FACTORS INFLUENCING THE UPTAKE OF THE REVISED EXPANDED IMMUNISATION PROGRAMME AT UMLAZI TOWNSHIP KWAZULU-NATAL

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Declaration

This is to certify that the work is entirely my own and not of any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Durban University of Technology or to any other institution for assessment or for any other purpose.

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Abstract

Brief Background

The Expanded Programme on Immunisation (EPI) is one of the most powerful and cost-effective public health programmes to improve child survival. In South Africa the programme remained fragmented because of the system of apartheid until 1995 when the national EPI was formed through the unification of all immunisation services in the country. Since then there have been significant advances in immunisation service delivery in South Africa. Amongst the revisions that were made in 2009 was the change of the EPI schedule.

Aim of the study

The aim of the study was to investigate the factors that influence the uptake of the revised EPI for children between the ages of 6 to 12 years at Umlazi Township, KwaZulu-Natal in order to improve immunisation coverage.

Methodology

A descriptive quantitative design was used to conduct the study. A total of ten primary health care clinics were included in the study. Data was collected from child caregivers and health care workers using self-directed questionnaires.

Results

It was worth noting that although the results of the study revealed that the EPI coverage for children between the ages 6 to 12 years remained low in Umlazi Township, however, the programme was well-implemented. Several factors that influenced the uptake of the immunisations were identified and these factors could be used to strengthen the EPI programme in Umlazi. Factors that had a negative influence on the uptake of immunisations were also identified and these factors could be used to develop strategies address the challenges.

Dedication

This study is dedicated to all those children that are disadvantaged, especially in remote rural areas where clinics are miles away and children are hardly immunised and we lose them through vaccine-preventable diseases, and to the Almighty, the Giver of Life.

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Glossary of Terms

Adoptive parents: Adults who provide children a permanent home through a court process, once the court process is final the adoptive parents become the child's legal parents. They are then responsible for the child in all ways: legally, financially, emotionally physically and spiritually as if the child was born to them.

Biological parents: A parent who has conceived rather than adopted a child and whose genes are therefore transmitted to the child.

Child Caregiver: Any person who is a legal parent/grandparent of a child. This includes biological, legal, foster and adoptive parents/grandparents.

Foster parent: A mother or a father who is bringing up someone else's child as if he or she was their own.

Grandparent: A grandfather or grandmother.

Health care worker: Professional nurses and enrolled nurses.

Immunisation: Process of inducing immunity to an infectious organism or agent in an individual through vaccination (Freshwater & Maslin-Prothero 2005: 296).

Immunisation coverage rate: The proportion of a targeted population that have received the recommended doses of vaccines to protect them against contracting certain serious illnesses (Bos & Batson 2000: 7).

Legal guardian: A person who is legally in charge of a child whose parents cannot look after him or her.

Nanny: A nanny is employed by a family in either a live-in or live-out basis. The function of a nanny is essentially to be responsible for all the care of the children in the home in a largely unsupervised setting. Duties are typically focused on childcare and any household chores or tasks related to the children.

Parent: A father or a mother who gives birth to or nurtures and raises a child.

Sibling: A brother or a sister.

Vaccine: A mixture that is given to help stimulate the body's own immune system to produce antibodies to fight a certain disease. The mixture contains weakened killed microbes (bacteria or viruses).

Well baby clinic: A clinic that is providing health care services to babies that are not sick. The clinic provides preventive and promotive health care services such as immunisation, weight and growth monitoring and health information to mothers regarding baby care.

List of Acronyms

Acronym	Full Name
BCG	Bacilles Calmette Guerin
DTap-IPV//Hib	Diphtheria, Tetanus, acellular Pertussis, Inactivated Polio Vaccine and Haemophilus influenza type b Combined
EPI:	Expanded Programme on Immunisation
GAVI	Global Alliance for Vaccines and Immunisation
GIVS	Global Immunisation Vision and Strategy
HBV	Hepatitis B Vaccine
KZN	KwaZulu-Natal
KZNPA	KwaZulu-Natal Provincial Administration
MOF	Ministry of Finance
NAGI	National Advisory Group on Immunisation
NITAG	National Immunisation Technical Advisory Group
OPV	Oral Polio Vaccine
PCV	Pneumococcal Conjugate Vaccine
PHC	Primary Health Care
REC	Reach Every Child
RED	Reach Every District
RV	Rotavirus Vaccine
Td	Tetanus and reduced strength of diphtheria Vaccine
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
WHA	World Health Assembly
WHO	World Health Organisation

CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

Over three decades ago the mother of all public health declarations, the 1978 WHO and UNICEF sponsored Alma Ata Conference set the goal of achieving 'Health for All by the year 2000' (WHO 1981: 5). Much has been achieved since then with vaccines playing a major role in controlling infectious diseases throughout the world. However, much still remains to be achieved. Measles is still responsible for about 150,000 child deaths every year. Around 430 children die every day. Vaccination is safe, effective and inexpensive and costs only a dollar a child (World Health Organisation 2014: 2). Several global health initiatives have been established to promote immunisation within the context of the other primary health care interventions. The Global Immunisation Vision and Strategy (GIVS) was established in 2005 with the specific aim of reducing vaccine preventable diseases, mortality and morbidity by 2/3 by 2015 as compared to 2000 (WHO 2005: 1). The Global Alliance for Vaccines and Immunisation (GAVI) was established in 2000 to provide financial support for immunisation to the poorest countries of the world (WHO 2000: 3). Unfortunately, the toll from infectious diseases, much of which is vaccine preventable, remains depressingly high. It has been estimated that in 2008 some 68% (5.970 million) of the 8.795 million deaths worldwide in children less than five years of age was due to infectious diseases, with Saharan Africa bearing a major portion of this toll. Of concern is that inadequate access to vaccines is responsible for over 2 million deaths annually in low and middle income countries. It is clear that much ground needs to be made up, in particular in the immunisation field, in order to meet Millennium Development Goal (MDG) 4 to reduce child mortality rate by 2/3 by 2015 from the 1990 figure (Schoub *et al*. 2012: 1).

The state of the world's vaccines and immunisation report of 2009 attributes the slow progress in introduction of under-utilised and new vaccines to amongst other things the underlying health system weaknesses in developing countries. GAVI has greatly supported delivery of vaccines in 13 low income countries, out of 19 countries in the East and Southern African countries of the AFRO region. Botswana, Lesotho, Mauritius and Namibia, classified as low middle income states, and South Africa being an upper middle income country, are the five countries in the sub-region that are ineligible for GAVI support to procure and deliver vaccines (Chauke-Moagi & Mumba 2012: 2).

Sub-Saharan Africa accounts for 11% of the total population of the world, and is accountable for half of all maternal and child deaths in the world. In addition, 31 countries with the highest mortality rate, except Afghanistan are in Sub-Saharan Africa. It is important to note that while significant strides have been made towards preventing child deaths, there is still a lot that needs to be done. The United Nations MDG monitor reports that a child born in a developing country is 13 times more likely to die before reaching the age of five compared to a child born in an industrialized country. Vaccine preventable diseases are unfortunately still responsible for 25% of child deaths. Thus, vaccines have a significant contribution to play in achieving MDG 4 (Chauke-Moagi & Mumba 2012: 2).

The Expanded Programme on Immunisation (EPI) was established in 1974 by the World Health Organisation (WHO) on request from the World Health Assembly (WHA) in order to provide a set of life-saving vaccines to the children of the world (Department of Health 2009: 9). In 2008, 106 million children were immunised against the standard six vaccine-preventable infectious diseases – TB, diphtheria, whooping cough, tetanus, polio and measles, and South African was no exception. The hepatitis B vaccine was added to the South African EPI schedule in 1995, in line with the recommendations by the WHA and WHO. By 2008, it was shown that the great majority of the infectious disease burden in the world lay outside of these diseases (Schoub *et al*. 2012: 1).

The EPI is a powerful and cost-effective public health programmes for improvement of child survival and was introduced in South Africa in 1974 (Wiysonge *et al*. 2012: 6-7). The EPI was introduced in response to pandemic diseases like polio, measles, chicken pox, whooping cough, diphtheria and tetanus (WHO & United Nations International Children's Emergency Fund [UNICEF] 2003: 125). These immunisations protect children from contracting diseases thus reducing the morbidity and mortality rate. The GAVI was established in 1999 with the sole purpose of improving child care in the poorest countries by extending the reach of the EPI to these communities (Hajjeh 2011: 2). This helped to renew interest and maintain the importance of immunisation in combating the world's burden of infectious diseases.

According to Ngcobo (2008: 12), EPI was strengthened further by the WHO, UNICEF and United States Agency for International Development (USAID) by introducing the Reach Every District (RED) and Reach Every Child (REC) strategy, a strategy to reach every district and reach every child especially in the hard to reach areas due to geographical challenges. The programme remained fragmented because of the system of apartheid until 1995 when the national EPI was formed through the unification of all immunisation services in the country (Ngcobo 2008: 9). Since then, there have been significant advances in immunisation service delivery in South Africa. Immunisations have been added, improved or removed or the ages at which the immunisations are given to children have been adjusted.

EPI uses various types of immunisations including live, attenuated, inactivated and conjugate. These are given to children in small doses at structured intervals (Atkinson *et al*. 2006: 60). The success of the EPI is measured not just by the number of children receiving the immunisations, but by the eradication of conditions, elimination of infections and reduction of outbreaks (WHO & UNICEF 2003: 28). The structure of the programme, removal and or addition of immunisations differs from country to country depending on the need and or success of the programme in

each country. South Africa has a functional decision making process for the introduction of new vaccines with an established National Immunisation Technical Advisory Group (NITAG), referred to as National Advisory Group on Immunisation (NAGI). South Africa has played a leadership role in the African continent with introduction of new vaccines, dating back to 1995 with the introduction of hepatitis B, followed by Haemophilus influenza type b in 1999 and recently the national roll out of the pneumococcal conjugate and rotavirus vaccines in 2009 (Ngcobo 2012: 13). NAGI has the responsibility to deliberate on key policy issues as part of the process for policy decision making on the introduction of new vaccines. In developing recommendations, NAGI considers: disease burden, cost effectiveness and the impact on EPI. Although guidance and recommendations from the WHO are considered, the decision to introduce a new vaccine in South Africa is based on local data. NAGI recommendations are presented to the National Department of Health.

The National Department of Health pursues the matter further through the involvement of provinces. When an agreement has been reached to accept the NAGI recommendations, the National Department of Health seeks funding from the Ministry of Finance (MOF). Once funds are available, the new vaccines are implemented by the immunisation programme. Although there is an established functional system for decision making in South Africa, some areas need to be addressed. A system should be developed to allow the National Department of Health, NAGI and the MOF to engage in the deliberations on financial and economic impact of new vaccines. It is further recommended that a committee be established that will assess the programmatic issues to weigh the potential benefits of a new vaccine. Furthermore, political commitment should support the immunisation programme and strengthen it so that it can make an impact in the achievement of the MDG 4 of reducing child mortality (Ngcobo & Cameron 2012: 1). The latest revision of the EPI in South Africa was made in 2009 (Department of Health 2010: 2).

EPI aims to reach and protect every child with safe and high quality vaccines (Ngcobo 2008: 10). The strategy was first introduced by the WHO in 1974 with a fully established standardised vaccination schedule established ten years later in 1984 (Department of Health 2009: 9).

EPI is revised from time to time depending on the need and or the successes of the programme where either some vaccines are added, improved or removed. The timing, frequency and types of revision differ from country to country based on the needs. This is influenced by the prevalence and incidences of infectious and communicable diseases. Sometimes the ages at which the immunisations are given are also adjusted. This is influenced by the age at which the children commonly contract the diseases. The latest revision of the EPI in South Africa was made in 2009 (Department of Health 2010a: 2). The revision included the following:

- Addition of new immunisations such as Pneumococcal Conjugate Vaccine (PVC), Rotavirus (RV), Pentaxim (DTap-Ipv//Hib).
- Replacement of certain immunisations such as oral polio immunisation (OPV) which was replaced by injectable polio immunisation (IPV) and diphtheria and tetanus (DT) which was replaced by tetanus and diphtheria in reduced strengths (Td) (Department of Health 2010: 6).
- The adaptation of the ages at which the child should receive the immunisations. The immunisation age for children was changed from five years to twelve years and the set of immunisation previously given at five years were moved to six years.

From the time these changes were made, the immunisation coverage for eThekwini District dropped from 90% to 64% in 2011 (Africa Check 2013: 1). The researcher in her day to day encounter with data information from one of the Umlazi PHC clinic where she has been working as an operational manager has also observed that less children receive immunisations at 6 to 12 years of age compared to the other age groups. The data information system (DIHS) for eThekwini district constantly

reflects a remarkable low immunisation coverage for children aged 6 to12 years compared to the other age groups (Appendix: 11). This indicated that the problem was not only found in one PHC clinic but throughout eThekwini district.

The two factors used to schedule vaccines include the age when the body's immune system will work the best and the need to provide protection to infants and children at the earliest possible age (American Academy of Paediatrics 2008:1). The two ages (6years and 12 years) are aligned to when the child begins school and to when the child move from primary to high school. Six years is the age when the child start school and becomes exposed to many other children who could possibly have the infection to infect the child or could be infected by him. Twelve years immunisation is given as a booster to ensure protection for the child before the child moves the high school.

1.2 PROBLEM STATEMENT

The number of children receiving the immunisations is used as the short term indicator for the success of the programme. The two most important indicators used in the administrative method to measure the effectiveness of the immunisation programme are 'immunisation coverage' and 'immunisation dropout rate' (Ngomane 2010: 1). The South African National Department of Health has set an EPI target of 90% for the immunisation coverage and less than 5% for the dropout rate. Prior to 2010, South Africa has been able to achieve the target for the immunisation coverage, but, according to the WHO, immunisation coverage dropped to 64% in 2011 (Africa Check 2013: 1).

South Africa is in the process of introducing the National Health Insurance (NHI). NHI is an approach to health system financing that is structured to ensure universal access to a defined, comprehensive package of health services for all citizens, irrespective of their social, economic and /or any other consideration that affects their status (Republic of South Africa

2011: 57). NHI is aimed at providing universal coverage in order to ensure that everyone has access to quality health services. One of the key interventions that will be addressed by NHI is the provision of a comprehensive package of care underpinned by a re-engineered PHC to focus mainly on health promotion, preventative care and rehabilitative services. The strengthening of the South African health system is based on primary health care (PHC) approach. PHC re-engineering focuses mainly on community outreach which will ensure health promotion, preventative care whilst ensuring that qualitative and rehabilitative services are rendered (Department of Health 2011: 3). PHC re-engineering contains three streams namely, a) a ward based PHC outreach team for each electoral ward, b) strengthening school health services, and c) district based clinical specialist teams with an initial focus on improving maternal and child health. Working with the Departments of Basic Education and Social Development, the Department of Health has revised the School Health Policy. The focus is on schools in quintiles 1 and 2 (the poorest schools) and also prioritise a selected range of services, for example screening of grades R and 1 and ensuring that primary school children are fully immunised (Department of Health 2011: 8).

A number of studies have revealed that despite the advances in the EPI in South Africa, the programme continues to face a number of challenges (Siegfried, Wiysonge & Pienaar 2010; Zipursky, Wiysonge & Hussey 2010; Schoub 2011). The findings of these studies revealed that both immunisation coverage and community knowledge about immunisation is low. In the current study the researcher investigated the factors that influence the uptake of the revised EPI for the children between the ages of 6 to 12 years at Umlazi Township, KwaZulu-Natal (KZN).

1.3 AIM OF THE STUDY

The aim of the study was to investigate the factors that influence the uptake of the revised EPI for children between the ages of 6 to 12 years at Umlazi Township.

1.4 OBJECTIVES OF THE STUDY

The objectives of the study were to:

- Assess how the EPI was implemented;
- Identify and describe the factors that influenced the uptake of the revised EPI for children between the ages of 6 to 12 years.

1.5 RESEARCH QUESTIONS

The research questions that guided the study were:

- Is EPI implemented according to the EPI Guidelines at the clinics?
- What factors influence the uptake of the revised EPI for children between the ages 6 to 12 years?

1.6 SIGNIFICANCE OF THE STUDY

The study will benefit the community and the Department of Health as the recommendations will be submitted to the Department for implementation so as to assist in reducing disability, morbidity and mortality due to vaccine preventable diseases. The importance of vaccination in controlling disease cannot be underestimated, according to the National Disease Surveillance Centre (NDSC). In order to effectively control these preventable diseases, it is recommended that at least 95% of children complete childhood the immunisation schedule, thereby decreasing the number of susceptible children in the population and ensuring that outbreaks of these diseases are prevented. As long as there is even a small reservoir of a particular infection, a fall in the rate of immunisation will increase the risk of the disease making a comeback. It is therefore

important that health care workers continue to encourage parents to vaccinate their children.

1.7 THEORETICAL FRAMEWORK

A theoretical framework is a frame of reference that is a basis for observations, definitions of concepts, research designs, interpretations and generalizations. (LoBiondo-Wood & Haber, 2013: 141). Theoretical frameworks provide the organization of the study. It guides the researcher in the interpretation of results which means it guides the entire research process. Theories are used to describe, predict, explain and control phenomena. The health promotion model by Pender was used to guide the study. The theory was chosen based on the understanding that health promotion as any activity that help people to adopt or maintain lifestyles that support a state of optimal health or balance of physical, emotional, social, spiritual and intellectual health is important for uptake of EPI (Maville and Huerta 2008:42).

Pender developed the Health Promotion Model that is proposed as a holistic predictive model of health-promoting behaviour for use in research and practice. The Health Promotion Model has given health care a new direction. According to Pender, Health Promotion and Disease Prevention should be the primary focus in the healthcare. When health promotion and prevention fail to prevent problems, care in illness becomes the next priority (Pender 1996: 7). The purpose of immunisation is to prevent diseases, however, the uptake of immunisation is dependent and influenced by health promotion. The health care workers have a duty to create awareness to the community about immunisation and the importance thereof. The caregivers have a responsibility to ensure that their children are protected from illnesses and immunisation is one of the strategies that they can adopt. Maville and Huerta (2008:3), state that related concepts, including health education, health protection and disease prevention are part of the broader concept of health promotion.

All of these three major categories are important for health promotion and protection and will be considered during the study.

1.8 OUTLINE OF THE DISSERTATION

Chapter 1: Introduction and background to the study.
Chapter 2: Literature review.
Chapter 3: Research methodology.
Chapter 4: Presentation of the results.
Chapter 5: Discussion of results, conclusion, limitations of the study and recommendations.

1.9 CONCLUSION

This chapter presented the background of the study and the purpose and aims of the study. The chapter highlighted the problem statement, objectives, purpose as well as its significance. The next chapter will focus on literature reviewed so as to gain more insight into the study as well as an understanding to support the relevance of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will present the thoughts, views, assumptions and investigations made by various authors and researchers on EPI. Literature search was conducted over a period of 12 months, using different scholarly search engines such as PubMed, Cinahl, Summons and Google scholar. The search strategy included using obvious key words related to EPI, PHC, vaccines or related terms. The World Wide Web including search engines such as Google Scholar was also searched for similar key words, producing a number of further papers and resources. The reference lists of key articles were scrutinized and this identified other relevant articles. In order to provide a complete an overview of available knowledge and resources, peer reviewed and non-peer reviewed journals; materials on the World Wide Web were used.

2.2 THE ORIGINS OF EPI: GLOBAL TRENDS

Keja *et al.* (1990) reported that when the EPI was initiated in 1974, fewer than 5% of children in developing countries were receiving a third dose of DPT and poliomyelitis immunisations in their first year of life. These coverage levels have now surpassed 50% in developing countries, and millions of cases of the target disease have been prevented. Over 700,000 measles deaths were prevented by immunisation in developing countries in 1987, and an increasing number of neonatal tetanus deaths are now being prevented by maternal immunisation and improved childbirth conditions. Poliomyelitis immunisation efforts have been so successful that the Pan American Health Organization is leading a drive to eradicate poliomyelitis from the Americas by 1990. The Global Polio Eradication Initiative (GPEI) has driven a 99% reduction in polio cases

during the last two decades, from nearly 350 000 cases in 1988 to fewer than1, and 500 in 2010.

The GIVS was established in 2005 with the specific aim of reducing vaccine preventable diseases mortality and morbidity by 2/3 by 2015 as compared to 2000 (WHO 2005: 1). GAVI was established in 2000 to provide financial support for immunisation to the poorest countries of the world (WHO 200: 3). Unfortunately, the toll from infectious diseases, much of which is vaccine preventable, remains depressingly high. It has been estimated that in 2008 some 68% (5 970 million) of the 8 795 million deaths worldwide in children less than 5 years of age was due to infectious diseases, with Saharan Africa bearing a major portion of this toll. Of concern is that inadequate access to vaccines is responsible for over 2 million deaths annually in low and middle income countries. It is clear that much ground needs to be made up, in particular in the immunisation field, in order to meet MDG 4 to reduce child mortality rate by 2/3 by 2015 from the 1990 figure (Schoub *et al*. 2012: 1).

The state of the world's vaccines and immunisation report of 2009 attributes the slow progress in introduction of under-utilised and new vaccines to amongst others the underlying health system weaknesses in developing countries. GAVI has greatly supported delivery of vaccines in 13 low income countries, out of nineteen countries in the East and Southern African countries of the AFRO region. Botswana, Lesotho, Mauritius and Namibia, classified as low middle income states, and South Africa being an upper middle income country, are the five countries in the sub-region that are ineligible for GAVI support to procure and deliver vaccines (Chauke-Moagi & Mumba 2012: 2).

Sub-Saharan Africa accounts for 11% of the total population of the world, and is accountable for half of all maternal and child deaths in the world .In addition, but one of the thirty-one countries with the highest mortality rate, except Afghanistan are in Sub-Saharan Africa. It is important to note that while significant strides have been made towards child deaths, there is still a lot that needs to be done. The United Nations MDG monitor reports that

a child born in a developing country is 13 times more likely to die before reaching the age of five compared to a child born in an industrialized country. Vaccine preventable diseases are unfortunately still responsible for 25% of child deaths. Thus, vaccines have a significant contribution to play in achieving MDG 4 (Chauke-Moagi & Mumba 2012: 2).

One of the world's children, about 22.4 million infants are not immunised against these killer diseases. More than 70 percent of these children live in ten countries. An estimated 1.5 million children died in 2011 from vaccine preventable diseases. The deadlines for eliminating maternal and neonatal tetanus and certification of global polio eradication by 2010 have not been met. UNICEF works with government and other partners including the WHO, the World Bank, the Bill and Melinda Gates Foundation, the vaccine industry, civil society groups, and research and technical health institutes to make full immunisation a part of every child's life. Priority is given to about 40 nations where routine immunisation coverage is lowest, and to the districts within those countries where children are least protected (WHO-UNICEF 2012: 3).

EPI continues to perform well throughout the Western Pacific Region, building on past achievements while meeting new challenges (WHO 2012: 9). The programme's effectiveness can be seen in the broad coverage for diphtheria, tetanus and pertussis (DTP) in the region, where more than 80% of children in 88% of all districts received three doses of the vaccine within a year of birth. In the Philippines, the WHO is supporting a successful new approach, RED, to deliver immunisation services to the hard to reach urban poor (Zhang 1995: 7). RED has improved routine immunisation coverage by focussing on district by district planning. It has re-established outreach services, increased community involvement and efficiently managed resources.

Despite these successes, fresh challenges remain in a number of countries and areas. In 2004, technical assistance for district-level micro-planning was provided to some countries still facing performance

problems – Cambodia, the Lao People's Democratic Republic and Viet Nam (Nareth 1997: 4). There were 6529 acute flaccid paralysis (AFP) cases reported in the Region in 2004, resulting in annualised non-polio AFP rate of 1.61% per 100 000 children under 15 years of age. AFP surveillance systems function reasonably well in all countries and picked up cases of circulating vaccine-derived poliovirus (cVDPV) in Guizhou Province, China, in 2004 and vaccine-deprived poliovirus in the Lao People's Democratic Republic in 2004-2005. Low immunisation coverage in these areas was responsible for the emergence of circulating vaccine-deprived poliovirus (cVDPV). It also poses a threat for the re-establishment of transmission if wild poliovirus is imported.

Measles viral infection continues to be one of the leading causes of vaccine- preventable morbidity and mortality in children in the Region. Cambodia completed a national measles vaccination campaign between 2000 and 2004, targeting all children 9 months to 14 years. It resulted in a significant reduction in cases. In the region; approximately 4 million children born every year do not receive hepatitis B immunisations. Australia, Japan, Macao, (in China), New Zealand, Singapore and five Pacific Island countries and areas (American Samoa, Fiji, French Polynesia, the Federated States of Micronesia, and Wallis and Futuna) have succeeded in reducing seroprevalence to less than 1% in 5 year old children born after the introduction of hepatitis B immunisation, the goal for the regional programme. EPI efforts have expanded in scope in many countries and areas with the introduction of new vaccines such as Haemophilus influenza type B (Hib). Mongolla and Tonga introduced a pentavalent vaccine containing Hib in the half of 2005 and Tonga intends to do so. The region is preparing to introduce other vaccines such as Rotavirus and pneumococcus vaccines, expected to be available in the next few years after the completion of disease burden and cost effectiveness studies (WHO-UNICEF 2012: 3).

The Indian state of Andhra Pradesh accounted for 50% diphtheria and 3% tetanus cases reported globally during 2005. During 2003-2006, there

was a rising trend of diphtheria in Hyderabad, the state capital, whereas there was no major change in the trend of tetanus cases. Primary vaccination coverage was <80% in four of the seven circles of Hyderabad while booster coverage was <80% in entire city. Of the 2419 children sero-surveyed, 56% and 64% were immune to diphtheria and tetanus respectively. Booster coverage and immunity against these diseases was lower among Muslims. It is necessary to improve booster coverage especially among Muslims (Murhekar *et al*. 2009: 58).

In the developing countries of Africa, Asia and South America, tetanus is far more common. The annual worldwide incidence is between 500,000-1million cases. The majority of new cases are in neonates in third-world countries. EPI is one of the most powerful and cost-effective public health programmes to improve child survival and was introduced to South Africa in 1974 (Wiysonge *et al*. 2012: 6-7). It was introduced in response to pandemic diseases like polio, measles, chicken pox, whooping cough, diphtheria and tetanus (WHO & UNCEF 2003: 125). These immunisations protect children from contracting diseases thus reducing the morbidity and mortality rate. GAVI was established in 1999 with the sole purpose of improving child care in the poorest countries by extending the reach of the EPI to these communities (Hajjeh 2011: 2).

2.3 EPI IN AFRICA

A strategy on maximising immunisation coverage through home visits in an urban area of Ghana was implemented in 1990 in an attempt to meet the goal to make immunisation against diphtheria pertussis, tetanus, poliomyelitis, measles and tuberculosis available to every child (Keja *et al.* 1990). It was tested in a controlled trial where clusters of children were allocated to the intervention and control groups. A total of 200 mothers in the intervention group were visited at home by non-health workers and their children were referred to a routine under five clinic. Subsequent home visits targeted those who failed to complete immunisation schedules were made by nurses. After 6 months coverage had risen from 60% to

85% which was 20% higher. According to Keja *et al.* (1990), the problems that have been encountered in Africa in the attempt to meet the goal to make immunisation against diphtheria, pertussis, tetanus, poliomyelitis, measles and tuberculosis available to every child in the world by 1990 included:

- Lack of public and governmental awareness of the scope and seriousness of the target diseases;
- Ineffective programme management; inadequate equipment and skills for immunisation storage and handling;
- Insufficient means for monitoring programme impact as reflected by increasing immunisation coverage levels and decreasing incidence of the target diseases.

Sub-Saharan Africa accounts for 11% of the total population of the world, and is accountable for half of all maternal and child deaths in the world. In addition, all but one of the thirty-one countries with the highest mortality rate except Afghanistan is in Sub-Saharan Africa. Sub-Saharan Africa unfortunately also bears the largest burden of maternal mortality in the world. It is important to note that while significant strides have been made towards reducing child deaths there is still a lot that needs to be done. The United Nations MDG monitor reports that a child born in a developing country is 13 times more likely to die before reaching the age of five years compared to a child born in an industrialised country. Vaccine preventable diseases are unfortunately still responsible for 25% of child deaths. This is mainly due to unavailability of vaccines. Thus, vaccines have a significance contribution to play in achieving MDG 4, by offering additional prevention against diarrhoea and pneumonia which account for almost a third of all child deaths (Chauke-Moagi & Mumba 2012: 2). By 2010, only 1 out of the 46 WHO AFRO countries had introduced rotavirus vaccine into routine immunisation. There is however an expectation for an increasing number of countries worldwide to introduce rotavirus vaccines in the near future.

In 1996, there were approximately 50 million chronic carriers of Hepatitis B virus (HBV) in Africa, with a 25% mortality risk.

Zimbabwe's immunisation rates declined from around 80% in 1991 to 62% in 2008 (UNICEF 2009). The large number of unvaccinated children in hard to reach areas led to the worst measles outbreak in the country in 2009, which claimed the lives of over 630 children while more than 12 918 suspected cases were recorded. However, the Ministry of Health and Child Welfare supported by the WHO, UNICEF and Civil Society Organisation (CSO) partners responded vigorously, vaccinating more than 5 million children within two months. This success and strong leadership of the MOHCW has given hope to development partners that the health sector can continue to rebound quickly. The support for Zimbabwe's immunisation programme is a fundamental step towards boosting immunisation coverage to at least 90% at national level and at least 80% in each district and further strengthens efforts to reduce the number of children dying before reaching 5 years.

2.4 EPI IN SOUTH AFRCA

South Africa has a functional decision making process for the introduction of new vaccines with an established National Immunisation Technical Advisory Group (NITAG), referred to as National Advisory Group on Immunisation (NAGI). South Africa has played a leadership role in the African continent with introduction of new vaccines dating back to 1995 with the introduction of hepatitis B, followed by Haemophilus influenza type b in 1999 and recently the national roll out of the pneumococcal conjugate and rotavirus vaccines in 2009 (Ngcobo & Cameron 2011: 3). NAGI has the responsibility to deliberate on key policy issues as part of the process for policy decision making on the introduction of new vaccines. In developing recommendations NAGI considers: disease burden, cost effectiveness and the impact on EPI. Although guidance and recommendations from WHO are considered, the decision to introduce a new vaccine in South Africa is based on local data. NAGI

recommendations are presented to the National Department of Health. The National Department of Health pursues the matter further through the involvement of provinces. When an agreement has been reached to accept the NAGI recommendations, the National Department of Health seeks funding from MOF. Once funds are available, the new vaccines are implemented by the immunisation programme (Ngcobo & Cameron 2012: 3).

South Africa has a structured national immunisation programme known as Extended Programme of Immunisation-South Africa (EPI-SA) which was introduced in 1995 (Ngcobo 2008: 10). This programme initially covered the six main diseases, but many additional vaccines have become available worldwide and several of these could have a major impact on the burden of vaccine-preventable diseases in South Africa. The introduction of combination vaccines, as well as improved vaccines, contributes to a more successful programme. According to Baker (2010: 2), several milestones have been reached in the history of the EPI-SA namely:

1995: Hepatitis B vaccine was introduced;
1999: Haemophilus influenza e type was introduced;
2000: BCG vaccine was converted from percutaneous to intra-dermal;
2002: Neonatal tetanus was eliminated;
2006: South Africa was declared polio-free. Last reported case was in 1989;
2008: Conjugated pneumococcal and rotavirus vaccines were introduced;
2009: Change from whole cell pertussis vaccine to acellular pertussis vaccine, which has a better side effect profile. Oral live polio vaccine (OPV) replaced by inactivated polio (IPV), which does not have the risk of vaccine-associated paralytic polio (VAPP).

Immunisation programmes for developing countries need to be adapted to suit the epidemiology of the diseases. The optimum age for measles vaccination depends on the local epidemiological situation and, in countries with ongoing transmission in which the risk of measles mortality

among infants remains high, measles vaccine should be administered at nine months of age. According to data collected in South Africa, almost 30% of cases occur in infants younger than 12 months of age and for this reason the first of measles vaccine is given at nine months, with a second dose given at 18 months of age (Department of Health 2010: 2).

In South Africa, diarrhoea causes more than 10 000 deaths in a year, mostly in children under the age of five years, with a third to half due to rotavirus infection. An effective vaccine administered to infants could, therefore save many lives. Based on the burden of disease and the availability of an effective vaccine, a decision was made to include rotavirus in the EPI schedule. South Africa is the first African country to include both pneumococcal and the rotavirus vaccine in the EPI (Department of Health 2010: 2).

The immunisation programme, however, remained fragmented because of the system of apartheid until 1995 when the national EPI was formed through the unification of all immunisation services in the country (Ngcobo 2008: 9). Since then, there have been significant advances in immunisation service delivery in South Africa. Immunisations have been added, improved and sometimes removed and the ages at which the immunisations are given to children have also been adjusted on several occasions.

The most recent revision of the EPI in South Africa was made in 2009 (Department of Health 2010). The revision included the addition of new immunisations such as Pneumococcal Conjugate Vaccine (PCV), Rotavirus (RV), Pentaxim (DTap-Ipv/Hib), the replacement of some immunisations such as oral polio immunisation (OPV) which was replaced by injectable polio immunisation (IPV) and Diphtheria and Tetanus (DT) which was replaced by Tetanus and diphtheria in reduced strengths (Td) (Department of Health 20010: 6) and the adaptation of the ages at which the child should receive the immunisations. The set of immunisation that were previously given when the child is five years was changed to six

years. The immunisation age for children which was previously from birth to five years was extended to twelve years. Several differences therefore exist between the former (before 2009) and the current (after 2009) EPI. The differences include the type of immunisations and the ages at which the children are to be given the immunisations. There is also an increased number of immunisations that the child should receive at one clinic visit with the current schedule and the majority of the immunisations are in an injection form. Table 1 presents the differences between the former (prior 2009) and the current (after 2009) EPI schedule.

Table 1: Comparison between the old and the current EPI

Age of child	Former programme	Revised programme
Birth	BCG, Polio	BCG, Polio
6 weeks	1st Polio, DTP-Hib, HepB	1st Polio, RV, DTaP-IPV//Hib, HepB, PCV
10 weeks	2nd Polio, DTP-Hib, HepB	2nd DTaP-IPV//Hib, HepB
14 weeks	3rd Polio, DTP-Hib, HepB	3rd DTaP-IPV//Hib, HepB,2nd PCV, RV
9 months	1st Measles	1st Measles, 3rd PCV
18 months	2nd Measles,4th Polio,4th DTP	4th DTaP-IPV//Hip, 2nd Measles
5 years	5th Polio, DT	No immunisation
6 years	No immunisation	Td
12 years	No immunisation	Td

There are two different methods that are used to monitor the EPI, namely the administrative method and through community-based surveys (Jamison *et al*. 2006). The administrative method involves using immunisation data from public, private, and non-governmental organisation (NGO) clinics. Each country sets out standard data elements that are used to collect and collate data at various levels from operational (PHC clinic) level to the national level. This allows for all the data to be consolidated and interpreted in the national data information system. Thus the accuracy of the administrative method is limited by the availability and accuracy of reports from the PHC facilities and consolidation of this data at various levels of operation which include district, provincial and national level (Jamison *et al*. 2006). Community-

based surveys are applied using a modified survey method developed by the World Health Organization. Such a survey implementation provides a way to get information from areas where there is no reliable data source. It is also used to validate reported immunisation coverage for example, from administrative reports missed immunisations can be identified and further qualified (Jamison *et al*. 2006).

The two most important indicators used in the administrative method to measure the effectiveness of the immunisation programme are immunisation coverage and immunisation dropout rate (Ngomane 2010: 1). The South African National Department of Health has a set EPI target of 90% for the immunisation coverage and less than 5% for the dropout rate. Prior to 2010, South Africa had been able to achieve the target for the immunisation coverage, but according to the WHO immunisation coverage dropped to 64% in 2011 (Africa Check 2013: 1). The researcher in her day to day encounter with the data information figures of eThekwini District where she has been working as an operational manager has also observed that less children receive immunisations at 6 years and 12 years compared to the other age groups. This could be the possible reason for the drop in the immunisation coverage.

2.5 EPI COVERAGE IN ETHEKWINI DISTRICT

The 2011 census report reflects that South Africa has a population of 18.523.917 of which 6.018.608 are children between the ages of 6-11 years. This is one third of the population. The same report reflects a total population of 388.687 people in Umlazi Township. It can be estimated from these figures that there are possibly 130.000 children in this age group in Umlazi Township. Table 2 below indicates the number of children who received Td immunisation over a period of 6 months in 2013 from the 10 clinics in Umlazi. These figures are below the number of children who should receive the immunisation to achieve target of 90% immunisation coverage as set by the national Department of Health. These figures were extracted from the district statistics for between April-September 2013 (Refer

to Appendix 11 attached District statistics – Td dose at 6 and 12 years * *attached Excel document**).

Table 2: Td coverage in Umlazi District for children aged 6 and 12 years for a period of six months

Health Authority	PHC Clinic	Age	April 2013	May 2013	June 2013	July 2013	August 2013	September 2013
P	P1	6 years	21	20	31	19	13	27
		12 years	7	5	6	6	22	5
	P2	6 years	35	23	34	29	40	42
		12 years	5	4	1	3	1	4
	P3	6 years	30	24	38	13	26	35
		12 years	3	1	3	1	3	4
	P4	6 years	8	11	9	6	8	12
		12 years	0	0	0	0	0	0
	P5	6 years	23	34	17	10	46	30
		12 years	2	1	1	0	3	1
	P6	6 years	11	4	16	13	20	10
		12 years	1	0	1	1	1	1
	P7	6 years	25	30	194	201	128	101
		12 years	72	89	90	78	25	12
M	M1	6 years	15	6	11	5	19	14
		12 years	2	8	3	12	1	2
	M2	6 years	5	6	15	13	10	8
		12 years	5	5	4	7	5	4
	M3	6 years	9	6	6	11	9	13
		12 years	2	2	3	5	0	4

2.6 CONCLUSION

Though much improvement has been made and some milestones achieved, much still needs to be done to improve immunisation coverage especially in the 6 and 12 years age cohort. The next chapter will focus on methodologies and approaches that were utilised in data collection, sampling and analysis.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents the research methodology used in this study. The focus will be on research design, theoretical framework, setting, population, pilot study, sampling strategy, data collection process, data analysis, validity and reliability, ethical considerations.

3.2 RESEARCH PARADIGM

A paradigm is a set of basic beliefs or a frame of reference that explains how individuals perceive the nature of the world and their places in it (Guba & Lincoln 1994). Use of a paradigm helps to create a bridge between the aims of a study and the methods by which to achieve those aims (Houghton, Hunter & Meskell 2012: 34). The term that is used synonymously with paradigm is worldview (Creswell & Plano Clark 2011: 39). Therefore, to clarify the researcher's choice of methodology, the paradigm chosen for this study will be discussed prior to discussing specific methodology utilised in this study. Creswell (2009) argues that a paradigm is a bridge between methods and aims which represent the researcher's world view and in turn shapes the methods used in research.

The paradigms most commonly used in nursing are positivist, post positivist and interpretive paradigms (De Vos, Strydom, Fouche & Delport 2011; Guba & Lincoln 1994; Houghton, Hunter & Meskell 2012). The quantitative methodology shares its philosophical foundation with the positivist paradigm and is based on rigid rules of logic measurement, truth and absolute principles. The post positivist researcher focuses on the understanding of the study as it evolves during the investigation and thus begins with an area of study and what is relevant to that area for a fuller

understanding thereof (Polit & Beck 2012). The quantitative approach has its roots in logical positivism and focuses on measurable aspects of human behavior that involves manipulation of numerical data through statistical procedures for the purpose of describing phenomena or assessing the magnitude and reliability of relationships among them (Polit & Beck 2012). The qualitative methodology shares its philosophical foundation with the interpretive paradigm which supports the view that there are many truths and multiple realities. The interpretive paradigm seeks to understand the holistic perspective of the person and environment. This involves studying the subjective meanings that people attach to their experiences (Hennink, Hutter & Bailey 2011: 14). Within the context of the research objectives, the researcher concluded that adopting the post positivist philosophy as a blue print was the appropriate design.

3.3 RESEARCH DESIGN

A research design is the architectural backbone or blueprint that is utilised for conducting a study (Yin 2009: 26). Creswell (2013: 5) refers to a research design as the entire process of research from conceptualising a problem to writing research questions, and onto data collection, analysis, interpretation and report writing. A quantitative, descriptive design was used to investigate the factors that influence the uptake of the revised EPI programme at Umlazi Township. Polit & Beck (2012: 763) describe quantitative research as the investigation of the phenomena that lend themselves to precise measurement and quantification, often involving a vigorous and controlled design. This design seeks to describe the current status of an identified variable or phenomenon. The researcher does not usually begin with hypothesis but is likely to develop one after collecting data. Analysis and synthesis of data provide the test of the hypothesis.

3.4 THEORETICAL FRAMEWORK: HEALTH PROMOTION MODEL

A theoretical framework is a frame of reference that is a basis for observations, definitions of concepts, research designs, interpretations and generalizations (LoBiondo-Wood & Haber 2013: 141). Theoretical frameworks provide the organisation of a study. They guide the researcher in the interpretation of results therefore guide the entire research process. Theories are used to describe, predict, explain and control phenomena. The health promotion model by Pender was used to guide the study (Pender 1996). Pender developed the Health Promotion Model that is proposed as a holistic predictive model of health-promoting behaviour for use in research and practice. The Health Promotion Model has given health care a new direction. According to Pender, health promotion and disease prevention should be the primary focus in healthcare, and when health promotion and prevention fail to prevent problems, care in illness becomes the next priority. The purpose of immunisation is to prevent disease, however, the uptake of immunisation is dependent and influenced by health promotion. Health care workers have a duty to create awareness in the community about immunisation and the importance thereof. Caregivers have a responsibility to ensure that their children are protected from illnesses and immunisation is one of the strategies that they can adopt. Pender in her model describes three major categories which are:

- Individual characteristics and experiences;
- Behaviour-specific cognitions and affect;
- Behavioural outcome (Maville and Huerta 2008:50).

All of these three major categories are important for health promotion and protection and will be considered during the study.

3.4.1 Individual characteristics and experiences

Individual characteristics which include prior related behaviour, personal factors and bio psychosocial factors have a direct effect on the desired health promotion behaviour which in the case of immunisation will influence whether the caregivers are in favour of getting the children immunised or not (Maville and Huerta 2008:50). The researcher considered that in order for health promotion to be effective the provider and the receiver of health promotion are equally important. The researcher assessed the individual characteristics for the child caregivers. The individual characteristics experiences of health care workers who were responsible for rendering immunisation services were also assessed.

3.4.2 Behaviour-specific cognitions and affect

The individual characteristics and experiences have an indirect effect on behaviour –specific cognitions and affect or the perceptions and feelings that the caregivers and the health care workers have regarding the benefits and barriers of the action of immunising or not immunising the children (Maville and Huerta 2008:50). The researcher assessed specific behaviour cognitions and affect of the health care workers based on their knowledge regarding immunisation. Knowledge items included the routine childhood immunisation schedule, the age at which it is given, contra-indications, side-effects, adverse events following immunisation and their management as well as immunisation catch-up. If the health care workers are able to cascade this information to the caregivers this will empower them which will in turn improve their knowledge on immunisation, co-operation as well as compliance which will improve the uptake on immunisation. Behaviour-specific cognitions and affect of caregivers was also assessed based on their knowledge regarding immunisation, immunisation that the child had already received, still to receive, or missed, what to do if child has missed immunisation, management of side-effects and on what days to take the child for immunisation.

3.4.3 Behavioural outcomes

The individual characteristics and experiences and behaviour-specific cognitions and affect combined directly affects the individual's commitment to a plan of action and ultimately the performance of health which in the current study would include whether caregivers get their children immunised or not (Maville and Huerta 2008:50). The behavioural outcomes were assessed by analysing the influence and effect of individual characteristics, the experiences and the behaviour-specific cognitions and effects of the uptake of the immunisation programme. The theoretical framework was used to guide the entire study from planning, data collection, data analysis and interpretation of results. The development of data collection tools was also guided by this theoretical framework.

3.5 STUDY SETTING

The study was conducted at Umlazi Township PHC clinics. Umlazi is the second largest township in South Africa, the first being Soweto. It is located on the east coast of eThekwini district in the province of KZN. EThekwini district is divided into three sub-districts; the South, the West and the North sub-districts. The PHC clinics are distributed in the three sub-districts as follows: there are 45 PHC clinics in the South sub-district, 29 in the North and 28 in the West sub-district. In the South sub-district 29 PHC clinics are controlled by the Municipality and 16 are controlled by KZNPA. In the North sub-district, 18 PHC clinics are controlled by the Municipality and 11 are controlled by KZNPA. In the West sub-district 13 are controlled by the Municipality and 15 are controlled by KZNPA.

Twenty one percent of women who visit clinics in townships are reported to be HIV positive. South Africa faces the challenge of supporting the well-being of adults caring for growing numbers of AIDS-orphaned children. In Umlazi Township, an HIV endemic community, a total of 22% of respondents in a recent survey were carers of AIDS-orphaned children (Kuo, Operario & Cluver 2012).

Another disease burden in Umlazi is TB. TB is a problem in South Africa but it is worse in KZN, more especially in eThekwini Municipality, according to Health MEC Dr Dhlomo. He said “SA would be a better country in terms of diseases if KZN were to be removed from the equation” (National Institute for Communicable Diseases 2014). Dr Dhlomo further said: “South Africa is still one of the countries in the world with the highest burden of TB. We know that the scourge of HIV and AIDS has also complicated our TB situation given the high co-infection rate between HIV and TB. I am quite happy therefore to unveil this new technology as this equipment will assist us in reducing the time we have to wait before our patients get their TB results including Multi-Drug Resistant (MDR) TB”. The new technology reduces waiting period to two hours. The new machine unveiled in Prince Mshiyeni Memorial Hospital in Umlazi is only one of five machines in the world (South Africa Government Online 2011). There are three clinics that are under the authority of the municipality and there are seven that are under KZNPA authority. Clinics under both authorities were included in the study. Figure 1 is a map showing Umlazi Township and its clinics located according to the alphabetical sections.

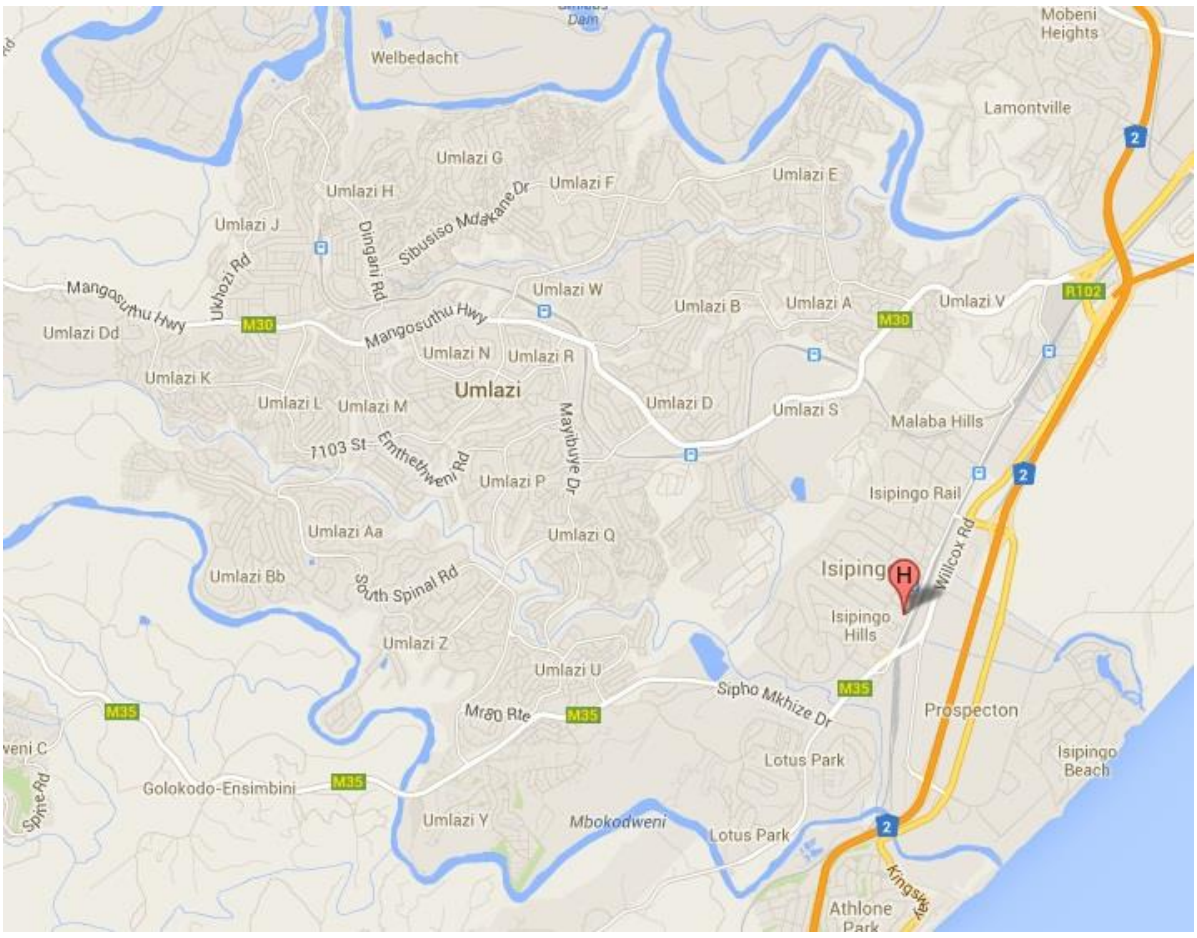

Figure 1: Map showing Umlazi Township and its located PHC clinics.

3.6 SAMPLING STRATEGY

Sampling is the process of selecting a portion of the population to represent the entire population (Polit & Beck 2012: 742). A sample is a subject of population elements, which are the most basic units about which data are, collected (Polit & Beck, 2012). Burns & Grove (2007) define a sample as a part or a fraction of a whole, or a subset of a large set, selected by the researcher to participate in a research project. Sampling was conducted in three phases namely:

- Phase 1: Sampling of PHC clinics;
- Phase 2: Sampling of health care workers;
- Phase 3: Sampling of child caregivers.

All the study respondents were sampled using purposive sampling methods. Purposive sampling is described by Polit & Beck (20012: 343)

as a non-probability sampling method in which the researcher selects respondents based on personal judgment about which ones will be most informative. Guidance was given by a qualified statistician regarding the sample size for all study the study participants (Appendix 5)

3.6.1 Phase 1: Sampling of the PHC clinics

There were ten PHC clinics in Umlazi Township at the time of the study. A total of 30% (n=3) PHC clinics were under the municipality health authority and 70% (n=7) were under the KZNPA health authority. Purposive sampling of all 100% (n=10) PHC clinics in Umlazi Township was done in order to allow the study results to be generalizable in all the clinics in Umlazi Township and other PHC clinics that are under the control of the two health authorities.

Inclusion criteria

- All PHC clinics that were providing well baby clinic services.

Exclusion criteria

- None as all clinics are providing well baby services.

3.6.2 Phase 2: Sampling of health care workers

Purposive sampling of all consenting health care workers who were working in well-baby clinics was done. Professional nurses and enrolled nurses are actively involved with the EPI programme. The researcher intended to include all (100%) health care workers who were directly involved in providing well baby services. The common practice in the PHC clinics is to have dedicated staff members who are working in immunisation clinics and this usually consists of one or two health care workers, a professional nurse and/or sometimes an enrolled nurse. A minimum of one health care worker was included from each study site because in some PHC clinics there was just one health care worker who was involved in the provision of EPI services.

Inclusion Criteria

- Only health care workers who were actively involved in provision of well-baby services were included in the study.

Exclusion Criteria

- All health care workers who were not actively involved in provision of well-baby services.

3.6.3 Phase 3: Sampling of child caregivers

The third phase of sampling involved sampling of child caregivers. All biological, adoptive and foster parents including other persons who were fully responsible for the care of the children were regarded as child caregivers. The purposive sampling method was used to select a sample of caregivers. A total of 100 child caregivers were sampled from each PHC clinic in order to get a sample size of 1000 child caregivers for the entire study. Sampling of the child care givers did not consider the age of the child. It was important to include all caregivers in order to get the information from those that were still due to bring the children and also from those that had brought the children at the right ages. The inclusion of all care givers irrespective of the age of the child that was at the clinic was also important for the care givers who had other children besides the one that was brought to the clinic.

Inclusion criteria

- Only biological, adoptive and foster parents including other persons who were fully responsible for the care of the children were regarded as child caregivers.

Exclusion Criteria

- All other persons who were not fully responsible for the children such as nannies, siblings, neighbours and other relatives and friends.

3.7 PRE-TESTING OF THE DATA COLLECTION INSTRUMENTS

A pre-test was conducted to test the reliability of all data collection instruments and the appropriateness of the study method. One PHC clinic was randomly selected from the PHC clinics. All health care workers from the pilot site who were actively involved in provision of well-baby services and who agreed to take part in the study were included in the study. A total of 100 child care givers were purposively selected from the pilot site. The PHC clinic used as a pilot site and the pre-test results were included in the main study. There were no amendments made on the questionnaires.

3.8 DATA COLLECTION

3.8.1 How the study participants were approached

A briefing session about the study was held for all the area and operational managers for all the clinics included in the study at their management meeting. Appointments were scheduled telephonically with each operational manager to conduct an information giving session with the clinic staff. Information giving sessions were conducted in each PHC clinic at a time that was decided upon by the operational manager. The information giving session for the care givers were conducted in the waiting area while the care givers were awaiting consultation. Data collection occurred in two phases namely:

- Phase 1: data collection from health care workers.
- Phase 2: data collection from Child Caregivers

3.8.2 Phase 1: Data collection from health care workers

Data were collected from health care workers using self-administered questionnaires (Appendix 4). The researcher developed the questionnaires based on the guidelines of the EPI, Pender's health promotion model and literature reviewed. The tool was verified by professional nurses working in the quality assurance departments from

the KZNPA and municipal health authorities and Primary Health Care lecturers from Durban University of Technology. According to Polit & Beck (2008: 14), self-administered questionnaires require respondents to read the questions on a written form and give answers in writing. These were administered by the researcher and were left with the health care workers to complete in their own time in the absence of the researcher so as to ensure that they were not intimidated by the researcher's presence. Although the respondents complete the questionnaires alone, the researcher is still available should the problems or queries arise. The respondents can clarify the matter with the researcher on his or her return (De Vos, Strydom, Fouche & Delport 2011: 188). A box was provided for placing the completed questionnaires. The completed questionnaires were collected on a weekly basis. Not all questionnaires were returned, about 98% were returned.

3.8.3 Phase 2: Data collection from child care givers

Data was collected from the caregivers of children using questionnaires (Appendix 5). Development of the questionnaires was guided by literature and based on Pender's Health promotion model. Literate child caregivers who were comfortable with completing the questionnaire on their own were allowed to do self-administered questionnaires. The care givers were requested to complete the questionnaires while they were waiting to consultation. The questionnaires were available in both English and isiZulu so respondents could choose the language they were comfortable with. A research assistant helped all the other child caregivers who were unable to complete the questionnaires on their own. In order to facilitate the easy completion of the questionnaires, most of the questions required just a tick or a yes or no response with a limited number of questions requiring narrative responses. A box was provided for placing the completed questionnaires. The completed questionnaires were collected on a weekly basis. Each day, the researcher or research assistant was present at the clinic until the desired number of questionnaires had been reached.

3.9 DATA ANALYSIS

The researcher sought the assistance of a statistician to analyse data. The data from the questionnaire was captured and subsequently analysed using version 20.0 of the Statistical Package for the Social Sciences (SPSS). Descriptive statistics including means and standard deviations, where applicable, were used to analyse data. Frequencies are represented in the form of tables or graphs. Further analysis using a chi-square goodness-of-fit-test where applicable was done. A chi-square goodness-of-fit-test is a univariate test, used on a variable to test whether any of the response options are selected significantly more/less often than the others. Under the null hypothesis, it is assumed that all responses are equally selected. The results of data analysis are presented in Chapter 4.

3.10 RESEARCH RIGOR

This is defined as the search for excellence in research and involves discipline, scrupulous adherence to detail, and strict accuracy. A rigorous researcher constantly strives for more precise measurements, representative samples, and tightly controlled study designs (Burns & Grove 2009: 34). This was ensured by the researcher or research assistant being present each day at the clinic until the number of respondents required being reached. In some clinics more questionnaires were handed out in order to cater for spoiled ones.

3.10.1 Reliability

Polit & Beck (2012: 741) describe reliability as the accuracy and consistency of information that is obtained in a study and is most often associated with the methods that are used to measure the research variables. Reliability was ensured by pre-testing the data collection tools with the caregivers for the children and health care workers who were working in the PHC clinics that are conducting well baby services. This

ensured that the pilot respondents were homogenous with the main study respondents. The results of the pre-test were analysed by the statistician to determine whether the construct validity was appropriate for statistical purposes. Reliability was ensured by collecting data from the clinics that were providing well baby services, the child caregivers and the health care workers who were currently working in well baby clinics. This ensured the content validity of the study in that the findings were unbiased and well-grounded since the information was gathered from respondents with first-hand information. The respondents were not coerced to take part on the study. All those respondents who were not interested to take part in the study were allowed to opt out and also those that wanted to withdraw from the study at any point were allowed to do so. The researcher did not personally assist with completion of the questionnaires. This was to ensure that there was no bias influenced by her knowledge as a health care worker. A research assistant who spoke English and IsiZulu was employed to assist the child care givers who did not speak nor understood English.

3.10.2 Validity

Validity is the quality criterion referring to the degree to which inferences made in the study are accurate and well founded in measurement and the degree to which the instrument measures what it is intended to measure (Polit & Beck 2012: 745). Content validity examines the extent to which the questionnaire includes all the major elements relevant to the construct being measured and faces validity of a data collection tool as measuring that the tool look like it is valid and give the appearance of measuring what it was supposed to measure (Burns & Grove 2009: 381). The questionnaire was tested for face and content validity by means of a pre-test of the data collection tool and was given to professionals for verification and comments before use.

3.11 ETHICAL CONSIDERATIONS

Ethical approval was obtained from the university research ethics committee (Appendix 6). Permission to conduct the study was requested from the Department of Health and Municipal authorities (Appendices 1a, 1b and 1c) and permission was granted (Appendix 1d). Only respondents who had given consent were allowed to take part in the study and will also be allowed to withdraw at any point (Appendices 2 and 3). Confidentiality was maintained in data handling to ensure that there was no untoward association of individuals with data. No personal information such as names of the study respondents and PHC clinics were recorded on the data collection instruments. The data collection tools were identified with numbers so that there was no link between the respondents' identity and the information gathered.

Beneficence was ensured in the sense that the nature of the study did not involve invasive procedures therefore respondents were not subjected to any physical harm or discomfort. There was no in-depth probing or exploration on highly personal topics. The respondents were given an opportunity to ask questions and were answered in their own chosen language. The respondents were made aware of what the research was about so as to be able to make an informed decision regarding participation. All respondents signed a written informed consent form. The respondents were given a choice not to participate if not willing and also to withdraw from the study at any point if they wished to do so.

In order to ensure confidentiality, the questionnaires were identified only by numbers so there was no link between the respondents' identity and the information gathered. The respondents were assured that the information would be used for research purposes only and it would not be shared with strangers, and would be kept in strict confidence in a locked file.

3.12 CONCLUSION

This chapter dealt with phases of sampling, collection of data and its analysis. The next chapter will be the presentation of results.

CHAPTER 4

PRESENTATION OF RESULTS

4.1 INTRODUCTION

The previous chapter outlined the methodology adopted in conducting the study. This chapter presents the results of the study. As stated in Chapter 1, the objectives of the study were to assess how the EPI is being implemented, identify and describe the factors that influence the uptake of the revised EPI for children between the ages of 6 to 12 years. In line with these objectives, data was gathered in two phases. Results of the study are presented in two phases. Phase 1 will entail presentation of results for data collected from health care workers and Phase 2 will include presentation of results for data collected from the child caregivers.

4.2. SAMPLE REALIZATION

4.2.1 Total number of PHC clinics included in the study

As indicated in Table 3, a total of ten PHC clinics from Umlazi Township were included in the study. These PHC clinics were from the two health authorities that are rendering health services in the Umlazi Township. A total of 70% (n=7) of the sample were PHC clinics from the provincial health authority (P) and a total of 30% (n=3) were PHC clinics under the municipality health authority (M).

Table 3: PHC clinics included in the study (n=10)

Health Authority	No of PHC clinics	Percent
Provincial	7	70.0
Municipality	3	30.0
Total	**10**	**100.0**

4.2.2 Health care workers included in the study

A total of twelve respondents were included in the study. These respondents made up 100% of the health care workers that were involved in the provision of EPI services in the ten PHC clinics that were included in the study. A total of 75% (n=9) health care worker respondents were from the PHC clinics that were under the control of KZN Provincial Health Authority (KZNPA) and a total of 25% (n=3) were from health municipality authority. The study findings was that in 80% (n=8) PHC clinics one health care worker was involved in provision of EPI and this was either as a professional nurse or an enrolled nurse. In 20% (n=2) PHC clinics there were two health care workers who were involved in the provision of EPI services. Of the two PHC clinics that had two health care workers, one PHC clinic had a professional nurse or an enrolled nurse and the other PHC clinic had two professional nurses. The two PHC clinics that had two health care workers belonged to provincial health authority. Table 4 presents demographic data for health care workers who were involved in EPI in the 12 clinics. All municipal PHC clinics did not have professional nurses involved in EPI services.

Table 4: Health care workers included in the study (n=12)

Health Authority	PHC Clinic	Health care workers involved in EPI services by qualification		Total included in the study
		Prof Nurse	Enrolled Nurse	
Municipality	M1	0	1	1
	M2	0	1	1
	M3	0	1	1
Sub- total from Municipality		**0**	**3**	**3**
KZNPA	P1	1	1	1
	P2	0	1	1
	P3	2	0	2
	P4	0	1	1
	P5	1	0	1
	P6	1	0	1
	P7	1	0	1
Sub- total from KZNPA		**6**	**3**	**8**
Grand total for the entire study		**6**	**6**	**12**

4.2.3 Total child care givers included in the study

The child care giver respondents were selected from the ten PHC clinics in Umlazi Township, some of the respondents were from the70% (n=706) PHC clinics that were under the KZNPA control and the others were from 30% (n=303) PHC clinics that were under the municipality control.

A total of 1100 questionnaires were distributed. This consisted of 10% (n=100) extra questionnaires as according to the study sample size the researcher needed a total of 1000 respondents for the entire study. This was done in order to safeguard against non-response rate, which could result in the researcher not getting the desired number of respondents for the study. The researcher remained in each clinic until a total of 100 questionnaires were returned. Where it was possible one extra questionnaire was accepted to safeguard in case any of the returned questionnaires were spoiled. The researcher was able to get the extra questionnaires in the nine PHC clinics. However, this was not possible in one PHC clinic. In this clinic, only 100 questionnaires were returned. Thus a total of 92% (n=1009) questionnaires were completed and returned by the respondents giving a non-response rate of 8% (n=91) and a response rate of 92% (n=1009). This was considered a good response rate. According to Polit and Beck (2013: 400), a response rate which is greater than 65% is considered good and is sufficient for most purposes. All the retuned questionnaires were correctly filled with none of them spoilt and suitable for inclusion in the study. Therefore the results of the current study were based on 1009 respondents instead of 1000 respondents (Table 5).

Table 5: Total number of child care givers included in the study (n=10)

Health Authority	PHC clinic	Questionnaires distributed	Questionnaires returned	Percentage
KZNPA	P1	101	101	10.0
	P2	100	100	9.9
	P3	101	101	10.0
	P4	101	101	10.0
	P5	101	101	10.0
	P6	101	101	10.0
	P7	101	101	10.0
Sub-total for 7 KZNPA PHC clinics		**706**	**706**	**69.9**
Municipality	101	101	101	10.0
	101	101	101	10.0
	101	101	101	10.0
Sub-total for 3 Municipal PHC clinics		**303**	**303**	**30%**
Grand total for 10 PHC clinics		**1009**	**1009**	**99.9%**

4.3 PRESENTATION OF RESULTS

4.3.1 How the EPI was implemented in the PHC clinics at Umlazi

The first objective of the study was to assess how the EPI was implemented at Umlazi PHC clinics. In order to achieve this objective the researcher assessed several characteristics which included the demographic characteristics of the health care workers that were involved in EPI, training and in-service education for the health care workers that were involved in EPI , availability of drugs and supplies, support by managers for staff involved in EPI services and quality of the EPI services. The findings of this assessment were as follows:

4.3.1.1 Demographic characteristics of the health care workers involved in EPI

As can be seen from Figure 2, the study findings reflected that 8.3% (n=1) were males and 91.7% (n=11) were females. There were 8.3% (n=1) Coloured respondents as opposed to 91.7% (n=11) African Black respondents. There were 0% (n=0) Indian and White respondents. The study consisted of an equal number 50% (n=6) of enrolled nurses and professional nurses. There were an equal number of respondents 50% (n=6) who had experience of less than two years and more than two years working in the well-baby clinic.

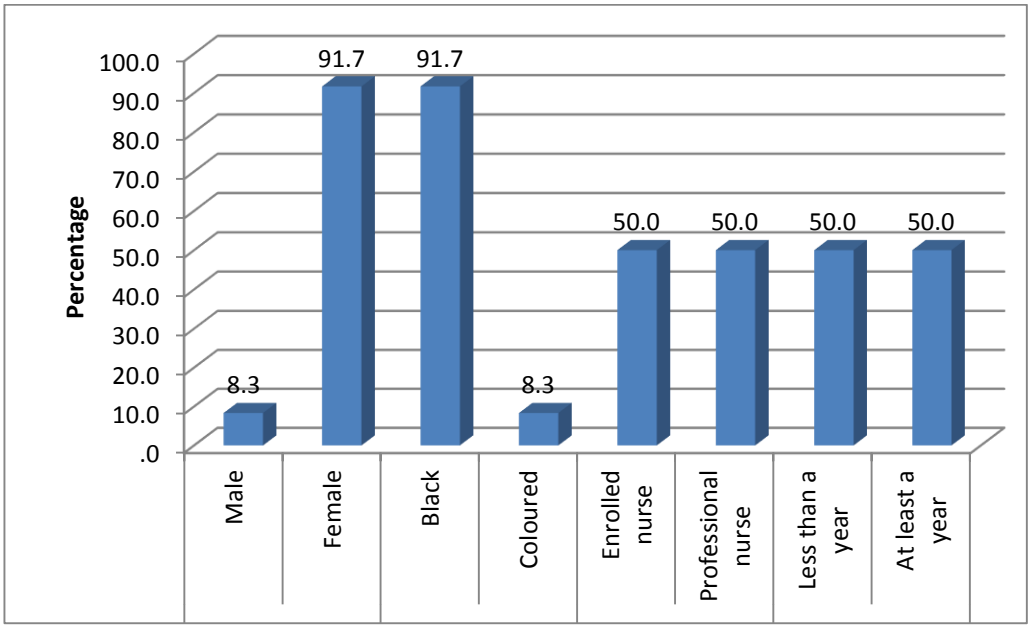

Figure 2: Demographics of health care workers

4.3.1.2 Training and in-service education on EPI

Information was gathered from the respondents regarding training and in-service education on EPI. The responses for training and in-service education are presented in a graph form on figure 3 and each discussed separately in sections a and b

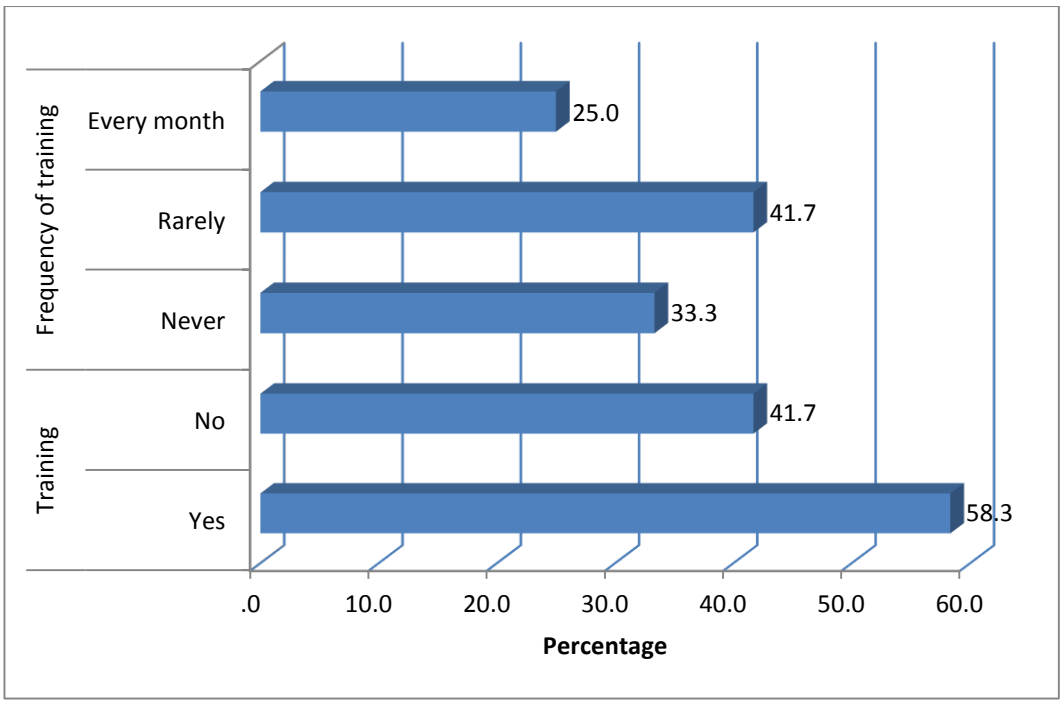

Figure 3: Training and frequency of in-service education

a) Training on EPI

The information whether the health care workers involved in provision of EPI services had received training on EPI was gathered from respondents. Those that stated that they had not had training were requested to provide reasons why they had not had training. The results were as follows: 58.3% (n=7) of respondents indicated that they had received training on EPI and 41.7% (n=5) indicated that they had not received training on EPI. Table 6 presents the responses from the respondents regarding training

Table 6: Training on EPI (n=12)

Response	Frequency	Percent
Yes	7	58.3
No	5	41.7
Total	**12**	**100.0**

All the respondents who had indicated that they had not received training on EPI were required to indicate the reasons why they had not had training. Table 7 shows that a total of 16.7% (n=2) indicated that they

were never invited for training, 8.3% (n=1) that they had not had training because they were a new employee and another 8.3% (n=1) responded that they had not had training because they were temporary staff. A total of 66.7% (8 respondents indicated that they had had training on EPI and so were not expected to respond to this question.

Table 7: Reason for no training

Response	Frequency	Percent
Not applicable	8	66.7
Never invited	2	16.7
New employee	1	8.3
Temporary staff	1	8.3
Total	**12**	**100.0**

b) In-service training on EPI

With regards to in-service education, the respondents were requested to provide the information on the frequency of in-service education and Table 8 shows that a total of 33.3% (n=4) of respondents indicated that they had never received in-service training on EPI, 41.7% (n=5) indicated that they rarely received in-service training on EPI and 25% (n=3) stated that they were receiving in-service training every month. Table 8 presents the results in relation to the frequency of in-service education on EPI.

Table 8: Frequency of in-service training on EPI (n=2)

Response	Frequency	Percent
Never	4	33.3
Rarely	5	41.7
Every month	3	25.0
Total	**12**	**100.0**

4.3.1.3 Availability of drugs and supplies

In this section the respondents were requested to respond by selecting their most appropriate answer for each of the statements given from the three possible responses which were: ‘always’, ‘sometimes’ and ‘no’. A fourth column was provided for respondents to insert comment if they wanted to. The following statements were included in this section:

- Sufficient stocks of all vaccines available at the clinic.
- All other immunisation equipment and supplies available at the clinic.
- Vaccine fridge working well.
- Correct quantities of vaccines issued.
- System exists for emergency order of vaccines.
- New developments regarding EPI programme communicated timeously.
- Staff challenges regarding EPI attended to by management.

Figure 4 is a graphical representation of the results.

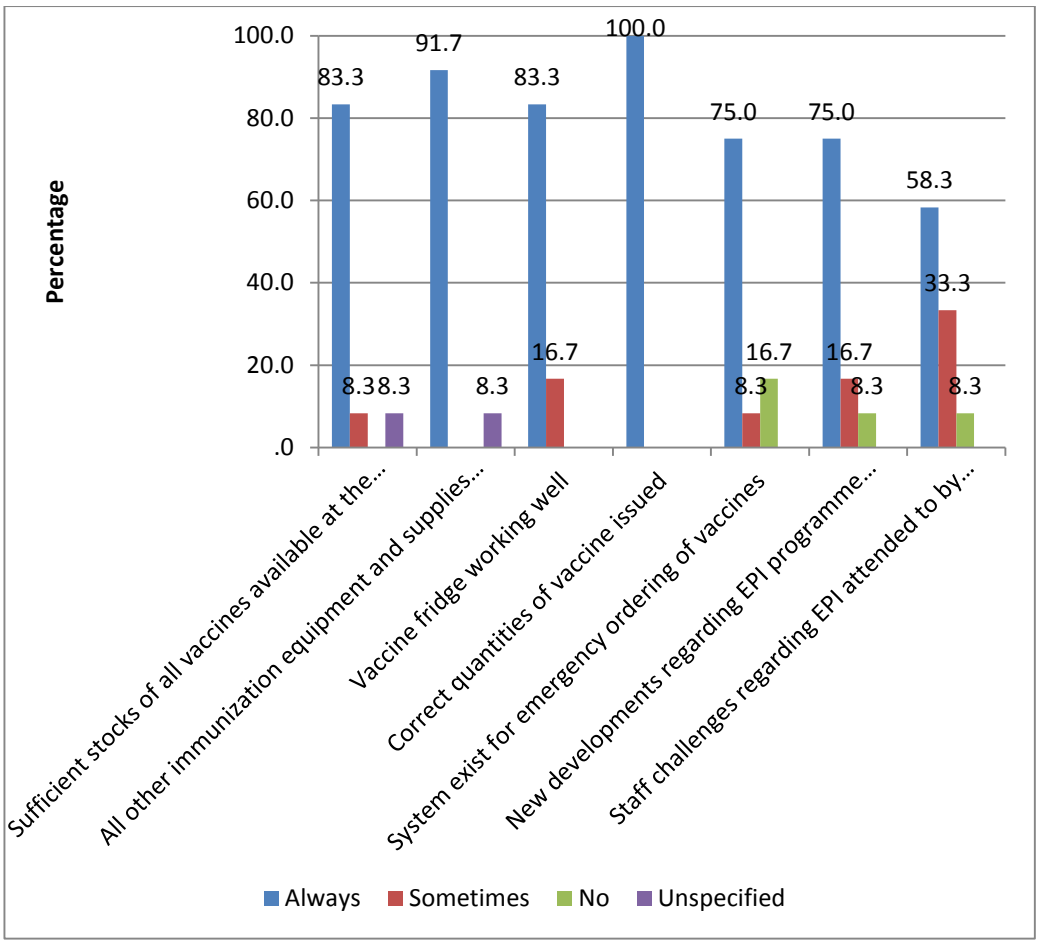

Figure 4: Responses regarding supplies and control

a) Sufficient stocks of all vaccines available at the clinic

As can be seen from Figure 6, the results of the study reflect that 83.3% (n=10) of respondents stated that they always had sufficient stocks of all vaccines available at the clinic. Only 8.3% (n=1) stated that they sometimes had sufficient stock of all vaccines and 8.3% (n=1) did not specify whether they always, sometimes or never had sufficient stock of all vaccines available at the clinic.

b) All immunisation equipment and supplies available at the clinic

The results of the study reflected that 91.7% (n=11) always had all other immunisation equipment and supplies available at the clinic and 8.3% (n=1) responded no to having all other immunisation equipment and supplies available at the clinic.

c) Vaccine fridge working well

With regards to the vaccine fridge, 83.3% (n=10) responded that the vaccine fridge was always working well and 16.7 (n=2) responded that sometimes the vaccine fridge worked well but sometimes it did not.

d) Correct quantities of vaccines issued

According to the results of the study all respondents 100% (n=12) answers showed that they were being issued with the correct quantities of vaccines.

e) System exist for emergency order of vaccines

A total of 75% (n=9) of respondents indicated that a system for emergency ordering of vaccines always exists, 8.3% (n=1) answered that sometimes a system exists and 16.7% (n=2) answered no to an existence of a system for emergency ordering of vaccines.

4.3.1.4 Support from management

Data that was gathered for the section on support from management included the frequency that the manager did support visits to the well-baby clinic, how the responded rated the support that they were getting from the managers, whether new developments regarding EPI programme were communicated timeously and whether staff challenges regarding EPI were attended to by management.

a) Manager support visits to the well-baby clinic

Table 9 shows that of the 12 respondents 58.3% (n=7) reported that the manager was doing the support visits every week, 8.3% (n=1) respondent reported that the manager was doing the support visits every month, 25% (n=3) reported that the manager was doing the support visits every quarter and 8.3% (n=1) reported that the managers were not doing the support visits. A chi-square goodness of fit test was done and the results from analysis show that significantly more than expected indicated that

managers do support supervision visits every week (χ^2(N=12,3) = 8.000, p=.048).

Table 9: Manager support visits to the well-baby clinic (n=12)

Frequency	Observed N	Percent
Every week	7	58.3%
Every month	1	8.3%
Every quarter	3	25%
Never	1	8.3%
Total	**12**	**100%**

b) How the respondents rated the support that they were getting from managers

With regards to how the respondents rated the support that they were getting from the managers, Table 10 shows that 8.3% (n=1) did not rate the support since they indicated that the manager was not doing any support visits. From the remainder, 25% (n=3) of the respondents rated the support as insufficient, 33.3% (n=4) rated it as sufficient and 33% (n=4) rated it as more than enough. Table 10 presents the frequency and percentages on how the how the respondents rated the support that they were getting from managers.

Table 10: How the respondents rated the support that they were getting from managers (n=12)

Rating of support received	Frequency	Percent
None	1	8.3
Insufficient	3	25.0
Sufficient	4	33.3
More than enough	4	33.3
Total	**12**	**100.0**

Figure 5 is a graphical presentation of the responses from the health care workers regarding the frequency that the manager did support visits to the well-baby clinic and how the respondents rated the support that they were getting from the managers.

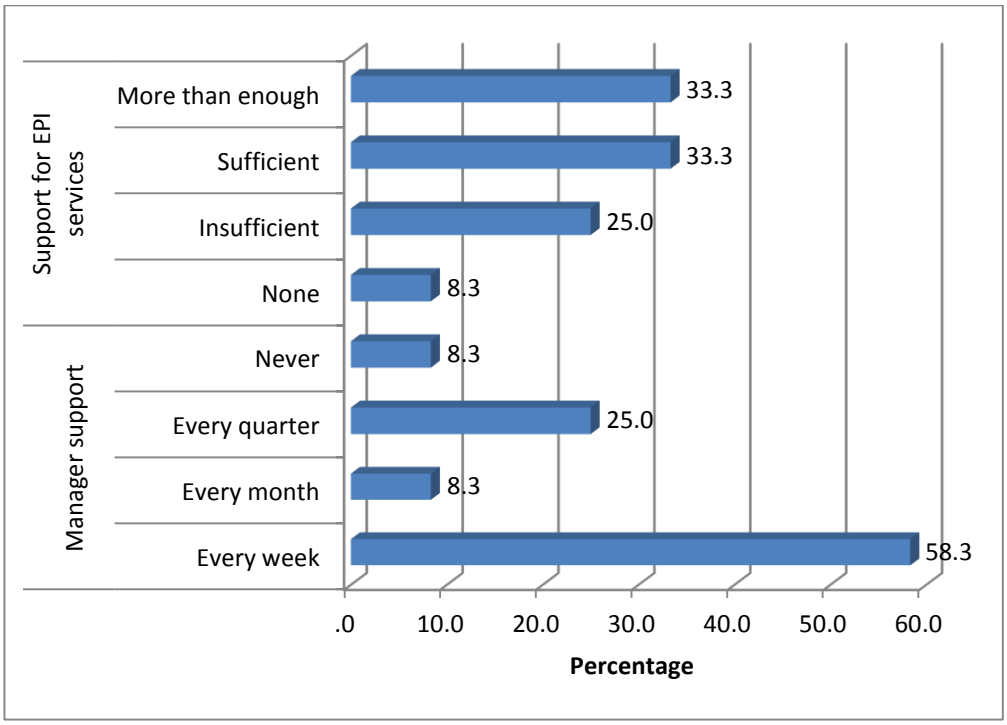

Figure 5: Responses of frequency and rating of support visits by the managers.

c) New developments regarding EPI programme communicated timeously

A total of 75% (n=9) respondents stated that new developments regarding EPI programme were always communicated timeously, 16.7% (n=2) responded that sometimes new developments regarding EPI programme were communicated timeously whist 8.3% (n=1) answered no, that new developments regarding EPI programme were not always communicated timeously. The results are presented in figure 6.

d) Staff challenges regarding EPI attended to by management

With regards to staff challenges, 58.3% (n=7) of respondents indicated that staff challenges regarding EPI were always attended to by management, 33.3% (n=4) indicated sometimes and 8.3% (n=1) answered no. The results are presented in figure 6.

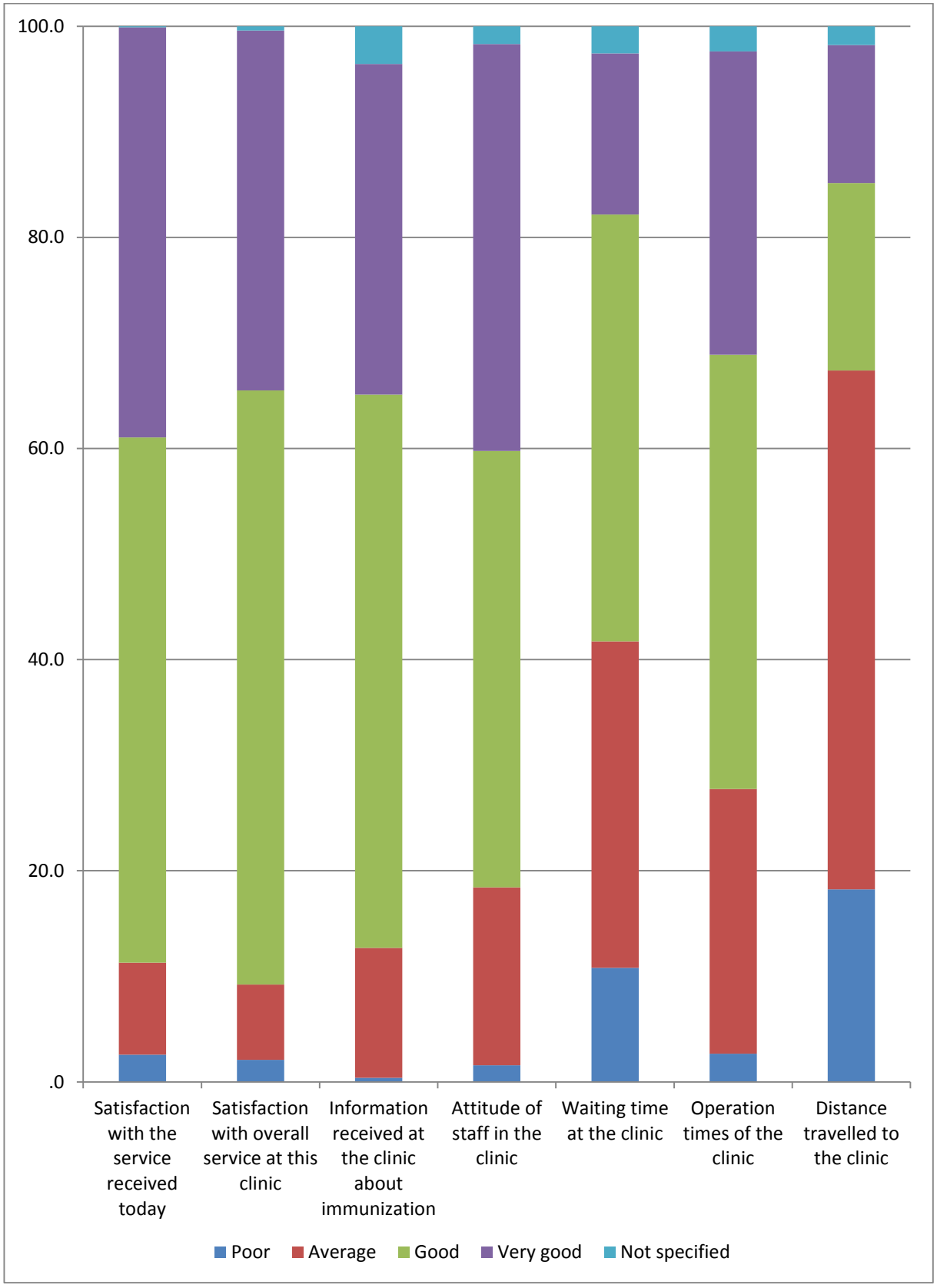

Figure 6: Presentation of results for the analysis of responses regarding quality of service

4.3.1.5 Quality of service

Respondents were requested to rate the quality of the service that they were getting in the PHC clinics. Several statements were given and the respondents were required to rate these using the Likert scale of 'poor', 'average', 'good' and 'very good'. The rating that was selected by the highest number of participant was 'good' followed by 'very good', then 'average'. Table 11 shows that for each statement, the rating that was selected by the least number of respondents was 'poor' except for the responses on the distance travelled to the clinic where the largest number of participant selected 'average', followed by 'poor' selected by18.2% (n=184), 'good' selected by 17.7% (n=179) and 'very good' 13.1% (n=132). These results are presented in graphic form in Figure 6.

Table 11: Presentation of results for the analysis of responses regarding quality of service

Element assessed	Poor	Average	Good	Very good	No Response
Satisfaction with the service received today	26	88	502	392	1
Satisfaction with overall service at this clinic	2.1% (n=21)	7.1% (n=72)	56.3% (n=568)	34.1% (n=344)	04% (n=4).
Information received at the clinic about immunisation	0.4% (n=4)	12.3% (n=124)	52.4% (n=529)	31.3% (n=316)	3.6% (n=36)
Attitude of staff in the clinic	1.6% (n=16)	16.8% (=170)	41.3% (n=417)	38.6% (n=389)	1.7% (n=17)
Waiting time at the clinic	10.8% (n=109)	30.9% (n=312)	40.4% (n=408)	15.3% (n=154)	2.6% (n=26)
Operation times of the clinic	2.7% (n=27)	25.1% (n=253)	41.1% (n=415)	28.7% (n=290)	2.4% (n=24)
Distance travelled to the clinic	18.2% (n=184)	49.2% (n=496)	17.7% (n=179)	13.1% (n=132)	1.8% (n=18)

4.3.1.6 Further analysis

Further analysis was conducted to check if responses differ by health authority, and for each section regarding knowledge about the EPI programme to assess if there were any differences in responses related to demographic differences such as qualification and/or years of experience.

a) Quality of care

Results of a chi-square goodness of fit test (Table 12) indicate that a significant number of the respondents responded 'good' or 'very good' to the service received that day (χ^2(3, N=1008)=635.206, p<.0005); overall service (χ^2(3, N=1005)=772.453, p<.0005); information received regarding immunisation χ^2(3, N=973)=651.210[d] p<.0005 and attitude of staff χ^2(3, N=992)=436.895[e] p<.0005). Significantly more than expected respondents indicated that waiting time at the clinic is 'average' or 'good' χ^2 (3, N=983)=235.332[f] p<.0005); operation times are 'good' χ^2 (3, N=985)=318.809[g] p<.0005); and distances travelled are 'average' χ^2 (3, N=991)=338.312[h] p<.0005).

Table 12: Results of chi-square goodness for fit test

	Satisfaction with the service received today	**Satisfaction with overall service at this clinic**	**Information received at the clinic about immunisation**	**Attitude of staff in the clinic**	**Waiting time at the clinic**	**Operation times of the clinic**	**Distance travelled to the clinic**
Chi-Square	635.206[b]	772.453[c]	651.210[d]	436.895[e]	235.332[f]	318.809[g]	338.312[h]
Df	3	3	3	3	3	3	3
Asymp. Sig.	.000	.000	.000	.000	.000	.000	.000

b) Supplies and control

Further analysis with a chi-square of goodness fit test was done for the responses for each statement. These included whether sufficient stocks of all vaccines were available at the clinic, all other immunization equipment and supplies available at the clinic, vaccine fridge working well, correct quantities of vaccine issued, system exist for emergency ordering of vaccines, new developments regarding EPI programme communicated timeously and whether staff challenges regarding EPI attended to by management. The results for further testing reflected that a significant

number of staff responded positively for all the elements assessed under supplies and control thereof. It was only with regards to whether challenges regarding EPI were attended to by management where a significant number of staff responded negatively. The results from analysis show that significantly fewer than expected indicated that staff challenges regarding EPI were attended to by management (χ^2(N=12) = 4.500, p=.115). The results are presented in Table 13

Table 13: Results for the chi-square goodness of fit test

	N	Chi-square	Asymp Sig	P value
Sufficient stocks of all vaccines	11	16.545[a]	.000	P<0005
All other immunisation equipment and supplies	11	22.000[a]	.000	P<0005
Vaccine fridge working well	12	14.000[b]	.001	P<0005
Correct quantities of vaccine issued	12	24.000[b]	.000	P<0005
System exist for emergency ordering of vaccines	12	9.500[b]	.009	P<0005
New developments regarding EPI programme communicated timeously	12	9.500[b]	.009	P<0005
Staff challenges regarding EPI attended to by management	12	4.500[b]	.105	P<0005

4.3.2 Factors influencing the uptake of the revised EPI for children between the ages of 6 to 12 years

The information used to achieve the second objective of the study which was to identify and describe the factors influencing the uptake of the revised EPI for children between the ages of 6 to 12 years was gathered from both the health care workers and the child care givers. Gathering this information was guided by Pender's health promotion model. Information with regards to the three strong elements which are a) individual characteristics and experiences, b) behaviour-specific cognitions and affect, and c) behavioural outcome was gathered.

4.3.2.1 Individual characteristics and experiences

The health promotion model shows that individual characteristics and experiences have a direct effect on the desired health promotion behaviour. Individual characteristics and experiences include prior related behaviour, personal factors and bio-psychosocial factors (Maville and Huerta 2008:50) The study assessed the characteristics of both the health care workers and the child care givers as the two parties involved in the health promotion process regarding EPI

a) Individual characteristics and experiences for the health care workers

The characteristics of the health care workers have already been described in section 4.3.1 and include qualifications, years of experience and training and in-service education received on EPI. These characteristics were believed to have an effect on health care workers' knowledge about the EPI programme.

Knowledge of health care workers for the EPI

The study furthermore assessed the knowledge of the health care workers regarding EPI. The information gathered from the health care workers was in relation to vaccines that were included in the EPI schedule, ages at which immunisations were given, the number of doses that the child should receive for each vaccine, and a few true or false statements about EPI stating whether the given statements were true or false. The true or false statements were related to missed opportunity management and contra-indications to immunisation. The results of the analysis were as follows:

The average score for correct responses for Section 1 which was vaccines that were included in the EPI schedule was 8.0 out of 10 (80%), section 2 which was about ages at which immunisations were given was 8.9 out of 10 (89%), section 3 which was about the number of doses that the child should receive for each vaccine was 9.3 out of 10 (93%) and

section 4 which was about true or false statements relating to missed opportunity, management and contra-indications to immunisation was 5.3 out of 10 (53%). According to the study findings, the first three sections were well answered with section 3 scoring the highest. Section 4 which consisted of true and false questions had the lowest score. Figure 7 is a graphical presentations of the scores obtained for this section.

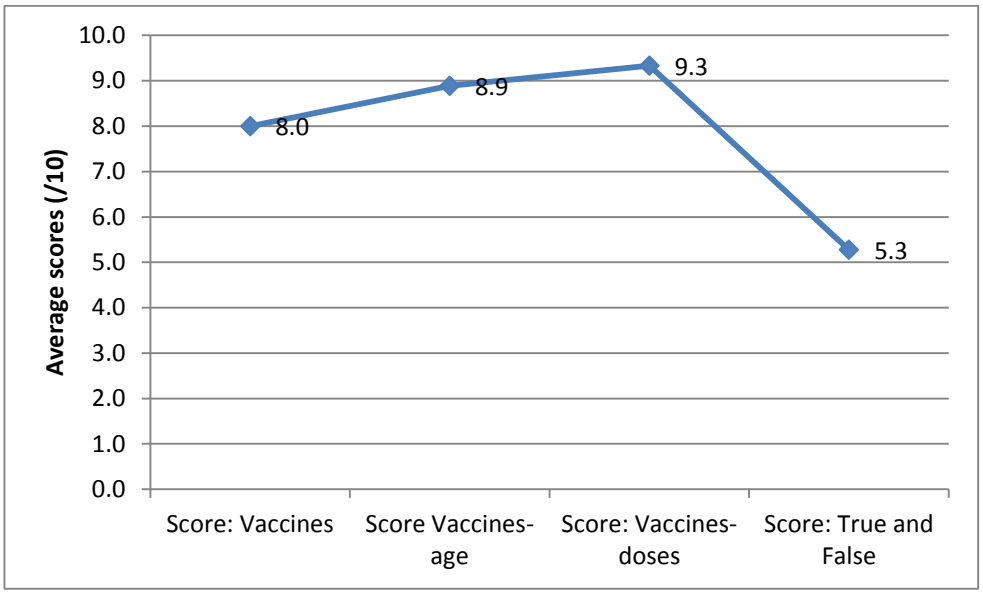

Figure 7: Average scores knowledge about the EPI programme

Further analysis

Further analysis was conducted to check if responses differ by health authority, and for each section regarding knowledge about the EPI programme to assess if there were any differences in responses related to demographic differences such as qualification and/or years of experience.

Responses by qualification

The results of the study reflected that no significant difference in average scores existed based on qualification (Table 14).

Table 14: Presentation of analysis scores by qualification

	Qualification	N	Mean	Std. Deviation
Score: Vaccines	Enrolled nurse	6	7.833	2.4833
	Professional nurse	6	8.167	2.1370
Score: Vaccines-age	Enrolled nurse	6	8.617	1.6241
	Professional nurse	6	9.167	1.3866
Score: Vaccines-doses	Enrolled nurse	6	9.000	1.6733
	Professional nurse	6	9.667	.8165
Score: True and False	Enrolled nurse	6	6.683	2.1189
	Professional nurse	6	3.867	1.3880

Responses by years of experience

The results of the study revealed that no significant difference in average scores existed based on years of experience of the respondents (Table 15).

Table 15: Presentation of scores of responses by experience

	Years working in well-baby clinic	**N**	**Mean**	**Std. Deviation**
Score: Vaccines	Less than a year	6	7.667	2.4221
	At least a year	6	8.333	2.1602
Score: Vaccines-age	Less than a year	6	8.333	1.4760
	At least a year	6	9.450	1.3472
Score: Vaccines-doses	Less than a year	6	9.000	1.6733
	At least a year	6	9.667	.8165
Score: True and False	Less than a year	6	5.550	2.7435
	At least a year	6	5.000	1.8623

b) Individual characteristics and experiences for the child care givers

Several characteristics for the child care givers were assessed in-order to identify and describe the factors that were influencing the uptake of the revised EPI for children between the ages of 6-12 years. The characteristics that were assessed included; demographic information regarding the child care givers that were included in the study, total number of children per child caregiver, relationship of the caregiver to the

child, information relating to the clinic visit and knowledge regarding EPI. The results of the analysis of these characteristics were as follows:

Demographic information the child care givers

The demographic information included race, language, level of education and employment status. As can be seen from Figure 8, the results of the study indicate a total of 96.1% (n=970) of respondents were females and 3.9% (n=39) were males. All respondents 100% (n=1009) were African Black. With regards to language 87.8% (n=870) spoke IsiZulu, and 13.78% (n=139) spoke other languages. The other languages were isiXhosa 9.7% (98) Sesotho 2.3% (n=23), Venda 1% (n=10) and SiSwati 1% (n=10). In relation to level of education 50.7% (n=512) had secondary education, 33.6% (n=339) had tertiary education, 7.2% (n=73) had studied up to primary school level and 8.4% (n=85) had no education at all. A total of 52.2 % (n=526) were unemployed, 16% (n=161) employed and 31.8% (n=320) were students.

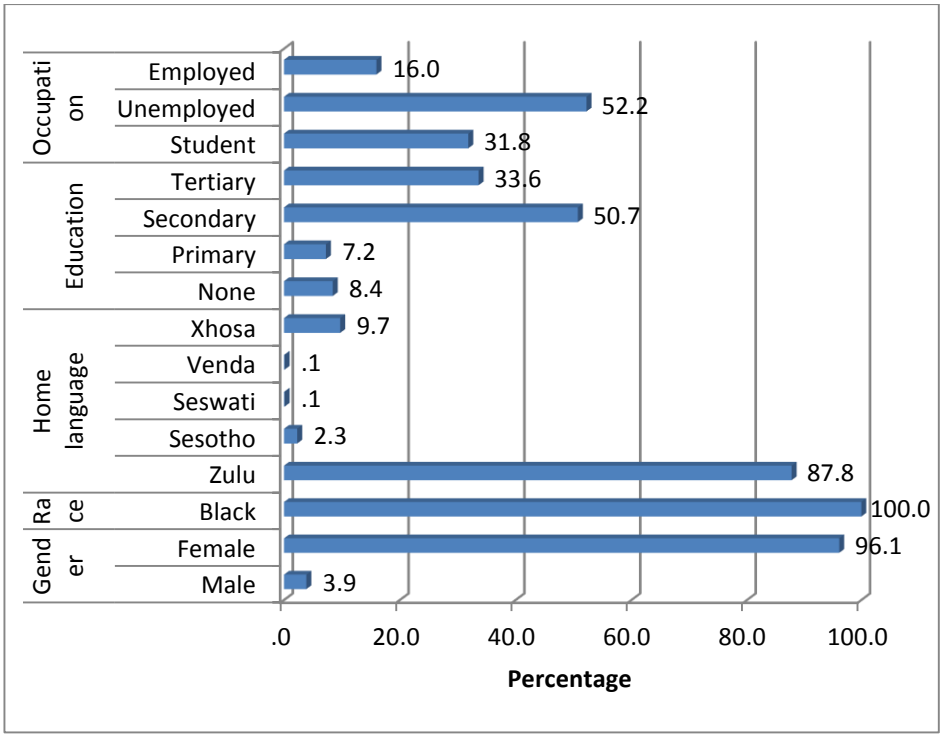

Figure 8: Demographic information regarding the respondents

Total number of children per child caregiver

According to the results of the study 63.5% (n=641) of respondents had one child and 36.5% (N=368) had more than one child (Table 16).

Table 16: Total number of children per child caregiver

Number of children	**Frequency**	**Percent**
One	641	63.5
More than one but less than five	368	36.5
Total	1009	100.0

Relationship to child

The results of the study revealed that out of the1009 care givers that participated in the study 56% (n=582) were biological parents of the children they brought to the clinic, 34% (n=343) were legal guardians, 10% (n=103) other persons such as granny, nannies and, siblings and 0%(n=1) were not specified (Figure 9).

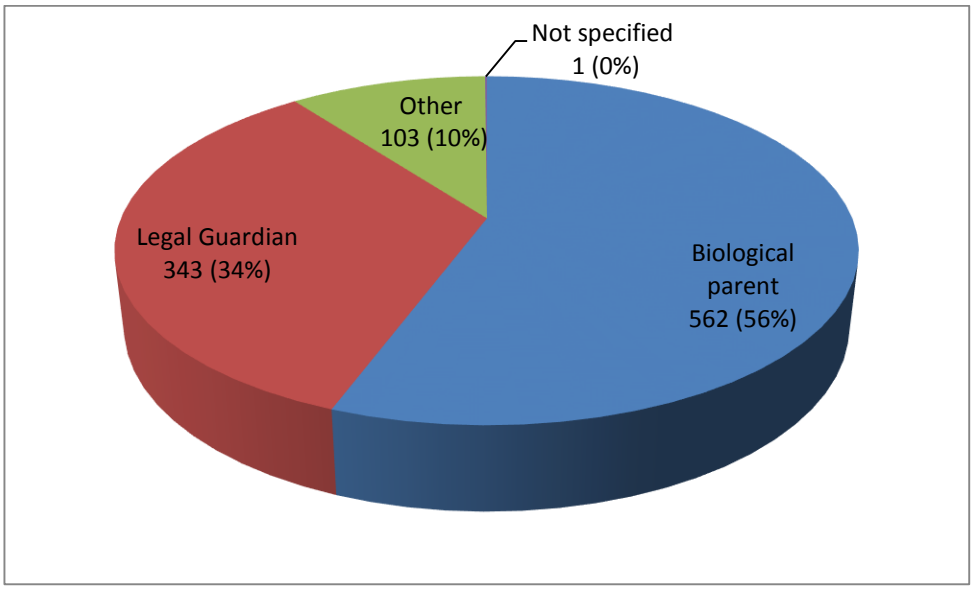

Figure 9: Relationship of the caregivers to the children

Information relating to the clinic visit

The respondents were required to provide information regarding the mode of transport that the caregivers were using to come to the clinic, the

reason why the care givers had brought the children to the clinic and whether the children had received the immunisation on the day of the visit.

Mode of transport to the clinic

With regards to the means of transport to the clinic 64.8% (n=646) indicated that they were walking to the clinic, 25.6% (n=255) used public transport and 9.6% (n=96) were using private transport. A total of 1.2% (n=12) did not respond to this question (Table 17).

Table 17: Mode of transport to the clinic

	Frequency	Percent
Walk	646	64.0
Public transport	255	25.3
Private transport	96	9.5
Total	997	98.8
Missing System	12	1.2
Total	1009	100.0

Reasons for bringing the child to the clinic

In regards to why the care giver had brought the child to the clinic the results of the study revealed that 61.2% (n=624) caregivers had brought the children for immunisation, 10.3% (n=185) had brought in the children because they were sick and 19.6% (n=197) came for other reasons. The other reasons included the following: child to receive vitamin A, deworming syrup, and/or checking of weight (Table 18).

Table 18: Reasons for bringing child to the clinic

Element assessed	Frequency	Percent
Immunisation	624	61.8
Illness	185	18.3
Other	197	19.5
Total	1006	99.7
Missing System	3	.3
Total	1009	100.0

Other reasons for bringing the child to the clinic

According to the results of the study, out of the 197 respondents who had brought children to the clinic for other reasons, these were as follows:

- 0.5% (n=1 each) for vitamin A only, deworming only, weight and deworming;
- 1.1% (n=2) for weight and vitamin A;
- 18.8% (n=37) for weight only;
- 78.7% (n=155) for vitamin A, weighing and deworming (Table 19).

Table 19: Other reasons for bringing the child to the clinic

Element being assessed	Frequency	Percent
Vitamin A only	1	0.5
Weight only	37	18.8
Deworm only	1	0.5
Weight and Deworm	1	0.5
Vitamin A and Deworm	0	0
Vitamin A, weight	2	1.1
Vitamin A, weight and ,Deworm	155	78.7
Total	197	100.0

Knowledge about EPI

The respondents had to provide some information and answer questions regarding the immunisation for their children. The first set of questions was to test the knowledge of the caregiver regarding immunisation for the

child that was being brought to the clinic. In order to know the correctness of the information it was essential to know the age of the child.

Age of the child brought to the clinic

It was important to get the information about the age of the chid in order to establish whether the responses that were given by the Respondents were in line with the age of the child. This also assisted the researcher to establish how many of the children were added 6-12 years. The majority 76% (n=767) of the caregivers had brought children that were less than five years old. A total of 19.5% (n=197) had brought children that were between five and six years and 4.5% (n=45) had brought in the children that were six to twelve years old (Table 20).

Table 20: Age of the child brought to the clinic

		Frequency	Percent
Valid	<5 years	767	76.0
	5-6 years	197	19.5
	>6-12 years	45	4.5
	Total	1009	100.0

Responses of respondents to questions about the immunisation of the child they have brought to the clinic

The results of the study revealed that 41.0% (n=414) responded that they knew what immunisation their children had already received. A total of 27.1 % (n=273) responded that they did not know the immunisations that their children had already received. There were a number of caregivers 31.7% (n=320) who did not respond to this question. A total of 42.9 % (n=433) respondents responded that they knew the immunisations that their children received on the day and 8% (n=81) respondents responded that they did not know the immunisation that their children received on the day. There were a number of respondents 12% (n=121) who did not respond to this question. Regarding the respondents' knowledge about the date on which the children were due to receive the next immunisation

the results of the study revealed that 59.6% (n=601) responded that they knew the date. A total of 18.3% (n=185) responded that they did not know the date on which their children were due to receive the next immunisation. There were 20.6% (n=208) respondents who did not respond to this question. In response to whether the respondents knew the immunisations that their children would receive during the next visit 37.1 (n=374) respondents responded that they knew, 33.3% (n=336) responded that they did not know and 29% (n=293) did not respond. The results of the study regarding whether the children of the respondents had ever missed any immunisations were that 25.4% (n=256) respondents stated yes, 44.7% (n=451) stated no and 29.9% (n=302) did not respond. In response to whether the respondents knew what to do if the child misses an immunization 47.7% (n=481) respondents responded that they knew, 27% (n=272) responded that they did not know and 25.1% (n=253) did not respond. A total of 58.6% (n=591) responded that they knew what to do if the child get sick after the immunisation, 21.6% (n=218) stated that they did not know and 19.8% (n=200) did not respond. Lastly the respondents were asked if they knew the days on which they could bring the children to the clinic for immunization. In response to this question 84.4% (n=684) answered that they knew, 15.2% (n=123) answered that they did not know and (n=199) did not respond (Table 21).

Table 21: Responses of respondents to questions about immunisation of the child they have brought to the clinic

Element assessed	% Yes	% No	No response
Caregiver knowledge about the immunisation that the child had already had	41.0	27.3	31.7
Caregiver knowledge about the immunisation that the child received on day (if any)	42.9	8.0	12.0
The date on which your child is due to receive the next immunisation	59.6	18.3	20.6
The date on which your child is due to receive the next immunisation	37.1	33.3	29.0
Whether your child has missed any immunisation	25.4	44.7	29.9
What to do if child misses the immunisation	47.7	27.0	25.1
Knowledge regarding what to do if the child get sick after the immunisation	58.6	21.6	19.8
The days on which you can take the child to the clinic for immunisation	67.8	12.2	19.7

4.3.2.2 Behavioural outcome

According to Pender's health promotion model individual characteristics and experiences and behaviour specific cognition and affect combined directly affects the individual's commitment to a plan of action and ultimately the performance of the health promoting behaviour (Maville and Huerta 2008:50). The behavioural outcome assessed in the study was whether the child that was at the clinic and the other children had received the immunisation according to the EPI schedule.

Assessment of whether child received immunisation

An analysis was done on how many of the children who were brought to the clinic had received the immunisation. This analysis assessed all the children irrespective of the reason that was specified by the child care giver regarding why she had brought the child to the clinic. The intention

was to assess whether the health care workers were able to identify the children that were due for immunisation according to EPI programme or whether they only responded to the reason why the child caregiver had brought in the child to the clinic. As can be seen from Table 22 the results of the study revealed that a total of 62.8% (n=619) respondents indicated that their children were given immunisation on that day, while 37.2% (N=367) indicated that their children were not given immunisation on that day.

Table 22: Assessment of whether child received immunisation

		Frequency	Percent
Valid	Yes	619	61.3
	No	367	36.4
	Total	986	97.7
Missing	System	23	2.3
Total		1009	100.0

Figure 10 is a graphical presentation of the result of the information regarding transport to the clinic, reasons why children were brought to the PHC clinic and whether the children were given any immunisation on the day of the visit. Regarding mode of transport to the clinic, the study findings were that the majority of caregivers (64%) walked to the clinic, 25.3% used public transport and 9.5% used their own private transport. About 1.2% did not indicate the mode of transport that they used to come to the clinic.

With regards to the reason they had brought the children to the clinic 61.8% indicated that they had brought the children for immunisation, 18.3% had brought the children because the children were sick and 19.5 had brought the children for other reasons such as checking of weight, routine deworming and or supply of vitamin A supplements.

Further questioning included whether the children had received the immunisation on that day. While the majority of the child caregivers

61.3% indicated that their children had received the immunisation 36.4 caregivers indicated that their children did not receive the immunisation and 2.3% did not respond to this question

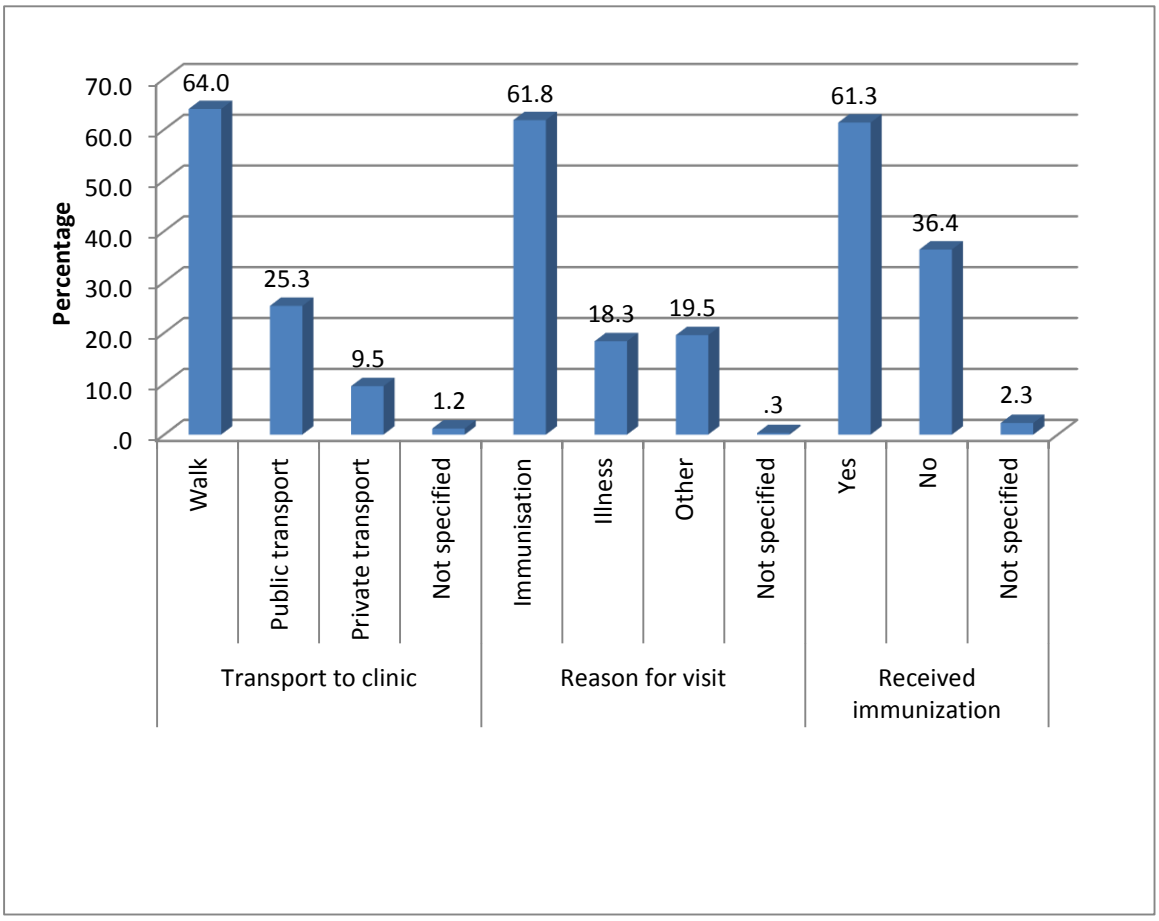

Figure 10: Graphical presentation of reasons children were brought to clinic and those that received immunisation

Assessment of whether other children had received immunisation

In addition to the children that the respondents had brought to the clinic the respondents who had other children were required to give information about the immunisation status of the other children.

As can be seen from Table 23 the respondents had to indicate whether they had other children besides the ones that they had brought to the clinic. The findings of the study revealed that 43.7% (n=441) responded that they had other children, 56.1% (n=566) indicated that they did not have other children and 0.2% (n=2) did not respond.

Table 23: Responses of respondents regarding other children

		Frequency	Percent
Valid	Yes	441	43.7
	No	566	56.1
	Total	1007	99.8
Missing	System	2	.2
Total		1009	100.0

Results for analysis of the correctness of information regarding other children

As can be seen from Table 24 the results of the study revealed that 41.0% (n=414) responded that they knew what immunisation their children had already received. A total of 27.1% (n=273) responded that they did not know the immunisations that their children had already received. There were a number of caregivers 31.7% (n=320) who did not respond to this question. A total of 42.9% (n=433) respondents responded that they knew the immunisations that their children received on the day and 8% (n=81) respondents responded that they did not know the immunisation that their children received on the day. There were a number of respondents 12% (n=121) who did not respond to this question. Regarding the respondents' knowledge about the date on which the children were due to receive the next immunisation the results of the study revealed that 59.6% (n=601) responded that they knew the date. A total of 18.3% (n=185) responded that they did not know the date on which their children were due to receive the next immunisation. There were 20.6% (n=208) of respondents who did not respond to this question. In response to whether the respondents knew the immunisations that their children would receive during the next visit 37.1 (n=374) indicated that they knew, 33.3% (n=336) that they did not know and 29% (n=293) did not respond. The results of the study regarding whether the children of respondents had ever missed any immunisations were that 25.4% (n=256) stated yes, 44.7% (n=451) stated no and 29.9% (n=302) did not respond. In response to whether the respondents knew what to do if the

child missed an immunisation 47.7% (n=481) indicated that they knew, 27% (n=272) that they did not know and 25.1% (n=253) did not respond. A total of 58.6% (n=591) responded that they knew what to do if the child got sick after the immunisation, 21.6% (n=218) stated that they did not know and 19.8% (n=200) did not respond. Lastly the respondents were asked if they knew the days on which they could bring the children to the clinic for immunisation. In response to this question 84.4% (n=684) answered that they knew, 15.2% (n=123) answered that they did not know and (n=199) did not respond.

Table 24: Results for analysis of the correctness of information regarding other children

	Frequency	**Percent**
Correct	365	36.2
Partly correct	20	2.0
Incorrect	59	5.8
Not applicable	565	56.0
Total	1009	100.0

Further analysis on correctness of information regarding other children

A total of 56% (n=565) of respondents indicated that they did not have other children and 44% (n=444) responded that they had other children. The respondents who indicated that they had other children were required to answer questions regarding the immunisation status of the other children. The questions were intended to test the correctness of the information that the respondents provided in response to the questions. The results of the analysis of the responses from the respondents were as follows: a total of 36.2% (n=365) gave correct information, 2.0% (n=20) gave partly correct information and 5.8 %(n=59) gave incorrect information.

Table 25: Results of Chi-square goodness of fit test

	Observed N	Expected N	Residual
Correct	365	148.0	217.0
Partly correct	20	148.0	-128.0
Incorrect	59	148.0	-89.0
Total	444		

A chi-square goodness of fit test was performed for those for who stated that they have other children to see whether any response is selected significantly more often than expected. The results show that significantly more than expected responded to the questions pertaining to the immunisation status of the other children ($\chi^2(2, N=444) = 482.392$, $p<.0005$) (Table 25).

4.3.3 Additional information

Finally each participant was requested to state issues they were not happy with at the clinic and two things that they would suggest needed to be improved (Table 26). The themes that emerged from the responses were grouped as follows: quality of care, waiting time, interruption of services during tea and lunch breaks, clinic space or infrastructure, cleanliness of toilets, organisation of clinic queues, attitude of staff, availability of medicines and other supplies, access to the PHC clinics and the number of nursing staff working in the PHC clinic. Analysis was done and the following results were obtained regarding issues respondents were not happy with:

- Waiting time 53.3% (n=538);
- Interruption of services during tea and lunch breaks 58.2% (n=587);
- Attitude of staff 48.3% (n=487);
- Availability of medicines and other supplies 52.6% (n=531);
- Access to the PHC clinics 46.0% (n=464) and the number of nursing staff working in the PHC clinic 54.7% (n=552).

According to the study results, the issue that the majority of the respondents were happy about was the quality of care 41.5 % (n=419), and the main issue that needed improvement was the organisation of clinic queues 59.6% (n=601).

Table 26: Additional information

Element assessed	Happy about	Needs to be improved	Not happy about	Missing System
Quality of care	41.5 % (n=419)	27.9% (n=282)	20.1% (n=203)	10.4% (n=105)
Waiting time	5.0% (n=50)	19.3% (n=195)	53.3% (n=538)	22.4% (n=226)
Interruption of services during tea and lunch breaks	4.9% (n=49)	20.0% (n=202)	58.2% (n=587)	16.9% (n=171)
Clinic space or infrastructure	1.6% (n=16)	22.3% (n=225	56.8% (n=573)	19. %3 (n=195)
Cleanliness of toilets	2.5% (n=25)	20.9% (n=211)	56.4% (n=569)	20.2% (n=204)
Organisation of clinic queues	9.0% (n=91)	59.6% (n=601)	15.2% (n=153)	16.3% (n=164)
Attitude of staff	14.3% (n=144)	16.7% (n=168)	48.3% (n=487)	20.8% (n=210)
Availability of medicines and other supplies	9.9% (n=100)	9.9% (n=100)	52.6% (n=531)	13.9% (n=140)
Access to the PHC clinics	6.4% (n=65)	31.9% (n=322)	46.0% (n=464)	15.7% (n=158)
The number of nursing staff working in the PHC clinic	9.4% (n=95)	15.7% (n=158)	54.7% (n=552)	20.2% (n=204)

4.4 CONCLUSION

Chapter 4 dealt with presentation of findings of data that was collected from health care workers and caregivers. The findings will be discussed in Chapter 5.

CHAPTER 5

DISCUSSION OF THE RESULTS, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter will discuss the results that were presented in the previous chapter. The discussion is based on the study objectives of the study which were to assess how the EPI was being implemented in the PHC clinics at Umlazi Township and to identify and describe the factors that influence the uptake of the revised EPI for children between the ages of 6 to 12 years in the Umlazi Township.

The aim of the current study was to investigate the factors that influenced the uptake of the revised EPI for children between the ages of 6 to 12 years at Umlazi Township in order to improve immunisation coverage. The three strong elements that are highlighted in Pender's health promotion model as being important for health promotion guided the identification of the factors that influence the uptake of the revised EPI for these age groups. The three strong elements are:

- Individual characteristics and experiences;
- Behaviour-specific cognitions and affect;
- Behavioural outcome.

Although the health promotion model focuses mainly on the client as the individual for whom health promotion must produce effective results, nurses form an important part of the health promotion process. Thus in the current study the three strong elements were assessed for both the health care workers and the child care providers. According to Pender (1996: 10), nurses have the unique opportunity of providing leadership in promotion of health for the world community because of their bio-psychosocial expertise and their frequent continuing contact with the clients.

5.2 DISCUSSION OF RESULTS FOR THE HEALTH CARE WORKERS

5.2.1 Individual characteristics and experiences

The individual characteristics for the health care providers that were assessed included: the qualification, experience, training received on EPI the ability to speak local language and gender of the health care workers. These individual characteristics of the health care workers also informed the researcher how EPI was being implemented in the PHC clinics at Umlazi Township which was the first objective of the study. How the EPI was implemented was identified as one of the factors that influence the uptake of the revised EPI.

5.2.1.1 Qualifications of health care workers working in well-baby clinics

The health care workers who were allocated in well-baby clinics were professional nurses, enrolled nurses or both. A challenge was noted in few clinics where only an enrolled nurse was allocated in the well-baby clinic. This could have and influence on the amount and quality of service that is given to the babies in these clinics because the enrolled nurse has a limited scope of practice than professional nurses (SANC 1978 Regulation R2598 as amended).

5.2.1.2 Training on EPI

The study findings revealed that not all respondents received training on EPI. Even with those who had received training indicated that it was not frequent. Initial training and frequent in-service training is very crucial in EPI as there are changes where vaccines are removed, changed and introduced and health care workers need to be updated in order to cascade the information to the caregivers. The WHO has identified six pillars on which to build a strong health system. These are: leadership and governance, financing of health system, health information, health service delivery, human resources and medical and drug supply (WHO

2009-2012). According to Poggenpoel (2013: 48), in-service training is necessary in order to satisfy the needs of the community, health care organisations, patients and nurses for quality patient care that is cost-effective. In-service training in nursing is seen as a necessary component to help the professional nurse to keep updated on the most recent developments in nursing and to be able to manage the demands of nursing practice.

5.2.1.3 Number of years working in well baby clinics

The study findings revealed that both professional and enrolled nurses had an experience of more than one year working in a well-baby clinic. Level of experience and skills cannot be separated as they play a vital role in improving immunisation uptake. Nkowane, Boualam, Haithami, Sayed & Mutambo (2009: 7) stated that nurses and midwives are key providers of nursing, when the skills and experience of nursing and midwifery personnel are maximized, they can contribute significantly to positive health outcomes. The current study also showed that in some PHC clinics, few health care workers had an experience of less than one year. In some clinics, enrolled nurses were allocated to provide the EPI.

5.2.1.4 Ability to speak and understand local language

The majority of health care workers spoke IsiZulu and the majority of child caregivers also spoke isiZulu, this facilitated communication on EPI health information. Though the majority of both healthcare workers and child caregivers spoke isiZulu as their home language, but there were those caregivers who could only speak their own home language and were unable to speak any of the local languages which were isiZulu and English. This was seen as barrier to communication which had a negative impact on immunisation uptake. According to Houle (2010: 1), misunderstanding of medical information and the lack of therapeutic relationship between providers and patients are problems encountered when patients have limited language proficiency.

5.2.1.5 Gender of health care workers that were involved in providing the EPI

The results of the study indicated that the majority of respondents who were working in the well-baby clinics rendering EPI services were females. The majority of child caregivers were also females. . Communication from female to female is generally more comfortable as compared to that of male to female. . Communication from female to female is generally more comfortable as compared to that of male to female. According to Jefferson (2013:1) physician gender may be a source of differences in communication between physicians and their patients, which may in turn contribute to patient satisfaction and other outcomes According to Naeem, Adil, Abbas, Khan, Naz, Khan & Khan (2011: 110) low immunization was seen among families with uneducated and low earning parents and vice versa and that mothers having knowledge about immunization and its importance had much greater immunization rates for their children which showed clearly. It is concluded that among aspects ignored, patient education is of vast importance and even a low level of health information can improve utilisation of health services by caregivers thus increasing immunisation coverage.

5.2.2 Behaviour-specific cognitions and affect

The behaviour specific cognition and effect that was assessed for the health care workers was their knowledge for EPI. The knowledge of the health care worker influenced how the EPI was being implemented. Understanding knowledge that is used in everyday nursing practice is important to the improvement of educational preparation and quality in health care (Skar 2010: 1). The knowledge about EPI was identified as one of the factors that influenced the uptake of the revised EPI schedule. Pender (1996:1) states that nurses play a role in making health promotion reimbursable services and in opening access to such services and therefore must continue to work to redistribute health care resources so

that quality health-promotion services are available to all. Another behaviour-specific cognitions and affect was how the assessment of the children was done at the clinics especially those that were brought for other reasons either than immunisation. The study identified that several children were inaccurately assessed thus resulting in missed opportunities for giving immunisations to these children.

5.2.2.1 Health care workers' knowledge of the EPI

This section was used to assess the knowledge of the respondents about the EPI programme. The section of the questionnaire had four subsections containing information about the EPI programme including: vaccines included in the EPI programme, ages at which certain immunisations are given, the number of doses that the child should receive for each vaccine, and true or false statements. The true or false statements basically consisted of missed opportunity management and contra-indications to immunisation. According to study findings all the first three sections were well answered with section three on vaccine doses scoring the highest, followed by section two on ages at which vaccines are given and section one on vaccines. The true and false section which was section four was answered worst. This was the most critical section as it consisted of missed opportunity management as well as contra-indications to immunisation. It is very crucial for a health worker providing EPI services to have basic knowledge of these critical components as these can lead to a loss of life. According to Global Health Sciences and Practice (2013: 1), health workers basic knowledge about immunisation is one of the key determinants of the success of vaccination and lack thereof can limit immunisation coverage. Harrington *et al* (2009: 294) stated that low knowledge regarding immunisation among caregivers particularly the timing of the next time vaccine is one of the factors contributing to suboptimal uptake of immunisation. Amin (2012: 2) further stated that basic caregivers' knowledge about immunisation is one of the key determinants of the success of vaccination.

5.2.2.2 Inaccurate assessment of children brought to the clinic for other reasons

An analysis was done on how many of the children who were brought to the clinic had received immunisation if they were due to receive them. . The intention was to assess whether the health care workers were able to identify the children that were due for immunisation according to the EPI programme or if they only considered the reason why the child caregiver had brought the child to the clinic. The results of the study revealed that though the majority of children received immunisation, about 37.2% of children did not receive immunisation. The new approach to assessing a sick child is that, even though the caregiver might state that a child is sick and does not mention immunisation, it is the responsibility of a professional nurse to assess if the child can be immunised based on her findings unless the caregiver seriously objects. "A child well enough to go home is well enough to go home immunised" (Africa 2012: 7). This lack of assessment can have a negative effect on immunisation uptake especially in those PHC clinics where enrolled nurses are more actively involved in providing immunisation.

5.3 ASSESSING THE THREE STRONG ELEMENTS FOR THE CHILD CARE GIVERS

The three strong elements that are important for health promotion relate mainly to an individual for whom health promotion or protection from illness is intended (Pender 1996: 7). Health promotion comprises strategies related to individual lifestyle and personal choices made in a social context that have a powerful influence over one's own health prospects (Pender 1996: 6). The three strong elements in relation to the child care givers were used to identify and describe the factors that influenced the uptake of the revised EPI for children between the ages of six to twelve years which was the second objective of the study.

The majority of the factors that influence the uptake of the revised EPI for children between the ages of six to twelve years in a positive way were in relation to how the EPI programme was implemented and the characteristics of the health care workers who were working in the EPI. Others factors were in relation to the childcare givers and their access to the EPI. The factors about the characteristics of the health care worker and how the EPI was implemented have been discussed above.

5.3.1 Individual characteristics and experiences of the child care givers

The individual characteristics for the child care givers included the following:

- Demographics of child caregiver;
- Relationship of the caregiver to child;
- Caregivers level of education and socio-economic status.

5.3.1.1 Demographics of child care givers

Though the majority of child caregivers spoke isiZulu, a minority spoke other languages that the respondents might not have been familiar with and that could have a negative influence on immunisation as this could be a barrier to communication. According to Houle (2010: 1), misunderstanding of medical information and the lack of therapeutic relationship between providers and patients are problems encountered when patients have limited language proficiency. The majority of nurses reported that language barriers are a significant impediment to quality care and a source of stress in the workplace.

5.3.1.2 Relationship of the care givers to children

According to the study results the majority of child caregivers were biological parents. Biological parents play a very important role when it comes to influencing immunisation uptake as they are the ones who make a decision to have their children immunised. Adeyinka *et al*. (2008: 2) conducted a study in South-Western Nigeria and emphasized that a good proportion of children were fully immunised as almost all women interviewed were aware of immunisation because of the information obtained during antenatal clinic.

5.3.1.3 Child care givers level of education and socio-economic status

In relation to level of education though few child caregivers had tertiary education; some had no education at all. Few were employed but others were unemployed. The level of socio-economic status and that of education also contributes to uptake of immunisation. According to Palmer (2013: 1), a number of large studies have shown that under-vaccination is significantly more common among less educated members of the public. By socio-economic deprivation, this database also shows that children living in most disadvantaged households are less likely to be fully immunised. According to New Zealand statistics (Statistics New Zealand 2007) regarding influences on health and well-being, in general people with fewer economic resources tend to have poorer health outcomes due to a combination of factors including difficulty in accessing health services.

5.3.2 Behaviour-specific cognitions and affect

The care giver's knowledge about the EPI was regarded as behaviour-specific cognitions and affect.

5.3.2.1 Child care givers knowledge of EPI

The majority of caregiver respondents (84.4%) knew which days to bring the children to the clinic for immunisation. Lack of knowledge among caregivers is one of the contributing factors affecting immunisation uptake. According to Simone Carrillo-Santisteve & Lopalco (2012: 1), gaps in knowledge and poor communication from healthcare workers are detrimental to high immunisation rates. Correct and transparent information for parents plays a key role in the parental decision on whether to have their children vaccinated. Harrington *et al*. (2009: 1) stated that low knowledge regarding immunisation, particularly the timing of the next time vaccine is one of the factors contributing to suboptimal uptake of immunisation. Amin *et al*. (2012: 2) state that basic caregivers' knowledge about immunisation is one of the key determinants of the success of vaccination. A number of studies revealed that despite the advances in the EPI in South Africa, the programme continues to face a number of challenges (Siegfried, Wiysonge & Pienaar 2010; Schoub 2011: 6-7). The findings of these studies revealed that both immunisation coverage and community knowledge about immunisations is low (Zipursky, Wiysonge & Hussey 2010: 455-461).

5.3.3 Behavioural outcome

In the current study the desired behavioural outcome was that the children receive immunisation according to the immunisation schedule. The individual characteristics and experiences and the behaviour-specific cognitions and affect of both the health care workers and the child care givers were viewed as important for the behavioural outcome. As indicated in the problem statement fewer children compared to the other age groups were receiving the immunisation at the age of six and twelve years. This was confirmed by the findings of the study where out of the 1000 children for the care givers that were included in the study 45 children were six to twelve years. The study findings also revealed a number of missed opportunities where due to inaccurate assessment of

the children who came to the clinic for other reasons a number of these children (367) who were due for immunisation or have missed immunisations were not given immunisation.

5.4 OTHER FACTORS INFLUENCING THE UPTAKE OF IMMUNISATION

There were several other factors, besides those directly related to health promotion, that were identified to influence the uptake of immunisation These factors were directly related to service provision and included:

- Supply and control of immunisation vaccines and material resources;
- Systems for emergency ordering of vaccines;
- Management and support of health care workers who were providing EPI;
- Clinic infrastructure and cleanliness;
- Other characteristics assessed for the child care givers;
- Distance travelled to access health care services;
- The waiting times.

5.4.1 Supply and control of immunisation vaccines and material resources

With regards to sufficient stocks of all vaccines, the results of the study were that the majority responded that they always had sufficient stocks of all vaccines available at the clinic but others stated that they sometimes had sufficient stock. Having sufficient stock is always very critical in provision of EPI services in order to avoid untoward consequences for example missed opportunities, declining immunisation coverage, increasing mortality rate due to vaccine preventable diseases. Thornton (2010: 3) argues that it is essential for all organisations to maintain adequate reserves. These reserves provide a cushion to deal with operating deficits that may rise because of unexpected events. In order for any organisation to function efficiently there should be a balance of

both human and material resources. Unless there is a balance of both, EPI services cannot be provided efficiently and this can badly affect immunisation uptake.

The majority of the respondents stated that the vaccine fridge was always working well, but there were those that stated it was working well sometimes. A vaccine fridge that is always working well contributes to a proper cold chain management however if the vaccine fridge is not always working well that will affect the cold chain. An improperly functioning cold chain can lead to wasted vaccines, missed opportunities to immunise due to lack of vaccines and children receiving vaccines that do not protect them as intended or that actually make them sick. Every immunisation program must assess cold chain equipment needs periodically and replace broken equipment not worth repairing (USAID-Immunisation Snap Shots 2008).

With regards to correct quantities of vaccines issued the results of the study revealed that all respondents were being issued with correct quantities of vaccines. It is crucial to always have sufficient quantities of vaccines so as to avoid contributing to unnecessary missed opportunities. According to Centre for Disease Control and Prevention (2012) disease prevention is the key to public health. Vaccines can protect both the people who receive them and those they come into contact with. Vaccine-preventable diseases have a costly impact resulting in hospitalisation and premature deaths.

The majority of respondents indicated that the system for emergency ordering of vaccines existed however there were those that responded ‘no’ to the existence of a system for emergency ordering of vaccines. The emergency vaccine retrieval and storage plan should provide up-dated information regarding procedures to follow. Current, new and temporary staff should read the plan and understand it (Vaccine Storage & Handling Toolkit 2012: 16).

According to the study results respondents stated that new EPI developments were always communicated timeously, but the study showed that some stated that new developments were sometimes communicated timeously whereas others stated they were not communicated timeously. According to Smith, Killen & Knight (2013:1), “Involving stakeholders in curriculum design introduces fresh insight that can improve the way a course or module is designed and delivered and find solutions to challenging issues”. Due to changes that constantly take place with the EPI it cannot be overemphasised how important it is to communicate new developments timeously.

5.4.2 Systems for emergency ordering of vaccines

The study findings revealed that there were no systems for emergency ordering of vaccines, this can have a negative impact on the success of immunisation as it can lead to unnecessary drop-out rate and missed opportunity. “The emergency vaccine retrieval and storage plan should provide up-dated information regarding procedures to follow” .Current, new and temporary staff should read the plan and understand it” (Vaccine Storage & Handling Toolkit 2012: 16)

5.4.3 Management and support of health care workers who were providing EPI

Though some respondents indicated that they received frequent management support there were those who felt the support was not that frequent and others responded that they never received management support at all. On the other hand regarding support for EPI services the study showed that respondents were receiving enough support but some respondents stated that they were receiving insufficient support while others stated they were not receiving any support. According to the WHO (2009-2012), strengthening the immunisation system by improving managerial skills of EPI managers is one of the keys to improving immunisation rates.

5.4.4 Communicating new developments in EPI

The results of the study showed that new developments were not communicated timeously which can hinder immunisation uptake as there are constant changes on EPI. Smith (2012: 1) states that involving stakeholders in curriculum design introduces fresh insight that can improve the way a course or module is designed and delivered and find solutions to challenging issues. Therefore, it cannot be overemphasised how significant it is to communicate new developments timeously.

5.4.5 Clinic infrastructure and cleanliness

Frequencies also revealed that some respondents were not happy about infrastructure and cleanliness of toilets. According to Infectious Diseases Epidemiology and Surveillance (2007: 1), cleaning is important particularly in work areas because deposits of dust, soil and microbes on surfaces can transmit infection. "Public health infrastructure is fundamental to the provision and execution of public health services at all levels". Cleaning allows for and supports the key goals of healthy people including: improvement of health, creation of environment that promotes good health and promotion of healthy development and behaviours (Public Health Infrastructure 2013: 12). Therefore, a proper infrastructure is essential in order to meet the above goals so as to be able to provide efficient service to child caregivers thus improving immunisation uptake.

5.4.6 Distance travelled to access health care services

With regards to the means of transport to the clinic the study findings showed that the majority of child caregivers walked and most of the remainder used public transport. Amin *et al*. (2013) argue that "walking is much longer in time for some families particularly during the wet seasons and that access to services may be blocked by poor road conditions". The findings were that some child caregivers were not happy about the distance travelled to the clinic and others were using public transport.

Due to long distance travelled and money to pay for public transport some child caregivers could lose interest in immunising their children. This is further supported by the Global Health Science and Practice (2013: 5) in that walking is much longer for some families particularly during the wet seasons; access to services may be blocked by poor road conditions and that could affect immunisation uptake badly.

5.4.7 The waiting times

The majority of the respondents responded that they were not happy about waiting time, interruption of services during tea and lunch breaks, attitude of staff, availability of medicines and other supplies, access to the PHC clinics, and the number of nursing staff working in the PHC clinic. Other researchers support this. According to Amin *et al*. (2013), key determinants of the success of vaccination efforts are health care workers attitudes, the manner in which patients are treated, aspects of service organisation and adequate supply of vaccines. Therefore, lack of these determinants can contribute to factors limiting immunisation uptake. The study findings revealed that respondents were happy about the quality of care; however organisation of queues needed improvement. Long queues could contribute to health caregivers not bringing children for immunisation thus affecting immunisation uptake. The findings of the study by Amin *et al*. (2013) further revealed that increased access resulted in long waiting times and queues, contributing to dissatisfaction with the service which could lead to missed appointments and non-compliance with established treatment plans".

5.5 SUMMARY OF FINDINGS

The aim of the study which was to investigate the factors that influence the uptake of the revised EPI for children between the ages of 6 to 12 years at Umlazi Township in order to improve immunisation coverage. Two objectives were used to achieve this aim. These were to:

- Assess how the EPI was implemented;

- Identify and describe the factors that influenced the uptake of the revised EPI for children between the ages of 6 to 12 years.

According to the findings of the study EPI was well implemented in Umlazi PHC clinics. However, there were several gaps with re

Gaps related to health care workers

- Some of the PHC clinics included in the study had only enrolled nurses and no professional nurses involved in EPI services
- The findings of the study revealed that not all health care workers working in the EPI services were able to answer all the questions that were used to test knowledge correctly. The conclusion from these findings was that not all health care workers involved in EPI services had full knowledge about EPI
- Some of the health care workers involved in EPI reported that they had not had training and others reported that in-service education was infrequent
- The study findings revealed that there inaccurate assessment either than immunisation thus resulting in missed opportunities to offer immunisation to these children

Gaps related to child care givers

- The one gap that pertained to the care givers was that some of them had limited knowledge about EPI especially with regards to the immunisations that the child had already received or missed and those that were still due and what to do if the child had missed immunisation;
- The waiting times in some of the clinics were viewed as being too long;
- Other child care givers complained about the location of the clinic stating that they had to travel long distances using public transport.

Gaps related to service provision

- The majority of the participants stated that there were no systems of ordering emergency supplies of immunisations;
- Some of the clinic reported that they did not have adequate support from man health care worker respondents reported that new developments on EPI were not communicated on time.

Factors that influenced the uptake of the revised EPI for children between the ages of 6 to 12 years

Several positive and negative factors that influenced the uptake of immunisation for this age group were identified. The majority of the factors that influence the uptake of the revised EPI for children between the ages of 6 to 12 years in a positive way were in relation to how the EPI programme was implemented and the characteristics of the health care workers who were working in the EPI. Other factors were in relation to the childcare givers and their access to the EPI. The factors about how the EPI, the characteristics of the health care workers and those of the child care givers have been discussed above as these are linked to the theoretical framework.

Several negative factors were identified and due to these negative factors several children were not being immunised. This resulted to the low immunisation coverage as presented in chapter one under introduction and background of the study. Amongst the negative factors identified were the following:

- Health care workers' knowledge of the EPI;
- Delays in communication of New developments on EPI;
- Distance travelled to access healthcare service;
- Inaccurate assessment of children brought to the clinic for other reasons;
- Child care givers knowledge of EPI;

- Long waiting times;
- Lack of management support of health care workers who were providing EPI;
- Communicating new developments in EPI;
- Unavailability of systems for emergency ordering of vaccines;
- Clinic infrastructure and cleanliness.

5.6 CONCLUSION

While the uptake of the for children between the ages of six to twelve years remains low in the Umlazi Township, the study identified several factors that have positive influence on the uptake of immunisations. These factors could be used to strengthen the EPI services in the area and improve the uptake of the immunization. It is important that the factors that have a negative influence on the uptake of immunisation were also identified because the awareness of these factors can facilitate the development of strategies to overcome them. Thus the researcher considered both the positive and the negative factors when drawing the recommendation from the study.

5.7 LIMITATIONS OF THE STUDY

The study was conducted in one district in KZN and the study findings may therefore not be generalised. However, the results could be used in other districts to increase awareness of factors that influence immunisation uptake. The sample for the health care workers was too small due to the number of health care workers who were involved in EPI services in the PHC clinics. This has implications for statistical analysis that was carried out. The majority of children brought for immunisation were mainly from the age group of five years and below compared to the age group between 6 to 12 years. This hindered identification of factors that had a positive influence on the uptake of immunisation for children between 6 and 12 years.

5.8 RECOMMENDATIONS BASED ON THE FINDINGS OF THE STUDY

The following recommendations were made based on the findings of the study and such findings were seen as factors that limited immunisation uptake.

5.8.1 Management support and communication

- Open communication is the basis for any organisation to be successful and function efficiently. It should be immediate and transparent at all levels so that any new developments are communicated timeously.
- Management support and availability is vital to sub-ordinates so that they are able to voice their concerns and get clarity on some queries regarding new developments in the programme. Constant supportive supervision should be ensured until healthcare workers are confident with new changes in the programme.
- Adequate supply of both human and material resources should be ensured at all times for efficient rendering of the service.

5.8.2 Training and frequent in-service training of health care workers

- Healthcare workers are considered by parents as a primary and trustworthy source of formation. Training of health care workers is crucial in order to bridge the gaps in knowledge.
- Due to constant changes in EPI, it is of vital importance that health care workers receive frequent in-service training so as be always abreast with new developments.
- Health care workers need to ensure that information on immunisation is cascaded to child caregivers by strengthening health education talks on immunisation especially during antenatal periods and postnatal periods.

5.8.3 Further research

Nursing research is valuable and must be encouraged and developed in order to build the profession. Further research is recommended that will explore the factors that influence the uptake of the revised immunisation for children between 6 and 12 years on a wider scale involving other provinces. This will provide a broader picture on the immunisation uptake in the whole country.

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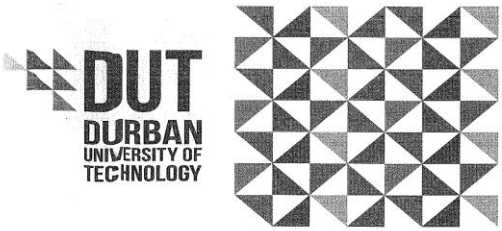
Appendix 1a: DUT Ethics Clearance



Institutional Research Ethics Committee
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www.dut.ac.za

29 August 2013

IREC Reference Number: **REC 49/13**

Ms N P H Chonco
5 Cove Close
Seaglen Gardens
4094

Dear Ms Chonco

Factors influencing the uptake of the revised expanded immunisation programme at Umlazi Township KwaZulu-Natal

I am pleased to inform you that Full Approval has been granted to your proposal REC 49/13.

The Proposal has been allocated the following Ethical Clearance number IREC 071/13. Please use this number in all communication with this office.

Approval has been granted for a period of one year, before the expiry of which you are required to apply for safety monitoring and annual recertification. Please use the Safety Monitoring and Annual Recertification Report form which can be found in the Standard Operating Procedures [SOP's] of the IREC. This form must be submitted to the IREC at least 3 months before the ethics approval for the study expires.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC SOP's. In addition, you will be responsible to ensure gatekeeper permission.
Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Please note that you may continue with validity testing and piloting of the questionnaire. Research on the proposed project may not proceed until IREC reviews and approves the final questionnaire. If there are no changes to the questionnaire kindly notify IREC in writing.

Yours Sincerely

Prof J K Adam
Chairperson: IREC

Appendix 1b: Acknowledgement of the pilot study

Institutional Research Ethics Committee
Faculty of Health Sciences
Room M5.49, Medical School Site
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Durban University of Technology

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www.dut.ac.za

25 October 2013

IREC Reference Number: REC 49/13

Ms N P H Chonco
5 Cove Close
Seaglen Gardens
4094

Dear Ms Chonco

Factors influencing the uptake of the revised expanded immunisation programme at Umlazi Township KwaZulu-Natal

The Institutional Research Ethics Committee acknowledges receipt of your notification regarding the piloting of your data collection tools.

Please note that you may now proceed with research on the proposed project.

Yours Sincerely,

Prof J K Adam
Chairperson IREC

Appendix 2a: Permission letter to the District Manager

5 Cove Close
Seaview
4094

The District Manager
EThekwini District Office
Durban

Dear Sir/ Madam

REQUEST FOR PERMISSION TO CONDUCT A STUDY

I am presently registered for a Master's Degree at the Durban University of Technology in the Department of Nursing. The proposed title of my research project is Factors influencing the uptake of the revised expanded programme on immunisation for children between ages of six to twelve years at Umlazi Township, KZN.

The study will be conducted in the fixed PHC clinics of eThekwini district using both Municipality and KZN Department of Health clinics and will be conducted in two phases. Self-administered questionnaires will be used to collect data from the professional nurses and enrolled nurses who are working in the well-baby service department. The second phase will include data collection from the care givers of the children between six to twelve years of age which will also use questionnaires.

I hereby request your permission to conduct a research project at your institute. I will collect data at the three Primary Health Care clinics at Umlazi that are under the control of the eThekwini Municipality.

Your support and permission to conduct the study in your facility will be appreciated.

Yours sincerely

……

Mrs. N.P.H. Chonco (Masters Student) Email: nomfundochonco@gmail.com

……

Dr. MN. Sibiya (Supervisor)
Email: nokuthulas@dut.ac.za

……

Mrs. TSP Ngxongo (co-Supervisor)
thembelihlen@dut.ac.za

Appendix 2b: Approval letter from the District Manager

Department:
Health
PROVINCE OF KWAZULU-NATAL

Postal Address: Private Bag X6431 8 Durban 4000
ss: 83 Jan Smuts Highway, Mayville, Durban 4001
Tel 031 2405308: Fax. 031 2405500
Email. nar.hoosain@kznhealth.gov.za
www.kzn health.gov.za

Enquiries: Ms Jabi: Hlazo
Tel: 031 240 5303
Date: 13 September 2013

Attention: N.P.H Chonco.

E-mail : nomfundochonco@gmail.com

REQUEST TO CONDUCT RESEARCH:

"Factors influencing the uptake of the revised expanded immunization programme at Umlazi Township. KwaZulu Natal. REC 49/13."

Support is hereby granted to conduct research on the above topic.

Please note the fofowing:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidulines of the Department of Health with regard to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure that this office is informed before you commence your research.
4. The District Office will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office.

For The District Manager
eThekwini Health District
Telephone: 031 2405303
Fax: 031 2405500
Email: jabulisiwe.hlazo@kznhealth.gov.za

Appendix 3a: Permission Letter from Municipality

5 Cove Close
Seaview
4094

The Head of Health Unit
EThekwini Municipality
9 Archie Gumede Place
Durban
4000

Dear Sir/ Madam

REQUEST FOR PERMISSION TO CONDUCT A STUDY

I am presently registered for a Master's Degree at the Durban University of Technology in the Department of Nursing. The proposed title of my research project is **Factors influencing the uptake of the revised expanded programme on immunisation for children between ages of six to twelve years at Umlazi Township, KwaZulu-Natal.**

The study will be conducted in the fixed PHC clinics of eThekwini district using both Municipality and KwaZulu-Natal Department of Health clinics and will be conducted in two phases. Self-administered questionnaires will be used to collect data from the professional nurses and enrolled nurses who are working in the well-baby service department. The second phase will include data collection from the care givers of the children between six to twelve years of age which will also use questionnaires.

I hereby request your permission to conduct a research project at your institute. I will collect data at the three Primary Health Care clinics at Umlazi that are under the control of the eThekwini Municipality.

Your support and permission to conduct the study in your facility will be appreciated.

Yours sincerely

……

Mrs. N.P.H. Chonco (Masters Student) Email: nomfundochonco@gmail.com

……

Dr. MN. Sibiya (Supervisor)
Email: nokuthulas@dut.ac.za

……

Mrs. TSP Ngxongo (co-Supervisor)
thembelihlen@dut.ac.za

Appendix 3b: Approval Letter from Municipality

HEALTH UNIT

9 Archie Gumede Place
Durban, 4001
P O Box 2443Durban, 4000
Tel: 031 311 3506/8, Fax: 031 311 3530
www.durban.gov.za

Dear Ms. N.P. Chonco

11 October 2013

Subject: Approval of a research proposal.

The research proposal titled: Factors Influencing the uptake of the revised expanded immunization program at Umlazi Township KwaZulu Natal is approved.

The following to be noted:

- Submission of the indemnity form obtainable from the EThekwini Municipality Health Unit before commencement of the study.
- Prior arrangements to be made with the facility and an assurance that service delivery will not be disrupted.
- No staff member should be used for collecting data for the researchers.
- Progress reports to be provided and the final report of the study to the eThekwini Municipality Health Unit or emailed to: grace.mufamadi@durban.gov.za
- Obtain permission from the eThekwini municipality health department for press releases and release of results to communities/stakeholders.
- The department has to receive recognition for the assistance given.
- Any amendment to the study to be communicated with the eThekwini Municipality Health Unit and the relevant amendment form obtainable from the unit to be submitted.
- Withdrawal of permission to conduct research will be left to the discretion of the eThekwini Municipality Health Unit.

Yours faithfully

Deputy Head for Health: B.V. Sibeko Signature: [signature] Date: 25/10/2013

Appendix 4a: Permission Letter from Province

5 Cove close
Seaview
4094

The Health Research and Knowledge Management Component
KwaZulu-Natal Department of Health
Private Bag X9051
Pietermaritzburg

Dear Madam

REQUEST FOR PERMISSION TO CONDUCT A STUDY

I am presently registered for a Master's Degree at the Durban University of Technology in the Department of Nursing. The proposed title of my research project is **Factors influencing the uptake of the revised expanded programme on immunisation for children between ages of six to twelve years at Umlazi Township, KwaZulu-Natal.**

The study will be conducted in the fixed PHC clinics of eThekwini district using both Municipality and KwaZulu-Natal Department of Health clinics and will be conducted in two phases. Self-administered questionnaires will be used to collect data from the professional nurses and enrolled nurses who are working in the well-baby service department. The second phase will include data collection from the care givers of the children between six to twelve years of age which will also use questionnaires.

I hereby request your permission to conduct a research project at your institute. I will collect data at the three Primary Health Care clinics at Umlazi that are under the control of the eThekwini Municipality.

Yours sincerely

……

Mrs. N.P.H. Chonco (Masters Student) Email: nomfundochonco@gmail.com

……

Prof MN. Sibiya (Supervisor)
Email: nokuthulas@dut.ac.za

……

Mrs. TSP Ngxongo (co-Supervisor)
thembelihlen@dut.ac.za

Appendix 4b: Approval Letter from Province

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Health Research & Knowledge Management sub-component
10 – 103 Natalia Building, 330 Langalibalele Street
Private Bag x9051
Pietermaritzburg
3200
Tel.: 033 – 3953189
Fax.: 033 – 394 3782
Email.: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

Reference : HRKM 261/13
Enquiries : Mr X Xaba
Tel : 033 – 395 2805

Dear Ms NP Chonco

Subject: Approval of a Research Proposal

1. The research proposal titled **'Factors influencing the uptake of the immunization programme (EPI) at Umlazi township'** was reviewed by the KwaZulu-Natal Department of Health.

   The proposal is hereby **approved** for research to be undertaken at Umlazi D, H, K, L, Q, U, V clinics.

2. You are requested to take note of the following:
   a. Make the necessary arrangement with the identified facility before commencing with your research project.
   b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

Dr E Lutge
Chairperson, Health Research Committee
Date: 03/10/2013

Appendix 5: Letter from statistician

Gill Hendry B.Sc. (Hons), M.Sc. (Wits)

Mathematical and Statistical Services

Cell: 083 300 9896

email : hendryfam@telkomsa.net

25 March 2013

To whom it may concern

Please be advised that Nomfundo Chonco (student number 20930507) who is presently studying for a Master of Technology: Nursing is consulting me regarding the sampling strategy she will use for her study. I am also advising her on the structure of the questionnaire but it is still a work in progress.

Yours sincerely

Gill Hendry (Mrs)

Appendix 6: Letter of information and consent to health care workers

Thank you for agreeing to participate in this study.

Title of the Research Study: Factors influencing uptake of the revised expanded Immunisation Programme in children between the ages of six to twelve years in Umlazi Township, KwaZulu-Natal.

Principle Investigator/s/researcher: Ms. N.P.H. Chonco (M. Tech: Nursing candidate) 083 339 2427 (Cell).

Co-Investigator/s/supervisor/s: Dr M.N. Sibiya (D Tech: Nursing) and Ms T.S.P. Ngxongo (M Tech: Nursing).

Brief Introduction and Purpose of the Study: I will be conducting the study on the uptake of revised expanded immunisation programme. I am interested in investigating the factors that influence the uptake of the new immunisation schedule for the children between the ages of six to twelve years.

Outline of the Procedures: Data will be collected from the health care workers who are directly involved in the immunisation programme using a self-administered questionnaire. I therefore will require the professional nurses and the enrolled nurses to complete the questionnaires at the time that is convenient to them. I will specify the date for collecting the questionnaires on the day when I am delivering them to the clinic. I am hereby requesting your assistance in completing the questionnaires which will take plus or minus fifteen to twenty minutes of your time. The questions are easy and straight forward and not intended to test your knowledge however it is aiming at getting the information to assist me with making the recommendation for improvement of immunisation programme for our community.

Discomfort to the Subject: There is no risk or discomfort that will because by partaking in the study.

Benefits: The study findings will be used to make recommendations for improvement of the immunisation programme and promote safe and quality practice at the PHC clinics.

Reason/s why the Subject May Be Withdrawn from the Study: You will be allowed to opt out from the study or withdraw at any time should you wish to do so.

Remuneration: You will not be expected to pay anything for taking part in the study, and also no payment will be given to you for taking part in the study.

Confidentiality: All the information will be kept in strict privacy. Your name will not be written on the field notes with your responses. The information gathered will only be used for the purpose of this study.

Research-related Injury: No compensation, however the nature of the study does not have any risk of injury to you.

Persons to Contact in the Event of Any Problems or Queries:

Supervisor: Dr MN Sibiya Durban University of Technology Tel: 031-373 2606

Co-supervisor: Ms TSP Ngxongo Durban University of Technology Tel: 031-373 2609

Institutional Research Ethics administrator on: 031-373 2900.

Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031-373 2382 or dvctip@dut.ac.za.

Statement of agreement to participate in the research study: If you are willing to participate in the study may I request that you sign the agreement on this page.

Statement of Agreement to Participate in the Research Study:

I ---------- (subject's full name).

ID number: ….....have read this document in its entirety and understand its contents. Where I have had any questions or queries, these have been explained to me by ……to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore, voluntarily agree to participate in this study.

Subject's name (print)

…….....

Subject's signature:…....……Date……..….....

Researcher's name (print)

signature:……..…….....

Researcher's signature:

……Date:.....

Witness name (print)

signature…….....

Witness signature:

…….Date…….……...

Appendix 7a: Letter of information and consent to caregivers in Zulu

Isishicilelo sesithathu: Incwadi yokwaziswa nemvume kwabanakekela abantwana

Siyabonga ukuba uvume ukuba yingxenye yalolucwaningo.

Isihloko socwaningo: Izizathu ezinomthelela ekwenyuseni izinga lokugoma kuhlelo olusha lokugoma olubhekiswe ezinganeni eziminyaka ephakathi kweyisithupha kuya kweyishumi nambili eMlazi, KwaZulu-Natal.

Umcwaningi: Ms. N.P.H. Chonco (Umfundi weziqu zemastazi) 083 339 2427 (Inombolo yocingo).

Abambisene nabo: Dokotela MN Sibiya (oneziqu zobudokotela kanye no Nkosikazi TSP Ngxongo (Oneziqu zemastazi)

Kafushane mayelana nenjongo yalolucwaningo: Lolucwaningo lumayelana nokubuyekezwa kabusha kohlelomgomo olwengeziwe olubhekiswe ezinganeni eziphakathi kweminyaka eyisithupha kuya kweyishumi nambili.Liphansi kakhulu izinga lokugoma kulesisigaba sezingane uma liqhathaniswa nelezingane ezingaphansi kwaleminyaka.Kulolucwaningo ngizobe ngicubungula ukuthi yiziphi izizathu ezingaba nomthelela ekwenyuseni izinga lokugonywa kwezingane ezikulesisigaba seminyaka.

Uhlelo lokuyokwenzeka: Uma uvuma ukuba yingxenye yalolucwaningo sizoccela ukuba ugcwalise imibuzo mibalwa mayelana nengane/izingane zakho kanye nemibuzwana ephathelene nemigomo.Lokhu kugcwaliswa kungathatha cishe imizuzu eyishumi kuya emashumini amabili.Imibuzo ezobuzwa ilula**.**

Ukungaphatheki kahle kwabangenele ucwaningo: Abukho ubungozi nokungaphtheki kahle obuyobangelwa ukuba yingxenye yalolucwaningo.

Inzuzo: Lolucwaningo luzosiza wena kanye nomphakathi ngoba zonke izimpendulo nemibono yakho izokwedluliselwa eMnyangweni wezempilo ukuze kwenziwe ngcono uhlelomgomo kulesisigaba seminyaka

Izizathu ezingenza labo abayingxenye yocwaningo bengabe besaqhubeka nocwaningo: Uvumelekile noma yinini ukuphuma ungabi yingxenye yocwaningo uma ufisa ukwenzenjalo.

Inkokhelo: Ayikho inkokhelo etholakalayo ngokuba yingxenye yocwaningo kanjalo nalabo abayingxenye yocwaningo akulindelekile ukuthi bakhokhe ukuze babe yingxenye.

Ukugcinwa kwemfihlo: Yonke imininingwane iyogcinwa iyimfihlo,igama lakho angeke libhalwe ezimpendulweni ozinikile lezizimpendulo ziyosetshenziselwa lolucwaningo kuphela.

Ukulimala okungenzeka ngenxa yocwaningo: Akukho ukulimala okungenzeka kuloluhlobo locwaningo

Ongabathinta uma unemibuzo noma kukhona ofuna ukuchazelwa ngakho mayelana nalolucwaningo:

Ubhekeleli: uDokotela MN Sibiya Durban University of Technology Kulenombolo 031-373 2606

Osizana naye: TSP Ngxongo Durban University of Technology Kulenombolo 031-373 2609

Isikhungo sokuphathwa kwemimithetho yezocwaningo: 031 373 2900

Izikhalazo zingabikwa kusolwazi F. Otieno kulenombolo: 031-373 2382 noma dvctip@dut.ac.za

Isitatimende sokuvuma ukuba yingxenye yocwaningo: Uma ufisa ukuba yingxenye yalolucwaningo uyacelwa ukuba usayine lesisivumelwano ekhasini elilandelayo.

Isitatimende sesivumelwano sokuba yingxenye yocwaningo:

Mina ----------

(Igama).

Inombolo yomazisi:….....ngiyifundile yonke incwajana futhi ngaqonda konke okuqukethwe kuyo. Ngichazelwe konke lapho benginemibuzo khona ngu Nkosikazi N Chonco (umcwaningi) ngendlela enganelisayo.. Ngaphezu kwalokho ngiyaqonda ukuthi ngivumelekile ukuthi ngingaqhubeki ukuba yingxenye yalolucwaningo noma yinini uma ngifisa ukwenza njalo ngaphandle kokuthi kube nemiphumela emibi futhi nukunakekelwa kwempilo yami esikhathini esizayo ngeke kuphazamiseke.. Ngaleyondlela ngiyavuma ngokuzikhethela ukuba yingxenye yalolucwaningo.

Igama loyingxenye yocwaningo……..….....

Sayina

……Date:…….

Igama lomcwaningi

……..…….....

Sayina

……Date:.....

Igama likafakazi:

…….....

Sayina

……..Date:…….....

Appendix 7b: Letter of information and consent to caregivers in English

Appendix 3: Letter of information and consent for care givers

Thank you for agreeing to participate in this study.

Title of the Research Study: Factors influencing uptake of the revised expanded Immunisation Programme in children between the ages of six to twelve years in Umlazi Township, KwaZulu-Natal.

Principle Investigator/s/researcher: Ms. N.P.H. Chonco (M. Tech candidate) 083 339 2427 (Cell)

Co-Investigator/s/supervisor/s: Dr M.N. Sibiya (D Tech: Nursing) and Ms T.S.P. Ngxongo (M Tech: Nursing)

Brief Introduction and Purpose of the Study: I will be conducting the study on the new immunisation programme. I am interested in checking on what could be the things that influence the number of children between the ages of six to twelve years who are getting the new immunisations.

Outline of the Procedures: If you agree to take part in the study, I will request you to complete a form which will have a few questions regarding your child/children and their immunisation and the immunisation programme in general. Completion of this form should last for approximately fifteen to twenty minutes. The questions asked will be simple and straight forward information.

Discomforts to the Subject: There is no risk or discomfort that will be cause by partaking in the study.

Benefits: The study will benefit you and the other community members in that at the end of doing this study recommendations will be made to the department of health for improvement of immunisation programme.

Reason/s why the Subject May Be Withdrawn from the Study: You will be allowed to opt out or withdraw from the study at any time should you wish to do so.

Remuneration: You will not be expected to pay anything for taking part in the study, and also no payment will be given to you for taking part on the study

Confidentiality: All the information will be kept in strict privacy. Your name will not be written on the field notes with your responses. The information gathered will only be used for the purpose of this study.

Research-related Injury: No compensation, however the nature of the study does not have any risk of injury to you.

Persons to Contact in the Event of Any Problems or Queries:

Supervisor: Dr MN Sibiya, Durban University of Technology, Tel: 031-373 2606

Co-supervisor: Ms TSP Ngxongo, Durban University of Technology, Tel: 031-373 2609

Institutional Research Ethics administrator on: 031-373 2900.

Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031-373 2382 or dvctip@dut.ac.za.

Statement of agreement to participate in the research study: If you are willing to participate in the study may I request that you sign the agreement in the next page.

Statement of Agreement to Participate in the Research Study:

I ----------(subject's full name).

ID number:…..... have read this document in its entirety and understand its contents. Where I have had any questions or queries, these have been explained to me by ……to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore, voluntarily agree to participate in this study.

Subject's name (print) …….....

Subject's signature: ……..Date:……..…….

Researcher's name (print) signature:…….…….....

Researcher's signature: ……..Date:……

Witness name (print) signature:..…….....

Witness signature: ……Date:……

Appendix 8: Data collection tools for health care workers

Dear Sir/Madam

Kindly find the questionnaire attached and please complete all the sections. You are once again assured that all the information that you will provide will be used for the purpose of this study only. Do not write your name on the questionnaire to maintain confidentiality. Please drop the completed questionnaires in the box that is kept in your clinic.

Thank you so much for taking your time to complete the questionnaire

Yours sincerely

NP Chonco (Researcher)

INSTRUCTIONS:

- Do not include your personal details
- All the information will be used for the purpose of this research only
- Mark with a cross (X) the correct box

Section A: Demographic Data

Gender: male ☐ Female ☐

Race: Black ☐ White ☐ Coloured ☐ Indian ☐

Qualification: Enrolled nurse ☐ Professional nurse ☐

Number of years working in a well-baby clinic

Less than a year ☐ One year or more ☐

Section B: Management and support

1. How often does your manager do support supervision visits

Every week ☐ Every Month ☐ Every ¼ ☐ Never ☐

2. How would you rate the support that you get from your clinic manager regarding provision of EPI services?

No support ☐ Insufficient support ☐

Sufficient ☐ More than enough ☐

3. Have you ever received training in Expanded Programme on Immunisation? (EPI)

Yes ☐ No ☐

If no, state why?

_____

_____

4. How often do you receive in-service training on EPI?

Never ☐ Rarely ☐ Every quarter ☐ Every month ☐

SECTION C: KNOWLEDGE ABOUT THE EPI PROGRAMME

1. State which of the following vaccines are included in the revised EPI schedule

VACCINES	AVAILABLE	
	Yes	No
BCG		
OPV0		
DTap–IPV/Hib		
Td		
DPT		
Measles		
RV		
PCV		
HepB		
DPT-Hib		

2. Indicate with a cross (X) the correct age at which the following vaccines are given to the children

VACCINE	AGE OF THE CHILD						
	6 weeks	**10 weeks**	**14 weeks**	**9 months**	**18 months**	**6 years**	**12 years**
Td							
PCV							
DTap-IPV/HIB							
OPV1							
Hep B							
Measles							

3. How many doses of the following vaccines should a child receive in total?

VACCINE	NUMBER OF DOSES				
	1 dose	**2 doses**	**3 doses**	**4 doses**	**unsure**
HepB					
DaPT-Hib-IPV					
Measles					
Td					
BCG					

4. State if the following statements are true or false

Statement	True	False
1. If a child has missed some immunisations missed doses of immunisation should all be given at the same time to ensure that the child catches up with the schedule		
2. Td should not be given to children under the age of 12 years		
3. All confirmed HIV positive children should be given measles vaccines at 6, 9 and 18 months		

Section D: Supplies and control

1. Indicate your response with a cross (X) in the columns below

	Always	**Sometimes**	**No**	**Comment**
Sufficient stocks of all vaccines available at the clinic				
All other immunization equipment and supplies available at the clinic				
Vaccine fridge working well				
Correct quantities of vaccine issued				
System exist for emergency ordering of vaccines				
New developments regarding EPI programme communicated timeously				
Staff challenges regarding EPI attended to by management				

Thank you for completing the questionnaire

Appendix 9a: Data collection tools for caregivers in Zulu

Mnumzane/ Nkosikazi Othandekayo

Uyacelwa ukuba wamukela uhla lwemibuzo oluchonywe kulencwadi nokuthi ugcwalise zonke izigaba zaloluhla. Uyaphinda uyaqinisekiswa ukuthi yonke imininingwane kanye nezimpendulo ozozinikeza kuzosetshenziselwa lolucwaningo kuphela. Ungabhali igama lakho kuloluhla lwemibuzo ukuze konke kugcinwe kuyimfihlo. Umsizi womcwaningi uzobakhona emtholampilo ukukulekelela ukugwalisa uhla lwemibuzo uma kwenzeka udinga lokho. Uyacelwa ukuba uphonse uhla lwemibuzo osulugwalisile ebhokisini eligcinwe emtholampilo wakho. Lelibhokisi livikelekile, livaliwe futhi ligcinwe endaweni ephephile emtholampilo wakho. Ibhokisi liyovulwa ukuphela umcwaningi. Umsizi wocwaningo noma abahlengikazi basemtholampilo bazokukhombisa lapho kugcinwe khona lelibhokisi uma.

Siyabonga kakhulu ngokuthi uthathe isikhathi sakho ukugcwalisa uhla lwemibuzo.

Ozithobayo.

N.P Chonco (Umcwaningi).

Imibuzwana ebhekiswe kulabo abanakekela abantwana

Khombisa ngophawu (X) ibhokisana eliyilo

1. **Ubudlelwane nengane**

Umzali wengane	Umgadi ogunyaziwe	Okunye	Chaza.....

2. **Imininingwane egondene nawe**

Ubulili: Owesilisa ☐ Owesifazane ☐

Ubuzwe: Onsundu ☐ Omhlophe ☐ Ikhaladi ☐ Indiya ☐

Ubudala: ☐

Ulimi: IsiZulu ☐ Isingisi ☐ Okunye ☐

Uma ukhethe okunye, yisho ulimi.....

Izinga lemfundo

Ongafundile ☐ Amabanga aphansi ☐ Amabanga aphakathi ☐ Amabanga aphakeme ☐

Umsebenzi

Uyafunda ☐ Awusebenzi ☐ Uyasebenza ☐

Inani labantwana

Uyedwa ☐ Ngaphezu koyedwa ☐

Ufika kanjani emtholampilo

Uhamba Ngezinyawo ☐ Ugibela imoto yomphakathi ☐ Ugibela imoto yangasese ☐

3. Isizathu sokuvakashela emtholampilo

Ukuzogoma ☐ Ingane iyagula ☐ Okunye ☐

Uma ukhetha okunye,yisho isizathu:

.....

Ngabe ingane igomile namhlanje: Yebo ☐ Cha ☐

4. Ulwazi mayelana nohlelo lo kugoma

4.1 Imininingwane mayelana nengane

4.1.1 Mingaki iminyaka yengane? ☐

4.1.2 Ngabe ikhona imigomo ingane eyitholile namuhla ? Yebo ☐ Cha ☐

4.1.3 Ngabe uyakwazi lokhu okulandelayo?

	Yebo	Cha	Akungeni
Imigomo ingane eseyayithola			
Imigomo eyitholile namhlanje			
Usuku olulandelayo ingane ezogoma ngalo			
Imigomo ezoyithola ngalolosuku			
Ukuthi ingane yakho yeqiwa imigoma ethize			
Okufanele ukwenze uma ingane yeqiwe imigomo			
Okufanele ukwenze uma kwenzeka ingane yakho igula emva komgomo			
Izinsuku onkufanele uhambise ngazo ingane yakho emtholampilo ukuyogoma			

4.2 Imininingwane ngezinye izingane

4.2.1 Ngabe unazo ezinye izingane? Yebo ☐ Cha ☐

Uma impendulo ithi yebo,yisho iminyaka yazo:

.....

4.2.2 Uma impendulo ithi yebo kulombuzo ongenhla,sicela uphendule umbuzo ongezansi (a-h) uma ungenazo ezinye izingane sicela udlulele kumbuzo wesihlanu (5) ongezansi.

	Ingane yokuqala	Ingane yesibili	Ingane yesithathu	Ingane yesine
a). Ubudala bengane.				
b) Ngabe ingane asasalelwe ukuthola eminye imigomo?(Bhala yebo noma Cha)				
c) Uma impendulo ithi yebo kumbuzo ongenhla,ngabe ingane izowuthola nini lomgomo				
d) Ngabe ingane ike yeqiwa ukutthola imigomo ethize				
e) Uma impendulo ithi yebo kumubuzo d) ongasenhla, yiphi lemigomo eyeqa ingane?				
f) Uma impendulo ithi yebo kumubuzo d) ongasenhla, Yisiphi isizathu esenza ukuthi ingane yeqiwe lomgomo?				
g) Ngabe ingane isiqede lonke uhla lwemigomo				
h) Uma impendulo ithi yebo kumbuzo g) isho ubudala ingane ethole ngabo umgomo wokugcina				

5. Isimo sosizo emtholampilo

Khombisa ngophawu (X) impendulo oyikhethile

	Kubi	Kulingene	Kuhle	Kuhle kakhulu
Ukwaneliseka ngosizo oluthole namhla				
Ukwaneliseka ngosizo lulonke kulomtholampilo				
Ulwazi olutholille kulomtholampilo mayelana nomgomo				
Indlela abasebenzi balomtholampilo abaziphethe ngayo				
Ubude besikhathi sokulinda ngaphambi kokusetshenzwa kulomtholampilo				
Izikhathi zokusebenza kulomtholampilo				
Ibanga olihambayo uma uza emtholampilo				

6. Imininingwane eyengeziwe

6.1 Yisho izinto ezintathu ongazijabuleli kulomtholampilo

.....

.....

.....

.....

6.2 Yisho izinto ezintathu ezikujabulisayo kulomtholampilo

.....

.....

.....

.....

6.3 Yisho izinto ezimbili ezisemqoka ongakhuthaza ukuba zenziwe ngcono kulomtholampilo.

.....

.....

.....

Siyabonga kakhulungokugcwalisa uhla lwemibuzo.

Appendix 9b: Data collection tools for caregivers in English

Dear Sir/Madam

Kindly find the questionnaire attached and please complete all the sections. You are once again assured that all the information that you will provide will be used for the purpose of this study only. Do not write your name on the questionnaire to maintain confidentiality. A research assistant is available at the clinic to assist you with completion of the questionnaire should you require such service. Please drop the completed questionnaires in the box that is kept in your clinic.

Thank you so much for taking your time to complete the questionnaire

Yours sincerely

NP Chonco (Researcher)

Mark with a cross (X) the correct box

1. Relationship to child

Biological Parent	Legal guardian	Other

Specify.....

2. Personal information

Gender: Male ☐ Female ☐

Race: Black ☐ White ☐ Coloured ☐ Indian ☐

Age ☐

Home Language IsiZulu ☐ English ☐ Other ☐

If other, state language:.....

Level of education

Primary ☐ None ☐ Secondary ☐ Tertiary ☐

Occupation

Studying ☐ Unemployed ☐ Employed ☐

Number of children

One ☐ More than one ☐

Transport to the clinic

Walk ☐ Public transport ☐ Private transport ☐

3. Reason for clinic visit

Routine immunisation ☐ Child is sick ☐ Other ☐

If other state reason:

.....

Did the child receive any immunisation today: Yes ☐ No ☐

4. KNOWLEDGE ABOUT EPI

4.1 Information about the child at the clinic today

4.1.1 What is the age of this child? ☐

4.1.2 Did your child receive any Immunisations today? Yes ☐ No ☐

4.1.4 Do you know the following?

	Yes	No	Not applicable
1. The immunization that your child has already received			
2. The immunization that your child received today (if any)			
3. The date on which your child is due to receive the next immunization			
4. The immunizations that your child will receive next visit			
5. Whether your child has missed any immunizations			
6. What to do if your child misses the immunization			
7. What to do if the child get sick after the immunization			
8. The days on which you can take the child to the clinic for immunization			

8.2 Information about the other children

8.2.1Do you have any other children: Yes ☐ No ☐

If yes, specify ages: **.....**

8.2.2 If yes answer to questions (8.2.1) above, please answer the questions (a-e) below if no other children please move to question 9 below

	Child 1	Child 2	Child 3	Child 4
1. Age of the child.				
2. Is the child still due to receive any more immunization?				
3. If yes to the above question, at what age is the next immunization due?				
4. Child ever missed any immunizations.				
5. If yes to question 4, what immunization did the child miss?				
6. If yes to question 4, what was the reason for the child to miss the immunization?				
7. Has the child completed the immunization schedule?				
8. If yes to question 7 above, state the age at which the child received the last immunization.				

9. QUALITY OF SERVICE

Mark your response with a cross (X)

	Poor	Average	Good	Very good
Satisfaction with the service received today				
Satisfaction with overall service at this clinic				
Information received at the clinic about immunization				
Attitude of staff in the clinic				
Waiting time at the clinic				
Operation times of the clinic				
Distance travelled to the clinic				

9. Additional information

10.1 Name three main things not happy about at this clinic

.....
.....
.....
.....

10.2 Name three main things that you are happy about a this clinic

.....
.....
.....
.....

10.3 Name two most important things you would recommend to improve the service at this clinic.

.....

.....

.....

Thank you for completing this questionnaire.

Appendix 10: Statistical analysis

Report on Statistical analysis: Nurses

Demographics

Health authority

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Provincial	9	75.0	75.0	75.0
	Municipal	3	25.0	25.0	100.0
	Total	12	100.0	100.0	

Facility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	P1	1	8.3	8.3	8.3
	P2	2	16.7	16.7	25.0
	P3	2	16.7	16.7	41.7
	P4	1	8.3	8.3	50.0
	P5	1	8.3	8.3	58.3
	P6	1	8.3	8.3	66.7
	P7	1	8.3	8.3	75.0
	M1	1	8.3	8.3	83.3
	M2	1	8.3	8.3	91.7
	M3	1	8.3	8.3	100.0
	Total	12	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	1	8.3	8.3	8.3
	Female	11	91.7	91.7	100.0
	Total	12	100.0	100.0	

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black	11	91.7	91.7	91.7
	Coloured	1	8.3	8.3	100.0
	Total	12	100.0	100.0	

Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Enrolled nurse	6	50.0	50.0	50.0
	Professional nurse	6	50.0	50.0	100.0
	Total	12	100.0	100.0	

Years working in well-baby clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than a year	6	50.0	50.0	50.0
	At least a year	6	50.0	50.0	100.0
	Total	12	100.0	100.0	

Section B: Management and support

Manager support

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Every week	7	58.3	58.3	58.3
	Every month	1	8.3	8.3	66.7
	Every quarter	3	25.0	25.0	91.7
	Never	1	8.3	8.3	100.0
	Total	12	100.0	100.0	

Support for EPI services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	1	8.3	8.3	8.3
	Insufficient	3	25.0	25.0	33.3
	Sufficient	4	33.3	33.3	66.7
	More than enough	4	33.3	33.3	100.0
	Total	12	100.0	100.0	

Manager support

	Observed N	Expected N	Residual
Every week	7	3.0	4.0
Every month	1	3.0	-2.0
Every quarter	3	3.0	.0
Never	1	3.0	-2.0
Total	12		

Support for EPI services

	Observed N	Expected N	Residual
None	1	3.0	-2.0
Insufficient	3	3.0	.0
Sufficient	4	3.0	1.0
More than enough	4	3.0	1.0
Total	12		

Test Statistics

	manager support	support for EPI services
Chi-Square	8.000[a]	2.000[a]
df	3	3
Asymp. Sig.	.046	.572
Exact Sig.	.048	.705
Point Probability	.011	.218

a. 4 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3.0.

Training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	7	58.3	58.3	58.3
	No	5	41.7	41.7	100.0
	Total	12	100.0	100.0	

Reason for no training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	8	66.7	66.7	66.7
	never invited	2	16.7	16.7	83.3
	new employee	1	8.3	8.3	91.7
	temporary staff	1	8.3	8.3	100.0
	Total	12	100.0	100.0	

Frequency of training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	4	33.3	33.3	33.3
	Rarely	5	41.7	41.7	75.0
	Every month	3	25.0	25.0	100.0
	Total	12	100.0	100.0	

Section C: Knowledge about the EPI programme

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Score: Vaccines	12	3.00	10.00	8.0000	2.21565
Score Vaccines-age	12	6.70	10.00	8.8917	1.46812
Score: Vaccines-doses	12	6.00	10.00	9.3333	1.30268
Score: True and False	12	3.30	10.00	5.2750	2.25394
Valid N (listwise)	12				

Score: vaccines

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.0	1	8.3	8.3	8.3
	4.0	1	8.3	8.3	16.7
	8.0	3	25.0	25.0	41.7
	9.0	5	41.7	41.7	83.3
	10.0	2	16.7	16.7	100.0
	Total	12	100.0	100.0	

Score Vaccines-age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6.7	3	25.0	25.0	25.0
	8.3	2	16.7	16.7	41.7
	10.0	7	58.3	58.3	100.0
	Total	12	100.0	100.0	

Score: Vaccines-doses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6.0	1	8.3	8.3	8.3
	8.0	2	16.7	16.7	25.0
	10.0	9	75.0	75.0	100.0
	Total	12	100.0	100.0	

Score: True and False

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.3	6	50.0	50.0	50.0
	6.7	5	41.7	41.7	91.7
	10.0	1	8.3	8.3	100.0
	Total	12	100.0	100.0	

	Health authority	N	Mean	Std. Deviation
Score: Vaccines	Provincial	9	8.222	1.7159
	Municipal	3	7.333	3.7859
Score Vaccines-age	Provincial	9	9.078	1.4584
	Municipal	3	8.333	1.6503
Score: Vaccines-doses	Provincial	9	9.111	1.4530
	Municipal	3	10.000	.0000
Score: True and False	Provincial	9	5.178	2.4453
	Municipal	3	5.567	1.9630

Scores by qualification:

	qualification	N	Mean	Std. Deviation
Score: vaccines	Enrolled nurse	6	7.833	2.4833
	Professional nurse	6	8.167	2.1370
Score Vaccines-age	Enrolled nurse	6	8.617	1.6241
	Professional nurse	6	9.167	1.3866
Score: Vaccines-doses	Enrolled nurse	6	9.000	1.6733
	Professional nurse	6	9.667	.8165
Score: True and False	Enrolled nurse	6	6.683	2.1189
	Professional nurse	6	3.867	1.3880

Scores by experience

	Years working in well-baby clinic	N	Mean	Std. Deviation
Score: Vaccines	Less than a year	6	7.667	2.4221
	At least a year	6	8.333	2.1602
Score Vaccines-age	Less than a year	6	8.333	1.4760
	At least a year	6	9.450	1.3472
Score: Vaccines-doses	Less than a year	6	9.000	1.6733
	At least a year	6	9.667	.8165
Score: True and False	Less than a year	6	5.550	2.7435
	At least a year	6	5.000	1.8623

Section D: Supplies and Control

Test Statistics

	Sufficient stocks of all vaccines available at the clinic	All other immunisation equipment and supplies available at the clinic	Vaccine fridge working well	Correct quantities of vaccine issued	System exist for emergency ordering of vaccines	New developments regarding EPI programme communicated timeously	Staff challenges regarding EPI attended to by management
N	11	11	12	12	12	12	12
Chi-Square	16.545[a]	22.000[a]	14.000[b]	24.000[b]	9.500[b]	9.500[b]	4.500[b]
df	2	2	2	2	2	2	2
Asymp. Sig.	.000	.000	.001	.000	.009	.009	.105
Exact Sig.	.000	.000	.001	.000	.012	.012	.115
Point Probability	.000	.000	.001	.000	.007	.007	.045

a. 3 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 3.7.

b. 3 cells (100.0%) have expected frequencies less than 5. The minimum expected cell frequency is 4.0.

Report on statistical analysis – Caregiver data

Demographics

Health authority

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Provincial	706	70.0	70.0	70.0
	Municipal	303	30.0	30.0	100.0
	Total	1009	100.0	100.0	

Clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	P1	101	10.0	10.0	10.0
	P2	100	9.9	9.9	19.9
	P3	101	10.0	10.0	29.9
	P4	101	10.0	10.0	39.9
	P5	101	10.0	10.0	50.0
	P6	101	10.0	10.0	60.0
	P7	101	10.0	10.0	70.0
	M1	101	10.0	10.0	80.0
	M2	101	10.0	10.0	90.0
	M3	101	10.0	10.0	100.0
	Total	1009	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	39	3.9	3.9	3.9
	Female	970	96.1	96.1	100.0
	Total	1009	100.0	100.0	

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black	1009	100.0	100.0	100.0

Home language

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zulu	886	87.8	87.8	87.8
	Other	123	12.2	12.2	100.0
	Total	1009	100.0	100.0	

Other language

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	99	886	87.8	87.8	87.8
	Sesotho	23	2.3	2.3	90.1
	Seswati	1	.1	.1	90.2
	Venda	1	.1	.1	90.3
	Xhosa	98	9.7	9.7	100.0
	Total	1009	100.0	100.0	

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	85	8.4	8.4	8.4
	Primary	73	7.2	7.2	15.7
	Secondary	512	50.7	50.7	66.4
	Tertiary	339	33.6	33.6	100.0
	Total	1009	100.0	100.0	

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	321	31.8	31.8	31.8
	Unemployed	527	52.2	52.2	84.0
	Employed	161	16.0	16.0	100.0
	Total	1009	100.0	100.0	

Age of caregiver – average age and standard deviation

Statistics

age

N	Valid	1009
	Missing	0
Mean		25.87
Std. Deviation		6.090

Number of children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One	641	63.5	63.5	63.5
	More than one	368	36.5	36.5	100.0
	Total	1009	100.0	100.0	

Clinic visit (including Reason for visit)

transport to clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Walk	646	64.0	64.8	64.8
	Public transport	255	25.3	25.6	90.4
	Private transport	96	9.5	9.6	100.0
	Total	997	98.8	100.0	
Missing	System	12	1.2		
Total		1009	100.0		

reason for visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Immunisation	624	61.8	62.0	62.0
	Illness	185	18.3	18.4	80.4
	Other	197	19.5	19.6	100.0
	Total	1006	99.7	100.0	
Missing	System	3	.3		
Total		1009	100.0		

Other reason

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.1	.1	.1
	99	812	80.5	80.5	80.6
	sick	1	.1	.1	80.7
	vitA,Deworm	1	.1	.1	80.8
	vitA,Deworm,wt	155	15.4	15.4	96.1
	vitA,wt,Deworm	2	.2	.2	96.3
	wt	37	3.7	3.7	100.0
	Total	1009	100.0	100.0	

receive immunisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	619	61.3	62.8	62.8
	No	367	36.4	37.2	100.0
	Total	986	97.7	100.0	
Missing	System	23	2.3		
Total		1009	100.0		

Knowledge about EP

age of child

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<5 years	767	76.0	76.0	76.0
	5 - 6 years	197	19.5	19.5	95.5
	>6 - 12 years	45	4.5	4.5	100.0
	Total	1009	100.0	100.0	

1. The immunisation that your child has already received

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	414	41.0	60.1	60.1
	No	273	27.1	39.6	99.7
	Not applicable	2	.2	.3	100.0
	Total	689	68.3	100.0	
Missing	System	320	31.7		
Total		1009	100.0		

2. The immunisation that your child received today (if any)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	433	42.9	48.8	48.8
	No	81	8.0	9.1	57.9
	Not applicable	374	37.1	42.1	100.0
	Total	888	88.0	100.0	
Missing	System	121	12.0		
Total		1009	100.0		

3. The date on which your child is due to receive the next immunisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	601	59.6	75.0	75.0
	No	185	18.3	23.1	98.1
	Not applicable	15	1.5	1.9	100.0
	Total	801	79.4	100.0	
Missing	System	208	20.6		
Total		1009	100.0		

4. The immunisations that your child will receive next visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	374	37.1	52.2	52.2
	No	336	33.3	46.9	99.2
	Not applicable	6	.6	.8	100.0
	Total	716	71.0	100.0	
Missing	System	293	29.0		
Total		1009	100.0		

5. Whether your child has missed any immunisations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	256	25.4	36.2	36.2
	No	451	44.7	63.8	100.0
	Total	707	70.1	100.0	
Missing	System	302	29.9		
Total		1009	100.0		

6. What to do if your child misses the immunisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	481	47.7	63.6	63.6
	No	272	27.0	36.0	99.6
	Not applicable	3	.3	.4	100.0
	Total	756	74.9	100.0	
Missing	System	253	25.1		
Total		1009	100.0		

7. What to do if the child get sick after the immunisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	591	58.6	73.1	73.1
	No	218	21.6	26.9	100.0
	Total	809	80.2	100.0	
Missing	System	200	19.8		
Total		1009	100.0		

8. The days on which you can take the child to the clinic for immunisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	684	67.8	84.4	84.4
	No	123	12.2	15.2	99.6
	Not applicable	3	.3	.4	100.0
	Total	810	80.3	100.0	
Missing	System	199	19.7		
Total		1009	100.0		

Other children

other children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	441	43.7	43.8	43.8
	No	566	56.1	56.2	100.0
	Total	1007	99.8	100.0	
Missing	System	2	.2		
Total		1009	100.0		

The correctness of information regarding other children

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	correct	365	36.2	36.2	36.2
	partly correct	20	2.0	2.0	38.2
	incorrect	59	5.8	5.8	44.0
	not applicable	565	56.0	56.0	100.0
	Total	1009	100.0	100.0	

The correctness of information regarding other children

	Observed N	Expected N	Residual
correct	365	148.0	217.0
partly correct	20	148.0	-128.0
incorrect	59	148.0	-89.0
Total	444		

Test Statistics

	The correctness of information regarding other children
Chi-Square	482.392[a]
df	2
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 148.0.

Quality of service

Satisfaction with the service received today

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	26	2.6	2.6	2.6
	Average	88	8.7	8.7	11.3
	Good	502	49.8	49.8	61.1
	Very good	392	38.9	38.9	100.0
	Total	1008	99.9	100.0	
Missing	System	1	.1		
Total		1009	100.0		

Satisfaction with overall service at this clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	21	2.1	2.1	2.1
	Average	72	7.1	7.2	9.3
	Good	568	56.3	56.5	65.8
	Very good	344	34.1	34.2	100.0
	Total	1005	99.6	100.0	
Missing	System	4	.4		
Total		1009	100.0		

Information received at the clinic about immunisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	.4	.4	.4
	Average	124	12.3	12.7	13.2
	Good	529	52.4	54.4	67.5
	Very good	316	31.3	32.5	100.0
	Total	973	96.4	100.0	
Missing	System	36	3.6		
Total		1009	100.0		

Attitude of staff in the clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	16	1.6	1.6	1.6
	Average	170	16.8	17.1	18.8
	Good	417	41.3	42.0	60.8
	Very good	389	38.6	39.2	100.0
	Total	992	98.3	100.0	
Missing	System	17	1.7		
Total		1009	100.0		

Waiting time at the clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	109	10.8	11.1	11.1
	Average	312	30.9	31.7	42.8
	Good	408	40.4	41.5	84.3
	Very good	154	15.3	15.7	100.0
	Total	983	97.4	100.0	
Missing	System	26	2.6		
Total		1009	100.0		

Operation times of the clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	27	2.7	2.7	2.7
	Average	253	25.1	25.7	28.4
	Good	415	41.1	42.1	70.6
	Very good	290	28.7	29.4	100.0
	Total	985	97.6	100.0	
Missing	System	24	2.4		
Total		1009	100.0		

Distance travelled to the clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	184	18.2	18.6	18.6
	Average	496	49.2	50.1	68.6
	Good	179	17.7	18.1	86.7
	Very good	132	13.1	13.3	100.0
	Total	991	98.2	100.0	
Missing	System	18	1.8		
Total		1009	100.0		

Satisfaction with the service received today

	Observed N	Expected N	Residual
Poor	26	252.0	-226.0
Average	88	252.0	-164.0
Good	502	252.0	250.0
Very good	392	252.0	140.0
Total	1008		

Satisfaction with overall service at this clinic

	Observed N	Expected N	Residual
Poor	21	251.3	-230.3
Average	72	251.3	-179.3
Good	568	251.3	316.8
Very good	344	251.3	92.8
Total	1005		

Information received at the clinic about immunisation

	Observed N	Expected N	Residual
Poor	4	243.3	-239.3
Average	124	243.3	-119.3
Good	529	243.3	285.8
Very good	316	243.3	72.8
Total	973		

Attitude of staff in the clinic

	Observed N	Expected N	Residual
Poor	16	248.0	-232.0
Average	170	248.0	-78.0
Good	417	248.0	169.0
Very good	389	248.0	141.0
Total	992		

Waiting time at the clinic

	Observed N	Expected N	Residual
Poor	109	245.8	-136.8
Average	312	245.8	66.3
Good	408	245.8	162.3
Very good	154	245.8	-91.8
Total	983		

Operation times of the clinic

	Observed N	Expected N	Residual
Poor	27	246.3	-219.3
Average	253	246.3	6.8
Good	415	246.3	168.8
Very good	290	246.3	43.8
Total	985		

Distance travelled to the clinic

	Observed N	Expected N	Residual
Poor	184	247.8	-63.8
Average	496	247.8	248.3
Good	179	247.8	-68.8
Very good	132	247.8	-115.8
Total	991		

	Satisfaction with the service received today	Satisfaction with overall service at this clinic	Information received at the clinic about immunisation	Attitude of staff in the clinic	Waiting time at the clinic	Operation times of the clinic	Distance travelled to the clinic
Chi-Square	635.206[b]	772.453[c]	651.210[d]	436.895[e]	235.332[f]	318.809[g]	338.312[h]
df	3	3	3	3	3	3	3
Asymp. Sig.	.000	.000	.000	.000	.000	.000	.000

Additional information

Quality of care

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	419	41.5	46.3	46.3
	Needs to be improved	282	27.9	31.2	77.5
	Not happy about this	203	20.1	22.5	100.0
	Total	904	89.6	100.0	
Missing	System	105	10.4		
Total		1009	100.0		

Waiting time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	50	5.0	6.4	6.4
	Needs to be improved	195	19.3	24.9	31.3
	Not happy about this	538	53.3	68.7	100.0
	Total	783	77.6	100.0	
Missing	System	226	22.4		
Total		1009	100.0		

Interruption of services during tea and lunch breaks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	49	4.9	5.8	5.8
	Needs to be improved	202	20.0	24.1	30.0
	Not happy about this	587	58.2	70.0	100.0
	Total	838	83.1	100.0	
Missing	System	171	16.9		
Total		1009	100.0		

Space or infrastructure

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	16	1.6	2.0	2.0
	Needs to be improved	225	22.3	27.6	29.6
	Not happy about this	573	56.8	70.4	100.0
	Total	814	80.7	100.0	
Missing	System	195	19.3		
Total		1009	100.0		

Cleanliness of toilets

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	25	2.5	3.1	3.1
	Needs to be improved	211	20.9	26.2	29.3
	Not happy about this	569	56.4	70.7	100.0
	Total	805	79.8	100.0	
Missing	System	204	20.2		
Total		1009	100.0		

rganisation of queues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	91	9.0	10.8	10.8
	Needs to be improved	601	59.6	71.1	81.9
	Not happy about this	153	15.2	18.1	100.0
	Total	845	83.7	100.0	
Missing	System	164	16.3		
Total		1009	100.0		

Attitude of staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	144	14.3	18.0	18.0
	Needs to be improved	168	16.7	21.0	39.0
	Not happy about this	487	48.3	61.0	100.0
	Total	799	79.2	100.0	
Missing	System	210	20.8		
Total		1009	100.0		

Availability of medicines and other supplies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	100	9.9	11.5	11.5
	Needs to be improved	238	23.6	27.4	38.9
	Not happy about this	531	52.6	61.1	100.0
	Total	869	86.1	100.0	
Missing	System	140	13.9		
Total		1009	100.0		

Access

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	65	6.4	7.6	7.6
	Needs to be improved	322	31.9	37.8	45.5
	Not happy about this	464	46.0	54.5	100.0
	Total	851	84.3	100.0	
Missing	System	158	15.7		
Total		1009	100.0		

Number of nursing staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Happy about this	95	9.4	11.8	11.8
	Needs to be improved	158	15.7	19.6	31.4
	Not happy about this	552	54.7	68.6	100.0
	Total	805	79.8	100.0	
Missing	System	204	20.2		
Total		1009	100.0		

Appendix 11: District health Information statistics for TD coverage

Sum of Entry Number				Month Period						
Facility	Sort Order	Data Element Name	Year Period	Apr	May	Jun	Jul	Aug	Sep	Grand Total
Adams Mission Clinic	85	Td dose at 6 years	2013	11	17	19	38	6	14	105
	633	Td dose at 12 years	2013	4	3	1	10	0	15	33
Addington Gateway	85	Td dose at 6 years	2013	11	5	2	14	14	15	61
	633	Td dose at 12 years	2013	1	0	0	2	1	0	4
Addington Hosp	85	Td dose at 6 years	2013	3	6	0	0	0	0	9
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Amanzimtoti Clinic	85	Td dose at 6 years	2013	4	14	3	5	4	7	37
	633	Td dose at 12 years	2013	2	0	0	0	1	3	6
Amaoti Clinic	85	Td dose at 6 years	2013	9	0	2	21	4	24	60
	633	Td dose at 12 years	2013	1	0	2	1	1	13	18
Amatikwe (BT) Clinic	85	Td dose at 6 years	2013	7	4	2	9	1	9	32
	633	Td dose at 12 years	2013	1	1	1	1	1	0	5
Athlone Park Hall Clinic	85	Td dose at 6 years	2013	6	4	11	9	3	4	37
	633	Td dose at 12 years	2013	4	3	1	2	0	0	10
Austerville Clinic	85	Td dose at 6 years	2013	12	13	21	19	10	12	87
	633	Td dose at 12 years	2013	4	3	5	11	1	4	28
Bayview Clinic	85	Td dose at 6 years	2013	19	27	19	27	15	13	120
	633	Td dose at 12 years	2013	5	3	8	7	1	11	35
Bekulwandle (BT) Clinic	85	Td dose at 6 years	2013	1	13	3	5	7	4	33
	633	Td dose at 12 years	2013	0	1	2	0	0	0	3
Besters Clinic	85	Td dose at 6 years	2013	11	8	10	18	12	12	71
	633	Td dose at 12 years	2013	1	2	1	0	0	2	6
Block B Cottonlands Mob 1	85	Td dose at 6 years	2013	6	3	2	0	1	2	14
	633	Td dose at 12 years	2013	2	0	0	2	2	1	7
Bluff Clinic	85	Td dose at 6 years	2013	18	13	11	15	10	9	76
	633	Td dose at 12 years	2013	4	1	1	5	3	0	14
Burlington Hgts Mob 1	85	Td dose at 6 years	2013	4	8	4	7	3	10	36
	633	Td dose at 12 years	2013	1	1	1	2	0	1	6
Caneside Clinic	85	Td dose at 6 years	2013	6	13	9	15	6	7	56
	633	Td dose at 12 years	2013	2	3	3	0	1	3	12
Cato Manor CHC	85	Td dose at 6 years	2013	34	19	28	30	22	47	180
	633	Td dose at 12 years	2013	2	0	28	0	0	0	30
Chatsworth Centre Clinic	85	Td dose at 6 years	2013	36	44	42	39	10	49	220
	633	Td dose at 12 years	2013	7	6	5	7	7	9	41
Chesterville Clinic	85	Td dose at 6 years	2013	16	14	26	28	18	19	121
	633	Td dose at 12 years	2013	2	1	1	0	0	2	6
Chopperstown Mob 1	85	Td dose at 6 years	2013	2	2	2	2	4	3	15
	633	Td dose at 12 years	2013	7	2	0	1	1	4	15
Clairwood Hosp	85	Td dose at 6 years	2013	21	19	15	23	20	18	116
	633	Td dose at 12 years	2013	0	0	10	4	1	1	16

Clairwood Mob 1	85	Td dose at 6 years	2013	6	9	5	7	4	5	36
	633	Td dose at 12 years	2013	5	4	2	6	0	1	18
Clare Estate Clinic	85	Td dose at 6 years	2013	7	9	2	9	7	1	35
	633	Td dose at 12 years	2013	2	0	0	1	4	0	7
Clermont Clinic	85	Td dose at 6 years	2013	18	19	15	15	11	24	102
	633	Td dose at 12 years	2013	3	2	2	1	4	5	17
Coffeefarm Mob 1	85	Td dose at 6 years	2013	8	8	6	5	4	5	36
	633	Td dose at 12 years	2013	2	5	3	7	3	4	24
Craigieburn Clinic	85	Td dose at 6 years	2013	4	5	10	13	4	6	42
	633	Td dose at 12 years	2013	7	2	3	1	0	1	14
Danganya Clinic	85	Td dose at 6 years	2013	10	7	8	9	7	9	50
	633	Td dose at 12 years	2013	3	2	0	0	0	0	5
Dassenhoek R Health Mob 1	85	Td dose at 6 years	2013	5	5	5	9	3	1	28
	633	Td dose at 12 years	2013	3	3	4	6	3	0	19
Don McKenzie TB Hosp	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Durban Mob 2 (Seaview)	85	Td dose at 6 years	2013	1	0	1	0	0	2	4
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Durban Mob 3 (PSC)	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Ekuphileni (Uml L) Clinic	85	Td dose at 6 years	2013	12	8	6	9	11	8	54
	633	Td dose at 12 years	2013	5	0	1	0	0	0	6
Emandleni (BT) Clinic	85	Td dose at 6 years	2013	6	12	7	14	1	2	42
	633	Td dose at 12 years	2013	2	10	4	8	1	0	25
Folweni (BT) Clinic	85	Td dose at 6 years	2013	10	18	17	19	15	16	95
	633	Td dose at 12 years	2013	2	5	1	6	2	2	18
Folweni Clinic	85	Td dose at 6 years	2013	29	24	17	20	23	27	140
	633	Td dose at 12 years	2013	5	3	4	18	19	21	70
Fredville Clinic	85	Td dose at 6 years	2013	21	9	18	14	13	11	86
	633	Td dose at 12 years	2013	9	5	2	5	2	2	25
Glen Earle Clinic	85	Td dose at 6 years	2013	28	26	14	21	17	15	121
	633	Td dose at 12 years	2013	5	4	2	12	7	8	38
Goodwins Clinic	85	Td dose at 6 years	2013	37	10	7	0	64	8	126
	633	Td dose at 12 years	2013	95	1	0	0	113	1	210
Grove End Clinic	85	Td dose at 6 years	2013	13	16	9	30	7	10	85
	633	Td dose at 12 years	2013	0	3	1	7	3	3	17
Halley Stott Clinic	85	Td dose at 6 years	2013	85	11	91	123	19	19	348
	633	Td dose at 12 years	2013	46	12	4	9	1	17	89
Halley Stott Mob 1	85	Td dose at 6 years	2013	6	4	4	5	7	16	42
	633	Td dose at 12 years	2013	3	1	1	2	0	4	11
Halley Stott Mob 2	85	Td dose at 6 years	2013	3	11	9	10	16	20	69
	633	Td dose at 12 years	2013	0	9	8	0	6	5	28
Hambanathi Clinic	85	Td dose at 6 years	2013	5	8	11	4	2	1	31
	633	Td dose at 12 years	2013	2	2	1	0	0	2	7

Hlengimpilo (BT) Clinic	85	Td dose at 6 years	2013	9	16	10	8	11	6	60
	633	Td dose at 12 years	2013	2	5	1	4	4	1	17
Hlengisizwe CHC	85	Td dose at 6 years	2013	25	181	68	105	15	86	480
	633	Td dose at 12 years	2013	3	73	158	53	3	157	447
Hlengisizwe Mob 1	85	Td dose at 6 years	2013	11	14	19	25	8	21	98
	633	Td dose at 12 years	2013	2	4	3	16	3	11	39
Hlengisizwe Mob 2	85	Td dose at 6 years	2013	11	12	13	9	4	16	65
	633	Td dose at 12 years	2013	1	1	4	2	3	2	13
Inanda C CHC	85	Td dose at 6 years	2013	246	25	14	20	10	27	342
	633	Td dose at 12 years	2013	4	12	6	3	11	3	39
Inanda CHC Mob 1	85	Td dose at 6 years	2013	11	6	14	15	6	7	59
	633	Td dose at 12 years	2013	1	0	2	14	1	0	18
Inanda Day (BT) Clinic	85	Td dose at 6 years	2013	5	21	10	8	9	11	64
	633	Td dose at 12 years	2013	2	2	1	4	23	1	33
Inanda Seminary Clinic	85	Td dose at 6 years	2013	2	6	1	8	3	35	55
	633	Td dose at 12 years	2013	1	0	0	0	0	0	1
Isipingo Clinic	85	Td dose at 6 years	2013	8	15	13	22	12	14	84
	633	Td dose at 12 years	2013	2	2	1	4	2	2	13
King Dinuzulu Hosp	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
King Edward VIII Hosp	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
King George V Hosp	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Kingsburgh Clinic	85	Td dose at 6 years	2013	13	10	13	22	11	14	83
	633	Td dose at 12 years	2013	5	1	3	6	4	0	19
Klaarwater Clinic	85	Td dose at 6 years	2013	10	21	10	10	138	16	205
	633	Td dose at 12 years	2013	3	0	1	3	2	0	9
Kloof Clinic	85	Td dose at 6 years	2013	6	2	4	2	1	1	16
	633	Td dose at 12 years	2013	0	0	1	1	0	0	2
Kusakusa (BT) Clinic	85	Td dose at 6 years	2013	4	0	6	9	4	4	27
	633	Td dose at 12 years	2013	3	2	0	2	0	0	7
Kwadabeka CHC	85	Td dose at 6 years	2013	15	24	17	30	27	22	135
	633	Td dose at 12 years	2013	6	6	4	3	5	2	26
KwaDabeka Mob 1	85	Td dose at 6 years	2013	12	20	8	10	7	0	57
	633	Td dose at 12 years	2013	2	2	6	5	2	0	17
KwaMakhutha Clinic	85	Td dose at 6 years	2013	27	17	25	35	19	60	183
	633	Td dose at 12 years	2013	3	0	2	2	3	21	31
KwaMashu B Clinic	85	Td dose at 6 years	2013	9	9	6	7	13	12	56
	633	Td dose at 12 years	2013	0	2	0	1	3	2	8
KwaMashu Mob 1	85	Td dose at 6 years	2013	10	12	10	22	7	24	85
	633	Td dose at 12 years	2013	2	12	10	7	4	16	51
KwaMashu Mob 2	85	Td dose at 6 years	2013	2	8	2	11	7	5	35
	633	Td dose at 12 years	2013	2	3	0	0	2	0	7

KwaMashu Poly CHC	85	Td dose at 6 years	2013	89	73	63	86	53	52	416
	633	Td dose at 12 years	2013	15	6	3	22	10	14	70
KwaNdengezi Clinic	85	Td dose at 6 years	2013	62	36	13	600	137	33	881
	633	Td dose at 12 years	2013	27	5	2	289	1	3	327
KZN CHOP	85	Td dose at 6 years	2013	0	0	0	0	0	1	1
La Lucia Clinic	85	Td dose at 6 years	2013	11	26	15	36	20	24	132
	633	Td dose at 12 years	2013	2	4	0	17	1	2	26
Lamontville Clinic	85	Td dose at 6 years	2013	18	18	10	16	8	13	83
	633	Td dose at 12 years	2013	2	0	1	2	1	6	12
Lancers Road Clinic	85	Td dose at 6 years	2013	18	5	12	32	12	3	82
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Lindelani Clinic	85	Td dose at 6 years	2013	16	14	15	27	9	266	347
	633	Td dose at 12 years	2013	3	6	4	3	2	43	61
Lovu Clinic	85	Td dose at 6 years	2013	21	17	17	22	10	6	93
	633	Td dose at 12 years	2013	1	1	2	6	1	9	20
Luganda Clinic	85	Td dose at 6 years	2013	34	28	16	16	46	51	191
	633	Td dose at 12 years	2013	8	10	15	2	16	40	91
M Gandhi Hosp	85	Td dose at 6 years	2013	2	0	0	0	0	2	4
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Magabheni Clinic	85	Td dose at 6 years	2013	19	7	11	7	1	8	53
	633	Td dose at 12 years	2013	9	5	7	5	3	1	30
Maphephetheni Clinic	85	Td dose at 6 years	2013	13	9	2	5	1	23	53
	633	Td dose at 12 years	2013	0	83	1	2	1	0	87
Mariannridge Clinic	85	Td dose at 6 years	2013	15	16	11	106	9	20	177
	633	Td dose at 12 years	2013	6	8	3	5	4	5	31
Matikwe Clinic	85	Td dose at 6 years	2013	4	4	0	1	3	1	13
	633	Td dose at 12 years	2013	0	1	0	0	0	1	2
McCords Hosp	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Merebank Clinic	85	Td dose at 6 years	2013	26	62	21	27	29	17	182
	633	Td dose at 12 years	2013	8	30	9	13	16	4	80
Molweni Clinic	85	Td dose at 6 years	2013	14	9	12	77	33	27	172
	633	Td dose at 12 years	2013	1	3	6	8	3	2	23
Motala Heights Mob 1	85	Td dose at 6 years	2013	2	1	3	1	2	4	13
	633	Td dose at 12 years	2013	0	0	0	0	0	1	1
Mpola Clinic	85	Td dose at 6 years	2013	13	6	9	17	7	12	64
	633	Td dose at 12 years	2013	0	3	1	3	1	3	11
Mpumalanga Clinic	85	Td dose at 6 years	2013	11	38	4	30	10	28	121
	633	Td dose at 12 years	2013	0	60	0	5	16	5	86
Msunduze Bridge Clinic	85	Td dose at 6 years	2013	19	6	38	54	67	71	255
	633	Td dose at 12 years	2013	11	3	23	39	49	49	174
Mzamo Clinic	85	Td dose at 6 years	2013	10	21	12	29	14	18	104
	633	Td dose at 12 years	2013	2	6	1	3	6	1	19
Nagina Clinic	85	Td dose at 6 years	2013	28	117	9	23	13	15	205
	633	Td dose at 12 years	2013	2	2	5	1	2	2	14

New Germany Clinic	85	Td dose at 6 years	2013	0	14	6	6	4	5	35
	633	Td dose at 12 years	2013	0	0	1	0	0	2	3
Newlands East Clinic	85	Td dose at 6 years	2013	0	6	5	10	3	2	26
	633	Td dose at 12 years	2013	0	2	0	0	0	0	2
Newlands West Clinic	85	Td dose at 6 years	2013	22	10	7	12	8	16	75
	633	Td dose at 12 years	2013	5	1	1	4	1	8	20
Newtown A CHC	85	Td dose at 6 years	2013	171	345	156	9	126	183	990
	633	Td dose at 12 years	2013	110	22	107	3	114	79	435
Ngcolosi Clinic	85	Td dose at 6 years	2013	5	52	11	9	4	8	89
	633	Td dose at 12 years	2013	1	92	2	0	1	2	98
Northdene Mob 1	85	Td dose at 6 years	2013	1	2	5	5	0	0	13
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Nsimbini Clinic	85	Td dose at 6 years	2013	22	37	20	36	31	20	166
	633	Td dose at 12 years	2013	7	3	4	2	0	2	18
Ntshongweni Clinic	85	Td dose at 6 years	2013	12	14	29	16	80	10	161
	633	Td dose at 12 years	2013	17	16	4	46	41	90	214
Ntuzuma Clinic	85	Td dose at 6 years	2013	24	13	71	62	15	118	303
	633	Td dose at 12 years	2013	8	5	27	35	1	79	155
Oakford Clinic	85	Td dose at 6 years	2013	4	1	8	4	1	5	23
	633	Td dose at 12 years	2013	1	1	1	2	0	1	6
Odidini Clinic	85	Td dose at 6 years	2013	29	21	5	13	7	4	79
	633	Td dose at 12 years	2013	19	11	0	0	2	3	35
Osindisweni Hosp	85	Td dose at 6 years	2013	0	10	7	13	3	7	40
	633	Td dose at 12 years	2013	0	1	2	2	2	2	9
Osizweni (Uml Q) Clinic	85	Td dose at 6 years	2013	12	14	13	16	18	21	94
	633	Td dose at 12 years	2013	0	0	0	38	0	0	38
Ottawa Clinic	85	Td dose at 6 years	2013	8	9	3	8	10	4	42
	633	Td dose at 12 years	2013	4	2	0	0	1	3	10
Overport Clinic	85	Td dose at 6 years	2013	0	6	2	11	6	17	42
	633	Td dose at 12 years	2013	0	0	0	1	0	1	2
Peaceville Clinic	85	Td dose at 6 years	2013	4	5	7	4	2	1	23
	633	Td dose at 12 years	2013	0	1	0	1	0	0	2
Phoenix CHC	85	Td dose at 6 years	2013	65	57	58	158	65	42	445
	633	Td dose at 12 years	2013	11	12	10	187	7	6	233
Pinetown Clinic	85	Td dose at 6 years	2013	12	17	7	21	4	11	72
	633	Td dose at 12 years	2013	3	1	0	2	0	1	7
Pinetown Mob 1	85	Td dose at 6 years	2013	26	19	24	26	18	12	125
	633	Td dose at 12 years	2013	9	12	11	22	15	7	76
Pinetown Mob 2	85	Td dose at 6 years	2013	8	2	9	22	9	12	62
	633	Td dose at 12 years	2013	5	4	7	4	3	6	29
Pinetown Mob 3	85	Td dose at 6 years	2013	3	12	9	16	5	12	57
	633	Td dose at 12 years	2013	0	1	4	10	4	5	24
Pinetown Mob 4	85	Td dose at 6 years	2013	20	38	30	26	11	8	133
	633	Td dose at 12 years	2013	6	4	0	8	1	1	20

Prince Mshiyeni Gateway	85	Td dose at 6 years	2013	6	8	7	16	22	16	75
	633	Td dose at 12 years	2013	2	4	1	3	3	2	15
Prince Mshiyeni Hosp	85	Td dose at 6 years	2013	0	0	1	3	1	0	5
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Prince Zulu CDC Clinic	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Qadi Clinic	85	Td dose at 6 years	2013	12	34	11	14	5	5	81
	633	Td dose at 12 years	2013	3	4	1	0	0	0	8
Queensburgh Clinic	85	Td dose at 6 years	2013	3	35	11	17	7	22	95
	633	Td dose at 12 years	2013	6	9	4	9	1	3	32
Redcliffe Clinic	85	Td dose at 6 years	2013	6	7	9	8	1	13	44
	633	Td dose at 12 years	2013	2	1	1	0	0	0	4
Redhill Clinic	85	Td dose at 6 years	2013	12	2	11	15	11	10	61
	633	Td dose at 12 years	2013	0	1	1	1	0	0	3
Reservoir Hills Clinic	85	Td dose at 6 years	2013	11	11	24	12	4	5	67
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
RK Khan Gateway	85	Td dose at 6 years	2013	13	8	9	19	14	5	68
	633	Td dose at 12 years	2013	1	2	1	5	7	1	17
Sandasonke (BT) Clinic	85	Td dose at 6 years	2013	7	8	10	14	9	12	60
	633	Td dose at 12 years	2013	0	63	2	0	23	1	89
Savannah Park Clinic	85	Td dose at 6 years	2013	17	30	47	37	26	25	182
	633	Td dose at 12 years	2013	1	18	25	23	17	17	101
Sea Cow Lake Clinic	85	Td dose at 6 years	2013	5	12	5	9	1	11	43
	633	Td dose at 12 years	2013	2	4	0	1	0	0	7
Shallcross Clinic	85	Td dose at 6 years	2013	16	33	23	18	17	18	125
	633	Td dose at 12 years	2013	6	13	13	8	8	10	58
Shongweni Dam Mob 1	85	Td dose at 6 years	2013	0	0	5	0	0	0	5
	633	Td dose at 12 years	2013	0	0	5	0	0	0	5
Sivananda Clinic	85	Td dose at 6 years	2013	6	7	5	2	2	3	25
	633	Td dose at 12 years	2013	1	0	0	0	0	0	1
St Anne's Clinic	85	Td dose at 6 years	2013	67	2	1	1	1	1	73
	633	Td dose at 12 years	2013	70	0	0	0	0	0	70
St Mary's Hosp (Mar)	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Starwood Clinic	85	Td dose at 6 years	2013	9	13	7	16	8	6	59
	633	Td dose at 12 years	2013	1	2	3	0	1	4	11
Stonebridge Clinic	85	Td dose at 6 years	2013	19	15	10	16	7	17	84
	633	Td dose at 12 years	2013	7	5	7	7	4	4	34
Sydenham Heights Clinic	85	Td dose at 6 years	2013	21	11	21	30	9	10	102
	633	Td dose at 12 years	2013	3	2	4	6	1	0	16
Tongaat CHC	85	Td dose at 6 years	2013	33	20	426	37	112	195	823
	633	Td dose at 12 years	2013	0	0	64	3	234	127	428
Tongaat Mob 1	85	Td dose at 6 years	2013	0	6	5	3	7	5	26
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0

Tongaat Mob 2	85	Td dose at 6 years	2013	0	7	4	5	9	5	30
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Trenance Clinic	85	Td dose at 6 years	2013	17	11	9	4	9	5	55
	633	Td dose at 12 years	2013	1	2	3	2	4	4	16
Tshelimnyama Clinic	85	Td dose at 6 years	2013	26	3	3	7	17	19	75
	633	Td dose at 12 years	2013	0	0	0	0	4	3	7
Umbumbulu Clinic	85	Td dose at 6 years	2013	32	10	13	4	0	6	65
	633	Td dose at 12 years	2013	2	2	2	4	1	0	11
Umbumbulu Mob 1	85	Td dose at 6 years	2013	0	0	0	0	2	0	2
	633	Td dose at 12 years	2013	0	0	0	0	2	0	2
Umbumbulu Mob 2	85	Td dose at 6 years	2013	5	1	0	2	6	2	16
	633	Td dose at 12 years	2013	0	0	0	0	1	0	1
Umdloti Mob 1	85	Td dose at 6 years	2013	0	2	1	0	1	2	6
	633	Td dose at 12 years	2013	0	0	0	0	0	2	2
Umhlanga Clinic	85	Td dose at 6 years	2013	2	2	3	6	4	7	24
	633	Td dose at 12 years	2013	1	0	0	0	0	0	1
Umkomaas Clinic	85	Td dose at 6 years	2013	5	15	8	11	8	8	55
	633	Td dose at 12 years	2013	2	5	2	0	2	2	13
Umlazi AA Clinic	85	Td dose at 6 years	2013	14	19	5	11	6	15	70
	633	Td dose at 12 years	2013	2	8	3	12	1	2	28
Umlazi D Clinic	85	Td dose at 6 years	2013	27	13	19	31	50	21	161
	633	Td dose at 12 years	2013	7	5	6	6	22	5	51
Umlazi G Clinic	85	Td dose at 6 years	2013	8	10	13	15	6	5	57
	633	Td dose at 12 years	2013	5	5	4	7	5	4	30
Umlazi K Clinic	85	Td dose at 6 years	2013	35	26	13	38	24	20	156
	633	Td dose at 12 years	2013	3	1	3	1	3	4	15
Umlazi N Clinic	85	Td dose at 6 years	2013	13	9	11	6	6	9	54
	633	Td dose at 12 years	2013	2	2	3	5	0	4	16
Umlazi U21 Clinic	85	Td dose at 6 years	2013	101	128	201	194	30	25	679
	633	Td dose at 12 years	2013	72	89	90	78	25	12	366
Umlazi V Clinic	85	Td dose at 6 years	2013	10	20	13	16	4	11	74
	633	Td dose at 12 years	2013	1	0	1	1	1	1	5
Umnini Clinic	85	Td dose at 6 years	2013	14	19	11	12	11	7	74
	633	Td dose at 12 years	2013	1	4	7	4	0	1	17
Umzomuhle (Uml H) Clinic	85	Td dose at 6 years	2013	42	40	29	34	23	35	203
	633	Td dose at 12 years	2013	5	4	1	3	1	4	18
Verulam Clinic	85	Td dose at 6 years	2013	44	71	22	43	16	19	215
	633	Td dose at 12 years	2013	13	4	4	6	2	3	32
Verulam Mob 1	85	Td dose at 6 years	2013	8	5	4	2	5	5	29
	633	Td dose at 12 years	2013	9	2	0	3	3	5	22
Verulam Mob 2	85	Td dose at 6 years	2013	0	4	4	4	6	6	24
	633	Td dose at 12 years	2013	1	0	1	1	0	8	11
Waterfall Clinic	85	Td dose at 6 years	2013	7	1	4	3	2	7	24
	633	Td dose at 12 years	2013	1	0	0	1	1	1	4

Waterloo Clinic	85	Td dose at 6 years	2013	0	0	16	19	14	27	76
	633	Td dose at 12 years	2013	0	0	0	3	2	2	7
Welbedacht Clinic	85	Td dose at 6 years	2013	5	19	7	9	7	8	55
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Welbedacht East Mob 1	85	Td dose at 6 years	2013	11	8	5	7	4	6	41
	633	Td dose at 12 years	2013	1	2	4	3	0	1	11
Welbedacht West Mob 1	85	Td dose at 6 years	2013	10	10	8	11	9	5	53
	633	Td dose at 12 years	2013	5	2	4	2	0	0	13
Wentworth Gateway	85	Td dose at 6 years	2013	0	0	0	0	0	0	0
	633	Td dose at 12 years	2013	0	0	0	0	0	0	0
Westville Clinic	85	Td dose at 6 years	2013	12	18	10	5	6	9	60
	633	Td dose at 12 years	2013	1	2	1	4	0	0	8
Woodhurst Clinic	85	Td dose at 6 years	2013	15	26	17	42	17	16	133
	633	Td dose at 12 years	2013	6	5	8	10	0	1	30
Wyebank Clinic	85	Td dose at 6 years	2013	26	9	15	12	14	18	94
	633	Td dose at 12 years	2013	4	5	5	4	2	3	23
Zwelibomvu Clinic	85	Td dose at 6 years	2013	34	24	19	11	7	53	148
	633	Td dose at 12 years	2013	1	6	1	3	1	2	14
Zwelitsha Mob 1	85	Td dose at 6 years	2013	0	2	3	4	5	4	18
	633	Td dose at 12 years	2013	1	0	1	1	0	6	9