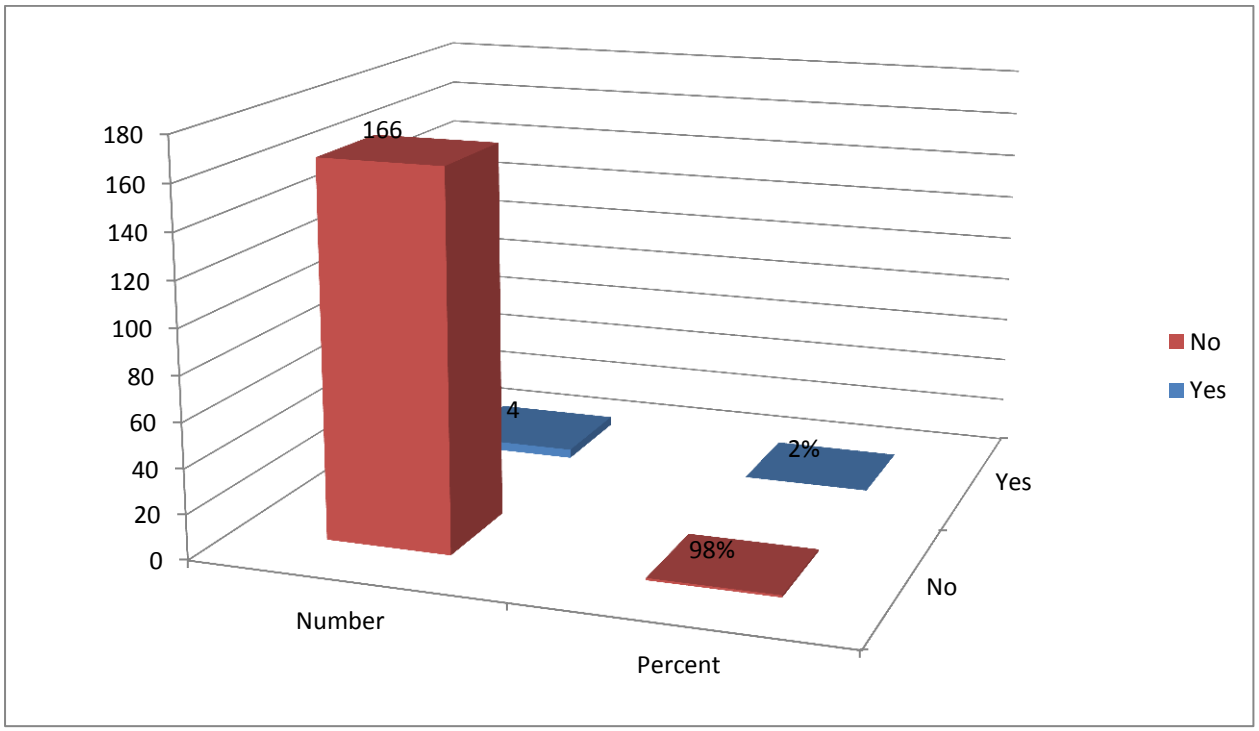

Figure 4.15 Screening developmental milestones

4.5 Frequencies' Scores of Observations

4.5.1 Overall score analysis:

There were 27 active data from the total observations of 170 that were analysed, that means 10 observations per clinic were carried out.

The median score was: 12.000

The mode was: 10.00

The minimum score was: 4.00

The maximum score: 20.000

4.5.2 Percentile scores

25^{th} percentile score: 9

The 50^{th} percentile score was: 12

The 75^{th} percentile score was: 15

4.5.3 Minimum and maximum scores

The minimum value was 4;

The maximum value was 20;

The value for the mode (which is the measurement with the greatest frequency/the most frequently occurring value), (Statistics and Linguistic Applications, 2008) (was 10 and;

The median value ;(which describes the exact number/s in the middle) was 12.

Further analysis regarding scores is depicted in the following figure to indicate the number of clinics which had the minimum value of 4 was only1; and the one with the maximum value of 20 was also 1; while and the number of people with the (median) value was of12; please see the figure below.

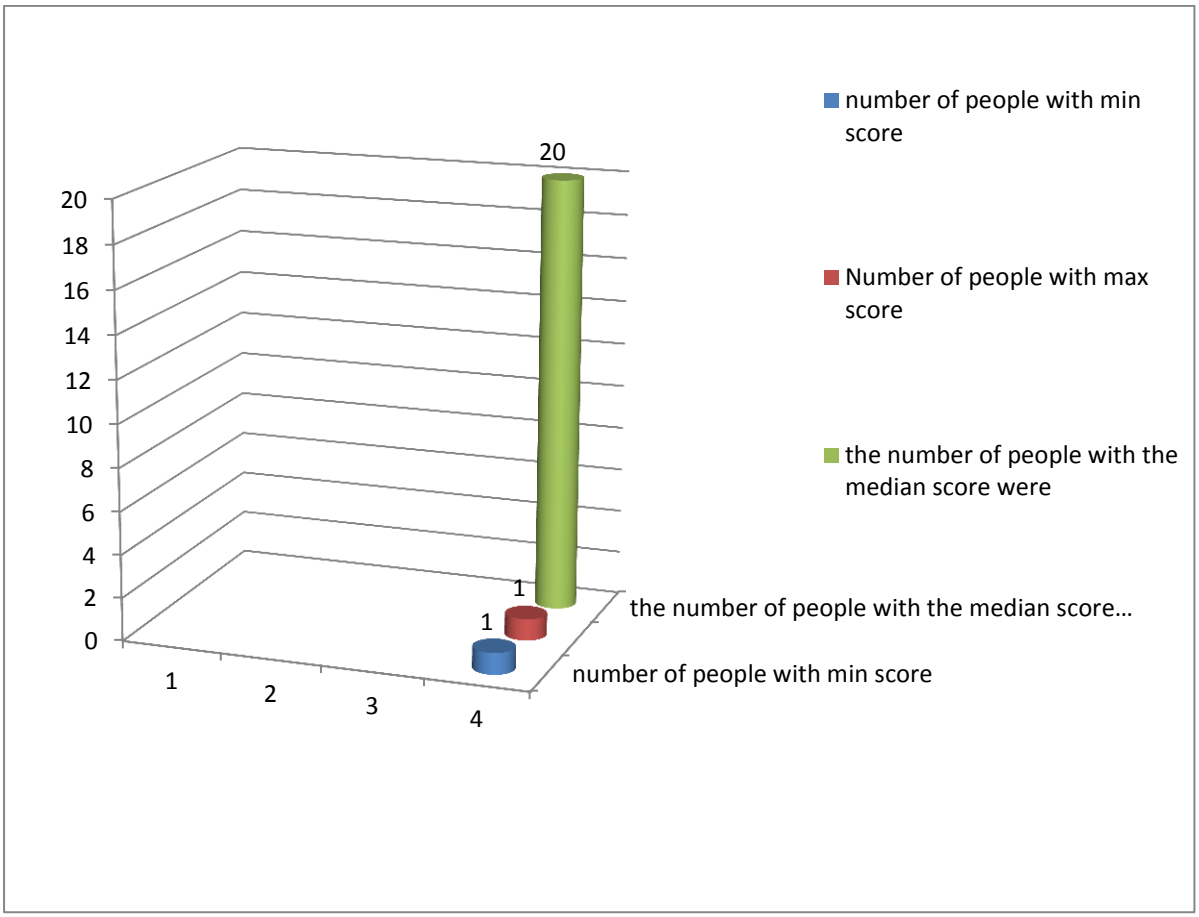

Figure 4.16 the number of clinic/s with minimum, median and maximum scores.

4.5.4 Clinic scores

4.5.4.1 Clinic score values

Table 4.10 displays the median, the mode, the minimum and the maximum values for all the seventeen clinics which were coded for confidentiality.

Also displayed is the notion that the minimum score value of 4 was in clinic A while the maximum score value of 20 was in clinic B.

Table 4.9 Median, mode, minimum and maximum values of each clinic

	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**
Median	11	19	12	14	11.5	15	7	11	12.5	6.5	10.5	14.5	9	12	13	41	10.5
Mode	10	19	12	11	10	15	7	10	11	5	10	16	9	12	11	10	7
minimum	4	15	10	9	10	13	5	8	8	5	8	6	5	5	8	9	7
Maximum	17	20	17	19	14	17	9	17	18	10	14	16	13	13	15	16	15

4.6. Conclusion

This chapter presented the figures and tables which summarised the average and overall scores of the HCWs knowledge, attitudes and practices for growth monitoring and development while utilizing the road to health card.

Incorporated in the analysis were the applicable indicators for the study's conceptual framework .The overall score values for the minimum, maximum, median and the mode per clinic were also presented as codes to ensure confidentiality, the next chapter deals with discussions of the analysed chapter four data.

CHAPTER FIVE: DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

This chapter presents the discussions of the findings of the study, its recommendations and the conclusions to explore the knowledge, attitudes and practices of the HCWs when utilizing the child growth and development monitoring tool which is also referred to as the RTHC in EThekwini metropolitan area, the discussions and conclusions were guided by the study's objectives, its conceptual framework (Principles of Documentation) and the corresponding literature review.

5.2. Major Conclusions from the Study

5.2.1 The Demographic Characteristics of the Respondents

The majority of the study's respondents (78%) were between the ages of 40 and 59, and, of these, 73% were professional nurses and (75%) had worked with children under the age of five for seven years and more.

5.2.2 The knowledge of the HCWs

The HCWs' average score regarding their knowledge for the use of the RTHC was 62%, this score was classified as 'unacceptable' according to the study's scoring expectations.

5.2.3 The attitudes and observed practices of the HCWs

The HCWs' responses to the statements that appeared on the Likert's scale rating of the instrument were inclined to favour statements that indicated good practices for the use of the RTHC. However, when their practices/activities were observed during consultations, it became apparent that the answers provided in the instrument to rate the HCWs attitudes, was

not a true reflection. The average score for the observations that were carried out was 69% and this was classified as "unacceptable" practice as well.

5.3 Discussions of the results

The applicable conceptual framework's principles are incorporated within these discussions.

5.3.1 The Demographic Characteristics of the Respondents

HCWs who were less than twenty years of age were in the minority (2.5%), Acutt and Hattingh, (2009) regard people younger than twenty years of age as being vulnerable in the workplace because they may demonstrate attitudinal problems, may be harsh or even frightened in the workplace, however, the respondents in that age group were of little significance to influence the practices of the HCWs in providing quality care to the children under five in this study.

About 72.5% of the HCWs were Professional Nurses (PNs) while 27.5% were Enrolled Nurses (ENs).Considering the HCWs registration with the South African Nursing Council (SANC) as either a PN, EN or ENA and their years of experience working in the section for the under-fives into consideration, this study's findings concluded that the HCWs knowledge and GMP practices/activities' average score rating was unacceptable and are in contrast to the guidelines which have been published and set out from as early as 1978 by the WHO and later modified by the Integrated Nutrition Directorate of the DOH for primary health care workers to ensure quality care of infants and children(2000,2003 & 2010).

The above mentioned conclusions of this study are similar to the findings of the study by Mudau,(2010), in Limpopo which revealed that although the HCWs who were involved in her study regarding the utilization of the RTHC were registered nurses, most had the

additional qualifications of either midwifery/ advanced midwifery/ community health care/ primary health care /paediatrics, and in addition some were exposed to short course training for IMCI, Preventing Mother-to-child-Transmission (PMTCT) and breast feeding, regardless of all the additional qualifications that the HCWs had received, they were not incorporating their skills and qualifications to utilize the RTHC effectively.

These findings by Mudau, (2010) about the contributions of training and short course for the HCWs are similar to those of a three months study that was conducted in Lusaka by Charlton et al., (2009) to assess whether the knowledge, attitudes and practices of the HCWs that have undergone training in GMP practices would lead to improved quality care in GMP practices especially the anthropometric measurements.

The findings of that study showed that there was no improvement and the authors concluded that children were still severely malnourished and underweight despite the initiative to introduce short courses like IMCI which aims at improving the HCWs' skills and more vigilant practices to improve children's weights. The findings of my study revealed that the majority of the HCWs (75%), have been exposed to working with children under five year for 7 years, and still delivered a service that was rated 'unacceptable', the findings are similar in that study by Mudau, (2010).

5.3.2 Findings regarding the knowledge of the HCWs

The first objective assessed the extent of the knowledge of the HCWs regarding the Road to Health Cards (RTHCs). Different questions were set out in alignment with the WHO and SA's guidelines to HCWs on the use of the RTHC by primary health care personnel.

Only 35% of the HCWs knew what the concept "in need of special care" require. This finding was confirmed by De Onis et al., (2004) who also concluded that HCWs experienced

difficulty with the concept “at risk infant/child”. In practice, the HCW should be vigilant of aspects that require special care such as prematurity at birth, TB contact or any other disease in the family and single parenting (DOH, 2000, 2002 and 2010).

Screening in the first five years of life is important to avert morbidity and mortality. Muniz et al., (2007) stated that the under-fives are a vulnerable group and should be prioritized in the delivery of primary health care. The HCWs’ knowledge regarding some of the activities, like vision testing at the six weeks consultation, is unacceptable. The guidelines to HCWs about the use of the RTHC require that periodic screening be done for different practices and a routine pencil test for this age group to determine the infant’s vision is mandatory according to the guidelines, (2000, 2003 and 2010).

The respondents performed well with regards to their knowledge on immunization visits, the score was 97.5%. Jani et al., (2008) conducted a study in Mozambique to increase vaccination coverage using the RTHC and attempted efforts to find missed opportunities for immunizations, these authors conquered that the study helped them to assess the progress of growth monitoring and promotion using the RTHC during the project (Jani et al., 2008).

Another study regarding the RTHC and immunization was conducted by Plumridge et al, (2009) in New Zealand in 2009 where they had analysed the importance of communication during children’s vaccinations. They found out that communication during contact with the mother/caregiver is important to allay the parents’ fears and anxiety and they recommended that communication between the parents and the HCWs should be an ongoing practice during immunizations. The concern about communication was acknowledged in the study by Robeifroid et al.,(2005) in Belgium where they conducted a study on the District Medical Officers, who were found to be very technical during their consultations/contacts with the

mother/caregiver and although they were concerned that GMP was not reaching the target that was set by the authorities, they failed to realize that they consistently treated parents/caregivers as subjects and not partners in caring for the infants/children and that this contributed to non-adherence by the parents/caregivers towards improvements of GMP practices. The average score of the HCWs knowledge for the data that were individually in tabular form regarding knowledge was 62%andclassified unacceptable. Tarwa and de Villiers, (2007) advocated in their study around Pretoria (SA) that the RTHC should be utilized as a communication tool between HCWs and parents/caregivers to promote and visualize the infant/child growth and development.

5.3.3 Findings regarding the attitudes of the HCWs

The second objective of the study was set to consider the attitudes of the HCWs regarding the use of the RTHCs. Although the HCWs' responses to most of the statements regarding their attitudes in the instrument tended to favour good GMP practices which were issued as guidelines for primary health care nurses about the use of the RTHC, this was not supported by their actual practices that were observed during the study, which gave me the impression that their attitudes were modified as explained below in the limitations of the study, for e.g. analysis of the answers to the statements relating to recording were of concern, because 27% of the respondents gave neutral answers to the statement that enquired about their attitudes for recording in the RTHC, that was a significantly high number as compared to the other neutral responses in the instrument.

The above can be reasoned out that in reality, some of the HCWs do not know the expectations in the growth and development monitoring tool/RTHC, and this was confirmed with the results of the observed practices in the study for the anthropometric measurements where the recording of weight and length were only carried out by 40.6% and 5.9% of the

respondents respectively. These findings confirm the conclusion of the world- wide study that was carried out on behalf of the WHO nutrition department by De Onis et al., (2004) which revealed that most HCWs encountered problems with the RTHC, specifically the growth chart, and that their respondents had difficulty interpreting the growth curves, in understanding the concepts that related to the child at risk, the authors added that recording and plotting in the growth charts seemed to pose a challenge to the respondents who were in their study.

In a study conducted by Charlton et al., (2009), the mothers/caregivers reported that the bad attitudes of the HCWs was one of the contributing factors to poor growth outcomes despite other serious challenges that the mothers/caregivers were faced with such as low socio-economic status and the scourge of HIV/Aids. The bad attitude of HCWs was also reported by Foder, (2008). There is little doubt that the HCWs modified their behaviour during the 170 observations that I conducted for this study. Of note in this study is the realization that 50% of the HCWs indicated that they need further training on utilizing the RTHCs**.**

5.3.4 Findings of the Prevailing Growth Monitoring and Promotion (GMP) Practices using the RTHCs

The third objective aimed at observing the GMP practices of the HCWs during consultations with children and their utilization of the RTHC concerning GMP practices. During the observations weight was measured in 92.9% of the cases which is a good practice.

However, I observed that the weights were being taken somewhere in the reception/front or another room in the clinic and not in the consulting room were the infant/child was consulted and the weights were not recorded on the growth chart by the person responsible for

weighing, because these people were either receptionists or home-based carers, who would then write the measurements on a piece of paper or on the Health Care Worker's clinic consultation sheet, that practice explains the reason why only 40.6% of the 92.6% measured weights were recorded. These findings are the same as Faber et.al.'s study in the Eastern Cape and UMkhanyakude district in KZN in 2009 who recommended that it is important to train people about weighting of the infants/children so as to improve the communities' knowledge and subsequently improve the health of the infant/child, Charlton et al., (2009) reiterated the same sentiments.

The findings of my study where lower scores such as infection control measures occurred, are similar to the study that was conducted by De Onis et al.(2004), who conducted a worldwide systemic review of GMP practices in 178 countries to analyze the effectiveness of GMP programmes in the respective countries, and the report from that study showed the following results; 48% of the respondents had problems relating to the interpretation of growth;40% inaccurate plotting of data; and 29% poor understanding of growth curves. These authors reported that the minority of the study's respondents (7%) cited poor equipment and lack of training. They state further, however, that it seemed that the HCWs in those countries did not regard good equipment and training as mandatory.

The DOH's guidelines about the RTHC for the HCWs require that weight be monitored monthly up to two years and three monthly from two to five years (DOH, 2000; 2002&2010), the guidelines promote that length and head circumference for a child under two years should be carried out monthly in the same period as well.

HCWs took note of the social history of the infant/child in only 7.1% (n=12) of the 170 observed practices, which is totally unacceptable in the circumstances. Grantham-McGregor

etal., (2007) concurred that over 200 million people in Asia and Sub-Saharan Africa live in absolute poverty and the HCWs should establish the social history of the infant/child in order to assess whether the infant/child meets the criteria for a feeding programme which is available in the clinic or to refer the family to an appropriate programme which deals with malnutrition (DOH, 2008 & 2010).

I have found that the HCWs do not seem to be aware that documentation in the RTHC is a legal binding exercise which was used as the conceptual framework of the study.

5.4 Recommendations

The fifth objective of the study which aimed at identifying and describing the training needs of the HCWs in growth monitoring and promotional practices will be incorporated in the recommendations below (paragraphs 5.4.1, 5.4.2 and 5.4.3).

5.4.1 Recommendations relating to nursing education.

There is a need for continued education and updates to nursing education curricular planners to emphasize the teaching and evaluation of growth monitoring and evaluation practices, both in the theoretical and clinical fields to ensure quality care to the under fives.

5.4.2 Recommendations Relating to Nursing practice.

Studies SA, Africa and the world on growth and development monitoring tool or the road to health card have more or less similar findings.

In service training to be accessible to all categories of staff; this was suggested in the articles by Chopra, et al., (1999) Roberfroid et al., (2005); Tarwa and De Villiers, (2007) and Faber,

et al., (2009). Faber et al., (2009) also suggested the training of volunteers and community members for GMP.

Although Charlton et al., (2009) in Lusaka Zambia, believed that HCW training is important for GMP, the authors say that training did little in their study to improve the quality of care provided to the under-fives and that there was no monitoring and evaluation. This was confirmed by Mudau, (2010) whose findings confirmed that the HCWs did not seem to be fully aware of the norms and standards that have been set for utilizing the RTHC; she recommended that monitoring and evaluation of documentation in the RTHC be undertaken by the authorities.

All categories of staff dealing with the under-fives should be in serviced. I also challenge the authorities to devise a check list that can be utilized at random in practice to monitor and evaluate the utilisation of the tool.

5.4.3 Recommendations Relating to Nursing Research

There is a need to establish which RTHC is being used because one of my study's findings has revealed that most of the clinics still use the 2002/2003 RTHC. In this study,85% (n=34) of the respondents indicated that the facilities where they worked were still using the 2000/2002 RTHC which uses the percentiles which are not good indicators to identify deviations of parameters dealing with malnourishment/underweight, stunting, overweight /obesity of infants/children, and, 15% (n=6) stated that they were using the new RTHB version which has the Z scores to measure the nutritional status and the anthropometric measurements of the children and also uses more than one indicator to measure growth and identify problems relating to the child's development. This is despite the fact that KZN's new

RTHB was launched in October 2010 by the Nutrition Directorate in KZN on behalf of the NDOH.

5.5 Study Limitations

Obtaining consent from EThekwini authorities to conduct the study took longer than expected. It started in March/June 2011 with correspondence and face presentations and signing annual leave at my place of employment to ensure permission was granted to conduct the study.

The budget was tight since the clinics were far apart from one another and the researcher found that although clinics are supposed to be a "one stop shop" it was not the case in some clinics where different clients were consulted on different days. Although it seems that the community members are used to that arrangement, the researcher had to go to the next clinic or return the following day so as to get the clients that met the criteria to be in the study.

In one clinic I found a professional nurse checking the RTHC to see if the answers she had provided were corresponding with what was required by the questionnaire.

The 'Hawthorne effect' on the part of the staff was noticeable, for an example, one day I arrived in a clinic at around 11h30, and it was the second clinic for the day for me, so when only established why I was in the clinic the scale was being cleaned and disinfected after weighing almost half of the clients for the day since people come much earlier to queue.

Most HCWs do not wear their distinguishing devices and this posed a challenge during the observations.

5.6 Conclusion

The purpose of the study was to explore the knowledge, attitudes and practices of the HCWs when utilizing the growth monitoring and development tool which is also known as the road to health card and the study incorporated applicable principles of documentation for growth monitoring and promotional practices.

The findings discussed in this chapter demonstrated that the health care workers' knowledge regarding the use of the tool was unacceptable; their responses which were assessing the attitudes, favoured good GMP practices, however, the actual clinical observations' of the study exposed unacceptable standards.

There is a need to ensure that all categories of staff dealing with the under-fives are conversant with growth monitoring and development activities

Recommendations relating to nursing education, nursing practice and research were suggested and finally the limitations presented.

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7. APPENDICES

APPENDIX A: INFORMATION SHEET

Dear participant

I am conducting research about the child growth and development monitoring tool which is also known as the Road to Health Card (RTHC), your participation is important for the improvement of quality care to the infants and children especially the under-fives.

Title: Exploring the practice of the health care workers regarding the use of child growth and development monitoring tool in the eThekwini metropolitan area.

I am a Masters of Nursing degree student at the University of Kwa-Zulu –Natal. As part of my studies, I am required to conduct a research project in the area of interest.

The purpose of this study: To explore the utilization of RTHC by the HCWs during Growth monitoring and promotion practices. Your participation is requested because you meet the criteria of the people to participate in this study. As part of the research process, you will be required to complete the questionnaire that will take about 20- 25 minutes.

Please note that your identity and information will be treated with confidentiality. Please feel free to ask if there is anything that is not clear or if you would like more information.

Please note that:

- You are free to participate and you are free to withdraw at any time without giving a reason.
- There is no monetary benefit for participating in the study
- There will be no risks attached to your participation
- The findings of this study will be made available to you on completion.

Thank you

Researcher : Doreen Senoge

Student number : 208519156

Contact number : 0820951048

Research supervisor: Dr. Z.Z. Nkosi

Contact number : 031- 2602901

Email - nkosizz@ukzn.ac.za

University of KwaZulu-Natal

Durban 4041

APPENDIX B:

INFORMED CONSENT FORM

Title: **Exploring the practice of the health care workers regarding the use of thechild growth and development monitoring tool also known as the road to health card in the eThekwini metropolitan area**

Researcher : Doreen Senoge

Student number: 208519156 Research Supervisor: Dr. Z.Z. Nkosi

Contact number: 0820951048Contact number : 031-2602901

Email 208519156@ukzn.ac.za Email nkosizz@ukzn.ac.za

Declaration

I..... (Full names of the participant) hereby confirm that I understand the contents of the information sheet and the nature of the research project, and I consent to participate in the research project.

I understand that I am at liberty to withdraw from the project at any time should I desire to do so.

_____ Date: ……..

Signature of participant

_____ ----------

Name of Witness Signature

APPENDIX C: SECTION 1

Institution Code	
Participant No.	

DEMOGRAPHIC INFORMATION

1. Please indicate your answer with an X in the corresponding space

1= [ ] less than 20 years old 2= [ ] 20– 39 years 3= [ ] 40 – 49 years

5= [ ] 60 and older 4= [ ] 50 – 59 years

2. Female1= [ ] Male 2= [ ]

3. Qualifications

[ ] 1 = Professional Nurse

[ ] 2=Enrolled nurse

[ ] 3=Enrolled Nursing Auxiliary

[ ] 4=Other

5=Please specify your category ----------

4. How many years have you been practicing in your category…….

5. How many years have you been working in the under-five section?

[ ] 1= less than one year

[ ] 2=2-3 years

[ ] 3=3-5 years

[ ] 4=5 -6 years

[ ] 5=7 years and more

APPENDIX C: Section Two:

Part one: (Knowledge and awareness)

QUESTIONNAIRE:

Please place a cross in the appropriate box; more than one answer box can be ticked/indicated/crossed.

1. Where did you learn about the Road to health Card (RTHC) from?

	Yes	No
Media, Radio/Television	☐	☐
Brochures/posters	☐	☐
Family/Friends	☐	☐
Mentor/colleague	☐	☐
Formal In-service	☐	☐

2. **Who supplies the RTHC**

	Yes	No
Religious leaders	☐	☐
Family members/Friends	☐	☐
The chief of the community	☐	☐
The Home affairs	☐	☐
The department of health	☐	☐

3. Where did you get training to use the RTHC from?

	Yes	No
Mentor/ colleague	☐	☐
Internet	☐	☐
Directives of the nutrition department	☐	☐
Formal In-service	☐	☐

4. **What do you do if a mother /caregiver brings a baby without the RTHC**

	Yes	No
Send her home	☐	☐
Photocopy another card to issue	☐	☐
Sell him/her a new one	☐	☐
Issue another one	☐	☐

5. **Which RTHC document are you currently using?**

	Yes	No
The current 2000/2002 version	☐	☐
The new road to health book	☐	☐
One supplied from private institutions	☐	☐
One from another province in S.A	☐	☐
One from other African states	☐	☐

Name of that country ----------

6. **What information should be filled in the RTHC on the front page of the 2000/20002 version?**

	Yes	No
Centiles	☐	☐
Vitamin A supplementation	☐	☐
Milestones	☐	☐
Batch numbers	☐	☐
Demographic information	☐	☐

7. What information should be written on the health indicator page after a two weeks old infant has been consulted?

	Yes	No
Demographic details	☐	☐
Visual screening	☐	☐
Voice Test	☐	☐
Hearing screening	☐	☐
Birth weight	☐	☐

8. **What information should be recorded after a six weeks old infant has had a consultation?**

	Yes	No
E Chart screening	☐	☐
Pencil test	☐	☐
Hearing screening	☐	☐
Voice Test	☐	☐
Immunizations details	☐	☐

9. **Which aspects are considered "In need of special care "?**

	Yes	No
Missed immunization dates	☐	☐
The number of children in the family	☐	☐
Obstetrical history of the mother	☐	☐
Single parenthood	☐	☐

10. **How often should an infant under one year be weighed?**

	Yes	No
During immunization visits only	☐	☐
When the mother requests weighing	☐	☐
Monthly	☐	☐
Every three months	☐	☐

11. **How would you ensure that a weighing scale functions accurately?**

	Yes	No
Transport weighing scale with care	☐	☐
Regular service of scale by the government	☐	☐
Annual service by the supplier	☐	☐
Store scales where they cannot be not seen	☐	☐
All of the above	☐	☐

12. **How often do you calibrate and balance the weighing scale?**

	Yes	no
Annually	☐	☐
Monthly	☐	☐
At least daily	☐	☐
At the most weekly	☐	☐
All of the above	☐	☐

13. What do you do when the growth curve is faltering?

	Yes	No
Report to the mother / caregiver	☐	☐
Report to the authorities	☐	☐
Record it in the RTHC	☐	☐
Give health education	☐	☐

14. How can infection control be ensured during weighing?

	Yes	No
Wash the scale with soap and water daily	☐	☐
Wash any spillages with soap and water	☐	☐
Disinfect with Biocide D solution	☐	☐
Clean hands in between each baby with Hibitane 70%	☐	☐
Use separate hand paper towel or linen saver in between Children	☐	☐

15. Recumbent height should be carried out for this age group:

	Yes	No
One month	☐	☐
Six months	☐	☐
Under one year	☐	☐
Less than 24 months	☐	☐
All of the above	☐	☐

16The head circumference is measured at the following ages

	Yes	No
Birth	☐	☐
Six weeks	☐	☐
Six months	☐	☐
One year	☐	☐
All of the above	☐	☐

17. The infant should be able to see at:

	Yes	No
Birth	☐	☐
At two weeks	☐	☐
At three weeks	☐	☐
At six weeks	☐	☐
All of the above	☐	☐

18. The child should sit with support at this age

	Yes	No
Two weeks	☐	☐
Two months	☐	☐
Three Months	☐	☐
Six months	☐	☐
All of the above	☐	☐

19. Which of the following questions concerning vision should be asked for at a ten weeks old infant's visit?

	Yes	No
Can the child focus on far objects?	☐	☐
Can I child look at small objects and pictures?	☐	☐
Can a child see small objects directly at six meters?	☐	☐
Can a child recognize familiar faces?	☐	☐
None of the above	☐	☐

20. When should solids be introduced?

	Yes	No
At One month	☐	☐
At Three months	☐	☐
At Four months	☐	☐
At Six months	☐	☐

21 When should the infant/child get deworming medication?

	Yes	no
Once a month	☐	☐
At every immunization visit	☐	☐
At three months	☐	☐
At six months	☐	☐
At twelve months	☐	☐

22. Vitamin A Supplementation should be commenced

	Yes	No
After birth	☐	☐
At two weeks	☐	☐
At six weeks	☐	☐
At six months	☐	☐

23. PCR should be done

	Yes	No
At birth	☐	☐
At two weeks	☐	☐
At six weeks	☐	☐
At six months	☐	☐
All of the above	☐	☐

Section Two: **Part two:**

Likert rating scale is as follows:

SD = 1=Strongly Disagree

D =2= Disagree

U = 3=Undecided/ neutral

A = 4=Agree

SA = 5=strongly agree

Category : Attitudes		**Rating**				
	Statement	SD	D	U	A	SA
24	I enjoy using the RTHC					
25	I need training on the use of the RTHC					
26	I think there are problems utilizing the RTHC					
27	I feel comfortable using the RTHC					
28	I know exactly what is expected regarding the RTHC					
29	Health care workers like to use the RTHC					
30	Other Staff members do not know what to record in the RTHC					
31	I think everybody records in the RTHC accordingly					
32	I always enquire about hospitalizations/illness					
33	Management supports us with the use of the RTHC					
34	Recording in the RTHC wastes time					

Thank You for participating

Section Three

Institution Code	

Observational Checklist;

no	

	Yes	**No**	**other/comments**
35. Did the HCW ask for the RTHC?	1= [ ]	2= [ ]	[ ]
36. Did the mother/caregiver bring the RTHC?	1= [ ]	2= [ ]	[ ]
37. Was last visit's consultation checked?	1= [ ]	2= [ ]	[ ]
38. Were the personal details confirmed?	1= [ ]	2= [ ]	[ ]
39. Ante Natal history discussed?	1= [ ]	2= [ ]	[ ]
40. Has Social history been discussed?	1= [ ]	2= [ ]	[ ]
41. Appropriate screening for age done?	1= [ ]	2= [ ]	[ ]
42. Was the Need for Special care/risk identified?	1= [ ]	2= [ ]	[ ]
43. Was action taken for the above?	1= [ ]	2= [ ]	[ ]
44. Immunization status checked?	1= [ ]	2= [ ]	[ ]
45. Vitamin a supplementation checked?	1= [ ]	2= [ ]	[ ]
46. Deworming, was it discussed?	1= [ ]	2= [ ]	[ ]
47. Weighing, was it done?	1= [ ]	2= [ ]	[ ]
48. Was the weight correctly plotted?	1= [ ]	2= [ ]	[ ]
49. Was the weight correctly interpreted?	1= [ ]	2= [ ]	[ ]

50. Was infection control practiced? 1= [ ]2= [ ] [ ]

51. Was the growth curve discussed with

Mother/caregiver/ & managed? 1= [ ]2= [ ] [ ]

52. Was length taken? 1= [ ]2= [ ] [ ]

53. Was it recorded? 1= [ ]2= [ ] [ ]

54. Was feeding practice discussed? 1= [ ]2= [ ] [ ]

55. Age appropriate developmental milestones asked? 1= [ ]2= [ ] [ ]

56. Was the HIV status discussed? 1= [ ]2= [ ] [ ]

57. If mother positive, was cotrimoxazole prescribed? 1= [ ]2= [ ] [ ]

58. If positive, was PMTCT or PCR discussed? 1= [ ]2= [ ] [ ]

59. Age appropriate developmental milestones assessed? 1= [ ]2= [ ] [ ]

60. Was the mother/ caregiver advised for next stage? 1= [ ]2= [ ] [ ]

61. Was anything else done during this consultation? 1= [ ]2= [ ] [ ]

……...…….

……

……..

62. Any other :

specify……

……

……

APPENDIX D: ETHICAL CLEARANCE APPROVAL LETTER

UNIVERSITY OF
KWAZULU-NATAL

University of KwaZulu-Natal
Research Office
Govan Mbeki Centre
Westville Campus
University Road
Chiltern Hills
Westville
3629
South Africa
Tel No: +27 31 260 3587
Fax No: +27 31 260 3584
E-mail : naidoos4@ukzn.ac.za

07 December 2010

Mrs M D Senoge
School of Nursing
HOWARD COLLEGE CAMPUS

Dear Mrs Senoge

PROTOCOL: Exploring the practice of health care workers regarding the use of the road to health card for growth monitoring and promotion in Ethekwini metropolitan area
ETHICAL APPROVAL NUMBER: HSS/1436/2010 M: Faculty of Health Sciences

In response to your application dated 03 December 2010, Student Number: **208519156** the Humanities & Social Sciences Ethics Committee has considered the abovementioned application and the protocol has been given **FULL APPROVAL.**

PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Professor Steve Collings (Chair)
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

SC/sn

cc: Dr. Z Nkosi (Supervisor)
cc: Mr. S Reddy

APPENDIX E: LETTER REQUESTING PERMISSION TO CONDUCT THE STUDY

5 Pfanner Road

Marianhill Park

Pinetown

3610

28 March 2011

Dr. Xhagisa

Ethekwini Municipality

Dear Ma'am

Re: Permission to conduct a research project in the clinics of Ethekwini metropolitan area

I am a postgraduate student at the University of KwaZulu -Natal
and am studying for a Master's degree in Nursing (Community Health Nursing Science),my dissertation is being undertaken as partial fulfilment of the requirements for this degree.
The title of the research project is:

Exploring the practice of Health Care Workers regarding the use of the road to health card for growth monitoring and promotion in Ethekwini metropolitan area.

Attached is the ethical clearance that has been obtained from the Humanities and Social Sciences Research Ethics Committee and the proposal and the list of clinics.

The purpose of the study is to create awareness about the importance of the Road to health Card, explore the utilization and documentation HCWs during GPM practices in seventeen clinics of EThekwini metropolitan area through questionnaires and observations that will be conducted by me.

The study aims to.

No costs will be incurred by the participating clinics or the health care workers, and the participating personnel would be asked to participate at a time that is convenient to both themselves and their employing body. Participation is voluntary and participants may withdraw from the study at any time should they wish to do so.
The anticipated benefit would be to contribute in achieving the forth Millennium Development Goal.

Your's faithfully

Doreen Senoge

031 327 2062;0820951048

APPENDIX F: LETTER FROM ETHEKWINI AUTHORITIES GRANTING PERMISSION TO CONDUCT THE STUDY

ETHEKWINI MUNICIPALITY

HEALTH & SOCIAL SERVICES
Health Unit

9 Archie Gumede Place
Durban, 4001
P O Box 2443, Durban, 4000
Tel: 031 311 1111, Fax: 031 311 3530
www.durban.gov.za

Deputy Head: Clinical Support Services

Dr N. Ngomane

Telephone: 031-3113539

06 June 2011

Mrs Doreen Senoge

Master Student UKZN

Dear Mrs Senoge

RE: UTILISATION OF ROAD TO HEALTH CARD BY HEALTHCARE WORKERS FOR GROWTH MONITORING AND PROMOTION

Approval for your request to utilise clinic data and observe practice in growth monitoring is granted.

Please contact Mrs Theresa Coleman (031-3113688) to arrange appointments for your clinic visits.

Yours faithfully,

Dr N. Ngomane

Deputy Head: Clinical Support Services

APPENDIX G: LETTER FROM ETHEKWININ INFORMING THE CLINCS ABOUT PERMISSION GRANTED FORTHE INTENDED STUDY

Senoge Doreen

From: Theresa Coleman [colemant@durban.gov.za]
Sent: 06 June 2011 03:04 PM
To: Senoge Doreen
Subject: Re:

Hi Doreen
Have e-mailed the nursing managers of the clinics listed, Umhlanga Rocks clinic is now operating out of a mobile so is probably not suitable, ? choose an alternative
Tks

Kind Regards
Theresa Coleman
3113688

Please read this confidentiality disclaimer:

http://www.durban.gov.za/durban/e_colophon/edisclaimer

>>> "Senoge Doreen" <Doreen.Senoge@kznhealth.gov.za> 2011/06/06 01:48 PM >>>
Afternoon colleagues

Kindly inform the contact persons for the attached clinics that I would like to collect the data between the 13th to the 17 of June 2011 as part of my course work requirements.

Thanking you in advance.

2011/06/28

APPENDIX H: LETTER TO ETHEKWINI INFORMING CLINICS ABOUT INTENTION FOR FURTHER DATA COLLECTION

Senoge Doreen

From: Elaine Davies [DaviesE@durban.gov.za]
Sent: 22 August 2011 09:09 AM
To: Senoge Doreen
Subject: Re: clinic ongoing observations

Thanks ,thats fine

Have a good day!

Elaine Davies
311 3629

Please read this confidentiality disclaimer:

http://www.durban.gov.za/durban/e_colophon/edisclaimer

>>> "Senoge Doreen" <Doreen.Senoge@kznhealth.gov.za> 2011/08/22 07:49 AM >>>
Dear colleagues, good morning.

Please note that I will be finishing off the observations where the practices of the health care workers for child growth and development will be observed without any interruption from the researcher as from Friday,26th August,2011 and on some other days till the end of August, it is important that we **do not** let the staff know that I will be coming this time.

Doreen Senoge
Community Health Nursing Science Lecturer
Addington Nursing Campus
031 327 2062
0820951048
Fax No:0867251984

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

2011/08/22