THE UTILISATION OF INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESSES (IMCI) STRATEGY BY PRIMARY HEALTH CARE FACILITIES

by

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DECLARATION

I declare that the study on THE UTILISATION OF INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI) STRATEGY BY PRIMARY HEALTH CARE FACILITIES is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

SIGNATURE…….. DATE…….

(Keneuwe Joyce Malimabe)

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ABSTRACT

This explorative, descriptive quantitative survey attempted to determine whether the reduced number of consultations and admissions of sick children less than five years in Emfuleni sub- district clinics is due to the utilisation of the IMCI strategy or other health services. The research population comprised of all the mothers/caretakers of children less than five years who utilised the clinics and those who consulted the private medical doctor. The convenient sample consisted of 169 candidates. Data was collected by means of a questionnaire and analysed using the SAS/Basic computer statistical software package. Findings of the study revealed a need to address the major concern about the waiting time and operational times in all the three clinics. Recommendations were made that staff allocation procedures and policies be reviewed in order to abate long waiting periods at the clinics where children with childhood illnesses are treated.

KEY TERMS

Childhood illnesses; IMCI, primary health care facilities; strategy; utilisation.

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Dedication

I dedicate this dissertation to:

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List of abbreviations

ARC	Acute respiratory condition
ARI	Acute respiratory infections
EPI	Expanded programme of immunisation
ETAT	Emergency triage assessment and treatment
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IMCI	Integrated management of childhood illnesses
IMR	Infant mortality rate
INP	Integrated nutrition programme
MCH	Maternal child health
MEC	Member of executive council
MINMEC	Ministers members of executive committee
NGO	Non-government organisation
ORT	Oral rehydration therapy
PAHO	Pan American Health Organization
PHC	Primary health care
RTHC	Road to health card
RSA	Republic of South Africa
SA	South Africa
STI	Sexually transmitted illnesses
TB	Tuberculosis
UNICEF	United Nations International Children's Emergency Fund
UK	United Kingdom
WHO	World Health Organization

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CHAPTER 1

Orientation to the study

1.1 INTRODUCTION

Each year, according to the World Health Organization (WHO 2007:1), more than 10 million children in low-and-middle-income countries die before they reach their fifth birthday. Seventy percent of these deaths are due to just five preventable and treatable conditions: pneumonia, diarrhoea, malaria, measles and malnutrition, and often a combination of these.

The WHO (2007:1) reports that every day millions of parents, especially in the Sub-Saharan countries, seek health care for their sick children, taking them to health care facilities, private doctors and traditional healers. Many of these children are poorly treated and their parents poorly advised. At first-level health facilities in low-income countries, services such as X-rays and laboratory services are minimal or non-existent. Supplies are also limited, with few doctors and limited opportunities to practise complicated clinical procedures. Instead, the health care providers depend on clinical symptoms and the history given by the parents to determine the course of management and treatment.

In 1997, the WHO (1997:1) reported that the Republic South Africa (RSA) was also experiencing high mortality and morbidity rates among children younger than five years of age. The factors mentioned above also apply to the RSA, and make providing quality care to sick children a serious challenge. The WHO (2007:1) and the United Nations Children's Fund (UNICEF) addressed this challenge by developing a strategy called "integrated management of childhood illnesses" (IMCI). The IMCI strategy was introduced in the Sedibeng District Health in Gauteng, specifically at the Emfuleni Local Municipality, in 1998. At the time, the oral rehydration therapy (ORT) corners were also introduced in ten primary health care (PHC) facilities.

Therefore, providing quality care to sick children in theses conditions is a serious challenge. There is a need for research on utilisation or use of strategies that are less expensive and sophisticated ; available to the majority of those in need; and which takes into account the capacity and structure of health systems as well as the views and beliefs of the people served (WHO 2001:2).

1.2 BACKGROUND TO THE RESEARCH PROBLEM

Projections based on the 1996 analysis by Murray and Lopez (1996:7-9) indicate that these conditions will continue to be major contributors to child deaths globally through the year 2020, unless significantly greater efforts are made to control them.

- **Globally**

Although in the 1990's it was noted that the global annual number of deaths among younger than 5 year-old sick children had decreased by almost one third since 1970's, this reduction has not been evenly distributed throughout the world. Children in low-income countries are ten times more likely to die before reaching the age 5 than children in the industrialised world. In 1998 more than fifty countries still had childhood mortality rates of over 100 per 1 000 live births (WHO 1997:3). The 1996 global burden of diseases analysis projected that pneumonia, diarrhoea, measles, malaria and malnutrition will continue to be major contributors to child deaths up to the year 2020, unless significantly greater efforts are made to control them (Murray & Lopez 1996:4).

In the 1990's diarrhoeal diseases caused about three million children's deaths globally through dehydration, and 80% amongst children under two years of age (UNICEF 1996:1). Malnutrition contributes to more than half of the deaths of children under five years old while high vitamin A deficiency in developing countries leave some blind. These illnesses also contributed to 20-30% of deaths of sick children under five years old (UNICEF 1996:1). Child morbidity and mortality are still high in developing countries and in some parts of RSA, especially the rural and semi rural areas.

The IMCI algorithm is designed to treat the most common causes of mortality in children, such as measles, malaria, pneumonia, diarrhoea, ear problems, malnutrition, anaemia and lack of adequate immunisation (Kelly 1999:33).

The IMCI was a new programme recommended and funded by the WHO and UNICEF in SA, as part of the third world country, in order to combat infant and child mortality and morbidity rates in SA (IMCI 1993:2).

- **South Africa**

The establishment of dedicated child health programme at national and provincial levels within the directorate of maternal, child and women's health in 1995 was a huge advancement. Programmes were initiated to improve the delivery of child health services, including the baby-friendly hospital and integrated nutrition programme (MCH News 1999:1).

South African society accords children and their rights especially of health high priority. In order to improve the quality of and access to health services for children, a significant number of changes have been and are still being made at programme, policy and legislative level.

New policies, including free health care for all children from 0 to 6 years of age, were introduced since 1994. The Bill of Rights in chapter 2, section 28 1c of the Constitution of the Republic of South Africa (South Africa 1996:7) stipulates that every child has the right to basic nutrition, shelter, basic health care services and social services. Children have a right to appropriate health, education, promotion, and care as well a safe environment (MCH News 2000b:11). Such laws are being revised and monitored for implementation to ensure greater equity and access to financial, health and other support for children in especially difficult circumstances of illness.

The IMCI strategy combines improved management of childhood illnesses to reduce the mortality, frequency, and severity of illness and disability among children under five years old. In Thukela health district, the communities accept the IMCI strategy as it has reduced mortality in children under two years old (Kerry 2000:5). Representatives from the Department of National Health conducted the first reviews of the programme in 2000 and 2002 in collaboration with the WHO and UNICEF. The report indicated a decline in admissions and consultations of children under five years old. The IMCI norms include full immunisation coverage, regular growth monitoring, exclusive breast-feeding for up

to four or six months, and reduction in the prevalence of malnutrition among children under 5 years old (WHO 2001:19).

The Vaal Health District launched the IMCI strategy in April 1998, the same year it was introduced in South Africa. The IMCI was piloted, evaluated and implemented by non-governmental organisations (NGOs) and 95% of the PHC clinics implemented the strategy. Most of the professional nurses at Emfuleni municipality (the research context) were trained on how to implement the strategy.

In 1998, the IMCI strategy was introduced at Kopanong Hospital in Vereeniging as well. After six months of pilot site training, sessions were conducted to empower nurses, doctors, health promoters, traditional healers, early childhood developmental teachers, mothers and caretakers about the signs and symptoms of childhood illness. Only two components of the IMCI strategy, namely the family and community component and case management skills, were piloted. Field workers were placed in different clinics to educate the communities at clinics and at home about IMCI. The first pilot study started at Empilisweni Clinic in Zone 7, Sebokeng and the rest of the clinics followed. Currently all the clinics and hospitals have IMCI trained people and effective ORT corners. The health personnel perceive the services as accessible and there appears to be a decrease in the number of referrals and admissions to the hospitals with common causes of death such as diarrhoea and pneumonia as evidenced in table 1.1.

The Sedibeng District, in Gauteng Province, was selected to start implementing the IMCI strategy in 1998. Prior to the IMCI strategies, doctors at hospitals saw children in the Vaal Triangle. The most common childhood illnesses for which children were admitted in hospitals were diarrhoea and pneumonia. Due to the shortage of doctors, children used not to survive from their admission period because of lack of competency of staff to administer intravenous therapy in children. Hence the cause of death was due to dehydration and some of the deaths of children were due to pneumonia because of Sedibeng (Vaal) area being surrounded by air pollution from the nearby industries.
The IMCI strategy was first piloted and adopted by the Sedibeng District Health in Gauteng before the other districts in the Gauteng region could implement it. The reduction of incidences of illnesses that leads to high morbidity and mortality rates among children under 5 years led to closure of three of the five children's wards at Sebokeng Hospital as well as reduced consultations at the clinics. There were no

previous research studies conducted in this area on the utilisation of the strategy. However, an analysis of the annual statistical data compiled between 2004-2006 at Emfulweni municipality, indicated a reduction in the number of children under 5 years old seen, admitted and treated at the PHC facilities for specific childhood illnesses (see table 1.1)

Table1.1 Reduction in attendance of sick children under the age of five years at the Emfuleni PHC facilities, 2004-2006

Childhood illness	2004	2005	2006
Diarrhoea with dehydration	420	351	226
Diarrhoea without dehydration	2520	2342	2283
Pneumonia	4869	4511	4525
Severe malnutrition	102	96	89

The researcher therefore wished to conduct the study in order to determine whether the low consultations and admissions of children under five years at the PHC facilities are due to the effective utilisation of the IMCI strategy or whether mothers or caregivers consult traditional healers, private practitioners or other service providers for the management of childhood illnesses.

1.2.1 Problem statement

The reduction in number of children consulting with common childhood illnesses in the health facilities reflected in table 1.1 raised the question of whether the community lifestyle and management of childhood illness has an impact on this reduction after the IMCI strategy was introduced or whether parents consult private medical doctors or traditional healers. Since the introduction of the IMCI strategy in health facilities in the Sedibeng District in 1998, there seems to be a reduction in clinic consultations and admission of ill children under five years in clinics as well as hospitals. The ORT corners were implemented in all health facilities in the district, especially the Emfuleni clinics, for treating diarrhoea and vomiting. Mothers and caretakers were taught and encouraged to use ORT to treat diarrhoea at home.

Before 1998 the admission rate of children was 60 to 80% of clinic attendance. Since the introduction of the IMCI, the admission rate dropped by 30%, which indicated possible compliance with the strategy.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to determine whether the reduced number of consultations and admissions of children under five years, suffering from childhood illnesses, in the Emfuleni sub-district of Sedibeng district was due to the effective utilisation of the IMCI strategy and the use of ORT corners during diarrhoea epidemics or rather the consultation of the services of private doctors.

1.3.1 Research question

In order to achieve the purpose, the researcher formulated the following research question:

Is the reduced consultations and admissions of children under the age of five due to the effective utilisation of the IMCI strategy in managing childhood illnesses by the health care providers, mothers/caretakers or other service providers?

1.3.2 Research objectives

The objectives of this study were to

- determine whether the reduced number of consultations and admissions of children suffering from childhood illnesses at the PHC facilities was due to the effective utilisation of the IMCI strategy or to other services or service providers, such as private doctors or traditional healers
- explore and describe mothers' and caretakers' views about the utilisation of the IMCI strategy or other preferred choices for the treatment of their under 5 years sick children for childhood illnesses
- make recommendations for the improvement of the implementation of the IMCI strategy to attract mothers and caretakers of children suffering from childhood illnesses to utilise it for their children's treatment

1.4 SIGNIFICANCE OF THE STUDY

The study would contribute to the improvement of the quality of children's health and review of the standard and practices of management of childhood illnesses at the primary health care clinics. Knowledge gained from the findings of this study could be used to plan in-service education for health care providers at the clinics on how to implement the IMCI strategy in such a way that mothers and caretakers bring their children who suffer from childhood illnesses to the PHC clinics as a service of choice above others. Since it was indicated earlier that no study has been done on the topic in the area concerned, the results of this study may prompt other researchers to explore the concept further. In addition, to identify gaps in the services that needs to be attended to improve the service delivery in caring for under 5 children with childhood illnesses .

1.5 DEFINITION OF KEY TERMS

For the purposes of this study, the following terms were used as defined below.

- **Childhood illnesses**

A c*hild* is a young human being who may be a boy or girl; and *childhood* is the time when a person is a child and has not yet reached the age of discretion. *Illness* is an unhealthy condition of the body or a state of being ill (Allen 2003:73, 211).

In this study *childhood illnesses* referred to illnesses such as measles, pneumonia, diarrhoea, malaria and malnutrition that affect children under 5 years old and are brought by their mothers or caretakers to the PHC facilities to be treated using non-sophisticated methods of treatment such as the IMCI.

- **Integrated Management of Childhood Illnesses (IMCI) strategy**

The *IMCI strategy* is an integrated approach to child health that focuses on the well being of the whole child. The IMCI aims to reduce illness, disability and death, and to promote improved growth and development among children under 5 years of age. The

IMCI includes both preventative and curative elements that are implemented by families and communities as well as by health care facilities (WHO 2007:1).

A s*trategy* is “a well-planned series of actions for achieving an aim, especially success against an opponent” (Longman 2000:1426). In this study, it referred to a system or programme put in place at the clinics to identify and manage childhood illnesses through an approach known as IMCI.

- **PHC facility**

A PHC facility refers to a health care centre which is geographically defined, and acts as a place of first level of contact of individuals, the family and the community with health care facilities and resources of the national health system, making it possible to bring health care as close as possible to where people live and work (Monekosso 1994:16).

- **Utilisation**

Utilisation means an act of using something effectively (Longman 2000:1584).

In this study, utilisation referred to community usage of the clinic services (based on the implementation of the IMCI strategy) for the management of childhood illnesses and practising what they had been taught to improve the quality of the children’s health and prevent complications of childhood diseases.

1.6 THEORETICAL FOUNDATION OF THE STUDY

Burns and Grove (2007:171) define a theoretical framework as “a brief explanation of a theory or those portions of a theory to be tested in a quantitative study. It forms a basis on which a researcher explains why one variable is expected to cause another. The idea is expressed concretely as the research question is to be answered through the study methodology. According to Burns and Grove (2007:37), in research, assumptions are embedded in the philosophical base of the framework, study design and interpretation of findings.

1.6.1 Assumptions

Assumptions are “basic principles that are assumed to be true based on logic and reason, without proof or verification” (Mouton & Marais 1994:11; Polit & Beck 2004:13-14). Sources of assumptions include universally accepted truths, such as theories, previous research and nursing practice. The recognition of assumptions by the researcher is a strength, and not a weakness. The recognition of assumptions leads to a more rigorous development of the study. To this end, epistemological, ontological, epistemological and methodological assumptions were posited in this study.

According to Mouton and Marais (1994:11-12), *ontological assumptions* refer to the study of being or reality. The ontological assumptions regarding reality underlying this study were that:

- Children, although under 5 years of age, are humans and are essentially holistic beings.
- Child health care needs are often fulfilled within an organised system of service that addresses the overall health and well being of the child and not only a single disease.
- Teaching the mother or caretaker how to give drugs, treat local infections and feed the child promotes self-care practices that enhance appropriate management of childhood illnesses at home.

Mouton and Marais (1994:14-15) define *epistemological assumptions* as statements that embody the ideal of science, namely the quest for truth. In this study, the epistemological assumptions were that:

- The IMCI strategy guidelines and principles provided by the WHO (2007:4) are constant and adaptable to any country, community and context.
- A combined, integrated approach to treating childhood illnesses is better than treating a single illness.
- Parents or caretakers of children, if correctly informed and educated, can play a vital role in improving the health status of their children.

According to Mouton and Marais (1994:15-16), *methodological assumptions* concern what may be called the "how" of research. In other words, how should research be planned, structured and executed to comply with the criteria of science. They refer to the logic of implementing scientific methods in the study of reality. The methodological assumptions of this study were that:

- Quantitative research is most often associated with precise measurement and quantifying of phenomena and involves rigorous and controlled research designs (Polit & Beck 2004:729).
- Survey studies, as in this instance, are helpful to obtain information concerning views, beliefs, opinions or ideas through direct questioning by use of questionnaires.
- Quantitative studies are based on theoretical or conceptual frameworks.
- Quantitative studies prevent contamination of data by the researcher's values, feelings, opinions, experiences and personal perceptions.

1.6.2 Theoretical framework

The IMCI model of case management of a sick children from age 2 months to 5 years was the theoretical framework of choice for this study. The major components of this model are outpatient health facility, referral health facility, and appropriate home management (see chapter 2 for discussion of this framework).

1.7 ETHICAL CONSIDERATIONS

Ethical guidelines are used by groups of people, professionals and researchers to measure rightness or wrongness of actions and behaviours. In research ethical considerations are principles that govern the process of research in order to safeguard humans under study from exploitation and harm. The focus therefore of ethics is to ensure that the respondents under study are kept from harm. Ethical consideration, especially to vulnerable groups like children needs to be adhered to when conducting research (Polit & Hungler 1995:136). Ethical considerations addressed in this study included informed consent and voluntary participation, anonymity, confidentiality, respect and dignity and protection of the right to withdraw at any stage of the study. Permission to conduct the study was sought in writing from Sedibeng District Health

Services Director and Emfuleni Local Council Management of Selected Facilities (see chapter 3).

1.8 RESEARCH DESIGN AND METHOD

Quantitative research is a formal, objective systematic process in which numerical data are used to obtain information about the world, usually under conditions of considerable control (Burns & Grove 2007:17-18). A quantitative, non-experimental explorative and descriptive study was conducted to determine whether the reduction of the attendance of children at the PHC clinics was due to the positive effect of the utilisation of the IMCI strategy or consultation of other service providers.

The population for the study was mothers or caretakers of children under 5 years of age. The researcher used convenience sampling to select the sample for the study. A research context of three clinics and one private doctors' surgery was utilised. Data was collected using a structured questionnaire, with the help of two volunteers. A structured interview questionnaire was used to elicit information from the respondents in order to investigate the assumption that the IMCI strategy is more effective in managing childhood illnesses than services provided by other health care providers, such as private doctors or traditional healers. Data was analysed using descriptive and inferential statistics. The researcher, with the help of a statistician, calculated the frequency distribution of attendance for services when the child was sick, percentages, and measures of central tendency, such as the mean and standard deviation. Data analysis tests were applied to determine whether the reduction of the attendance of sick children at the clinics was a clear indication of the effective utilisation of the ICMI strategy or of other health care service providers. A statistician performed statistical analysis and data manipulation, using the SAS/Basic and SAS/STAT Version 11.1 statistical software package (Polit & Beck 2004:469; Polit & Hungler 1995:18).

1.9 STRUCTURE OF THE DISSERTATION

Table 1.2 presents an outline of this study.

Table 1.2 Outline of the study

Chapter	Title	Content description
1	Orientation to the study	Overview of the research problem, purpose and significance of the study. Introduction of the theoretical foundation of the study and research design and method
2	Literature review	An in-depth review of the literature related to the topic under investigation to give the researcher information on what is published or discussed in the literature about the phenomenon
3	Research design and methodology	The overall plan for addressing the research question, objectives including the ethical considerations
4	Data presentation, analysis and interpretation	Presentation, analysis and interpretation of the research findings
5	Findings, limitations and recommendations	Discussions, conclusions and recommendation, based on the research findings

1.10 CONCLUSION

This chapter introduced and gave an overview of the study. The research problem; purpose, objectives and significance of the study; population, sampling, and data collection and analysis were briefly discussed. Chapter 2 discusses the literature review conducted on the phenomenon under study and the theoretical framework suggested as a basis for the study.

CHAPTER 2

Literature review

2.1 INTRODUCTION

A literature review is a systematic identification, location, scrutiny and summary of related published works to gain information about a research topic (Burns & Grove 2007:33; Polit & Hungler 1995:69). The literature review, especially in quantitative studies, refers to an extensive, thorough and systematic examination of books on research, periodicals and monographs relevant to the research topic. It is a summary of theoretical and empirical sources to generate a picture of what is known and not known about a particular problem. Through the literature review researchers can discover what is known about the topic and compare or validate the findings of the present study. The literature review will also cover the pertinent studies related to the topic of interest and provide an essential background knowledge of similarities and differences between the present study and prior research (Burns & Grove 2007:137). The primary rationale for reviewing literature relevant to this study was to gain a background understanding of the information available on IMCI strategy. However, this is a new strategy that was introduced in PHC facilities of South Africa in 1998 in order to reduce child mortality and morbidity rates. Consequently, not much has been published on the topic as yet, except for most of the WHO publications on the Internet.

2.2 UTILISATION OF THE IMCI STRATEGY

WHO (2001:2) argues that a more integrated approach to managing sick children is needed to achieve better outcomes.

- **Global context**

The WHO and UNICEF developed the IMCI strategy in 1995 to address the high global incidence of childhood morbidity and mortality from the five most common diseases of childhood, namely malnutrition, diarrhoea, pneumonia (acute respiratory condition

[ARC]) measles and malaria. The approach emphasises promotive and preventative strategies, such as breastfeeding and immunisation, as well as education of the mother or caretakers on these illnesses and how to care for the sick child at home (IMCI 1998:13). UNICEF is guided by the Convention on the Rights of the Child and strives to establish child rights as enduring ethical principles and international standards of behaviour towards children (UNICEF 1996:2).The American National Red Cross Society in partnership with the Pan American Health Organization (PAHO), WHO, UNICEF and other health-related organisations adopted the IMCI strategy in order to address childhood illnesses, and save the lives of more than 10 million children under five years each year who die of childhood illnesses. They also aim to empower community health educators, mothers and caretakers to recognise the danger signs of these five childhood diseases and encourage referral to more advanced health facilities (WHO 2007:1).

The integrated approach to child health embodied in IMCI focuses on the diseases of childhood that cause the greatest global burden, while allowing for the content and guidelines to be adapted to individual countries' needs and situations. An integrated approach is justified by good clinical practice. It is important to treat the child as a whole, and not only what seems to be the most obvious disease (WHO1997:24; WHO 2001:4).

- **Developing countries**

The WHO and UNICEF developed IMCI to improve the management of sick children at primary health facility level in order to reduce the number of complications, disabilities and deaths in children under 5 years of age in developing countries. The high infant and child mortality and morbidity rate in developing countries poses a great threat to the child development and economy of these countries. Many children under the age of 5 die in developing countries as well as in South Africa. Most of the developing countries are trying to improve the effectiveness and efficiency of the health care that their medical systems deliver by integrated approaches like IMCI, Human Immunodeficiency Virus/Tuberculosis (HIV/TB) and sexually transmitted infections (STIs) management as guided by the WHO, UNICEF and other health-related organisations (UNICEF 1996:3).

A study in Uganda by Kolstad, Burnham, Kalter, Kenya-Mugisha and Nathan (1998:9), compared the use of IMCI strategy and the usual clinical guidelines provided by medical officers in the Ugandan primary health care facilities. Their findings showed that poor classification of children's conditions led to 37 children who met the IMCI criteria for referral being sent home instead of to a referral facility.

Sixteen percent of children who were supposed to have been referred to hospital according to IMCI classification compared to 22% who were actually referred showed that the IMCI strategy was efficiently implemented and is cost effective and accurate (Kolstad et al, 1998:6).

Murray and Lopez (1996:45) projected that every year more than 10 million children under the age of 5 in developing countries would die of preventable childhood illnesses. Of these deaths, 7 out of 10 would be due to acute respiratory infections (ARI) mostly pneumonia, diarrhoea, measles, malaria, malnutrition or often a combination of these conditions (see figure 2.1).

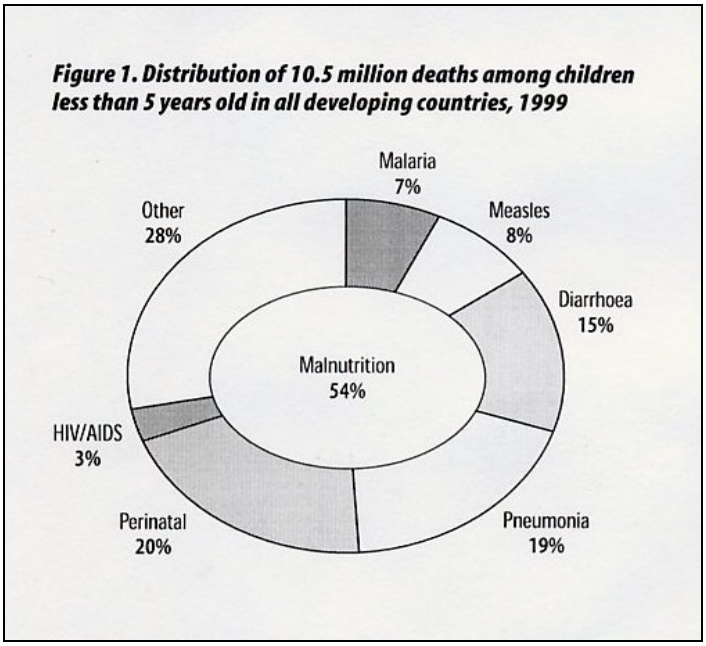

Figure 2.1

Distribution of 10.5 million deaths among children less than 5 years of age in all developing countries

(Adapted from Murray & Lopez 1996:39)

- **South African context**

In order to reduce the infant and child mortality and morbidity rate, South Africa had to introduce strategies that would improve the effectiveness and efficiency of care that their medical systems deliver. In terms of section 28, 1c of the Constitution of South Africa Act, 108 of 1996 (South Africa 1996:7), every child should have access to quality health care. Children should be raised in an environment that is conducive to quality health care and growth. Therefore, the IMCI seemed an ideal approach to manage childhood illnesses for the under 5 children either at health care facility or at home (IMCI 1993:24).

The infant mortality rate (IMR) in South Africa seems to be one of the key health factor indicators, and was adopted in South Africa in 1996. A study conducted by Kelly (1999:33), revealed that due to the lack of reliable estimates of IMR in rural South Africa, a previous birth statistic was used in Hlabisa District in Kwazulu Natal to estimate the current infant mortality rate. The study revealed that out of 708 women whose babies were born alive the previous year, 42% reported that their children died,

leading to estimates of the IMR of 53 per 1000 total births (95% confidence integral – C142-71) and the under 5's mortality rate was estimated at 70% per 1000 population (95% confidence integral - C153-98). It is predicted however, that human immunodeficiency virus HIV/acquired immuno deficiency syndrome (AIDS) will play a significant contributory role in high child mortality (Kelly 1999:35).

The IMCI strategy was adopted by Minmec (National and Provincial Health Ministers) and Provincial Health Advisory committees in July 1999 for implementation in South Africa to address the childhood illnesses of children under 5 years. The first course to train professional nurses particularly in case management skills in South Africa was run in the Mpumalanga Province in 1998 with 24 representatives from different provinces.

In the Eastern Cape, a District Health System survey found that the use of ORT to treat children with diarrhoea had a significant positive impact. Twenty percent of the children who were brought in were given medical treatment and 80% utilised the ORT therapy at home with success. The study revealed that 92% of the respondents had substantial knowledge of ORT, knew the home formula usage and the ORT was available in their homes. Sixty eight percent of the children were fully immunised (WHO 2002:2).

In the Okhahlaba sub-district, the expanded programme on immunisation (EPI) coverage showed a rate of 30% of children presenting at the clinics with childhood illnesses and 70% through accidents and injuries (Kelly 1999:33). However, this report showed a decline in the attendance at the PHC facilities by children suffering from childhood illnesses in spite of positive reports from other studies. Also, in terms of the Gauteng IMCI Health Facility survey report, it is recommended to review the poor attendance of children under 5 with childhood illnesses at some of the clinics (WHO 2006:36).

- **Emfuleni health sub-district**

The Emfuleni health sub-district (Vaal) of the Gauteng region had members who were part of the initial group that participated in the training on IMCI in the Mpumalanga province. The Vaal has been active in integrating the hospitals, local authority and provincial clinics in matters related to children's health issues. One person from each hospital and clinic has been trained in IMCI. Managers and doctors have been

orientated on the IMCI strategy and participate as trainees and trainers. All the primary health care facilities in the district have functional ORT corners and IMCI trained personnel.

All trained people are being followed-up quarterly or annually for support and guidance on the implementation of the strategy. The Gauteng infant mortality rate is presently 36% and under 5-mortality rates stand at 45% (South African Statistics : 49). According to the 1996 census, South Africa had a population of 40 583 573, of whom 4 443 621 were children aged 5 years and younger. In the Gauteng region, children below 5 years of age consist of 15% of the population. The Sedibeng district has a population of 657 000 and 53740 are children under 5 years (South African Statistics 2006:49).

The integrated approach to childhood illnesses is a strategy that assists health workers to manage childhood illnesses comprehensively. It treats all major complaints simultaneously and provides guidance for faster action when handling life-threatening illnesses. As an approach to address childhood illnesses, IMCI actually uses all encounters with the sick child for preventive actions and clear communication with the mother or caretaker.

The WHO (2001:6,18-20) guidelines on how to manage childhood illnesses were adapted and implemented at the Vaal clinics. These guidelines include assessing the sick child, communicating with the mother or caretaker (history taking), classifying the illness, treating the child, referral to other health facilities and giving counselling or advice to the mother or caretaker. The guidelines are based on an overall treatment plan at outpatient level, giving oral rehydration salts, an oral antibiotic (usually Amoxil), an oral anti malarial, Vitamin A oral drops, iron tablets, an oral antipyretic (usually paracetamol) and an eye antibiotic ointment. For severely ill children, an intravenous infusion treatment is initiated and the child is referred to the local Emfuleni sub-district hospitals (WHO 1997:2).

The health system component in this district addresses the availability of drug supply, drug stock control and management, ORT, weight monitoring, patient flow, referrals, health information system and supervision of health care workers and health care facilities in order to render quality IMCI care. The community component of IMCI focuses on the empowerment of the mothers and caretakers in order to improve child

care practices in the family and in the community. Partnership is established with community structures, by training staff at crèches and early learning centres to identify the danger signs, and the management of childhood illnesses at their level, which refers to promotion of good health and good nutrition practices (Child and Youth Health 1999:1).

2.2.1 What is IMCI?

The WHO (2007:1) defines IMCI as an integrated approach to child health that focuses on the well-being and development of the whole child. IMCI claims to reduce illness and disability and death, and to promote improved growth and development among children under 5 years of age. IMCI includes promotion of health, and preventative and curative elements of health care that are implemented by health care providers in primary health care facilities, families and communities in general.

2.2.2 Components of IMCI

The implementation of the IMCI strategy in countries involves the following three components (WHO 2007:2):

- Improvements in the case management skills of health staff through the provision of locally adapted guidelines on integrated management of childhood illness and activities to promote their use.
- Improvement in the health system and its resources required for effective management of childhood illnesses.
- Improvement in family and community practices on health-related matters concerning infants and children.

2.2.3 What does IMCI strive for?

In order to reduce the infant and child mortality and morbidity rates in South Africa and regional areas, several strategies were introduced to improve the effectiveness and efficiency of care delivered by the medical and nursing systems. In this study, it refers to the introduction of the IMCI in SA since 1998.

Firstly, IMCI promotes provision of preventative care that includes child immunisation and catch-up programmes. Secondly, it improves infant and child nutrition by weighing all the children before consultation. Appropriate health and maternal education on the importance of breastfeeding and matters of nutrition is given to the mothers or caretakers. Supplementary feeding is provided if the child is under the 3rd percentile of weight. In addition, IMCI promotes adjustment of the curative interventions to the capacity and functions of the health care system. Family members and the community are encouraged to be involved in the health care process (WHO 2001:3).

Effective provision of IMCI strategy requires action at different levels of the health services, families and the community. In the PHC facilities, the IMCI strategy promotes accurate identification of childhood illness; ensures appropriate combined treatment for all major illnesses; strengthens the advice and counselling of care takers, and speeds up referral of severely ill children. It also seeks to improve the quality of care of sick children and promotion of breastfeeding (WHO 1997:3). The IMCI strategy promotes a number of interventions and areas of activity, such as immunisation, Vitamin A supplements and drug supply management (IMCI I999:26). Conde, Parasso and Ayasson (1999:17) state that at governmental level, most health projects initiated are not successful because they are incoherent and uncoordinated and are unsuited to cope with the health sector's real problems. This failure led the health care workers to pin all their hopes on the IMCI approach.

2.2.4 Community participation

According to Shishana and Versfeld (1993:7), the important mechanism of facilitating change or health development through interaction with the community is described as community participation, community involvement or community action for health and partnership in health.

The WHO and UNICEF recognise community participation as a fundamental factor in PHC. The problem however, remains in the identification of sustainable forms of community participation in the face of the different definitions and perceptions of community participation. To some promoters, community participation simply means contributions and donations in terms of money, labour and materials by the community in the provision of health care. To others, it means empowerment of a community to make decisions about its own health. The second understanding brings to light the term *empowerment*, which includes recognising the potential of power and ability that communities have to make valuable contributions to and about their own health. The IMCI strategy empowers the mothers or caretakers with information concerning the general danger signs; when to bring the sick children for medical attention; how to prepare the ORT remedy at home, and lastly about the nutrition practices for the feeding of the sick child (WHO 1997:56).

2.2.5 Principles of IMCI

The IMCI guidelines are based on the following principles:

- All sick children must be routinely checked for major symptoms of infection, fever, ear problems, cough or difficulty in breathing and diarrhoea. They must also be routinely checked for nutritional and immunisation status, feeding problems and other potential health problems.
- All sick children must be examined for 'general danger signs', which indicate the need for immediate treatment or admission to a hospital.
- IMCI does not address all the health problems the child is brought to the clinic for. For example, management of trauma, injuries and accidents may require specialised care.
- IMCI procedures utilise a number of essential drugs and encourage active participation of mothers or caretakers in the treatment of their children.
- An important aspect of the IMCI strategy is the counselling of the mothers or caretakers about home management, feeding of the child, fluids, and when to return to the health facility (WHO 2001:4).

2.2.6 Implementation of the IMCI strategy

The WHO and UNICEF (WHO 2001:6-8) introduced the implementation of the IMCI at outpatient level through the following four key steps for sick children aged 2 months to 5 years:

- *Assessment of sick children*

Assessment of these children includes history taking and communicating with the mother or caretaker on the child's health problems. Health workers need to check for the general danger signs and check the main symptoms such as cough or difficulty in breathing, diarrhoea, fever, ear infections and other health problems. Assessment of the nutritional status and the child's feeding are high on the list. The immunisation status should be thoroughly checked. Assessment of sick children includes the following aspects:

- History taking
- General danger signs
- Main symptoms
- Cough or difficulty in breathing
- Diarrhoea
- Fever
- Ear problems
- Nutritional status
- Immunisation status
- Other health problems

Careful and systematic assessment of common symptoms and well-selected specific clinical signs provide sufficient information to guide rational and effective actions.

- *Classification of the illnesses* will depend on the combination of various symptoms and clinical signs and the severity of the illness. The WHO (2001:18) adds that the IMCI classification of the illnesses is not necessarily the diagnosis, but indicates what action needs to be taken. Some of the children may need to be referred to the hospital for admission. All children with a severe classification are referred to the hospital as urgent referrals. For other sick children, health

workers may initiate the treatment with oral drugs and send the child home or the child can be sent home with careful advice and education for the mother on feeding practices, giving oral drugs, treating local infections and when to return for follow up.

- *Cost implications.* According to the 1993 World Bank report, the implementation of the IMCI strategy is likely to have the greatest impact in reducing global disease burden in children under the age of five years at an annual cost of 1.6 dollars per capita, which ranks among the most cost effective health interventions in developing countries (IMCI 1999:44).

The utilisation of the IMCI strategy in managing childhood illness assists in treating the child holistically and not as a single approach or for a single disease. This means that once the child presents with any illness at the PHC, the child will be assessed for growth monitoring, immunisation coverage, nutritional and social aspects. The utilisation of the ORT corner for management of diarrhoea also reduces complications of severe diarrhoea and ultimate death.

Both doctors and nurses utilise the strategy when managing childhood illnesses in the clinics and hospitals thus reducing morbidity and mortality rates. The integrated approach also helps with efficient triage and case management of sick children. The importance of breast-feeding and using increased convalescent feeding to encounter illness-induced malnutrition has gained increased scientific support (WHO 1993:31). The utilisation of the IMCI treatment guidelines improved the prevention of complications and disability when managing childhood diseases in most of the health facilities in developing countries as well as in the Sedibeng sub-district (WHO 1997:2).

2.3 CHILDHOOD ILLNESSES

The WHO (2001:1) states that infant and childhood morbidity and mortality rates are sensitive indicators of inequity and poverty. Accordingly, the IMCI clinical guidelines target children under 5 years - the age group that bears the highest burden of common childhood diseases. Figure 2.2 shows a projected picture of the death rate of children under 5 years and the percentage of the illnesses that would lead to these deaths by the year 2000.

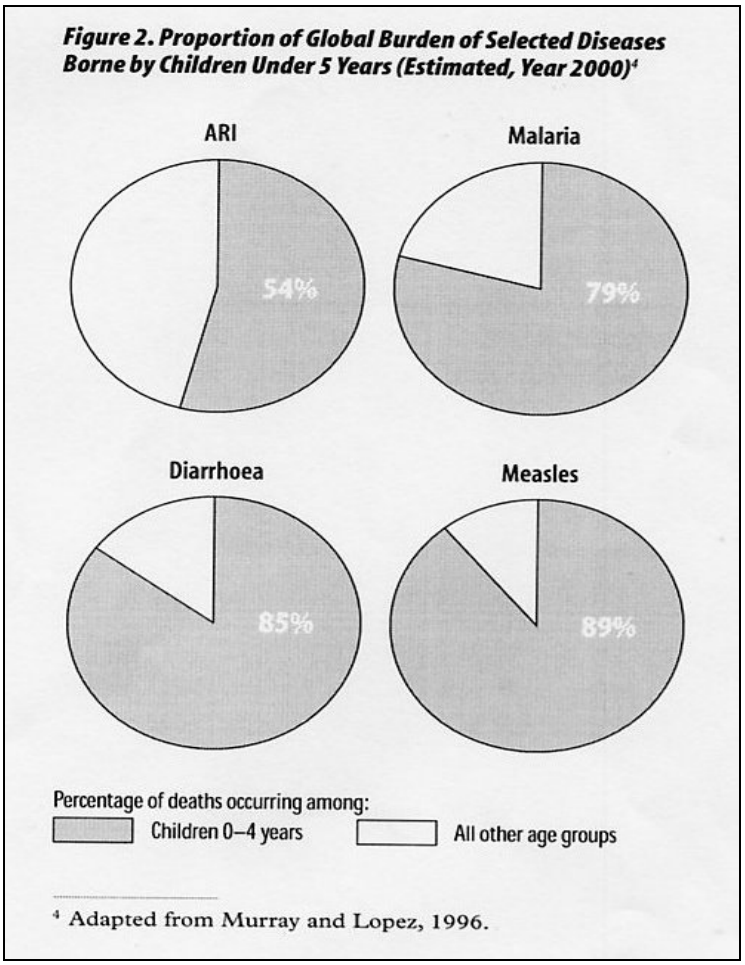

Figure 2.2

Global death rate of children under 5 and the illnesses that lead to the deaths

(Adapted from Murray Lopez 1996)

The five most critical infant and children under 5 years morbidity and mortality causes in most developing countries, and South Africa, are pneumonia, diarrhoea, malaria,

measles and malnutrition. Those five conditions also account for more than 20% of problems for which caretakers or mothers bring their children to a health facility (WHO 1997:16).

- **Diarrhoea**

Freshwater and Maslin-Prothero (2005:181) define diarrhoea as “frequent passing of watery and loose stools continuously for a certain period which can be due to infection or ingesting contaminated food with or without discomfort”. It can be effectively treated by ORT and let the mother or caretaker push fluids and give food during this stage. Figure 2.2 indicates 85% of children under 4 years of age in the year 2000 would contribute to the death rate due to diarrhoea. In the Cebu Province, the Phillipines, a diarrhoeal disease control programme, including ORT, was introduced at all ten primary health care facilities in the area. A survey conducted after the introduction of this programme and ORT found a decline of diarrhoea associated mortality rate from 18,3% in 1985 to 5% in 1989 (a reduction of 73%). However, sick children admitted during 1989 were severely ill and more complicated compared to those admitted in 1985. These results demonstrated the effectiveness of the ORT corners and community use of the programme (Hussey 1996:8) The ORT corners save over 1.5 million children’s lives every year and some 4 500 every day who are treated in the health care facilities (WHO 1997:45). In the Sedibeng sub-district, diarrhoea is a common childhood illness. Some children are brought in with dehydration and some without dehydration on assessment. The IMCI strategy and ORT corners are implemented to address this illness with seemingly good results as there was an evident decline in attendance at the clinics with some of the childhood illnesses between 2004 and 2006.

- **Pneumonia**

ARI, especially pneumonia, kills over 2 million children under 5 in developing countries every year (WHO 1997:15). Figure 2.2 gives an estimation that in the year 2000 children who are under 4 years would make a contribution of 54% of the death rate from respiratory infections.

In the USA, early in the 1930s and 1940s, sulphonamide therapy for pneumonia was introduced. An investigation that compared data of a 15 year period before and after the

introduction of sulphonamide therapy revealed a decline in infant pneumonia deaths from 1.8% to 1.7% and in children aged 1 to 4 years from to 5.9% to 3.7% (Murray & Lopez 1996:124).

In Cameroon, children treated with Procaine Penicillin for cough and fever during admission at the hospital, had a lower risk of developing pneumonia (60%) compared to children not treated (52%) with the drug. In India, in the Punjab area, child mortality rates due to pneumonia dropped by 50% through the implementation of case management guidelines for acute respiratory infections (WHO 1997:5).

In the Sedibeng sub-district, a number of children present at the clinics with cough or difficulty in breathing. They are checked for general danger signs and often have pneumonia. There is a mechanism in place for referral of very sick children who need medical attention or more complex therapy at the hospital. Some children die due to complications of the disease.

- **Measles**

In a study in Cape Town, Bless and Higson-Smith (2000:15) found that the death rate for children admitted in an urban regional hospital and treated with vitamin A for measles showed a significant decline. There was an evidence of lowered mortality rate of 10% in the placebo group and only 2% deaths in the vitamin A treated group. According to Bless and Higson-Smith (2000:15), a recent meta-analysis of studies in the United Kingdom (UK), South Africa and Tanzania showed that vitamin A therapy reduced mortality by an impressive 67% ($p = 0{,}004$). The measles immunisation coverage rose from about 25% in 1980 to over 80% in most world regions in 1996. The IMCI strategy ensures that each child's road to health is assessed and immunisation coverage is done (WHO 1997:28). In the Sedibeng sub-district, due to effective immunisation coverage, measles is not a common childhood illness.

- **Malaria**

The IMCI classification of fever and pallor for malaria in Tanzania showed that 70% of the 395 children classified to receive antimalaria drugs by the IMCI algorithm had malaria para sitaemias, 68.4% had Plasmodium Falciparum trophozoites; 1.3% only Plasmodium Falciparum gametocytes; 0.3% Plasmodium Ovale and 0.3% Plasmodium malaria (Tarimo, Minyas & Bygobjerg 2001:). There are no incidences of malaria in the context of this research study. It is designated as a no malaria risk area or zone.

- **Malnutrition**

Malnutrition contributes to more than half of the 12 million under five deaths in developing countries each year, and 83% of these are associated with mild and moderate malnutrition. Worldwide, 250 million children under five suffered from vitamin A deficiency in 1995 with an impaired immune system. This deficiency increased the severity of common childhood illnesses and contributed to 25% of the deaths of sick children under five. The vitamin A provision in IMCI saves 1 million to 3 million children's lives a year worldwide. The IMCI strategy promotes exclusive breastfeeding and teaches mothers and caretakers the correct way of breastfeeding and the benefits of breastfeeding (WHO 1997:27).

A decline in mortality rate caused by malnutrition from 20% to 7% in Dhaka was identified, which was due to the efficiency of the health workers' case management skills (Bless & Higson-Smith 2000:27).

Malnutrition due to poverty still poses a challenge for the health care facilities in the Sedibeng Sub District. However, the rigorous nutrition programmes in place bring about successful results.

2.4 IMCI CASE MANAGEMENT MODEL

The case management model (WHO 2001:4-7) applied to care for sick children from age 2 months to 5 years brought to a first level primary health care facility includes a number of important elements (see figure 2.3). These elements are outpatient health facility, first-level referral health facility and appropriate home management.

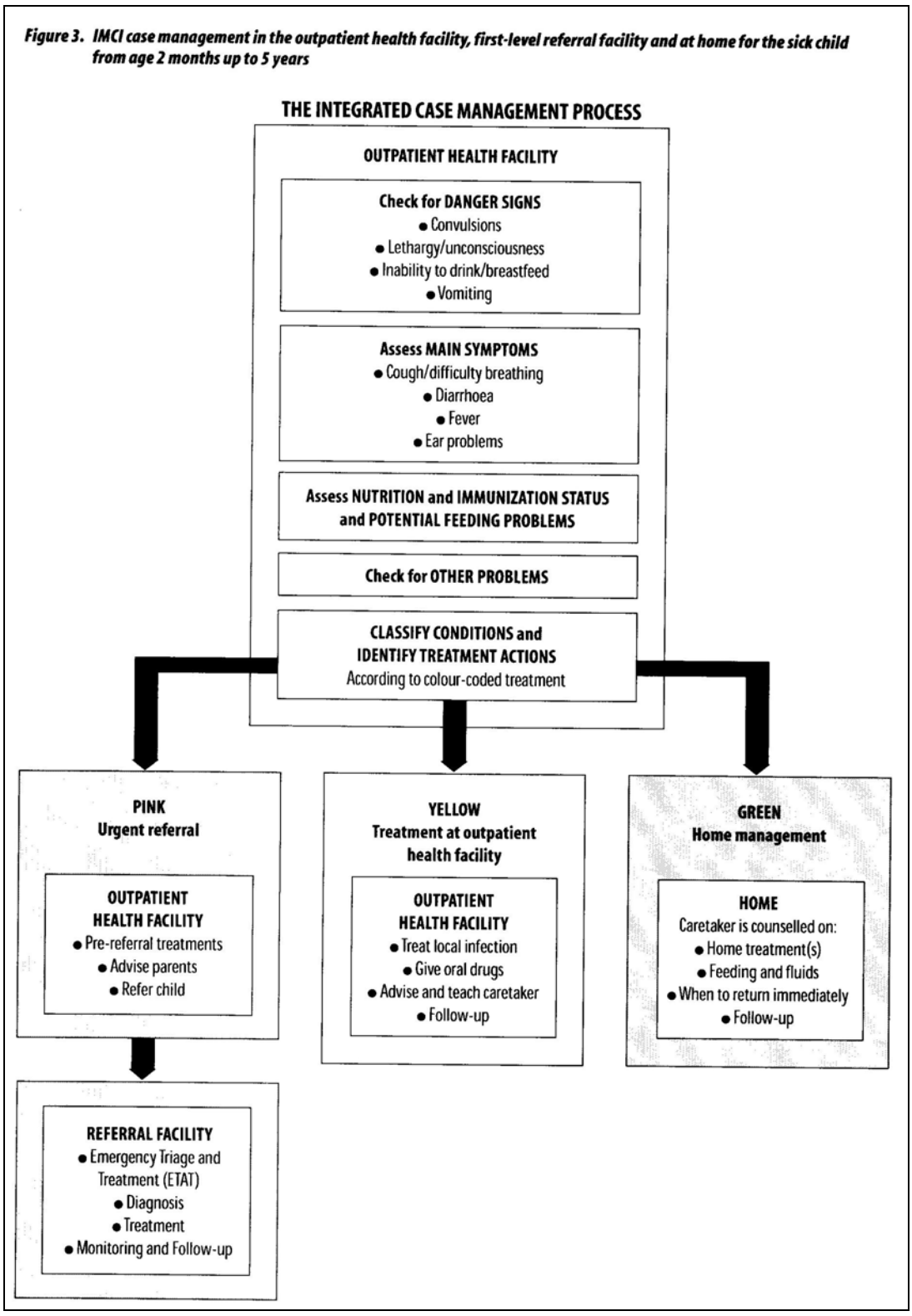

Figure 2.3

IMCI case management in the outpatient health facility, first level referral facility and at home fro the sick child from age 2 months up to 5 years

(Adapted from Murray & Lopez 1996:42)

2.4.1 Primary health care facility

Primary health care facility as a first-level point of entry for health care service delivery provides treatment of local infections, giving of oral drugs such as antibiotics, anti-pyrexia treatment and intramuscular injections. The mother or caretaker is advised and counselled on how to manage the illness at home, identify further danger symptoms, and when to bring the child back to the health system.

- Sick children are assessed for the danger signs which may present as convulsions, lethargy, inability to drink or breastfeed and vomiting.
- The children are assessed for the general danger signs which are cough, difficulty in breathing, signs of diarrhoea and dehydration, fever and ear problems.
- The nutritional status of the child, feeding patterns and potential feeding problems are assessed. The immunisation status is checked to ensure that the program is adhered to or if there are any gaps of attendance.
- Other health care problems are also checked such as local infections, injuries or accidents and referred to appropriate specialised care.
- Follow-up structures are put in place for continuous support and monitoring of the child's progress to good health.

(WHO 2001:4-5)

2.4.2 Referral health facility

Pre-referral treatment is given to the sick child to abate complications such as pneumonia or severe dehydration. The mother or caretaker is given initial counselling and health education on feeding practices or use of ORT corners or how to do a skin test. If the sick child does not improve, then he/she is *referred* to the local hospital. The emergency triage assessment and treatment (ETAT) is carried out at the referral facility, which is at the hospital. Further assessment and tests are done or X-rays taken in order to make a nursing and medical diagnosis. Appropriate medical treatment is given, which may be oral drugs, antibiotics, antipyretics or intravenous therapy for rehydration.

The *referral note* should include:

- Name and age of the child.
- Date and time of referral.
- Description of the child's health problems.
- Reason for referral (symptoms and signs leading to severe classification).
- Treatment that has been given.
- Any other information that the referral health facility needs to know in order to care for the child, such as earlier treatment of the illness or any immunisations need.

(WHO 2001:19)

2.4.3 Appropriate home management

The mother or caretaker is counselled on how to give the oral drugs and treat local infections at home. Essential aspects of health education on foods, feeding patterns and fluids are given. Arrangements are made for when to bring the child to the facility for follow up and to monitor the health progress. The success of home treatment depends on how well the mother or caretaker knows how to give the treatment and understands its importance (WHO 2001:4-5).

Follow-ups are arranged and dates of return to monitor the progress of the child and nutritional status are arranged with the mother or caretaker. When a child comes for follow-up, the mother or caretaker is asked if the child has developed new health problems. The IMCI follow-up instructions are used to assess the child fully; use the information given to select appropriate treatment, and the treatment to be given (WHO 2001:4-5, 25).

Depending on the child's age, various clinical signs and symptoms have different degrees of reliability and diagnostic value and importance. Therefore, the IMCI guidelines recommend the case management procedures and skills as employed by the health workers to manage and deal with childhood illnesses for both infants and children under 5 years of age.

2.5 CONCLUSION

The literature review assisted in providing a clear picture of what IMCI is, and how it is implemented in PHC facilities. It highlighted the situation of childhood illnesses of children under 5 years of age at global, national and contextual level. Most of the studies cited revealed the success and effectiveness of the implementation of the IMCI strategy. However, in the Emfuleni sub-district there is concern over whether the decline of the attendance of sick children at the clinics is due to the strategy or other consultations with private doctors or traditional healers.

Chapter 3 describes the research design and methodology.

CHAPTER 3

Research design and methodology

3.1 INTRODUCTION

This chapter describes the research design and methodology used to determine the utilisation of IMCI strategy at PHC facilities or clinics at Emfuleni local municipality. The research design, population and sample, data collection and instrument, data analysis, validity and reliability, and the ethical considerations observed are discussed.

3.2 RESEARCH DESIGN

Burns and Grove (2007:38) define a research design as "a blueprint or detailed plan of how a research study is to be conducted in a way that maximises control over factors that could interfere with the study's desired outcome". Bless and Higson-Smith (2000:630) describe it as planning any scientific research from the selection of a population, sample, methods of measurement, plans for data collection and analysis, and interpretation of observed facts with the intention of generalising the findings. A quantitative research design involves the use of structured procedures and formal instruments, such as a questionnaire, to collect data. To enhance objectivity, analysis of data is done, using statistical procedures (Polit & Hungler 1995:15). The researcher selected a quantitative, explorative and descriptive research design, using the survey approach.

- **Exploratory**

Babbie and Mouton (2001:79-80) state that research is exploratory when the researcher "examines a new interest or explores a topic especially where a phenomenon is persistent". Saunders, Lewis and Thornhill (1997:97-98) add that exploratory studies are useful if the researcher wishes to "assess and understand a phenomenon in a new light, ask questions, and search for new insights". The study sought to explore the views, opinions and ideas of mothers or caretakers of under 5 children, suffering from

childhood illnesses, treated through the IMCI strategy at the Emfuleni local clinics and those attending a doctor's office.

- **Descriptive**

The study was descriptive because the researcher found limited research literature, especially in South Africa, on the utilisation of the IMCI strategy in PHC facilities. According to Talbot (1995:229), a descriptive design entails "a full description of a single broad variable or concept, either unstudied or understudied, within a given population". Burns and Grove (2001:795) add that descriptive studies provide an accurate account of the uniqueness of the respondents, groups or events in their original setting for the purpose of describing what exists, discovering new meanings and categorising information. A descriptive design was therefore selected for this study in order to describe the variable of the situation of the utilisation of the IMCI strategy by mothers or caretakers at PHC facilities.

- **Purpose of descriptive studies**

The purpose of descriptive studies is to generate precise measurements of phenomena being studied that can be explained by the accumulation of statistical data (Burns & Grove 2007:34). Furthermore, the purpose of descriptive designs is to observe, describe and document aspects of a situation as it naturally occurs, and to provide a complete description of a single broad variable or concept within a given population (Brink & Wood 1998:289). According to Morse (1991:45), a descriptive design is used when little is known about the phenomenon under study and when the research context is poorly understood. It also assists quantitative researchers to develop hypotheses, which can be investigated and tested later with more precise and more complex designs and data-collection techniques (Burns & Grove 2007:35).

- **Survey**

According to Polit and Hungler (1995:178), a survey is any research activity in which the investigation gathers data from a portion of the population for the purpose of examining the characteristics, opinions and intentions of that population. Polit and Hungler (1995:178) add that surveys often focus on what people do and think, and what kind of

behaviours they engage in, and guide researchers to collect information on people's opinions, attitudes and values. The researcher chose a survey for the following reasons (Bless & Higson-Smith 2000:46; LoBiondo-Wood & Haber 1990:168):

- A survey is cost-effective and covers a large number of the population.
- It is advantageous in that it provides data about the present situation of a phenomenon and indicates what people think, anticipate, plan and do.
- It enables researchers to be creative in determining the area to be further researched.
- It is useful for gaining new insight and finding new methods.

The survey approach was appropriate for gaining new insight into the effective utilisation of the IMCI strategy and identifying gaps in the PHC services.

This study focused on a single broad variable, namely the utilisation of the IMCI strategy to address childhood illnesses in PHC facilities. Since this strategy is new in South Africa, little has been published on it since its introduction.

3.3 RESEARCH METHOD

The study used a quantitative research design with a questionnaire as data-collection instrument.

3.3.1 Target population

Seaberg (1988:24) defines a population as "the total set from which the individuals or units of the study are chosen". A target population, according to Burns and Grove (2007:324), is the entire set of persons or elements that meet the sampling criteria. An accessible population is the portion of the target population to which the researcher has reasonable access (Burns & Grove 2007:324). The accessible population for this study was the mothers or caretakers of children under 5, suffering from childhood illnesses, who attended three selected Emfuleni Local Municipality health care facilities and one health service of a private doctor in the area.

Eligibility criteria

Burns and Grove (2007:324) explain that eligibility criteria include a list of characteristics essential for membership in the target group. In this study, the following inclusion criteria were used:

- Mothers or caretakers of sick children under 5 years of age who were treated for childhood illnesses such as diarrhoea, pneumonia, measles, malaria and malnutrition.

Exclusion criteria

- Mothers or caretakers of all other older than 5 years children with childhood illnesses who attended the clinics and the office of the private doctor.
- Mothers or caretakers of children under 5 years who attended the clinic and office of a private practitioner for other health problems, injuries or accidents were excluded.

3.3.2 Sampling and sampling technique

A sample is a subset of the population that is selected for a particular study, and the members of a sample are the respondents. A sample is advantageous because it is more practical and less costly than collecting data from the population. Less time is spent on a sample as compared to larger populations and it gives more in-depth information and better quality research outcome (Burns & Grove 2007:327).

- **Convenience sampling**

The researcher used convenience sampling, also called accidental sampling. Respondents were included in the study as they happened to be at the clinics and at the doctor's office at the time the researcher needed them. Burns and Grove (2007:327) define convenience sampling as the selection of the most readily available people as study participants. Convenience samples are inexpensive, accessible and usually less time consuming to obtain than other types of samples. This sampling was appropriate for this study and topic because it is commonly used in health care studies and the topic did not need probability sampling methods. Respondents who attended the three

selected clinics and the doctor's office were included until the desired sample size was reached (Burns & Grove 2007:337-338; Polit & Beck 2004:711). According to Polit and Hungler (1995:183), convenience sampling is considered more economical and practical than other types of sampling, particularly when the population is large and widely dispersed.

Sampling technique

A sample of 150 mothers or caretakers of sick children under 5, who were on the IMCI strategy programme and who attended the Emfuleni PHC clinics, was considered reasonably adequate. A sample of 30 respondents was taken from the doctor's office. The researcher visited the research contexts in the morning. Permission was already obtained to collect data from the settings. At first an introduction was made about our presence at the settings by the manager in charge and the doctor respectively to the mothers and caretakers. Explanations were made and information was given about what the study was about and its benefits. The mothers and care caretakers were approached individually to participate in the study. Only those who were willing to participate were made to sign the consent form. They were approached as they entered the clinics and the doctor's office. A side room was allocated for the purpose. The selection of desired respondents was done until the desired sample size of 180 mothers or caretakers from the research sites was reached (see table 3.1). The help of two trained volunteers was enlisted especially to translate as the questionnaires were in English. The respondents are referred to as mothers or caretakers or primary caregivers, as it is applicable.

Table 3.1 Sample according to the selected research area

Research area	Number of mothers or care takers who participated (N)	Percentage (%)
Zone 3 clinic	50	28
Sharpville Tshepong Clinic	50	28
Empilisweni Clinic	50	28
Doctor's office	30	16
Total = 4	180	100

3.3.3 Data collection

Burns and Grove (2007:536) define data collection as identification of respondents and the precise, systematic gathering of information (data) relevant to the research purpose or specific objectives, research question, or hypothesis of a study. It is the gathering of information needed to address a research problem (Polit, Beck & Hungler 2001:460)

3.3.3.1 Data-collection approach and method

Self-report questionnaires were used to collect data. Burns and Grove (2007:551) define a questionnaire as a printed, structured self-report form designed to elicit information that can be obtained through written or verbal responses from the respondents. Structured data collection involves the use of formal instruments comprising pre-defined items and response options. It also involves directly asking the respondents about the study variable. If a researcher wants to obtain information about attitudes, feelings, beliefs or any other information that cannot be easily observed, the most direct means is to ask questions and receive answers from the respondents (Talbot 1995:293). Structured self-report data collection is strong in respect to its directness and versatility, and content coverage. It yields information that would otherwise be difficult to obtain by other means (Polit & Hungler 1995:254-255). Self-administered questionnaires were therefore used and were completed by the available respondents who brought their sick children to the clinics and the doctor's office. Since the respondents differed considerably in their education levels and their ability to communicate in writing, two research volunteers were selected to distribute and interpret the questionnaires to the respondents in their home language and complete the questionnaires on their behalf.

The questionnaires were clear, simple and unambiguous for the respondents to answer (see annexure D). They were distributed to the mothers and caretakers who were attending the three clinics and the doctor's office. The trained volunteers assisted in the distribution, completion and collection of the questionnaires. They were given background on the ethical issues of research. Ethical considerations, such as confidentiality, anonymity and respect, were emphasised and adhered to. Therefore, respondents who had difficulty in understanding the language in the questionnaires were assisted and difficult items were interpreted in their home language.

Polit and Hungler (1995:288-289) point out the specific advantages of using a questionnaire as follows:

- It is a rapid and efficient method of gathering adequate information on a phenomenon.
- Measurement is enhanced because all respondents answer the same questions.
- The identity of respondents is kept anonymous.

Talbot (1995:293) adds that, generally, questionnaires are cost effective in terms of finances and time taken to administer them. Information can be gathered from large samples relatively quickly and inexpensively. It offers the possibility of complete anonymity. However, Talbot (1995:293) points out that a disadvantage of questionnaires is that the only information obtained is what is asked, so there is always the possibility that other equally important information may not be retrieved.

- **Construction of the questionnaire**

A questionnaire should be clear, simple, unambiguous, and arranged in an orderly manner in such a way that data collection and analysis is as easy and accurate as possible (Polit & Hungler 1995:286-293). The researcher developed the structured questionnaire, using the literature review as a frame of reference. The items were closed and worded in such a way that respondents were limited to specified, mutually exclusive response options. Closed options facilitate the coding and statistical analysis of data. This also ensures that the researcher obtains the desired information, which can increase the reliability of the study (Talbot 1995:294-295). The assistance of the study supervisors and statistician was sought in this regard. The questionnaires were in

English and some of the words and phrases were clarified and explained in the respondents' local languages to facilitate understanding.

- **Structure of the questionnaire**

The questionnaire was divided into four sections (A-D). These sections were designed to elicit information from the respondents about the utilisation of the IMCI strategy by PHC facilities when caring for sick children younger than 5.

Section A. General information, including child demographic data such as age, gender, household information and the behaviour of the primary caregiver.

Section B. Child immunisation status, including the road-to-health cards, weight and nutritional status of the child.

Section C. Child health care seeking behaviour, included the type of childhood illnesses that the child suffered from, such as diarrhoea, pneumonia or fever, and how the child was treated at the clinic or doctor's office.

Section D. Service delivery issues regarding the use of the IMCI strategy, such as length of stay in the clinic, or quality of care given.

3.3.3.2 Pre-test

According to Polit et al (2001:467), a pre-test is a small-scale version, or trial run, done to ensure validity of the instrument in preparation for a major study. It is conducted to identify possible weaknesses in the research instrument. Polit and Hungler (1995:320) add that researchers who develop their own instruments should subject them to a small pre-test. A small scale study was conducted to pre-test the questionnaire with ten respondents, who attended the clinics, to identify gaps in the questionnaire. The respondents who participated in the pre-test were not included in the main study. This exercise assisted in estimating the time needed to complete the questionnaire and helped identify questions that were too difficult or ambiguous in terms of language or conceptualisation.

3.3.3.3 Administration of the questionnaire

Seaman (1987:284) states that hand delivered questionnaires are good in stimulating respondents' timely response and cooperation. The researcher personally administered the questionnaires at the three clinics and at the doctor's office for two days. They were collected immediately after completion with the assistance of the two volunteers.

3.4 VALIDITY AND RELIABILTY

With any type of measurement, two considerations are very important, namely validity and reliability. They are important criteria to evaluate a research instrument in terms of its adequacy and quality.

Validity is concerned with the soundness and effectiveness of the measuring instrument. Validity would raise questions such as: What does the instrument measure? Does it, in fact, measure what it is supposed to measure? How well, how comprehensively or how accurately does it measure it?

Reliability deals with the accuracy and consistency of the measuring technique. It asks questions such as: How accurate is the instrument that is used in making the measurement? (Burns & Grove 2007:264-365).

3.4.1 Validity

According to Polit and Hungler (1995:418), validity refers to the ability of the instrument to measure only what it is intended to measure, given the context in which it is applied. Burns and Grove (2007:365) add that validity of an instrument is a determination of how well the instrument reflects the abstract concept being examined. Validity is a measure on a continuum as no instrument is completely valid. Therefore, in this study the degree of validity of the instrument for the intended purpose and the context where the study was conducted was determined rather than whether validity existed or not (Burns & Grove 2007:365).

- **Face validity**

Polit and Hungler (1995:418) explain that face validity means that an instrument empirically appears to measure what is needed, given the construct that is supposed to be measured. Bless and Higson-Smith (2000:139) point out that this type of validity relies basically on the researcher's subjective judgement. It asks two questions which the researcher must finally answer in accordance with his or her best judgement: Is the instrument measuring what it is supposed to measure? Is the sample being measured adequately enough to be representative of the behaviour or trait being measured?

In this study, face validity was ensured by careful selection of items to be included in the questionnaire. These items reflected the concept of the utilisation of the IMCI strategy by the PHC clinics to treat sick children under 5 years in order to determine whether the reduction of attendance of children at these clinics was due to its effective use or other means of care. The help of experts in the field, who were the professional nurses working at the PHC clinics at the time of the study was sought for to establish face validity.

- **Content validity**

This type of validity is sometimes equated with face validity (Bless & Higson-Smith 2000:136). However, content validity deals with the question of how representative or adequate the compiled questions are for the construct being measured. To ensure content validity, the researcher conducted an extensive literature review, especially on internet on the wide discussions and debates by the WHO, UNICEF and other countries that implement the IMCI strategy. Polit and Hungler (1995:419) state that it is common practice to seek experts who are familiar with the content area to judge the relevancy and congruency of the questions and how well the questionnaire is designed. In this study, content validity was also enhanced by presenting the questionnaire to the statistician and the study supervisors because of their vast experience and years of service, both in practice and research. Senior colleagues in clinical practice were consulted to go through the questionnaire and make an input because of their experience in implementing the IMCI strategy. This helped in the validation and authenticity of meanings and better understanding of questions asked. They also examined the clarity of item wording and the necessary adjustments were made (Brink & Wood 1998:259).

- **External validity**

External validity refers to the generalisability of the research findings to settings or samples other than the one studied (Polit & Hungler 1995:158; Polit & Beck 2004:718). Three clinics in the Emfuleni sub-district and one doctor's office were utilised as the study context. One hundred and eighty (180) questionnaires were distributed. The sample had characteristics that represent the population of mothers or care takers of the children being investigated. Therefore, the size of the sample warranted generalisation of the findings to the rest of the sub-district clinics.

- **Internal validity**

According to Polit and Hungler (1995:217), internal validity is attained in a study when the findings can be shown to result only from the effects of the independent variable of interest and not interpreted as reflecting the effects of extraneous variables. Brink and Wood (1998:106) describe internal validity as "the extent to which the outcome of the study can be attributed to the independent variable rather than other factors". In this study, the independent variable was the IMCI strategy, which is a fairly new approach of managing childhood illnesses in South African communities. The dependant variable was the effect the IMCI strategy had on the attendance of sick children at the identified research context. To enhance internal validity, the researcher:

- Carefully designed the questionnaire which was validated with literature and experts in the field both in practice and in theory.
- Ensured that the conditions under which data was collected remained constant during the two days when data was collected (Polit & Hungler 1995:219).

Multiple biases may exist in this study, which may have affected the internal validity, and some of which may be subtle and not recognised by the researcher. However, Burns and Grove (2007:338) confirm that serious biases are not always present in convenience samples.

3.4.2 Reliability

Reliability is concerned with the consistency, accuracy, dependability and comparability of a measuring technique. For example, “if a scale is being used to weigh a subject, the scale should indicate the same weight each time the subject steps on and off the scale. A scale that does not show the same weight every time, is unreliable” (Burns & Grove 2007:364). Reliability refers to how consistent or stable the data-collection instrument is. Reliability testing is a measure of random error in the measurement technique. Reliability actually exists in degrees and is expressed as a correlation coefficient, with a coefficient of 1.00 indicating perfect reliability and a coefficient of 0.00 indicating no reliability. A reliability of 0.80 for a well-developed measurement tool is considered the lowest acceptable coefficient. However, a reliability of 0.70 for a newly developed instrument is considered acceptable (Burns & Grove 2007:364-365). A pre-test, utilising clients with similar characteristics to the study sample, was conducted to determine clarity of the items and consistency of responses. The Cronbach alpha co-efficient was utilised as a measure of reliability in this study. The assistance of a statistician was sought for statistical analysis and interpretation (Burns & Grove 2007:365). The internal consistency was established with a Cronbach alpha coefficient of 0.89.

3.5 DATA ANALYSIS

According to Burns and Grove (2007:41), data analysis refers to techniques used to reduce, organise and give meaning to data. In this study, descriptive and inferential statistical analyses were employed. The researcher, with the help of a statistician, calculated the frequency distribution of attendance, percentages, measures of central tendency such as the mean and standard deviation. Data analysis tests were applied to determine whether the reduction of the attendance of sick children at the clinics was a success story of the effective utilisation of the ICMI strategy or of other health care services. A statistician was consulted for assistance on the use of the SAS/Basic and SAS/STAT modules of the statistical software package. This computer program was used to perform statistical analysis and data manipulation. Version 11.1 of the package was used (Polit & Beck 2004:469; Polit & Hungler 1995:18).

3.6 ETHICAL CONSIDERATIONS

The ethics involved in the use of human subjects in research should not go without careful scrutiny. Polit and Beck (2004:717) define ethics as a system of moral values

concerned with the degree to which research procedures adhere to professional, legal and social obligations to the study participants. The principle of ethical propriety should consider the following: fairness, honesty, openness of intent, disclosure of methods and the ends for which the research is executed. Informed willingness on the part of the respondent to participate voluntarily in the research activity is a vital ethical standard (Polit & Hungler 1995:136). The ethical considerations applied in this study are discussed below.

- **Institutional rights**

Permission to conduct the study was obtained from the District Health Department, Emfuleni Local Council management ((see annexure B) who informed the clinic facility managers of the three specific clinics. The doctor gave oral consent to collect data from thirty mothers and caretakers who were conveniently selected to participate in the study.

- **Informed consent**

Respondents should have full knowledge of how the research project will unfold and a clear understanding of what is expected from them. They should be able to participate of their free will with no deception or coercion practised by the researcher. The consent for participating in the research should not be exploited by the status of the researcher, but a clear agreement should be reached by explaining all the details of the research and how long the questionnaire would take (Polit & Beck 2004:145).

To ensure adherence to this stated ethical standard, the respondents were fully informed of what the study was all about, and what their contribution would mean to the quality of care given to sick children. They were assured that their contributions and views would not jeopardise their attendance at the clinics or doctor's office, but would help to improve the quality of health care for their children. The respondents signed a written consent form after consenting voluntarily to participate in the study.

- **Confidentiality and anonymity**

In terms of the South African Constitution (South Africa 1996:8), the rights of patients are kept through maintaining confidentiality and anonymity (Devendish 1998:55). Respondents will behave and think without interference or the possibility that private behaviour or thoughts may be used to embarrass or demean them in any way later. In this study, confidentiality and anonymity were maintained by making sure that the questionnaires did not include the respondents' names to protect them from being identified. They were kept anonymous throughout. With anonymity, there was no linking of responses or findings to the individual respondents. Anonymity was also maintained by not including the addresses of respondents on the data collection tool to avoid any unfair treatment or possible exploitation (Polit & Beck 2004:149). For the purpose of confidentiality, data was coded with numbers instead of names.

- **Privacy and dignity**

Every person is entitled to the right of privacy and dignity. In this study, privacy and dignity was achieved through the provision of a socially conducive environment and secluded venue where data was collected. Respondents were addressed in their home languages. Only data that was necessary for the study was collected. Full disclosure of how the results will benefit the respondents' children, the health department and the primary health care clinics was explained.

- **Right to withdraw from the study**

The respondent's right to refuse to participate or withdraw from a study should be respected (Polit & Beck 2004:147). The respondents were given the right to refuse to participate or to withdraw from participating at any stage of data collection without fear of discrimination. In this study, there was no risk of physical or psychological harm to the respondents or their children. Only questions were asked and they were assisted to fill in the questionnaires where needed. They were explained to that they could withdraw from the study at any time if they so wish or are feeling uncomfortable or afraid. They were assured that the care of their children will not be affected.

3.7 CONCLUSION

This chapter described the research design and methodology used in the study, including population, sampling, data collection and analysis, data-collection instrument, validity and reliability, and ethical considerations.

Chapter 4 discusses the data presentation, analysis and interpretation.

CHAPTER 4

Data presentation, analysis and interpretation

4.1 INTRODUCTION

The study was a quantitative, explorative and descriptive investigation to determine whether the reduced number of consultations and admissions of sick children (0-5 years old) were due to the effective utilisation of the IMCI strategy when managing childhood illnesses by health care providers, or other means.

The objectives of this study were to

- determine whether the reduced number of consultations and admissions of children suffering from childhood illnesses at the PHC facilities was due to the utilisation of the IMCI strategy or to other services or service providers, such as private doctors or traditional healers
- explore and describe mothers' and caretakers' views on the utilisation of the IMCI strategy or other preferred choices for the treatment of their under 5 year-old sick children for childhood illnesses
- make recommendations for the improvement of the implementation of the IMCI strategy to attract mothers and caretakers of children suffering from childhood illnesses to utilise it for their children's treatment

4.2 DATA ANALYSIS

The researcher administered the questionnaire to the respondents (see chapter 3). The items on the questionnaire were coded as indicated on the questionnaire (see annexure D). The questionnaire consisted of four sections, namely:

Section A: General Information about the child
Section B: Child immunisation and nutritional status
Section C: Child healthcare seeking behaviour
Section D: Service delivery

A statistician statistically analysed and interpreted the data, using the SAS/Basic and SAS/STAT statistical software package, version 11.1 (Polit & Beck 2004:469; Polit & Hungler 1995:18). Descriptive and inferential statistical tests, including frequencies, percentages, the mean and standard deviations were used. Pearson's Chi-Square was used to establish statistical significance of relationships. The chosen level of significance was 0.05. A significant difference obtained on an item would indicate whether the IMCI programme was used effectively or not. Non-parametric analysis of variance, utilising the Wilcoxon test, was undertaken to establish which biographical indicators affected respondents' perceptions of health services delivery. The presented percentages were rounded off to one decimal point.

The research results of the statistical tests are discussed with reference to the sample characteristics of both the sick children and those of the primary care givers. References are only made to the frequencies of responses that showed significant variations. An annexure of the statistician's comprehensive report is attached (see annexure E).

4.3 SECTION A: GENERAL INFORMATION

Section A of the questionnaire consisted of 11 questions, covering general information about the child, primary care giver, and the circumstances under which the child was cared for.

4.3.1 Gender

Of the sick children, 99 (58.6%) were females and 70 (41.4%) were males (see annexure E). Thus more female than male babies were investigated in the study. Table 4.1 depicts the children's gender.

Table 4.1 Children's gender (N=169)

Gender	N	%
Females	99	58.6
Males	70	41.4
Total	169	100.0

4.3.2 Child's age

Although table 4.2 shows four age categories, in practice, two age categories were followed, which were inclusive of all the presented categories as children age 2 months up to 5 years, and infant's age 1 week to 2 months. For this study, children I week to 2 months were excluded.

Table 4.2 Child's age (N=169)

Age	N	Percent
2-6 months	29	17.2
7-12 months	35	20.7
1-2 years	46	27.2
3-5 years	59	34.9
Total	**169**	**100.0**

With regard to the sick children's age distribution, 105 (62.1%) were between 1 and 5 years. The IMCI strategy focuses on children under 5 years; nevertheless, the doctor sees children who are 0-6 weeks old when they are sick. The children's ages were therefore significant in this study because all children under 2 should have a feeding assessment, even if they have a normal Z-score. All children from 2 months up to 5 years have specific treatment protocols, classified as before referral, pre-referral urgent treatment, and treatment in the outpatient facility, and those urgently referred to the hospital as outlined in the theoretical framework for this study (see figure 2.3). The statistics according to the child's age has a bearing on the effective utilisation of the IMCI programme.

In the Sedibeng sub-district, this policy is adhered to and actually added to the EPI programme. Moreover, the WHO (2001:4-5) emphasises that depending on the child's age, various clinical signs and symptoms have different degrees of reliability and diagnostic value and importance in how treatment procedures are followed. Therefore, at the Emfuleni clinics, the IMCI guidelines that recommend case management

procedures depending on the age are followed. Although treatment at all categories of this age (0-5 years) is important; it should be noted that the highest number of sick children (59; 34.9%), who attended the clinics at the time of the study, were between 1 and 5 years. This would appear to indicate a need to re-educate the mothers and caretakers of this age group of children on appropriate home management skills, for example in how to give oral drugs and treat diarrhoea at home. This finding was cross-referenced with table 1.1, as diarrhoea was still the second highest health problem consulted for at the clinics. Although the incidence of diarrhoea has been reduced (see chapter 1, table 1), it is still a health problem to be reckoned with in this sub-district.

4.3.3 Child's primary caregiver

Mothers or caretakers who bring sick children, who are under 5 years of age, to the Emfuleni clinics are counselled to continue treatment, feeding procedures, and fluids at home. They also need to recognise when the child is improving or worsening. The WHO (2001:23) stresses that the success of home treatment depends on how well the mother or caretaker knows how to give treatment, understands its importance, and knows when to return to the health care facility.

Table 4.3 Child's primary caregiver (N=168)

Caregiver	N	Percent
Biological mother	131	78.0
Sister/father/other	15	8.9
Grandmother	22	13.1
Total	**168**	**100.0**

Of the caregivers, the majority (131; 78.0%) were the children's biological mothers. The high percentage of biological mothers, who often are closer to the children than other caretakers, has a positive influence on the accuracy of history taking and presentation of the danger signs. Grandmothers of these children are often sick themselves and old. Frequently, fathers, sisters or others care for these sick children because the biological mothers are working or have died. This factor influences how urgently and consistently attention is given to the sick child at home. According to the WHO (2001:6), communication between the caregiver and health professional with regard to history taking is critical. Sick children brought to the health facility may present with signs that

clearly indicate a specific problem or non-specific signs known as 'general danger signs'. Therefore, biological mothers who take care of their own children present a more accurate history about the child's illness, signs and symptoms, and management of the illness at home, which enhances the effective utilisation of the IMCI strategy.

4.3.4 Caregiver's educational level

According to the Child and Youth Health (1999:4), IMCI strategy identifies the education of the child's mother or caretaker as important, as it empowers them to know and understand how to give prescribed drugs, measure and prepare the ORT solution or prepare a cough mixture. Table 4.4 presents the caregivers' educational level.

Table 4.4 Caregivers' educational level (N=165)

Education	N	%
No schooling	21	12.7
Grade 1-8	33	20.0
Grade 9-10	27	16.4
Grade 11-12	63	38.2
Tertiary	21	12.7
Total	**165**	**100.0**

Of the respondents, 84 (50.9%) had Grade 11 or higher educational level. The WHO (2006:16) reports that populations whose health is compromised by economic or social factors may face many problems that make their lives and that of their children miserable. The problem is often compounded by crucial factors such as the level of education and other related factors. The higher the level of education, the better the communication in terms of language skill, observation and reporting skills of clinical signs of the sick child and how questions are answered concerning the child's sick profile. This had a bearing on how treatment-related tasks were understood and done. Lower-educated groups demand more effort on the part of the health professional when teaching them to use steps. For example, use words that they understand and teaching aids that are familiar to them; allow practice sessions and make corrections when practising, and check their understanding of the concepts taught (WHO 2001:23-24). These steps were followed for all the mothers and caregivers; but the better educated were observed to understand better and faster than the others. However, table 4.9 revealed that only one (0.71%) of the respondents indicated having read a pamphlet on how to prepare a cough mixture. Although the level of education was reasonably high,

there was a need to encourage them to foster and improve a culture of reading among them, as most information about childhood illnesses are in the literature.

4.3.5 Accessibility to the health facilities

Of the respondents, 167 (98.8%) answered this question. Of those, 124 (74.3%) indicated that they lived less than 5 km from a clinic, which is within walking distance; and 120 (71.9%) indicated that they walked to the clinic. Accessibility and affordability are key elements of primary health care. In a study conducted in Kenya (Child Youth Health (1999:9), accessibility was noted as a problem as mothers and care givers walked long distances to the health facility. With regard to the accessibility and affordability of the health services, 25 (83.3%) of the respondents who attended the doctors office indicated that the clinic facility was close to their home but they did not utilise the services. The most common reason cited for not visiting the nearest facility to their homes was that it was time consuming. The findings in this study therefore indicated easy access to the facility and, which encouraged mothers and caretakers to utilise the IMCI strategy, as 75 (52.8%) consulted the clinics for the treatment of their children.

4.3.6 Respondents' family financial means (family income)

WHO (2001:1) reports that children in low- to middle-income families are 10 times likely to suffer from childhood illnesses than children who live in families that have financial stability and provide for the needs of the children adequately.

Figure 4.1 summarises the respondents' financial means (family income).

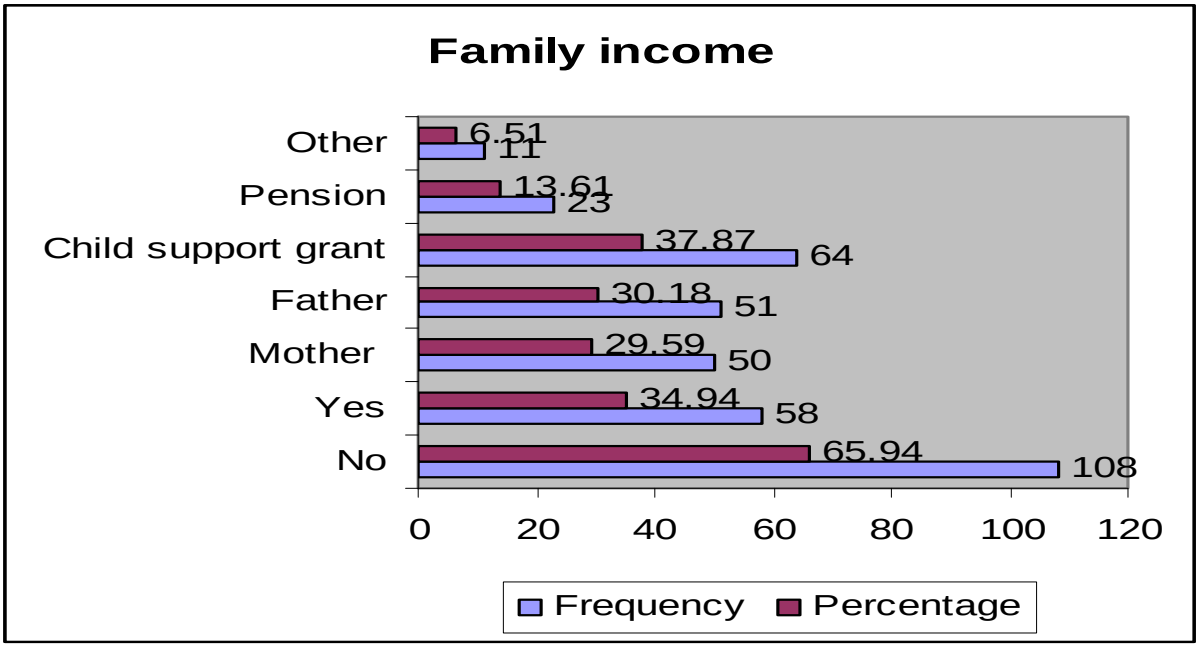

Figure 4.1 Respondents' income (financial means)

With regard to the respondents' financial means, 164 (97.0%) of the respondents answered the question. Of the respondents, 58 (35.0%) indicated that they had financial means to pay for medical services. This correlated quite well with the next four questions, which could be regarded as control questions for this question (family financial means or income). Of the respondents, then, 50 (29.6%) were working mothers; 51 (30.2%) had support from working fathers, and 64 (37.9%) indicated that they received child support grants. This finding corresponded with the 58 (35.0%) respondents who indicated that they had sufficient financial means, especially considering that one household could have a working mother and father and receive child support. Since 131 (78.0%) of the respondents were the biological mothers and the primary care takers, the 51 (29.6%) working mothers had a heavy financial burden. Of the respondents, 23 (13.0%) were grandmothers who indicated that they were the primary caregivers and supported the household with pension money. Of the respondents, 44 (26.0%) respondents indicated that they lived in dwellings with one or two rooms, which could be also an indication of poverty, and 79 (47.3%) respondents indicated that five or more people resided in the same dwelling. The findings, therefore, indicate a high level of poverty and low income amongst the respondents. This finding is supported by a greater number (108; 65.1%) of respondents who said 'no' about financial means for medical services; and only 58 (35.0%) indicate by a 'yes' that they have financial means for medical services as indicated in the above figure.

4.4 SECTION B: CHILD IMMUNISATION AND NUTRITIONAL STATUS

This section included the road-to-health card and nutritional status of the child, which influence the effective utilisation of the IMCI strategy. The IMCI strategy requires that each child attending the clinic should be assessed for nutritional status, development, as well as immunisation status. The road-to-health card assesses the immunisation status, information on return date, plotting and checking weight curve and its importance, feeding system, breast-feeding, introduction of solids and the types of supplementary feeds.

4.4.1 Road-to-health card and immunisation schedule

Figure 4.2 depicts the road-to-health card and immunisation status of the children who attended the clinics and doctor's office.

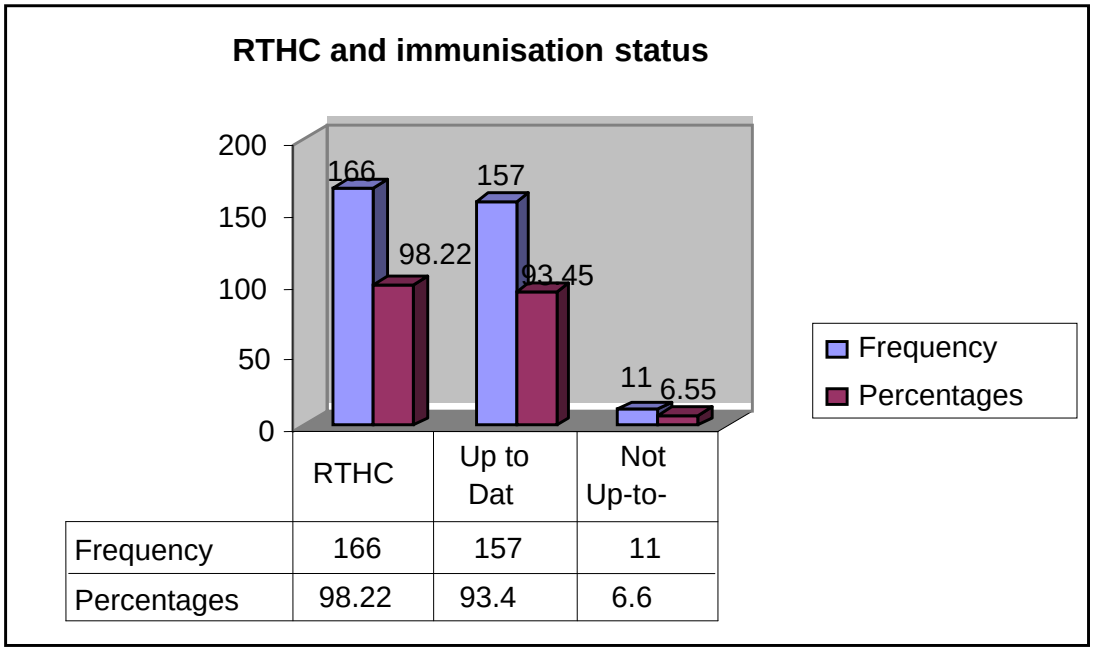

Figure 4.2 Road-to-health card and immunisation coverage

With regard to the RTH card and the immunisation of children, the sample respectively indicated that 166 (98.2%) of children were in possession of the RTH card and 157 (93.4%) were immunised on a regular basis. It was therefore not foreseen that these

biographical variables would be deterministic/ influential in further analyses. According to the WHO (2006:18) guidelines, the immunisation status of every sick child brought to a health facility should be checked. Illness is not a contra-indication to immunisation. In practice, sick children may be even more in need of the protection provided by immunisation than well children. A vaccine's ability to protect is not diminished in sick children. These guidelines were followed at the Emfuleni sub-district. As a result, the findings indicated satisfactory immunisation coverage as only 11(6.6%) were not up-to date with their immunisation schedule.

4.4.2 Weight curve

Table 4.5 shows the relation between the child's weight and his/her nutritional status plotted on a chart on regular basis until the child is 5 years old.

Table 4.5 Weight curve (N=168)

Weight curve	N	Percent
Normal	128	76.2
Overweight	18	10.7
Under weight	15	8.9
Not available	7	4.2
Total	**168**	**100.0**

Of the respondents, 128 (76.2%) indicated that the growth plot and the weight curve were normal. The importance of the return date had been explained to them and adhered to. A weight for age indicator, which is a national growth chart (WHO 2001:16), helps to identify children with low (Z score less than -2) or very low (Z score less than -3) weight for age, who are at increased risk of infection, poor growth and development. Children under two years have a higher risk of feeding problems and malnutrition than older children do; therefore their feeding should be assessed. In practice at the clinics if these problems are identified, the mother or caregiver is counselled about feeding the child according to the recommended IMCI clinical guidelines. These findings thus show the effective utilisation of the IMCI strategy by the mothers and caretakers.

4.4.3 Child's nutritional status

The community component of IMCI aims to identify key family practices that can promote the health of children at home. These include encouraging good nutrition

practices like exclusive breastfeeding and nutritious complementary feeds (WHO 2006b:1).

The government strategy to alleviate malnutrition introduced the Integrated Nutrition Programme (INP) in health care districts across the country in 1994. It targeted malnutrition mainly, because it is a major cause of high mortality rate amongst the children less than five years in South Africa. The programme also included encouraging exclusive breastfeeding for the first six months. One of the guidelines of the IMCI strategy is growth monitoring and the introduction of supplementary food in the diet at age four or six months (MCH NEWS 1999:1). Of the respondents, 124 (73.8%) understood the importance of the return date; 101 (60.1%) understood the weight curve, and 147 (88.0%) knew that regular weight plotting by the health care providers indicated the impact of the utilisation of the strategy in combating childhood illnesses. These findings suggested that the health care workers had provided effective health education on nutrition and acceptable nutritional practices to the mothers or caregivers.

Many people fail to recognise that not only is growth an important sign of satisfactory feeding or general health, but that a child's growth chart can become a powerful tool for communication between the health care worker and the mother or care taker.

4.4.4 Breast-feeding and supplementary foods

Breast milk is the most important basic food for children up to 2 years. Both healthy and sick children should breastfed 8 or more times per twenty-four hours. Breastfeeding is not contra-indicated during illness. The Australian Breastfeeding Association (2005:405) emphasises that breast milk provides growing children with the basic, correct nutrients that their bodies need for growth and protection from illness and infection. The WHO (2001:28) emphasises that infants with no feeding problems are those who are breastfed exclusively at least 8 times in 24 hours and whose weight is not classified as "low weight for age" according to standard measures. Supplementary food is essential for infant growth and development. Carruth and Kelly (2000:407) used a stepwise linear regression to determine the effect on weight and length slopes by the introduction of supplementary foods in the diet. Weight gain was directly related to the age when supplementary food was introduced in the infant's diet. The IMCI guidelines emphasise adequate feeding and proper breastfeeding practices. However, despite the importance

of breastfeeding, the present study found that 113 (67.3%) of the mothers did not breastfeed their children, although most of them (83; 50.6%) breastfed their children for between 7 months and 2 years. This was a positive indication of the mothers' cooperation with the IMCI strategy. Of the respondents, 15 (13.2%) indicated that they were working mothers, which hindered them from breastfeeding their children.

4.4.5 Introduction to supplementary food

The WHO (1997:5) states that when a child is 6 months old, supplementary food should be introduced in the diet. Breastfeeding should be continued up to the age of two years – as often as the child wants it.

Of the respondents, 42 (24.8%) started with supplementary food within two months of the child's birth. Supplementary food introduced in the sick child's diet is needed for growth and weight gain. One hundred and twenty eight (76.2%) of the children were within the normal weight curve. This could be because the supplementary food was introduced in progressive stages, starting at two months. Various reasons, such as cultural or traditional practices, might nevertheless prevent adherence to this standard. Although 69 (40.8%) mothers or caregivers gave cereal or purity as supplementary food, Carruth and Kelly (2000:410) suggest that fruit, juice, vegetables and meat clusters should be the first to be introduced. This finding indicated a need for health education on nutrition, breastfeeding techniques, types of complementary foods or fluids, and feeding patterns during children's illness.

Sick children should be assessed for weight, breastfeeding and adequate feeding (WHO 2001:27). The WHO strategy on nutrition stipulates that children should eat 6 to 8 times a day, depending on their age and body weight. The INP aims to alleviate malnutrition amongst children under 5 by providing subsidised food coverage to early childhood development centres to ensure that children at day care centres are well fed (MCH News 1999:2).

4.5 SECTION C: CHILD HEALTH CARE-SEEKING BEHAVIOURS

In the Sedibeng sub-district, most of the health professionals have undergone training on how to run the IMCI programme. The less qualified staff is trained to provide EPI as

well as initial consultation services for sick children. When sick children are brought in for consultation, they are checked for general danger signs and major signs and symptoms of the presented illness.

4.5.1 Illness experiences

Table 4.6 outlines all the illnesses or symptoms presented with at the clinics and doctor's office. The "yes" responses in the columns reflect the number of children who presented with that symptom; the "no" ones indicate the number of children who did not have that symptom at the clinic or doctors' office. Children may present with more than one illness or symptom at a health facility (WHO 2001:6).

Table 4.6 Respondents' illness experiences

Listed illness	Yes		No	
	N	%	N	%
Fever	104	88.9	13	11.1
Diarrhoea	61	78.2	17	21.8
Vomiting	36	67.9	17	32.8
Cough	76	88.4	10	11.6
Convulsions	1	5.3	18	94.7
Lethargic	1	5.0	19	95.0
Unable to swallow	4	17.4	19	82.6
Painful ear	14	45.2	17	54.8
Sore throat	11	39.3	17	60.7
Running nose	24	64.86	13	35.1
Skin sores	31	68.9	14	31.1
Total	**363**	**67.6**	**174**	**32.40**

The distribution of listed ailments on sick children suggested that the respondents most commonly visited health care facilities when symptoms of fever, cough and diarrhoea presented themselves. In this case, the health care workers were the respondents. Of these, 104 (88.9%) consulted sick children who had fever. The IMCI guidelines recommend the use of antipyretics, followed by referral for appropriate treatment. The health care workers follow this guideline and about 1 in 10 children diagnosed with severe fever is either referred to the clinic doctor or to the local hospital. However, this finding highlighted one of the challenges that confront the health care workers, namely how childhood illnesses are managed at home. The second highest symptom of illness presented at the clinic was coughing (76; 88.4%). Most of the children treated at the clinics for cough or difficulty in breathing are first assessed for general danger signs. The WHO (2001:80) confirms that often these children have pneumonia or other respiratory infections. More probing questions are asked of the mother or caretaker for more information. Although health information is provided to mothers and caretakers on how to prepare the cough mixture, this symptom is still the highest on the list of illnesses. Convulsions and lethargic reactions seemed to be the least frequent reasons.

4.5.2 Who treated the child's last listed ailment?

Table 4.7 lists the respondents' answers to who treated the child's last listed ailment.

Table 4.7 Who treated child's last listed ailment? (N= 142)

Who treated	N	%
Clinic	75	52.8
Doctors	67	47.2
Total	**142**	**100.0**

The difference in attendance at the clinic or the doctor's rooms was relatively small: 75 (52.8%) compared to 67 (47.2%). Compared to private medical practitioners, the services cost less at the clinic. In section 4.3.6 and figure 4.1 on finances for medical services indicated a finding of low income and indicators of poverty. The mothers bore the financial weight of care for sick children, supplemented by government social grants. Therefore the findings also give an impression that although some of the respondents prefer to consult doctors for their sick children rather than the clinics, the element of poverty and low income as alluded to may contribute to the slightly high attendance at the clinics. None of the respondents indicated consulting traditional healers for health care. However, it might be a cultural taboo not to divulge information to the public about such consultations.

4.5.3 Satisfaction with treatment and child improvement after treatment

Table 4.8 indicates the respondents satisfaction (or not) with treatment provided by the clinics or by a private doctor.

Table 4.8 Satisfied with treatment (N=158)

Satisfy	N	%
Yes	152	96.2
No	6	3.8
Total	**136**	**100.0**

Treatment offered by both services was generally regarded by 152 (96.2%) respondents as satisfactory and 6 (3.8%) respondents reported a need for improvement. The success of any health programme is largely determined by the effective use of the

services offered. This principle is especially relevant in treating childhood illnesses because of the balance between lifestyle modifications and the prompt use of efficacious drugs that bring immediate improvement in the illness and prevents complications. At the Emfuleni clinics, the IMCI treatment protocol is followed and the findings of this study confirmed the participants' satisfaction with the treatment and the improvement of the child after treatment.

4.5.4 Respondents' knowledge of how to prepare oral re-hydration solutions

Although the statistics of this question was omitted, the community component of the IMCI role is to promote a healthy lifestyle and prevention of complications and diseases or illnesses in children. Knowledge of home remedies, such as the preparation of oral re-hydration therapy for treatment of diarrhoea, empoweres the community to reduce the number of children presenting with diarrhoea (see chapter 1, table 1.1). Wikipedia (2007:1) indicates that oral re-hydration therapy is used around the world, but is most important in the Third World, where it saves millions of children from diarrhoea, which is still the leading cause of death in these countries. The community around the Emfuleni sub-district can be categorised as both first and third world. The IMCI guidelines on educating the mothers and caretakers of sick children from both worlds on ORT and corners have been successful in treating diarrhoea, especially at home. The high education level of the mothers or caretakers reported in table 4.4 is an important factor that will enhance easy grasping and applying the knowledge when caring for their sick children.

4.5.5 Respondents' knowledge of the preparation a cough mixture

It is critical that the mothers or caretakers be taught how to prepare a cough mixture for use at home.

Table 4.9 Knowledge on how to prepare the cough mixture

Cough mixture	N	%
Yes	111	66.8
No	55	33.2
Total	**166**	**100.0**

One hundred and eleven (66.8%) respondents indicated that they knew how to prepare a cough mixture. According to the WHO (2007:1), the IMCI strategy ensures appropriate combined treatment of all major illnesses and disability with special emphasis on the education and counselling of mothers or caretakers. Cough was reported as third highest illness presented at the Emfuleni clinics (see table 4.6). Although most of the respondents (111; 66.87%) had been taught and knew how to prepare a cough mixture, the respondents who did not know (55; 33.2%) indicated the need for more intensified education programmes at the clinics.

4.5.6 Persons or sources that taught the respondents how to prepare a cough mixture

Table 4.10 lists the people or sources that taught the respondents how to prepare a cough mixture.

Table 4.10 Person or source that taught respondents how to prepare the cough mixture (N=140)

Who taught you?	N	%
Health care worker	99	70.7
Friends	19	13.6
Pamphlet	1	0.7
Local radio	5	3.6
Hospital	1	0.7
Doctor	4	2.8
Other	11	7.9
Total	**140**	**100.0**

One hundred and eighteen (84.3%) respondents indicated that the health care worker or friends showed this to them – which is a good indicator of the effective utilisation of the IMCI strategy. The strategy encourages regular staff development and training for

all levels of health care workers. In turn the health care workers adhere to standards of providing education and counselling to mothers and caretakers on various aspects of treating children with childhood illnesses. Only one respondent (0.7%) had read a pamphlet. The majority of the respondents were literate and could benefit more from pamphlets on the topics. It could be that there are no pamphlets available at the clinics. Freda (1999:772) maintains that a major component of the IMCI strategy is effective caregiver education. There are many methods to educate mothers and care takers of sick children. One other method is to give them pamphlets produced by reputable organisations that address specific topics on the implementation of the IMCI strategy to reinforce verbal teaching by health care workers.

4.5.7 Respondents' knowledge of causes of diarrhoea

Table 4.11 presents causes of diarrhoea indicated by the respondents.

Table 4.11 Respondents' knowledge of the causes of diarrhoea

Diarrhoea	**N**	**%**
Spoiled food	70	42.2
Illness	5	3.0
Not sure	29	17.5
Teething	42	25.3
Unhygienic circumstances	20	12.0
Total	**166**	**100.0**

Of the respondents, 70 (42.2%) indicated that spoiled food caused diarrhoea in their children; 42 (25.3%) claimed that it was due to teething problems, and 29 (17.5%) were not sure. Although the findings generally indicated that effective health education and counselling programmes were in place, gaps of ignorance were still evident as some respondents were not sure what caused diarrhoea in their children. Health education given in the clinics needs to take these factors into consideration to guide mothers or caretakers on how they can best preserve food for their children.

4.6 SECTION D: SERVICE DELIVERY

The respondents viewed the quality of services rendered at the clinics and doctor's offices in various ways.

4.6.1 Respondents' perceptions of service delivery

Table 4.12 indicates how the respondents perceived the delivery of services at the clinics where the IMCI strategy was implemented. The respondents were asked to indicate their agreement with certain statements from 1 = strongly agree to 5 = strongly disagree.

Table 4.12 Respondents' perceptions of service delivery at the clinics

Aspect of service delivery	**Perception of clinic service delivery**					
	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Total
Nurses give adequate information	45	61	16	27	14	163
	27.6	37.4	9.8	16.6	8.6	100.0
Nurses answers questions	46	60	19	33	9	167
	27.5	35.9	11.4	19.8	5.4	100.0
Nurses are patient	35	54	22	42	10	163
	21.5	33.1	13.5	25.8	6.1	100.0
Nurses communicate understandably	53	64	18	28	3	166
	31.9	38.6	10.8	16.9	1.8	100.0
Nurses are friendly	32	66	20	37	9	164
	19.5	40.2	12.2	22.6	5.5	100.0
Nurses are competent	37	68	22	25	6	158
	23.4	43.0	13.9	15.8	3.8	100.0
Information in literature understandable	98	49	9	5	6	167
	58.7	29.3	5.4	3.0	3.6	100.0
Clinic times	22	35	19	57	33	166
	13.3	21.1	1.0 11.5	34.3	19.9	100.0
Clinic waiting time reasonable	9	24	12	78	42	165
	5.5	14.6	7.3	47.2	25.5	100.0
Clinic treatment system satisfactory	42	73	13	34	5	167
	25.2	43.7	7.8	20.4	3.0	100.0
Clinic services satisfactory	31	50	19	50	15	165
	18.8	30.3	11.5	30.3	9.1	100.0
Total	**450**	**604**	**189**	**416**	**152**	**1 811**
	24.8	**33.4**	**10.4**	**23.0**	**8.4**	**100.0**

With regard to the respondents' perceptions of health services rendered at the clinics, the frequency distributions indicated general agreement on most of the aspects.

One thousand and fifty four (58.3%) responses (which were a total of all the strongly agree and agree) from the respondents indicated a positive perception of how services

were rendered at the clinics. This reflected a reasonable satisfaction level or effective utilisation of the IMCI strategy for sick children under 5 years of age. However, 568 (31.4%) responses (the total of both disagree and strongly disagree) disagreed that the services were satisfactory. This group viewed service delivery negatively. The WHO (2007:1) stresses that the IMCI and its evaluation depend on successful implementation of the different components of the strategy. It is important for the IMCI to become more available and tailored to the needs of each community. Therefore, based on the findings on service delivery, the implementation of the strategy needs to be evaluated and improvements made on the basis of the results. For example, although 147 (88.0%) agreed that information on the literature was understandable, this contradicted the findings in table 4.9 where only 1 (0.7%) respondent indicated having read a pamphlet. Moreover, 90 (54.2%) respondents disagreed that the clinic times suited them. This could be related to the nearly three quarter (120; 72.7%) respondents who disagreed that the waiting time to be attended to at the clinics was reasonable.

4.6.2 Respondents' waiting time at the clinic

Table 4.13 presents the time the respondents indicated that they spent waiting at the clinics for the health workers to attend to their sick children.

Table 4.13 Respondents' waiting time at the clinic (N=165)

Wait	N	%
< 1 hour	31	18.8
1-2 hours	58	35.2
2-3 hours	22	13.3
3-4 hours	31	18.8
> 4 hours	23	13.9
Total	**165**	**100.0**

Of the respondents 35.2% say that they wait for 1-2 hours and 53 (32.1%) respondents waited for 2-4 hours to be attended. Only 23 (13.9%) respondents waited for more than 4 hours. This therefore is also one of the factors that influences respondents as to whether to utilise the clinic health services or not. However, in spite of doctors being expensive, in this study, 67 (47.2%) respondents as reflected on table 4.7, took their sick children to a private doctor and 75 (52.8%) consulted the clinics.

4.6.3 Preferences for people to utilise a clinic service

Table 4.14 Preferences for people to utilise a clinic service

Preference for people	N	%
Yes	138	82.6
No	29	17.6
Total	167	100.0

One hundred and thirty eight (82.6%) respondents indicated that they refer people to make use of clinics for the treatment of childhood illnesses. However, when questioned about their own children they indicated (100; 63.7%) that they would preferably take their children to the doctor. The highly cited reason by 39 (26.0%) respondents is that doctor's issue medication. The second highly cited reason is that at the doctors' office time of waiting is shorter (35.5%; 23.0%; 3.0%). The IMCI guidelines put emphasis more on lifestyle modification, health education for the mothers and caretakers and home management of children illnesses than provision of medication. The WHO (2007:2) confirms this practice by stating that the mothers or caretakers must be taught about various topics such as breastfeeding, importance of immunisation, ORT to treat diarrhoea, nutrition and feeding practices, treating some of the illnesses at home, giving oral drugs and how to identify general and danger symptoms. This information empowers the caregivers to participate in the treatment of their children other than just to depend on issued medication.

4.6.4 Scale reliability measure of respondents' perceptions of service delivery

Table 4.15 presents the mean and standard deviation results of how the respondents perceived the service delivery at the Emfuleni clinics.

Table 4.15 Scale reliability measurement of respondents' perceptions of service delivery (N=169)

Label	N	Mean	Std Dev	Sum	Minimum	Maximum
Nurses give adequate information	146	2.38356	1.30389	348.00000	1.00000	5.00000
Nurses answers questions	146	2.37671	1.22694	347.00000	1.00000	5.00000
Nurses are patient	146	2.62329	1.27111	383.00000	1.00000	5.00000
Nurses communicate understandably	146	2.16438	1.12665	316.00000	1.00000	5.00000
Nurses are friendly	146	2.54795	1.20391	372.00000	1.00000	5.00000
Nurses are competent	146	2.32192	1.11994	339.00000	1.00000	5.00000
Clinic times	146	3.26027	1.36485	476.00000	1.00000	5.00000
Clinic waiting time reasonable	146	3.73973	1.17476	546.00000	1.00000	5.00000
Clinic treatment system satisfactory	146	2.30822	1.14810	337.00000	1.00000	5.00000
Clinic services satisfactory	146	2.80822	1.31472	410.00000	1.00000	5.00000

The respondents' perceptions of service delivery were deduced from the findings in table 4.15 as both satisfactory and unsatisfactory, which was indicated separately for each aspect of service perception. Scale reliability testing/ item analysis established whether the responses to the questions could be combined into a statistically reliable combined service perception score that indicated the respondents' general perception of service delivery.

The output represents scale reliability testing/ or item analysis to determine whether a calculated single score or scale for service perception would offer a reliable measure of service perception, such as an average score for each label. Reliability was measured by means of the Cronbach's alpha coefficient, calculated as part of item analysis or scale reliability testing. Generally, an alpha coefficient greater than 0.7 is regarded as reliable. Internal consistency reliability was established with an alpha coefficient of 0.89 as indicated in table 4.16.

Table 4.16 Cronbach's coefficient alpha

Variables	Alpha
Raw	0.885392
Standardised	0.886836

Scale reliability testing was conducted with the PROC CORR (alpha) procedure of the SAS statistical software package. The mean score was then calculated as a scale to measure service perception in general. Means were calculated with the aid of the

PROC MEANS procedure of SAS. The mean perceptions reflected above did not differ significantly, but gave a graphical presentation of respondents' mean perception on service delivery (see annexure E).

4.7 CONCLUSION

This chapter discussed the data analysis and interpretation with the use of frequency tables, descriptions and the mean and standard deviation. Although gaps were identified that require further investigation, the findings of the study were generally positive.

Chapter 5 concludes the study, discusses its limitations, and makes recommendations for practice, education and further research.

CHAPTER 5

Findings, limitations and recommendations

5.1 INTRODUCTION

This chapter discusses the findings and limitations of the study, and makes recommendations for practice, education and further research.

5.2 OBJECTIVE OF THE STUDY

The study wished to establish whether the reduction in the number of consultations and admissions for childhood diseases in children under 5 years in the Emfuleni sub-district was due to effective utilisation of the IMCI strategy and the use of ORT corners for diarrhoea or whether mothers or caregivers of the children consulted other services for the management of childhood diseases.

5.3 SUMMARY OF FINDINGS

The study found that most of the respondents (52.8%) utilised clinics that implemented the IMCI strategy with a reasonable impact on the reduction of consultations or admission of under 5 children suffering from childhood illnesses. It was noted with concern, however, that 47.2% preferred to take their under 5 children to a private doctor for childhood illnesses.

5.3.1 Demographic data

Although the study had more female than male children, gender was not an issue in the utilisation of the IMCI strategy. The weight and eating patterns of female children may need more observation to counsel the mothers appropriately.

Age is a significant factor in the effective implementation of the of the IMCI strategy, especially regarding treatment protocols.

In this study, the majority of the respondents (78.0%) were the biological mothers of the children. Most of them were literate, and their educational level ranged from Grade 9-12 and higher (table 4.4). Education empowers people as it enables them to express their thoughts and feelings and to participate meaningfully in essential activities such as health care of their children. Although 144 (87.3%) were literate, only 1 (0.7%) of the respondents read the pamphlets at the clinics. Pamphlets used at the clinics may need to be assessed for both availability and easy readability. The ability to use the oral re-hydration solution to manage diarrhoea and to recognise danger signs and when to refer to a health facility are key elements of the IMCI strategy. The respondents' reasonable educational level could have influenced the choice of health care facility or ability to administer treatment and manage child illness or ailments at home. Financially, some of the households depended on child support grants, which did not leave them much choice other than to utilise the clinic services because they were offered free of charge. Of the mothers or caretakers, 76 (45.0%) could not manage to take care of the children at home, as indicated by consultation for ailments such as coughs, which could have been well handled at home (see table 4.6). It should be noted, however, some of the respondents were pensioners (grandmothers) who might not be healthy themselves. Some of the working mothers had to bear the financial burden of their homes with inadequate incomes, which impacted on where to take their children for health services as well as the type and amount of nourishment (food) they could provide.

Factors such as distance and means of transport to the health care facility are important indicators of the accessibility and cost effectiveness of the health care services. Of the respondents, 120 (71.9%) reported walking to the clinic and 74.3% travelled less than 5km, which meant that the services were accessible and cost effective. This contributed to increased utilisation of the IMCI.

5.3.2 Immunisation and nutritional status

The Emfuleni sub-district falls within the category of free health services for children, which confirms the successful immunisation coverage achieved in this context. The

easy access and affordability of health care services enabled the mothers or caretakers to honour return dates for immunisation schedules of the children.

- **Immunisation**

The WHO strategy that every child under five years should be fully immunised was adopted in the IMCI strategy that each child seen in a health facility should have the RTHC. The study found that the children's growth and immunisation status was monitored, as evidenced by 98.2% of the respondents who produced the RTHC and 93.4% who had an up-to-date immunisation status.

The finding that the RTH card and immunisation schedule was up-to-date will assist the national objective of reaching 90.0% coverage at the health district (South Africa 2007:5).

- **Road-to-health card**

Mothers and caretakers are advised at the clinics to bring their children for regular check ups. The health workers monitor the child's development and growth as stipulated by the IMCI strategy guidelines. Developmental screening is routinely done during clinic visits for immunisation. Growth monitoring was done according to standard and procedures, as indicated by a normal growth and weight curve plotted on the growth charts. The mothers and caretakers had satisfactory knowledge of how the RTHC can be assessed, and what to observe in growth monitoring. The RTHC is an ongoing record of the child's progress. The children's weights are recorded on this card and checked regularly against the growth chart. The regular and up-to-date attendance of the mothers and caretakers on return dates made it easy for the health workers to monitor the children's weight and growth. Health education given particularly on breastfeeding and food supplements was successfully reinforced, as 128 (76.2%) had a normal weight curve.

- **Breast-feeding**

Breastfeeding plays an essential and sometimes underestimated role in the treatment and prevention of childhood illnesses. Breastfeeding prevents the occurrence of diarrhoea and respiratory infections. It is important that mothers should breastfed for 4

to 6 months exclusively before other foods are introduced (WHO 2006:4). In this study, 113 (67.3%) of the respondents breastfed their children, and of this number 43 (26.2%) breastfed for 7 to12 months. Of those who had not breastfed 55 (32.7%), some reported that they were working. Non-breastfed babies are more likely to fall ill, costing the family more, including medical expenses. In this study, the community were of lower socio-economic status. Health education on breastfeeding and breastfeeding techniques are emphasised at every visit to the clinic.

- **Supplementary feeds**

Early introduction of solids or bottle feeding put the child at risk of diseases like diarrhoea and upper respiratory illnesses. Of the mothers or caretakers, 31 (18.3%) introduced supplementary foods as early as 2-3 months. This factor could contribute to the high rate of ailments indicated in table 4.6. The IMCI strategy encourages the introduction of supplementary feeds at four or six months. Solids can be introduced at four or six months to prevent illnesses. In table 4.11, 70 (42.2%) of the respondents reported that they knew that spoiled food was the main cause of diarrhoea in the sick children.

The study found that at less than a month, 42 (24.9%) were already on supplementary feeds. This could be influenced by failure to deal with a restless child or thinking that breast milk is not enough.

5.3.3 Child health profile

The IMCI is a strategy for reducing the mortality, morbidity, disability and complications associated with the major causes of childhood illness among children who are under 5years. It initially focuses on improving care at first-level health facilities where many children arrive sick each day. Common illnesses mostly presented with at the clinics were fever 104 (88.9%), diarrhoea 61 (78.2%), coughing 76 (88.4%) and vomiting 36 (67.9%). Although the researcher found no research or literature for comparison purposes, the introduction of the IMCI in Emfuleni sub-district in 1998 showed a progressive reduction of children admitted for severe diarrhoea (see chapter 1, table 1.1). Health education and the community component of IMCI play a crucial role as a

prevention strategy by giving information and knowledge to mothers and caretakers regarding recognition of danger signs and management of childhood illnesses at home.

The use of ORT corners and mothers or caretakers' knowledge of how to prepare the oral re-hydration solution also played a crucial role in decreasing the number of children with severe dehydration. In terms of the IMCI, health education and life style modification play a primary role rather than issuing medication. Although doctors are available and medication is given at referral facilities, educating and counselling mothers or caretakers takes precedence in the IMCI programmes.

5.3.4 Service delivery

With regard to the respondents' perceptions of health care services rendered at the clinics, the responses indicated general agreement on most of the aspects of service delivery. Communication skills and service delivery by nurses in the clinics had a great influence on the effective utilisation of health care facilities. Of the respondents, 70.5% indicated that nurses communicated in an understandable way, which could be because they used the local language when interacting with them. The nurses are mostly seen (59.7) as friendly. Most of the nurses were known to the respondents and served on a long-term basis. In this study, it was of concern that 100 (63.7%) of the respondents preferred to consult a private doctor rather than a cost-effective clinic nearby and should be further investigated. System delivery issues, such as long clinic waiting times (54.2%), highlight gaps in the system that needs to be attended to, to improve the services. A shortage of qualified staff or staff trained in IMCI might contribute to unsuitable clinic times or long waiting periods, which undermines the effective implementation of the strategy to treat childhood illnesses for children less than 5 years.

Although 75 (52.8%) mothers or caretakers utilised the IMCI strategy for the treatment of their children's childhood illnesses, there were still gaps in the service delivery that need attention.

5.4 SCOPE AND LIMITATION OF THE STUDY

The study was conducted in PHC clinics in the Emfuleni sub-district of the Gauteng region of the Republic of South Africa (RSA). Therefore, the findings can be generalised

and replicated in other sub-districts and provinces. The population consisted only of mothers or caretakers of children less than 5 years who suffered from childhood illnesses. This excluded other sick, injured or older children from the study. Collecting data at the clinics and doctor's office could have influenced the respondents negatively, as they might have given positive answers to avoid discrimination against the care of their children.

The questionnaire was in English, which required the researcher and the volunteers to interpret the questions for the respondents in their own local languages, which were commonly Zulu and South Sotho. This could have compromised the ethical standard of anonymity and confidentiality. There was a high rate of missing frequencies, which might have been due to language problems or inadequate training of the volunteers who assisted with data collection

5.5 RECOMMENDATIONS

The findings provided valuable information on how the mothers and caretakers perceived care given at the clinics and at the doctor's office. Although there was general agreement on the impact of IMCI to treat childhood illnesses, other steps like determining vitamin A coverage should have been included. Accordingly, based on the findings, the researcher makes the following recommendations for nursing practice, education, and further research.

- **Nursing practice**

Staff allocation procedures and policies should be reviewed in order to abate the long waiting periods at the clinics where sick children are attended. Even if most of the staff are trained in the implementation of the IMCI strategy, supervision may be a missing element for efficiency and effective processes of the strategy. The fact that most clinic staff are trained in IMCI strategy seems not enough. The training itself should be evaluated as this my assist in closing the gaps.

- **Nursing education**

Although the IMCI strategy is part of the curriculum for the training of student nurses, there is a need for effective correlation with practice.

- **Further research**

Further research should be undertaken on the following topics:

- Why people perceive medication as the solution to management of childhood illnesses rather than preventative measures.
- An exploration of the prevailing situations at the clinics to identify factors that could improve the utilisation of the IMCI strategy and reduce consultation of doctors.
- A comparative study of clinics and other institutions to see if the same results would be found.
- A similar study in other provinces and districts in South Africa.

5.6 CONCLUSION

This study found a positive perception of the utilisation of the IMCI strategy to treat childhood illnesses and as a result reduce high morbidity, disability and mortality rates amongst children under the age of 5 years. Mothers and caretakers reported satisfaction with how the strategy was implemented in treating their children, both at the clinics and at doctor's office. The strategy is cost effective in managing childhood illnesses for low socio-economic groups and makes services accessible and affordable. At the same time the study identified certain gaps and made appropriate recommendations.

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CONSENT FORM

STUDY TITLE: A STUDY ON THE UTILISATION OF INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI) STRATEGY BY PRIMARY HEALTH CARE FACILITIES

INVESTIGATOR: KENEUWE JOYCE MALIMABE

Ms. Joyce Malimabe is a registered nurse studying the utilization of IMCI strategy by primary health care facilities. The study will assist in improving service delivery and identify gaps that is available in primary health care centers in Emfuleni.

The Emfuleni Local Authority has approved that the study can be conducted in their health facilities and facility managers ha been notified that such a study will be conducted.

There will be no risk or harm to you during your participation in the study. You are expected to respond to the questions in the questionnaire which will take less than 20 minutes? You are free to ask any question if clarity is needed. Your participation in this study is voluntary, you are under no obligation to participate. You have the right to withdraw at anytime however your participation is highly appreciated and will have no effect on your service delivery needs.

Your identity will not be revealed during the study, reporting or publishing. Data will be collected by Ms Malimabe and well-trained volunteers who will never share the information with any other person.

I have read this consent form and voluntarily consent to participate in this study.

_____ _____

Subject's signature **Date**

I have explained this to the above subject and have sought his/her understanding for informed consent.

_____ _____

Investigator's signature **Date**

ANNEXURE D

QUESTIONNAIRE

- This questionnaire is intended for the adult who brings an under five-year-old child to the clinic.
- Thank you for your willingness to complete this questionnaire consisting of four sections, and it would be appreciated if you would complete the questionnaire.
- Instructions:

You are expected to put a cross 'X' in the block (where question requires only one response) and only write on the other if there is no response relevant to your answer eg:
What toilet facilities do you use?

Bucket system	
Sewerage	**X**
Pit Latrines	
Other specify	

Date.....

Clinic Name.....

Section A: **General Information: CHILD**

	Kindly tick the appropriate space below: -	For office only 3 ☐☐☐
1.	Gender of Child: 1. Female ☐ 2. Male ☐	4 ☐
2.	Age of the child 1. 2-6 months ☐ 2. 7-12 months ☐ 3. 13-2yrs ☐ 4. 25months -5years ☐	5 ☐
3.	Who is the primary care giver of the child? 1.Biological mother ☐ 2. Sister or Brother ☐ 3. Father ☐ 4. Grand mother ☐ 5. Domestic worker ☐ 6. Other ☐	6 ☐
4.	What is the primary caregiver's level of education? 1. Did not attend school ☐ 2. Grade 1-8 ☐ 3. Grade 9-10 ☐ 4. Grade 11-12 ☐ 4. Tertiary ☐	7 ☐

5.	Distance to the clinic: From the child's home? 1. less than 5km ☐ More than 5km ☐	☐ 8
6.	Transport to the clinic: From the child's home? 1.Walking ☐ 2. Bus or Taxi ☐ 3.Private Car ☐	☐ 9
7.	Do you have the financial means to pay for medical services for your child? 1. Yes ☐ 2. No ☐	☐ 10
8	Please indicate the regular source of family income: **(Please tick appropriate sources)** 1. Working mother ☐ 2. Working father ☐ 3. Child support ☐ 4. Pensioners ☐ 5. Others specify ☐	☐ ☐ ☐ ☐ ☐ 15
9.	How many rooms are there in your house? 1.One – Two ☐ 2. Three-Four ☐ 3. Five to six ☐ 4. More than six ☐	☐ 16
10	How many people are permanently living in the house, including the child? 1.One – Two ☐ 2. Three-Four ☐ 3. Five to six ☐ 4. More than six ☐	☐ 17
11	**How many siblings under five years living in the house** 1.One – Two ☐ 2. Three-Four ☐ 3. More than four ☐	☐ 18
	Section B **Child Immunisation Status: Health care worker**	
12	Do you have the road to health card (RTHC) for this child? 1. Yes ☐ 2. No ☐	☐ 19

13	Is the immunisation programme card up to date? 1. Yes ☐ No ☐	☐ 20
14	If not, what is the reason that the baby is not immunised? Please select one 1. Child sick ☐ 2. Unsure ☐ 3. Forgotten ☐ 4. Never had time ☐ 5. Produced the card ☐ 6. Other ☐	☐ 21
15	Is the return date written on the road to health card? 1. Yes ☐ 2. No ☐	☐ 22
	Nutritional Status of the child	
16	Are growth points plotted on the record, recorded: 1. Regularly ☐ 2. Irregular ☐	☐ 23
17	Weight Curve 1. Normal within the percentile ☐ 2. Overweight ☐ 3. Under weight ☐ 4. Not available ☐	☐ 24
18	Was the importance of the weight curve explained to the primary caregiver or Mother? 1. Yes ☐ 2. No ☐	☐ 25
19	Was the caregiver or mother advised on the importance of the return date? 1. Yes ☐ 2. No ☐	☐ 26
20	Are you breast-feeding the child or is the child being breastfed? 1. Yes ☐ 2. No ☐	☐ 27

21	For how long is your child being breastfed? 1.None 2. 0-3 months 3. 4-6 months 4. 6months to a year 5. More than a year	☐ 28
22	If not breastfeeding, or breastfed for less than one month, why? 1. Child sick 2. Unable to suck 3. Not enough milk 4. Other 5. Mother ill 6. Mother went back to work	☐ 29
23	Did the mother breastfed previous children? 1. Yes 2. No 3. Not applicable 4. Not sure	☐ 30
24	Which of the following difficulties did you experience while breastfeeding your previous children. Please select the most important reason 1. Baby sick 2. Child not sucking well 3. Not having enough milk 4. Not applicable 5. Other reason, please specify:	☐ 31
25	When did you start giving supplementary feeds? 1.Before 2 months 2. 2-3 months 3. 4-5 months 4. 6-7 months 5. 8 months and older	☐ 32

26 What supplementary other food are you /were you giving your child? Please select the most appropriate one:

1. Cereal/ Purity	
2. Soft porridge	
3. Home prepared vegetables	
4. Milk formula	
5. All of the above	
6. Not giving supplementary food	

☐ 33

27 How many times a day do you feed your child solids?

1. Once	
2. Twice	
3. Three times	
4. More than 3 times	
5. All the time	
6. Not feeding supplementary food	

☐ 34

SECTION C

Child health care seeking behaviors

28 Has the child suffered from any of the following during the past two months?

Fever	1. Yes		2.No	
Cough	1. Yes		2.No	
Diarrhoea	1. Yes		2.No	
Vomiting	1. Yes		2.No	
Cough	1. Yes		2.No	
Convulsions	1. Yes		2.No	
Lethargic	1. Yes		2.No	
Unable to swallow	1. Yes		2.No	
Painful Ear	1. Yes		2.No	
Sore throat	1. Yes		2.No	
Running nose	1. Yes		2.No	

☐ 43

29 If yes to any of the above conditions: Did the child need treatment?

1. Yes		2. No

☐ 44

30 Who treated the child the last time he/she had one of the above conditions.

1. Treated at clinic	
2.Traditional Healer	
3. Yourself	
4. Dr surgery	
5. Hospital	
6. Other	

☐ 45

31	Were you satisfied with the treatment? 1. Yes ☐ 2. No ☐	☐ 46
32	Did the child improve? 1. Yes ☐ 2. No ☐	☐ 47
33	Were you told how to make oral dehydration solution (Motswako/Drip) 1. Yes ☐ 2. No ☐	☐ 48
34	Do you know how to make homemade cough mixture? 1. Yes ☐ 2. No	☐ 49
35	If yes, who told you how to make it? Please select one option 1.Health Care worker ☐ 2.Traditional Healer ☐ 3.Friend ☐ 4.pamphlet ☐ 5. Local radio ☐ 6. Hospital/ Doctor ☐ 7. Other, please specify ☐	50 ☐
36	What do you think causes of diarrhoea? Please indicate 1. Spoiled food ☐ 2. Illness ☐ 3. Not sure ☐ 4. Teething ☐ 5. Unhygienic circumstances ☐ 6. Other please specify ☐	51 ☐

SECTION D

Service Delivery

To be completed by the primary caregiver/mother of the child Please read through each statement carefully before giving your Opinion or View of the service. Indicate the extent to which you agree or disagree with Each statement by marking only one Response.

Key notes; Strongly agree – 1.
Agree – 2.
Undecided – 3
Disagree –3.
Strongly Disagree – 4.

Statement	**1**	**2**	**3**	**4**	**5**
37. Nurses at the clinic give adequate information on why the conditions or symptoms in question 28 need or did not need treatment					
38. Nurses allow you to ask questions regarding child illness or treatment					
39. Nurses have the patience to listen to your needs.					
40. Nurses communicate in an understandable way					
41. Nurses are friendly at the clinic					
42. Nurses are competent in their work					
43. The pamphlets and information in the clinic are understandable					
44. The time on which the clinic function suits us					
45. The waiting period at the clinic is satisfactory					
46. The methods used by the nurses at the clinic to treat the child are satisfactory					
47. The services at the clinic are satisfactory					

62

48 How long did you wait to be served at the clinic or surgery?

1. Less than one hour	
2. 1-2Hours	
3. 2-3 Hours	
4. 3-4 Hours	
5. More than 4hours	

63

49 Would you refer people to utilise the clinic for child illnesses?

1. Yes		2. No	

64

50 Did you take your child to a private doctor?

1. Yes		2. No	

65

51	Was the doctor's treatment satisfactory? 1. Yes ☐ 2. No ☐ 3. Didn't take the child to doctor ☐	☐ 66
52	Did the nurses or doctor explain the condition of child in an understandable way? 1. Yes ☐ 2. No ☐	☐ 67
53	Do you prefer taking your child to a private doctor or clinic? 1. Doctor ☐ 2. Clinic ☐	☐ 68
54	If you indicated doctor" why do you prefer doctor than a clinic? Tick most appropriate one They issue medication 1 Wait for short period to be served 2 Wait to long but happy with treatment given 3 They examine the child instead of just taking a history 4 Can go at any time of the day 5 Any other reason 6	☐ 69

Thank you for your time answering these questionnaires and for your cooperation.

NB: Section B to be completed by health worker

- **Nutritional status question 18 yes they will know as this is taught daily at the clinic and according to the Strategy they need to know and understand the gragh**
- **Q23 Not applicable to those mother with one child**
- **Q22 Relevant to identify any correlation to present situation**

ANNEXURE E

Report on statistical analysis: Integrated Health Management System.

LV Monareng / JK Malimabe
15-01-2008

1. Software package used:

The SAS/Basic and SAS/STAT modules of the SAS statistical software package were used to perform all statistical analyses and data manipulation. Version 11.1 of the package was used :

"(Copyright (c) 2002-2003 by SAS Institute Inc., Cary, NC, USA.
SAS (r) 9.1 (TS1M3))'

Additional references to the package and components used:

1. SAS/Base® Procedure **User's Guide, Version 8**
Copyright © 1999 by SAS Institute Inc., Cary, NC, USA.
ISBN 1–58025–482-9
2. : **SAS/STAT**® Procedure **User's Guide, Version 8**
Copyright © 1999 by SAS Institute Inc., Cary, NC, USA.
ISBN 1–58025–494–2
3. **SAS/GRAPH**® Software: Reference, **Version 8**
Copyright © 1999 by SAS Institute Inc., Cary, NC, USA.
ISBN 1–58025–525-6)

2. Analyses undertaken

Once all the analyses had been finalized and results recorded to output files, these output files were combined into a single results file. Annotated output (Descriptions and comments (in colour)) were added to explain and interpret the analyses results and create a preliminary report

The report comments on the following analyses which were undertaken:

2.1 One way frequency tables.

The analysis was aimed at producing a means of describing the sampled population, (q1-q11) and establishing an overview of respondents reactions to questions posed (q12-q34, q46-q52) and perceptions (q35-q45).

The one-way tables were further used to identify probable indicator variables affecting/ influencing the effectiveness of the Integrated Management Health System (IMHS) (such as q3, 4, 7, ,12, 13, 14, 20, q27, 28, q29, 47, 48, 51, etc).

Data validity of the captured data was also checked with the aid of the one-way tables. Please refer to section 2.1 which follows below.

2.2 Two way frequency tables and corresponding Pearson's chi-square and - Exact chi-square tests

Two way frequency tables were calculated to investigate relationships between variables (questionnaire items) and identify indicators of IMHS effectiveness. The chi-square tests were used to establish statistical significance of relationships.

2.3 Item analysis/ scale reliability testing on service perceptions

Apart from the one-way frequency tables calculated for service perceptions probed in q35-45, which indicated respondents' perceptions on each aspect of service perception separately, scale

reliability testing/ item analysis were also undertaken to establish whether the responses to q35-45 can be combined into a statistically reliable combined service perception score which indicates respondents' general perception of service delivery.

.

2.4 Perception means and analysis of variance.

Once the scale reliability was established in section 2.4, mean perception scores and non-parametric analysis of variance (Wilcoxon test) could be undertaken to establish which biographical indicators affected respondents perceptions of health service delivery.

Section 2.1: One way frequency tables

The following comments refer to the one-way tables presented in section 2.1 below:

These comments and similar can be used in the sample-description required in the appropriate section of the dissertation. Comments which follow are example of one-way table descriptions and are not necessarily complete. Inclusion of the one-way tables can be considered as part of the dissertation or in an appendix.

- Female to male gender distribution of the babies were 59 to 41%. Thus somewhat more females than male babies were investigated in the study
- With regard to the age distribution, 62% of the babies were between 1 and 5 years of age.
- 77% of the caregivers proved to be the biological mother
- 51% of the sampled caregiver have grade 11 or higher educational level
- 74% of the caregivers live less than 5 km from a clinic
- 72% of the samples population walk to the clinic
- With regard to the financial means of the sample, 35% indicated that they have the financial means to pay for medical services. (q7). This correlated quite well with q8,9, 10 and 11 which could be regarded as control questions for q7, the financial means of the family. (For example, the 30%, 30%, 38% indicated respectively for working mothers, fathers and child support are more or less in agreement with the 35% indicated by respondents are sufficient financial means in q8. Especially if it is kept in mind that one household can have a working mother, father and receive child support. Since the mother was indicated as the primary care taker for 77% of the respondents, the 30% working mothers indicated carry a strong weight. The low percentage of pensions indicated in q5_4 (23%) attest to the fact that grandmothers were only indicated as primary caretakers in 13% of the sampled data. 26% of the respondents indicated that they lived in dwellings with one or two rooms – also an indication of poverty. And 47% indicated that 5+ people resided in the same dwelling – whether this can be used as an indication of poverty level needs to be discussed?)
- Question 7 was therefore considered in following analyses as the indicator of financial means and the other questions mentioned above were not taken into account again as they were regarded as financial means verifying-variables.
- With regard to the RTH card and the immunization of babies, 98% and 94% of the sample respectively indicated that their children were in possession of the RTH card and were immunized on a regular basis. It was therefore not foreseen that these biographical variables would be deterministic/ influential in further analyses.
- The same reasoning as the above could be followed by investigating the distribution of babies immunized in q14. Since 90% of respondents indicated that immunization were up to date, it was not expected that this biographical indicator would be an influential variable in the study on effectiveness of the Integrated Health Management System.
- The same applies to q15, the return date for immunization (95% indicated that they were informed)
- 88%, 76%, and 74% of respondents respectively indicated that the growth plot and weight curve were normal and that the importance of the return date had been explained to them. These factors

were thus also not regarded as crucial in determining the effectiveness of the Integrated Health Management System.

- At this point in time it might be appropriate to mention that the respondents included in the study were all people visiting clinics or doctors and as such represents the 'responsible' sector of the population (the fact that they attend a clinic or doctor in itself proves that they take the care of their babies to heart) and not necessarily the broader spectrum of the population. This should perhaps be mentioned as well when discussing the selection of the sample and the population to which deductions will pertain.
- The distributions of variables related to breast feeding proved that
    - 67% of the caregivers did breastfeed
    - 52% breast fed between 7 months and 2 years
    - 13% indicated that working mothers could not breast feed
    - 28% of respondents started with supplementary food within two months of birth
    - 41% gave cereal/Purity as supplementary food
    - And 40% gave solids three times daily
- The distribution of listed ailments suggests that respondents mostly visit medical services when symptoms of fever, cough, diarrhoea, vomiting, skin sores and runny nose present them selves. Convulsions and lethargic reactions seem to be the least frequent reasons.
- The 94% positive response to whether treatment was sought for the listed ailments, confirm the respondents' reason for visiting the clinic/ doctor in q27
- Treatment was generally regarded as satisfactory (96%, q29) and improvement was reported in 95% of the cases.
- Two thirds (66%) of the sample indicated that they knew how to prepare a cough mix (low?)
- The frequencies for q33 on who explained the cough mixture to the respondent indicated that the health care worker or friends showed this to84% of the respondents – which is a good indicator of the effectiveness of the IHMS (But should the figure in q32 be only 66% - could this indicate an area where the IHMS could improve?)
- With regard to the perceptions on medical services rendered at clinics, described in q35-q45, frequency distributions indicated general agreement on most of the aspects: That nurses
    - Give adequate information (65%)
    - Are patient (55%)
    - Communicate understandably (71%)
    - Are friendly (60%)
    - Are competent (66%). Respondents also agree that
        - Info literature is understandable (88%)
        - Treatment is satisfactory (69%), but, they disagree to a greater extent that:
    - Clinic times suit caregivers (54% disagree tp some extent)
    - Waiting times are reasonable (73% disagree)
    - Respondents seem divided on clinic services : 49% indicated agreement and 39% disagreement
- A general measure of service-perception is investigated in further analyses described in a later section of the analyses.
- Q47, q48 and q51 suggest interesting deductions. The frequency distributions suggest that respondents in general prefer PEOPLE (could one interpret this as 'the general public'?) to make use of clinics (83%) . But when it comes to their own child, (could it be interpreted as on a more personal level?) they take THEIR CHILD to the doctor (73%) and mostly prefer to take THEIR CHILD to the doctor (64%).
- In the next section, Section B the effect of financial means, etc on respondents' choice will be investigated by means of two-way frequency tables and chi-square or exact chi-square tests.
- Please note that the number of categories of some of the biographical variables have been 'compressed/reduced'. This was done for those variables where some categories had no entries or very few entries causing an imbalance in the data which could bring bias into further analysis. (For example q3.) A output file of the original one-way frequencies with categories not compressed can be found in the file 'oneway-doc'.

SECTION 2.1:

gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
female	99	58.58	99	58.58
male	70	41.42	169	100.00

q2:age of child				
age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2-6 months	29	17.16	29	17.16
7-12 months	35	20.71	64	37.87
1-2 years	46	27.22	110	65.09
2-5 years	59	34.91	169	100.00

q3:primary caregiver of child				
caregiver	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Biological mother	131	77.98	131	77.98
Sister/father/other	15	8.93	146	86.90
Grand mother	22	13.10	168	100.00

Frequency Missing = 1

q4:educational level of caregiver				
educ	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No schooling	21	12.73	21	12.73
Grade 1-8	33	20.00	54	32.73
Grade 9-10	27	16.36	81	49.09
Grade 11-12	63	38.18	144	87.27
Tersiary	21	12.73	165	100.00

Frequency Missing = 4

q5:distance to clinic				
distance	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< 5 km	124	74.25	124	74.25
> 5km	43	25.75	167	100.00

Frequency Missing = 2

q6:how travel to clinic				
commute	Frequency	Percent	Cumulative Frequency	Cumulative Percent
walk	120	71.86	120	71.86
bus/ taxi	28	16.77	148	88.62
car	19	11.38	167	100.00

Frequency Missing = 2

q7:financial means for medical services?				
fmeans	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	58	34.94	58	34.94
no	108	65.06	166	100.00

Frequency Missing = 3

q8-1:family income:working mother				
q8_1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	50	29.59	50	29.59
no	119	70.41	169	100.00

q8-2:family income: working father				
q8_2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	51	30.18	51	30.18
no	118	69.82	169	100.00

q8-3:family income: child support				
q8_3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	64	37.87	64	37.87
no	105	62.13	169	100.00

q8-4:family income: pensioners				
q8_4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	23	13.61	23	13.61
no	146	86.39	169	100.00

q8-5:family income: other				
q8_5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	11	6.51	11	6.51
no	158	93.49	169	100.00

q9:number of rooms in the house				
rooms	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1 - 2	44	26.04	44	26.04
3 - 4	67	39.64	111	65.68
5 - 6	45	26.63	156	92.31
>6	13	7.69	169	100.00

q10:number of people in the household				
people	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1 - 2	14	8.48	14	8.48
3 - 4	73	44.24	87	52.73
5 - 6	45	27.27	132	80.00
>6	33	20.00	165	100.00

Frequency Missing = 4

q11:number of siblings in household				
sibs	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1 - 2	118	77.12	118	77.12
> 2	35	22.88	153	100.00

Frequency Missing = 16

q12:Road to Health card?				
RTHC	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	166	98.22	166	98.22
no	3	1.78	169	100.00

q13:Immunization up to date?				
Immune	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	157	93.45	157	93.45
no	11	6.55	168	100.00

Frequency Missing = 1

q14:reason baby not immunised				
reason	Frequency	Percent	Cumulative Frequency	Cumulative Percent
child sick	6	3.61	6	3.61
unsure	2	1.20	8	4.82
forgotten	4	2.41	12	7.23
never had time	3	1.81	15	9.04
lost RTHCard	2	1.20	17	10.24
immunization up to date	149	89.76	166	100.00

Frequency Missing = 3

q15:informed of return date?				
return	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	159	94.64	159	94.64
no	9	5.36	168	100.00

Frequency Missing = 1

q16:nature of growth point plot				
gplot	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
regularly	147	88.02	147	88.02
irregularly	20	11.98	167	100.00

Frequency Missing = 2

q17:nature weight curve				
weightC	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
normal	128	76.19	128	76.19
overweight	18	10.71	146	86.90
under weight	15	8.93	161	95.83
not available	7	4.17	168	100.00

Frequency Missing = 1

q18:importance weight cure explained?				
weightE	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
yes	101	60.12	101	60.12
no	67	39.88	168	100.00

Frequency Missing = 1

q19:importance return date explained?				
returnNB	**Frequency**	**Percent**	**Cumulative Frequency**	**Cumulative Percent**
yes	124	73.81	124	73.81
no	44	26.19	168	100.00

Frequency Missing = 1

q20:breast feed?				
BFeed	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	113	67.26	113	67.26
no	55	32.74	168	100.00

Frequency Missing = 1

q21:period breast feeding				
BPeriod	Frequency	Percent	Cumulative Frequency	Cumulative Percent
never	22	13.41	22	13.41
0-3 months	30	18.29	52	31.71
4-6 months	29	17.68	81	49.39
7-12 months	43	26.22	124	75.61
1-2 years	40	24.39	164	100.00

Frequency Missing = 5

q22:reason not breast feeding				
ReasonBF	Frequency	Percent	Cumulative Frequency	Cumulative Percent
child sick	6	5.26	6	5.26
unable to suck	5	4.39	11	9.65
not enough milk	9	7.89	20	17.54
mother at work	15	13.16	35	30.70
mother ill	10	8.77	45	39.47
other/n.a.	69	60.53	114	100.00

Frequency Missing = 55

q23:supplements started at age of:				
ageSupp	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< 2 months	42	24.85	42	24.85
2-3 months	31	18.34	73	43.20
4-5 months	22	13.02	95	56.21
6-7 months	35	20.71	130	76.92
> 8 months	13	7.69	143	84.62
no supplementaries	26	15.38	169	100.00

q24:supplementary foods included:				
suppFood	Frequency	Percent	Cumulative Frequency	Cumulative Percent
cerial/ Purity	69	40.83	69	40.83
soft porridge	22	13.02	91	53.85
prepared vegetables	3	1.78	94	55.62
milk formula	2	1.18	96	56.80
all/ some of above	52	30.77	148	87.57
no supplementaries	21	12.43	169	100.00

q25:frequency of daily solids				
solids	Frequency	Percent	Cumulative Frequency	Cumulative Percent
once	16	9.47	16	9.47
twice	20	11.83	36	21.30
three times	67	39.64	103	60.95
> 3 times	31	18.34	134	79.29
all the time	14	8.28	148	87.57
no supplementaries	21	12.43	169	100.00

q27:did child need treatmentfor listed ailment?				
treat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	148	94.27	148	94.27
no	9	5.73	157	100.00

Frequency Missing = 12

q27:who treated child's last listed ailment?				
who treated	Frequency	Percent	Cumulative Frequency	Cumulative Percent
clinic	75	52.82	75	52.82
doctors	67	47.18	142	100.00

Frequency Missing = 27

q29:satisfied with treatment?				
satisfy	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	152	96.20	152	96.20
no	6	3.80	158	100.00

Frequency Missing = 11

q30:did the child improve?				
improve	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	155	95.09	155	95.09
no	8	4.91	163	100.00

Frequency Missing = 6

q32:told how to prepare cough mixture?				
cough mix	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	111	66.87	111	66.87
no	55	33.13	166	100.00

Frequency Missing = 3

q33:who told how to prepare mixtures?				
whoTold	Frequency	Percent	Cumulative Frequency	Cumulative Percent
health care worker	99	70.71	99	70.71
friend	19	13.57	118	84.29
pamphlet	1	0.71	119	85.00
local radio	5	3.57	124	88.57
hospital	1	0.71	125	89.29
doctor	4	2.86	129	92.14
other	11	7.86	140	100.00

Frequency Missing = 29

q34:causes of diarrhoea				
diarrhoea	Frequency	Percent	Cumulative Frequency	Cumulative Percent
spoiled food	70	42.17	70	42.17
illness	5	3.01	75	45.18
not sure	29	17.47	104	62.65
teething	42	25.30	146	87.95
unhiegenic circumstances	20	12.05	166	100.00

Frequency Missing = 3

q46:waiting time at clinic/surgery				
wait	Frequency	Percent	Cumulative Frequency	Cumulative Percent
< 1 hour	31	18.79	31	18.79
1-2 hours	58	35.15	89	53.94
2-3 hours	22	13.33	111	67.27
3-4 hours	31	18.79	142	86.06
> 4 hours	23	13.94	165	100.00

Frequency Missing = 4

q47:prefer PEOPLE to use clinic?				
clinic	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	138	82.63	138	82.63
no	29	17.37	167	100.00

Frequency Missing = 2

q48:did you take YOUR child to doctor?				
doctor	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	119	73.01	119	73.01
no	44	26.99	163	100.00

Frequency Missing = 6

q49:was dr's treatment satisfactory?				
dr_satisfy	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	122	89.71	122	89.71
no	14	10.29	136	100.00

Frequency Missing = 33

q50:was dr's explanation understandable?				
dr_explain	Frequency	Percent	Cumulative Frequency	Cumulative Percent
yes	106	82.17	106	82.17
no	23	17.83	129	100.00

Frequency Missing = 40

q51:prefer taking YOUR child doctor or clinic?				
prefer	Frequency	Percent	Cumulative Frequency	Cumulative Percent
doctor	100	63.69	100	63.69
clinic	57	36.31	157	100.00

Frequency Missing = 12

q52:why prefer doctor to clinic?				
whyDr	Frequency	Percent	Cumulative Frequency	Cumulative Percent
issue medication	39	26.00	39	26.00
shorter waiting time	35	23.33	74	49.33
treatment satisfactory	27	18.00	101	67.33
examine child	20	13.33	121	80.67
visit any time	11	7.33	132	88.00
other reason	18	12.00	150	100.00

Frequency Missing = 19

Question 26: Listed ailments:

Table of listed illnesses experienced			
Listed illness	(Suffered any listed illness?)		
Frequency Percent Row Pct	yes	no	Total
fever	104 19.37 88.89	13 2.42 11.11	117 21.79
diarrhoea	61 11.36 78.21	17 3.17 21.79	78 14.53
vomiting	36 6.70 67.92	17 3.17 32.08	53 9.87
cough	76 14.15 88.37	10 1.86 11.63	86 16.01
convulsions	1 0.19 5.26	18 3.35 94.74	19 3.54
lethargic	1 0.19 5.00	19 3.54 95.00	20 3.72
unable to swallow	4 0.74 17.39	19 3.54 82.61	23 4.28
painful ear	14 2.61 45.16	17 3.17 54.84	31 5.77
sore throat	11 2.05 39.29	17 3.17 60.71	28 5.21
runny nose	24 4.47 64.86	13 2.42 35.14	37 6.89
skin sores	31 5.77 68.89	14 2.61 31.11	45 8.38
Total	363 67.60	174 32.40	537 100.00
Frequency Missing = 1322			

Questions 35-34: Health Service perceptions

Frequency table on perceptions						
Aspect of Service Delivery	**perception on Clinic service delivery)**					
Frequency Percent Row Pct	**strongly agree**	**agree**	**undecided**	**disagree**	**strongly disagree**	**Total**
nurses give adequate info	45 2.48 27.61	61 3.37 37.42	16 0.88 9.82	27 1.49 16.56	14 0.77 8.59	163 9.00
Nurses answers questions	46 2.54 27.54	60 3.31 35.93	19 1.05 11.38	33 1.82 19.76	9 0.50 5.39	167 9.22
Nurses are patient	35 1.93 21.47	54 2.98 33.13	22 1.21 13.50	42 2.32 25.77	10 0.55 6.13	163 9.00
Nurses communicate understandably	53 2.93 31.93	64 3.53 38.55	18 0.99 10.84	28 1.55 16.87	3 0.17 1.81	166 9.17
Nurses are friendly	32 1.77 19.51	66 3.64 40.24	20 1.10 12.20	37 2.04 22.56	9 0.50 5.49	164 9.06
Nurses are compitent	37 2.04 23.42	68 3.75 43.04	22 1.21 13.92	25 1.38 15.82	6 0.33 3.80	158 8.72
Info literature understandable	98 5.41 58.68	49 2.71 29.34	9 0.50 5.39	5 0.28 2.99	6 0.33 3.59	167 9.22
Clinic times suit caregivers	22 1.21 13.25	35 1.93 21.08	19 1.05 11.45	57 3.15 34.34	33 1.82 19.88	166 9.17
Clinic waiting time reasonable	9 0.50 5.45	24 1.33 14.55	12 0.66 7.27	78 4.31 47.27	42 2.32 25.45	165 9.11
Clinic treatment system satisfactory	42 2.32 25.15	73 4.03 43.71	13 0.72 7.78	34 1.88 20.36	5 0.28 2.99	167 9.22
Clinic services satisfactory	31 1.71 18.79	50 2.76 30.30	19 1.05 11.52	50 2.76 30.30	15 0.83 9.09	165 9.11

Frequency table on perceptions						
Aspect of Service Delivery	**perception on Clinic service delivery)**					
Frequency **Percent** **Row Pct**	**strongly agree**	**agree**	**undecided**	**disagree**	**strongly disagree**	**Total**
Total	450 24.85	604 33.35	189 10.44	416 22.97	152 8.39	1811 100.00
Frequency Missing = 48						

Section 2.2: Two way table to investigate effect of biographical indicators on health service issues:

Section 2.2 displays two-way frequency tables for all questionnaire items cross-references with indicators which were identified in section 2.1 as indicators which could possible influence the effectiveness of the IHMS.
Probable indicators identified and cross-tabulated below are:

- Q3, the primary caregiver (caregiver)
- q28, who treated the child (who treated)
- and, q48, did you take your child to the doctor. ('doctor')

The effect of other biographical variables became apparent in cross tabulations which follow and will be commented on. (For example variables such as the financial means of the caregiver/family)
(Other variables can be included if need be)

In the two way tables the number of responses associated with each category-combination of the two cross-referenced variables are presented as the first entry in each cell. The third entry in each cell represents the percentage of the total frequency which a particular cell constitutes. The fourth entry represents the frequency-percentage contribution to the various levels of the row category. (For example in the table which follows directly below the levels 'clinic' and 'doctor' form the row category of the table)

To establish whether the dependency between cross-referenced variables are statistically significant (and thus 'meaningful'), Pearson's chi-square tests were calculated. Exact chi-square tests had to be calculated in those instances where cell-frequencies were very small since a pre-requisite for the chi-square test is that cell-frequencies should not be too low (< 5).

Interpretation of the results associated with each table is given directly below each table, since the frequency distribution within each table assists in interpreting the results.

Table of caregiver by who treated			
(q3:primary caregiver of child)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
Biological mother	57 0.0057 40.14 52.29	52 0.0063 36.62 47.71	109 76.76
Sister/father/other	7 0.0691 4.93 58.33	5 0.0774 3.52 41.67	12 8.45
Grand mother	11 0.0008 7.75 52.38	10 0.0008 7.04 47.62	21 14.79
Total	75 52.82	67 47.18	142 100.00
Frequency Missing = 27			

Statistics for Table of caregiver by who treated

Statistic	DF	Value	Prob
Chi-Square	2	0.1601	0.9231

Effective Sample Size = 142
Frequency Missing = 27

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between the person of the primary caregiver and the choice between doctor or clinic are not significant. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table]

Non-significance in this instance implies that the person of the caregiver (be it mother, sister, grand mother) does not determine whether a private doctor or clinic is visited. This statement can be confirmed by calculating and comparing the ratio of frequencies of doctor to clinic for each of the categories of caregiver – the ratios are all more or less the same: 52/57 =0.91 ; 5/7 = 0.71 ; 10/11 = 0.91; all approx. 1)

Table of financial means by who Treated patient			
q7:financial means for medical services?)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
yes	14 5.9633 10.00 27.45	37 6.4973 26.43 72.55	51 36.43
no	59 3.4171 42.14 66.29	30 3.7232 21.43 33.71	89 63.57
Total	73 52.14	67 47.86	140 100.00
Frequency Missing = 29			

Statistics for Table of fmeans by who treated

Statistic	DF	Value	Prob
Chi-Square	1	19.6008	<.0001

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between financial means and whether doctor or clinic treated previous listed ailment is statistically significant on the 0.1% level of significance. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table]

Significance in this instance implies that whether a doctor or clinic treated the baby is influenced by the financial means of the caregiver. This statement can be confirmed by calculating and comparing the ratio of frequencies for doctor to clinic for each of the categories of financial means; 37/14= 2.6 for respondents with financial means as opposed to 30/59 = 0.5 for respondents without the financial means. This can be interpreted that, in relation, more people visit doctors (2.7 visit dr as compared to every 1 than visits a clinic) if they have the financial means that those who do not have the means (0.5 visit dr to 1 visiting clinic; or 1 visit dr. to every 2 that visit a clinic).

Table of treatment satisfaction by who treated the baby			
(q29: satisfied with treatment?)	(q27: who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
yes	68 0.1147 48.23 50.37	67 0.1267 47.52 49.63	135 95.74
no	6 2.5814 4.26 100.00	0 2.8511 0.00 0.00	6 4.26
Total	74 52.48	67 47.52	141 100.00
Frequency Missing = 28			

Fisher's Exact Test	
Cell (1,1) Frequency (F)	68
Left-sided Pr <= F	0.0189
Right-sided Pr >= F	1.0000
Table Probability (P)	0.0189
Two-sided Pr <= P	0.0291

Effective Sample Size = 141
Frequency Missing = 28

Comment and interpretation:

Fisher's exact chi-square test for the above frequency table indicates that the dependency between whether dr. or clinic treated the baby and treatment satisfaction are statistically dependent at the 5%level of significance. Implying that treatment satisfaction is influenced by whether baby was treated by dr. or clinic. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

By calculating and comparing the relevant ratios it can be deduced that dependency implies that, in relation, more satisfaction is experienced by respondents visiting a dr.

Table of improve by who Treat baby			
(q30:did the child improve?)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
yes	68 0.1088 47.89 50.75	66 0.1218 46.48 49.25	134 94.37
no	7 1.822 4.93 87.50	1 2.0396 0.70 12.50	8 5.63
Total	75 52.82	67 47.18	142 100.00
Frequency Missing = 27			

Fisher's Exact Test	
Cell (1,1) Frequency (F)	68
Left-sided Pr <= F	0.0447
Right-sided Pr >= F	0.9950
Table Probability (P)	0.0396
Two-sided Pr <= P	0.0661

Effective Sample Size = 142
Frequency Missing = 27

Comment and interpretation:

Fisher's exact test for the above frequency table indicates that the dependency between who treated the baby and improvement of baby's condition are statistically dependent on the 5% level of significance. Implying that improvement of baby is affected by service that treated the baby – in relation more respondents who visited a doctor reported improvement that respondents who visited clinics. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

The deduction can be high lightened by calculating and comparing the ratio of improvement to non-improvement for babies treated by a dr. or at a clinic

Table of cough mix preparation by who Treated baby			
q32:told how to prepare cough mixture?)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
yes	48 0.0021 34.53 52.17	44 0.0023 31.65 47.83	92 66.19
no	25 0.0041 17.99 53.19	22 0.0045 15.83 46.81	47 33.81
Total	73 52.52	66 47.48	139 100.00
Frequency Missing = 30			

Statistics for Table of cough mix by who treated

Statistic	DF	Value	Prob
Chi-Square	1	0.0129	0.9095

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between whether dr or clinic treated the previous listed ailment and knowledge of cough mix preparation are not statistically significant. Implying that knowledge of cough mix preparation is not influenced, significantly, by whether dr. or clinic treated the previous listed illness. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

This statement can be verified by calculating and comparing the relevant frequency-ratios.

Table of diarrhoea by who treated			
(q34:causes of diarrhoea)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
spoiled food	28 0.3912 20.14 46.67	32 0.4326 23.02 53.33	60 43.17
illness	1 0.5767 0.72 25.00	3 0.6379 2.16 75.00	4 2.88
not sure	13 0.0013 9.35 52.00	12 0.0014 8.63 48.00	25 17.99
teething	21 0.1266 15.11 56.76	16 0.14 11.51 43.24	37 26.62
unhygienic circumstances	10 1.4743 7.19 76.92	3 1.6307 2.16 23.08	13 9.35
Total	73 52.52	66 47.48	139 100.00
Frequency Missing = 30			

Statistics for Table of diarrhoea by who treated

Statistic	DF	Value	Prob
Chi-Square	4	5.4128	0.2475

Effective Sample Size = 139
Frequency Missing = 30

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between treatment by dr. or clinic for listed illness and knowledge of diarrhoea are not statistically significant. Implying that knowledge of the cause of diarrhoea is not influenced by treatment by a doctor or clinic (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

Table of waiting time by who Treated baby			
wait(q46:waiting time at clinic/surgery)	who treated(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
< 1 hour	11 0.0029 7.91 52.38	10 0.0033 7.19 47.62	21 15.11
1-2 hours	22 0.8014 15.83 44.00	28 0.9124 20.14 56.00	50 35.97
2-3 hours	12 0.1718 8.63 60.00	8 0.1956 5.76 40.00	20 14.39
3-4 hours	16 0.1839 11.51 59.26	11 0.2094 7.91 40.74	27 19.42
> 4 hours	13 0.2963 9.35 61.90	8 0.3374 5.76 38.10	21 15.11
Total	74 53.24	65 46.76	139 100.00
Frequency Missing = 30			

Statistics for Table of wait by who treated

Statistic	DF	Value	Prob
Chi-Square	4	3.1143	0.5389

Effective Sample Size = 139
Frequency Missing = 30

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between treatment by doctor or clinic and waiting time is not significantly related. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

Table of which service respondents prefer PEOPLE to use cross referenced with who treated the baby previously for listed ailment			
(q47:prefer PEOPLE to use clinic?)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
yes	64 0.17 45.71 55.65	51 0.1906 36.43 44.35	115 82.14
no	10 0.7819 7.14 40.00	15 0.8766 10.71 60.00	25 17.86
Total	74 52.86	66 47.14	140 100.00
Frequency Missing = 29			

Statistics for Table of clinic by who treated

Statistic	DF	Value	Prob
Chi-Square	1	2.0190	0.1553

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that preference of which service people should use (in general) is not affected by whether the baby was treated by a dr. or clinic previously for a listed illness. The two variables are not statistically dependent. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table

Table of clarity of dr.'s explanation by who treated baby previously for listed ailment			
(q50:was dr's explanation understandable?)	who treated(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
yes	35 0.3135 31.82 38.04	57 0.2253 51.82 61.96	92 83.64
no	11 1.6022 10.00 61.11	7 1.1515 6.36 38.89	18 16.36
Total	46 41.82	64 58.18	110 100.00
Frequency Missing = 59			

Statistics for Table of dr_explain by who treated

Statistic	DF	Value	Prob
Chi-Square	1	3.2925	0.0696

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between whether doctor or clinic treated the baby previously for a listed illness and clarity of dr.'s explanation are statistically dependent. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table

By comparing relevant ratios in the frequency table, it becomes apparent that, in relation, dr.'s explanations to respondents who visited a doctor are more understandable than explanations to respondents who previously visited a clinic for a listed illness. (Is this a sensible comparison to make?)

Table of prefer by who treated			
(q51:prefer taking YOUR child doctor or clinic?)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
doctor	32 3.842 24.24 35.96	57 3.9602 43.18 64.04	89 67.42
clinic	35 7.9521 26.52 81.40	8 8.1968 6.06 18.60	43 32.58
Total	67 50.76	65 49.24	132 100.00
Frequency Missing = 37			

Statistics for Table of prefer by who treated

Statistic	DF	Value	Prob
Chi-Square	1	23.9512	<.0001

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between who treated the baby previously for a listed illness and preference for future service (dr. or clinic) are statistically significant. Implying that choice of future preference of doctor or clinic is influenced by whether previous treatment was by clinic or doctor. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table

In relation more respondents who were treated by a dr. on their previous visit prefer a dr. for future visits than those who visited a clinic. (Ratio of dr. to clinic treatment previously, for the two preference groups dr. or clinic are respectively: 57/32 = 1.8 and 8/35 = 0.2)

Table of reasons for dr.-preference by who Treated baby the previous time.			
(q52:why prefer doctor to clinic?)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
issue medication	13 0.6005 10.24 41.94	18 0.6497 14.17 58.06	31 24.41
shorter waiting time	18 0.1129 14.17 56.25	14 0.1221 11.02 43.75	32 25.20
treatment satisfactory	11 0.0164 8.66 50.00	11 0.0177 8.66 50.00	22 17.32
examine child	7 0.208 5.51 43.75	9 0.225 7.09 56.25	16 12.60
visit any time	4 0.5154 3.15 36.36	7 0.5577 5.51 63.64	11 8.66
other reason	13 3.4751 10.24 86.67	2 3.7599 1.57 13.33	15 11.81
Total	66 51.97	61 48.03	127 100.00
Frequency Missing = 42			

Statistics for Table of why Dr by who treated

Statistic	DF	Value	Prob
Chi-Square	5	10.2604	0.0682

Effective Sample Size = 127
Frequency Missing = 42

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between reasons for dr.-preference and whether a doctor or clinic treated a baby previously for a listed illness is statistically significant on the 10% level of significance. (Please note Significance on **the10%**, 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less **than 0.1**, 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

'Other reasons' seem to be an influential issue? (This is indicated by the large cell-chi entry for this 'reason' listed) Could something be made of this or should one ignore the tabulation?

Table of Breast Feeding or not by whom baby was treated			
BFeed(q20:breast feed?)	who treated(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
yes	48 0.4393 33.80 48.00	52 0.4918 36.62 52.00	100 70.42
no	27 1.046 19.01 64.29	15 1.1708 10.56 35.71	42 29.58
Total	75 52.82	67 47.18	142 100.00
Frequency Missing = 27			

Statistics for Table of BFeed by who treated

Statistic	DF	Value	Prob
Chi-Square	1	3.1479	0.0760

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that a significant dependency between choice of breast feeding and service that treated the baby the previous time exists. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].
By comparing ratios of breastfeeding or not for the groups who were previously treated by a doctor or clinic, it becomes apparent that in relation more mothers beast feed whose baby were treated for a listed ailment by a doctor on the previous visit.

Table of breast feeding Period by who treated the baby on previous visit			
(q21:period breast feeding)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
never	10 1.0862 7.25 71.43	4 1.151 2.90 28.57	14 10.14
0-3 months	11 0.8052 7.97 39.29	17 0.8533 12.32 60.71	28 20.29
4-6 months	10 1.3474 7.25 35.71	18 1.4279 13.04 64.29	28 20.29
7-12 months	16 0.4843 11.59 43.24	21 0.5132 15.22 56.76	37 26.81
1-2 years	24 4.0638 17.39 77.42	7 4.3064 5.07 22.58	31 22.46
Total	71 51.45	67 48.55	138 100.00
Frequency Missing = 31			

Statistics for Table of BPeriod by who treated

Statistic	DF	Value	Prob
Chi-Square	4	16.0386	0.0030

Effective Sample Size = 138
Frequency Missing = 31

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that a significant dependency between breast feeding period and service that treated the baby the previous time exists. (Significance on the 5%,

1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].
By comparing ratios of dr./clinic previous treatment over the various periods, differences in feeding periods pattern becomes apparent. In relation more respondents whose babies were previously treated by a dr. for a listed ailment tend to beast feed for 0-12 months and, more respondents whose baby were previously treated at clinic for a listed ailment beast feed for periods of 1 – 2 years.

Table of age supplementary feed started by who Treated baby for previous listed ailment			
(q23:supplements started at age of:)	(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
< 2 months	23 0.8356 16.20 63.89	13 0.9353 9.15 36.11	36 25.35
2-3 months	13 0.2164 9.15 46.43	15 0.2422 10.56 53.57	28 19.72
4-5 months	6 2.3373 4.23 28.57	15 2.6163 10.56 71.43	21 14.79
6-7 months	19 1.5751 13.38 70.37	8 1.7632 5.63 29.63	27 19.01
> 8 months	6 0.1093 4.23 46.15	7 0.1223 4.93 53.85	13 9.15
no supplements	8 0.1067 5.63 47.06	9 0.1195 6.34 52.94	17 11.97
Total	75 52.82	67 47.18	142 100.00
Frequency Missing = 27			

Statistics for Table of ageSupp by who treated

Statistic	DF	Value	Prob
Chi-Square	5	10.9791	0.0518

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates a significant dependency between age period supplements were started and whether the baby was previously treated by a clinic or doctor for a listed ailment. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001) [The other statistics given in the statistics table can be ignored and even removed from the statistics table

BY comparing the relevant ratios of previous dr. to clinic treatment over time periods, the comparisons seem to indicate that in relation more respondents treated by clinic on their previous visit started supplementary feeds before two months and more respondents whose babies were treated by a doctor on their previous visit started supplementary feeds once the baby was between 2 and 5 months of age.

Table of solids by who treated			
solids(q25:frequency of daily solids)	who treated(q27:who treated child's last listed ailment?)		
Frequency Cell Chi-Square Percent Row Pct	clinic	doctors	Total
once	7 0.021 4.93 50.00	7 0.0235 4.93 50.00	14 9.86
twice	11 0.0928 7.75 57.89	8 0.1038 5.63 42.11	19 13.38
three times	34 0.6613 23.94 60.71	22 0.7402 15.49 39.29	56 39.44
> 3 times	13 0.1114 9.15 48.15	14 0.1247 9.86 51.85	27 19.01
all the time	6 0.1093 4.23 46.15	7 0.1223 4.93 53.85	13 9.15
no supplements	4 1.1965 2.82 30.77	9 1.3393 6.34 69.23	13 9.15
Total	75 52.82	67 47.18	142 100.00
Frequency Missing = 27			

Statistics for Table of solids by who treated

Statistic	DF	Value	Prob
Chi-Square	5	4.6462	0.4606

Comment and interpretation:

Pearson's chi-square test for the above frequency table did not indicate statistically significant difference in solids-preference pattern between the respondents whose babies were treated by a doctor or clinic on their previous visit for a listed ailment.

Table of caregiver by doctor			
(q3:primary caregiver of child)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
Biological mother	90 0.0706 55.56 71.43	36 0.1953 22.22 28.57	126 77.78
Sister/father/other	13 0.3563 8.02 86.67	2 0.9861 1.23 13.33	15 9.26
Grand mother	16 0.0214 9.88 76.19	5 0.0591 3.09 23.81	21 12.96
Total	119 73.46	43 26.54	162 100.00
Frequency Missing = 7			

Statistics for Table of caregiver by doctor

Statistic	DF	Value	Prob

Effective Sample Size = 162
Frequency Missing = 7

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates non-significance for dependency between the person of the caregiver and choice of dr. or clinic. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

Table of financial means by choice of doctor or clinic			
(q7: financial means for medical services?)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	51 1.9108 31.88 89.47	6 5.3685 3.75 10.53	57 35.63
no	67 1.0574 41.88 65.05	36 2.9709 22.50 34.95	103 64.38
Total	118 73.75	42 26.25	160 100.00
Frequency Missing = 9			

Statistics for Table of fmeans by doctor

Statistic	DF	Value	Prob
Chi-Square	1	11.3077	0.0008

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that the dependency between choice of doctor or clinic and financial means are highly significant – significance level is 0.1%. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

By comparing the ratios of respondents taking their babies to a doctor or not for the two groups with or without the financial means, it becomes apparent that in relation, significantly more people with the necessary financial means visit doctors.

Table of satisfaction by baby taken to dr.			
(q29:satisfied with treatment?)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	114 0.1134 75.00 78.08	32 0.3525 21.05 21.92	146 96.05
no	1 2.7598 0.66 16.67	5 8.5776 3.29 83.33	6 3.95
Total	115 75.66	37 24.34	152 100.00
Frequency Missing = 17			

Statistics for Table of satisfy by doctor

Fisher's Exact Test	
Cell (1,1) Frequency (F)	114
Left-sided Pr <= F	0.9999
Right-sided Pr >= F	0.0034
Table Probability (P)	0.0032
Two-sided Pr <= P	0.0034

Effective Sample Size = 152
Frequency Missing = 17

Comment and interpretation:

The exact chi-square test for the above frequency table indicates that the dependency between treatment-satisfaction and whether respondent took baby to the doctor are statistically significant. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

In relation, more respondents were satisfied who took their babies to a doctor than those who took their babies to the clinic, (satisfied to dissatisfied ratio for respondents who took and did not take their babies to a doctor, are respectively: 114/1=114 as opposed to 32/5 = 6.4)

Table of improve by doctor			
improve(q30:did the child improve?)	doctor(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	114 0.0362 72.61 76.51	35 0.1095 22.29 23.49	149 94.90
no	4 0.6738 2.55 50.00	4 2.0385 2.55 50.00	8 5.10
Total	118 75.16	39 24.84	157 100.00
Frequency Missing = 12			

Fisher's Exact Test	
Cell (1,1) Frequency (F)	114
Left-sided Pr <= F	0.9767
Right-sided Pr >= F	0.1060
Table Probability (P)	0.0826
Two-sided Pr <= P	0.1060

Comment and interpretation:

The exact chi-square test for the above frequency table indicates that the dependency between improvement and whether the respondent visited a doctor are significant on the 10% level of significance (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

In relation, more respondents reported improvement who took their baby to a doctor than those who did not, (improved to not improved ratio for respondents who took and did not take their babies to a doctor, are respectively: 114/4 = 28.5 and 35/4 = 8.8)

Table of cough mix preparation by doctor visit or not			
(q32:told how to prepare cough mixture?)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	78 0.012 48.75 72.22	30 0.0328 18.75 27.78	108 67.50
no	39 0.025 24.38 75.00	13 0.068 8.13 25.00	52 32.50
Total	117 73.13	43 26.88	160 100.00
Frequency Missing = 9			

Statistics for Table of cough mix by doctor

Statistic	DF	Value	Prob
Chi-Square	1	0.1378	0.7105

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates non-significance for the dependency between knowledge of cough mixture preparation and whether respondents took her baby to a doctor. This implies that knowledge of cough mixture preparation is not influenced by whether mother took her child to a private doctor.

Table of cause of diarrhoea by baby taken to dr or clinic			
(q34:causes of diarrhoea)	48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
spoiled food	51 0.0076 31.88 72.86	19 0.0213 11.88 27.14	70 43.75
illness	4 0.0265 2.50 80.00	1 0.0744 0.63 20.00	5 3.13
not sure	21 0.1737 13.13 80.77	5 0.488 3.13 19.23	26 16.25
teething	28 0.0202 17.50 71.79	11 0.0568 6.88 28.21	39 24.38
unhygienic circumstances	14 0.0381 8.75 70.00	6 0.1071 3.75 30.00	20 12.50
Total	118 73.75	42 26.25	160 100.00
Frequency Missing = 9			

Statistics for Table of diarrhoea by doctor

Statistic	DF	Value	Prob
Chi-Square	4	1.0137	0.9077

Effective Sample Size = 160
Frequency Missing = 9

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that non significance is indicated for the relationship between causes of diarrhoea and whether child was taken to a private doctor. This implies that knowledge of diarrhoea is not influenced by whether a private doctor treated the baby or not.

Table of waiting time by whether private doctor treated respondent's baby			
(q46:waiting time at clinic/surgery)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
< 1 hour	24 0.0847 15.09 77.42	7 0.2284 4.40 22.58	31 19.50
1-2 hours	46 0.321 28.93 79.31	12 0.866 7.55 20.69	58 36.48
2-3 hours	11 1.5891 6.92 50.00	11 4.2869 6.92 50.00	22 13.84
3-4 hours	16 0.2749 10.06 64.00	9 0.7415 5.66 36.00	25 15.72
> 4 hours	19 0.2937 11.95 82.61	4 0.7924 2.52 17.39	23 14.47
Total	116 72.96	43 27.04	159 100.00
Frequency Missing = 10			

Statistics for Table of wait by doctor

Statistic	DF	Value	Prob
Chi-Square	4	9.4785	0.0502

Effective Sample Size = 159
Frequency Missing = 10

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that a statistically significant dependency between waiting time and whether a respondent took her baby to a private doctor or not exists. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001) [The other statistics given in the statistics table can be ignored and even removed from the statistics table].

By comparing the private dr./not private dr.-ratio for the various waiting times, the difference in waiting time-patterns between the two groups become apparent. For example, in relation more people wait between 0-2 hours at a doctor's surgery as opposed to a clinic, and in relation more respondents wait between 3-4 hours at clinics as opposed to private dr.s. [Ratio for more than 4 hours indicate that in relation more respondents at doctor's surgeries wait more than 4 hours?)

Table of whether clinic should take precedence over dr. by whether baby was taken to private dr.			
(q47:prefer PEOPLE to use clinic?)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	93 0.2383 57.06 69.40	41 0.6445 25.15 30.60	134 82.21
no	26 1.1011 15.95 89.66	3 2.9779 1.84 10.34	29 17.79
Total	119 73.01	44 26.99	163 100.00
Frequency Missing = 6			

Statistics for Table of clinic by doctor

Statistic	DF	Value	Prob
Chi-Square	1	4.9617	0.0259

Comment and interpretation:

Pearson's chi-square test for the above frequency table indicates that an interesting statistically significant dependency exists between whether a respondent takes her baby to a private dr., and yes-no preference whether people should, in general, use a clinic, was established on the 5% level of significance. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001) [The other statistics given in the statistics table can be ignored and even removed from the statistics table].

By comparing the yes/ no-ratio of whether people in general should visit clinics for respondents who took their own babies to the doctor and those who did not, (93/26 and 41/3) it becomes apparent that, in relation, less people, who take their own babies to a private doctor are of the opinion that people in general should take their babies to a clinic.

Table of satisfaction with dr.'s treatment by whether caregiver took her child to a doctor.			
(q49:was dr's treatment satisfactory?)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	113 0.3769 83.70 93.39	8 2.8036 5.93 6.61	121 89.63
no	6 3.2579 4.44 42.86	8 24.231 5.93 57.14	14 10.37
Total	119 88.15	16 11.85	135 100.00
Frequency Missing = 34			

Fisher's Exact Test	
Cell (1,1) Frequency (F)	113
Left-sided Pr <= F	1.0000
Right-sided Pr >= F	1.228E-05
Table Probability (P)	1.171E-05
Two-sided Pr <= P	1.228E-05

Effective Sample Size = 135
Frequency Missing = 34

Comment and interpretation:

Note: The question arises as to whether the comparison made between the two questionnaire-items tabulated is sensible? Once this has been established one would be able to deduce that: (otherwise the table should be ignored)

Fisher's exact test for the above frequency table indicates that the dependency between whether the respondent took her baby to a doctor and satisfaction with doctor's treatment are highly significant. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)
[The other statistics given in the statistics table can be ignored and even removed from the statistics table].

By comparing ratios of satisfaction to dissatisfaction for respondents who took their babies to a private dr. and those that did not, it becomes apparent that, in relation, respondents who took their babies to a private doctor were more satisfied than those who did not.
Question: should there be respondents who indicated that they did not take their child to a private dr. but still indicated satisfaction with dr.'s treatment?

Table of dr.'s explanation understandable by whether caregiver took baby to private dr.			
(q50:was dr's explanation understandable?)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	102 0.1876 79.69 96.23	4 2.2133 3.13 3.77	106 82.81
no	16 0.9037 12.50 72.73	6 10.664 4.69 27.27	22 17.19
Total	118 92.19	10 7.81	128 100.00
Frequency Missing = 41			

Fisher's Exact Test	
Cell (1,1) Frequency (F)	102
Left-sided Pr <= F	0.9998
Right-sided Pr >= F	0.0018
Table Probability (P)	0.0016
Two-sided Pr <= P	0.0018

Effective Sample Size = 128
Frequency Missing = 41

Comment and interpretation:

Fisher's exact test indicates a statistically significant relationship between whether the caregiver took her baby to a private dr. and whether his explanation was understandable. (Significance on the 5%, 1% or

0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

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Comparison between the ratios of understandable to not understandable, indicates that, in relation, more respondents who visited a doctor found the doctor's explanation understandable as opposed to those who visited a clinic.

Table of preference for dr or clinic by whether caregiver took her baby to private dr.			
(q51:prefer taking YOUR child doctor or clinic?)	doctor(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
doctor	93 3.201 60.39 93.00	7 10.883 4.55 7.00	100 64.94
clinic	26 5.9277 16.88 48.15	28 20.154 18.18 51.85	54 35.06
Total	119 77.27	35 22.73	154 100.00
Frequency Missing = 15			

Statistics for Table of prefer by doctor

Statistic	DF	Value	Prob
Chi-Square	1	40.1662	<.0001

Comment and interpretation:

Pearson's chi-square test indicates that a statistically, highly (o.1% level) significant, dependency was established between whether a caregiver took her baby to a private dr. and whether the caregiver prefers the services of a private dr.. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

Comparison between the ratios of preference for the respondents who took their babies to a private dr. and those who did not, indicates that in relation, significantly more caregivers who took their babies to a private dr. prefers a doctor.

Table of Beast Feeding by whether caregiver took her child to a private dr.			
(q20:breast feed?)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
yes	86 0.6969 53.09 80.37	21 1.9287 12.96 19.63	107 66.05
no	33 1.3559 20.37 60.00	22 3.7523 13.58 40.00	55 33.95
Total	119 73.46	43 26.54	162 100.00
Frequency Missing = 7			

Statistics for Table of BFeed by doctor

Statistic	DF	Value	Prob
Chi-Square	1	7.7338	0.0054

Comment and interpretation:

Pearson's chi-square test indicates a statistically significant dependency (1% level of significance) between whether a caregiver took her baby to a private dr. and whether the caregiver was breast feeding or not (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

Comparison between the ratios of breast feeding to not breast feeding for those respondents who took their babies to a private dr. and those who did not, indicates that in relation, significantly more caregivers who took their babies to a private dr. was breastfeeding as opposed to those who did not take their babies.

Table of breast feeding Period by whether caregiver took her baby to a private dr.			
(q21:period breast feeding)	(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
never	12 1.0673 7.59 54.55	10 2.9477 6.33 45.45	22 13.92
0-3 months	22 291E-7 13.92 73.33	8 0.0001 5.06 26.67	30 18.99
4-6 months	21 0.0699 13.29 77.78	6 0.1931 3.80 22.22	27 17.09
7-12 months	32 0.044 20.25 76.19	10 0.1215 6.33 23.81	42 26.58
1-2 years	29 0.124 18.35 78.38	8 0.3425 5.06 21.62	37 23.42
Total	116 73.42	42 26.58	158 100.00
Frequency Missing = 11			

Statistics for Table of BPeriod by doctor

Statistic	DF	Value	Prob
Chi-Square	4	4.9100	0.2967

Effective Sample Size = 158
Frequency Missing = 11

Comment and interpretation:

Pearson's chi-square test indicates non-significance for dependency between whether a caregiver took her baby to a private dr. and the period the caregiver breast fed. This implies that the period caregiver breast fed was not influenced by whether he caregiver took the baby to a private dr. or clinic (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

Table of ageSupp by doctor			
ageSupp(q23:supplements started at age of:)	doctor(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
< 2 months	29 0.0098 17.79 74.36	10 0.0264 6.13 25.64	39 23.93
2-3 months	19 0.2228 11.66 65.52	10 0.6025 6.13 34.48	29 17.79
4-5 months	22 2.1958 13.50 100.00	0 5.9387 0.00 0.00	22 13.50
6-7 months	25 0.0013 15.34 73.53	9 0.0034 5.52 26.47	34 20.86
> 8 months	10 0.0273 6.13 76.92	3 0.0739 1.84 23.08	13 7.98
no supplementaries	14 1.3074 8.59 53.85	12 3.5359 7.36 46.15	26 15.95
Total	119 73.01	44 26.99	163 100.00
Frequency Missing = 6			

Statistics for Table of ageSupp by doctor

Statistic	DF	Value	Prob
Chi-Square	5	13.9452	0.0160

Effective Sample Size = 163
Frequency Missing = 6

Comment and interpretation:

Pearson's chi-square test indicates statistically significant (5% level of significance) dependency between whether a caregiver took her baby to a private dr. and age at which supplements were started.

(Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

Table of solids by doctor			
solids(q25:frequency of daily solids)	doctor(q48:did you take YOUR child to doctor?)		
Frequency Cell Chi-Square Percent Row Pct	yes	no	Total
once	14 0.849 8.59 93.33	1 2.296 0.61 6.67	15 9.20
twice	17 0.3941 10.43 85.00	3 1.0658 1.84 15.00	20 12.27
three times	43 0.1132 26.38 69.35	19 0.3062 11.66 30.65	62 38.04
> 3 times	20 0.3061 12.27 64.52	11 0.8278 6.75 35.48	31 19.02
all the time	12 0.3097 7.36 85.71	2 0.8376 1.23 14.29	14 8.59
no supplementaries	13 0.3545 7.98 61.90	8 0.9588 4.91 38.10	21 12.88
Total	119 73.01	44 26.99	163 100.00
Frequency Missing = 6			

Statistics for Table of solids by doctor

Statistic	DF	Value	Prob
Chi-Square	5	8.6187	0.1253

Effective Sample Size = 163
Frequency Missing = 6

Comment and interpretation:

Pearson's chi-square test could not establish a significant dependency between whether a caregiver took her baby to a private dr. and frequency of daily supplements given to the babies. It can therefore be deduced that the frequency of daily supplements are not influenced by whether a caregiver took her baby to a private dr. (Significance on the 5%, 1% or 0.1% level of significance would have been indicated by a chi-square probability ('Prob') in the first row of the 'statistics table' of less than 0.05, or 0.01, or 0.001)

2.5 Item analysis/ scale reliability testing on service perceptions

Apart from the one-way frequency tables calculated for service perceptions probed in q35-45, which indicated respondents' perceptions on each aspect of service perception separately, scale reliability testing/ item analysis were also undertaken to establish whether the responses to q35-45 could be combined into a statistically reliable combined service perception score which indicates respondents' general perception of service delivery.

The output below represents scale reliability testing/ or item analysis for q35-45, to determine whether a calculated single score or scale for service perception will offer a reliable measure of service perception. (Something like an average-score for each respondent). Reliability is measured via the Cronbach alpha coefficient calculated as part of item-analysis/ or scale reliability testing. An alpha-coefficient greater than 0.7 is generally regarded as reliable. Internal consistency reliability was established with an alpha coefficient of 0.89 as indicated below. (This was established by omitting q 41)

Scale reliability testing was conducted with the PROC CORR (alpha) - procedure of the SAS statistical software package.

Scale reliability testing/ Item analysis on service delivery perception
Do the questions-items linked to service delivery represent a reliable scale/ measure of service delivery perception?
Cronbach approx. > 0.7 indicate reliability
Analysis indicated that q41 be dropped from item analysis

The CORR Procedure

10 Variables:	q35 q36 q37 q38 q39 q40 q42 q43 q44 q45

Simple Statistics							
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**	**Label**
q35	146	2.38356	1.30389	348.00000	1.00000	5.00000	q35:nurses give adequate info
q36	146	2.37671	1.22694	347.00000	1.00000	5.00000	q36:Nurses answers questions
q37	146	2.62329	1.27111	383.00000	1.00000	5.00000	q37:Nurses are patient
q38	146	2.16438	1.12665	316.00000	1.00000	5.00000	q38:Nurses communicate understandably
q39	146	2.54795	1.20391	372.00000	1.00000	5.00000	q39:Nurses are friendly
q40	146	2.32192	1.11994	339.00000	1.00000	5.00000	q40:Nurses are competent
q42	146	3.26027	1.36485	476.00000	1.00000	5.00000	q42:Clinic times suit caregivers
q43	146	3.73973	1.17476	546.00000	1.00000	5.00000	q43:Clinic waiting time reasonable

Simple Statistics							
Variable	**N**	**Mean**	**Std Dev**	**Sum**	**Minimum**	**Maximum**	**Label**
q44	146	2.30822	1.14810	337.00000	1.00000	5.00000	q44:Clinic treatment system satisfactory
q45	146	2.80822	1.31472	410.00000	1.00000	5.00000	q45:Clinic services satisfactory

Cronbach Coefficient Alpha	
Variables	**Alpha**
Raw	0.885392
Standardized	0.886836

Cronbach Coefficient Alpha with Deleted Variable					
	Raw Variables		**Standardized Variables**		
Deleted Variable	**Correlation with Total**	**Alpha**	**Correlation with Total**	**Alpha**	**Label**
q35	0.544318	0.879880	0.545383	0.881108	q35:nurses give adequate info
q36	0.683646	0.869446	0.681791	0.871407	q36:Nurses answers questions
q37	0.724021	0.866223	0.724814	0.868272	q37:Nurses are patient
q38	0.651208	0.872198	0.654543	0.873374	q38:Nurses communicate understandably
q39	0.754148	0.864443	0.756467	0.865942	q39:Nurses are friendly
q40	0.718169	0.867778	0.717853	0.868782	q40:Nurses are competent
q42	0.471823	0.885982	0.474218	0.886027	q42:Clinic times suit caregivers
q43	0.445415	0.885862	0.437743	0.888511	q43:Clinic waiting time reasonable
q44	0.517909	0.880962	0.519888	0.882882	q44:Clinic treatment system satisfactory
q45	0.705474	0.867516	0.708831	0.869441	q45:Clinic services satisfactory

2.6 Perception means and analysis of variance.

2.6.1 Perception means

Once scale reliability was established in section 2.4, the mean score for each respondent were calculated as a scale for measuring service perception in general. Averages of these score were further calculated according to the categories of various biographical variables to get an indication of whether general service perception was influenced by biographical indicators. The perception means arranged according to the categories of the various biographical variables are firstly presented below: (Means were calculated with the aid of the PROC MEANS procedure of SAS)

Service Delivery means- perception,
Arranged according to categories of biographical variables.
1: strongly agree - 5: strongly disagree

The MEANS Procedure

Analysis Variable : Service perception construct, q35-40, 42-45						
q3:primary caregiver	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
Biological mother	131	130	2.66	0.85	1.00	4.70
Sister/father/other	15	15	2.46	0.79	1.00	4.40
Grand mother	22	22	2.82	0.91	1.60	4.90

Analysis Variable : Service perception construct, q35-40, 42-45						
q7:financial means available?	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
yes	58	58	2.64	0.77	1.00	4.40
no	108	107	2.69	0.89	1.00	4.90

Analysis Variable : Service perception construct, q35-40, 42-45						
q28:who last treated listed illness?	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
clinic	75	75	2.64	0.90	1.00	4.90
doctors	67	66	2.82	0.72	1.00	4.70

Analysis Variable : Service perception construct, q35-40, 42-45						
q27:treatment needed for listed illness?	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
yes	148	147	2.72	0.81	1.00	4.90
no	9	9	2.28	1.03	1.00	3.80

Analysis Variable Service perception construct, q35-40, 42-45						
q47:prefer people to use clinic?	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
yes	138	137	2.52	0.78	1.00	4.40
no	29	28	3.27	0.92	1.22	4.90

Analysis Variable : Service perception construct, q35-40, 42-45						
q48:took you child to private doctor?	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
yes	119	118	2.68	0.85	1.00	4.90
no	44	43	2.46	0.78	1.00	4.00

Analysis Variable : Service perception construct, q35-40, 42-45						
q51:prefer taking your child private dr?	**N Obs**	**N**	**Mean**	**Std Dev**	**Minimum**	**Maximum**
doctor	100	99	2.84	0.83	1.20	4.90
clinic	57	56	2.29	0.75	1.00	4.00

2.7 Perception means and analysis of variance.

2.7.2 Analysis of variance

From the above tables of means certain biographical variables could be identified that appears to affect respondents' perceptions. (Such as whether a respondent prefers people to take their babies to a clinic for example)

In a further step to establish whether mean service perceptions between categories of the same biographical variable listed above (such as respondent preferring people to take their babies to the clinic, yes or no) differ significantly from one another, non-parametric analysis of variance, referred to as Kruskal-Wallis non-parametric analysis of variance (using Wilcoxon rank scores) were performed. Separate analyses were run on the perception scale means of each respondent arranged according to a biographical variable in each analysis. The analyses are presented below.

A chi-square probability of less than 0.05, associated with Wilcoxon test, will indicate that perception means for a specific biographical variable differ significantly – in other words that the biographical variable influence respondents general perception on health services.

A comment below each analysis is printed in colour to assist in the interpretation of the results

The NPAR1WAY procedure of SAS was used to run the analysis of variance.

Service Delivery perception .Wilcoxon tests:
Non-parametric analysis of variance
strongly agree - 5: strongly disagree

The NPAR1WAY Procedure

1. Biographical variable, caregiver

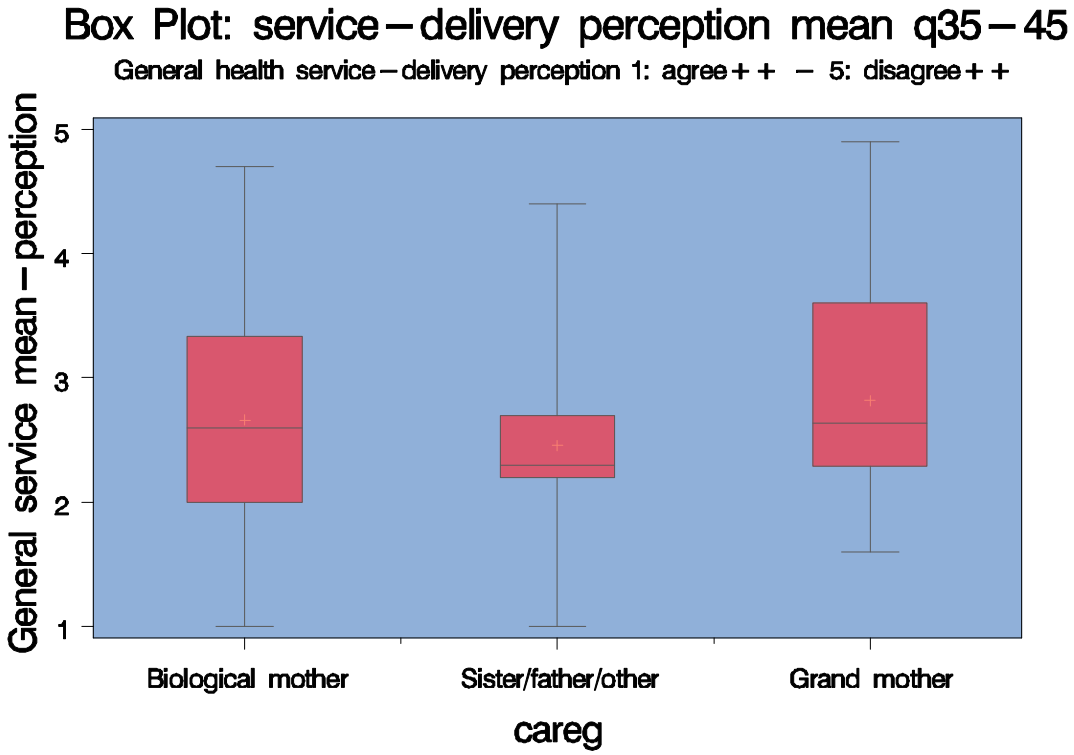
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Among	2	1.156164	0.578082	0.7962	0.4528
Within	164	119.071904	0.726048		
Average scores were used for ties.					

Wilcoxon Scores (Rank Sums) for Variable CService Classified by Variable ind1					
ind1	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
Grand mother	22	2002.0	1848.0	211.181922	91.000000
Biological mother	130	10947.0	10920.0	259.318759	84.207692
Sister/father/other	15	1079.0	1260.0	178.537241	71.933333
Average scores were used for ties.					

Kruskal-Wallis Test	
Chi-Square	1.3996
DF	2
Pr > Chi-Square	0.4967

Comment:
The chi-square probability of 0.4967 is > 0.05, therefore non-significant, indicating that perception means according to caregiver-categories do not doffer significantly. Service perceptions are not significantly affected by the person of the caregiver.

Although the mean perceptions reflected below do not differ significantly, they give an graphical presentation of respondents mean perceptions.



2. Biographical variable: financial means

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Among	1	0.112022	0.112022	0.1543	0.6950
Within	163	118.371121	0.726203		
Average scores were used for ties.					

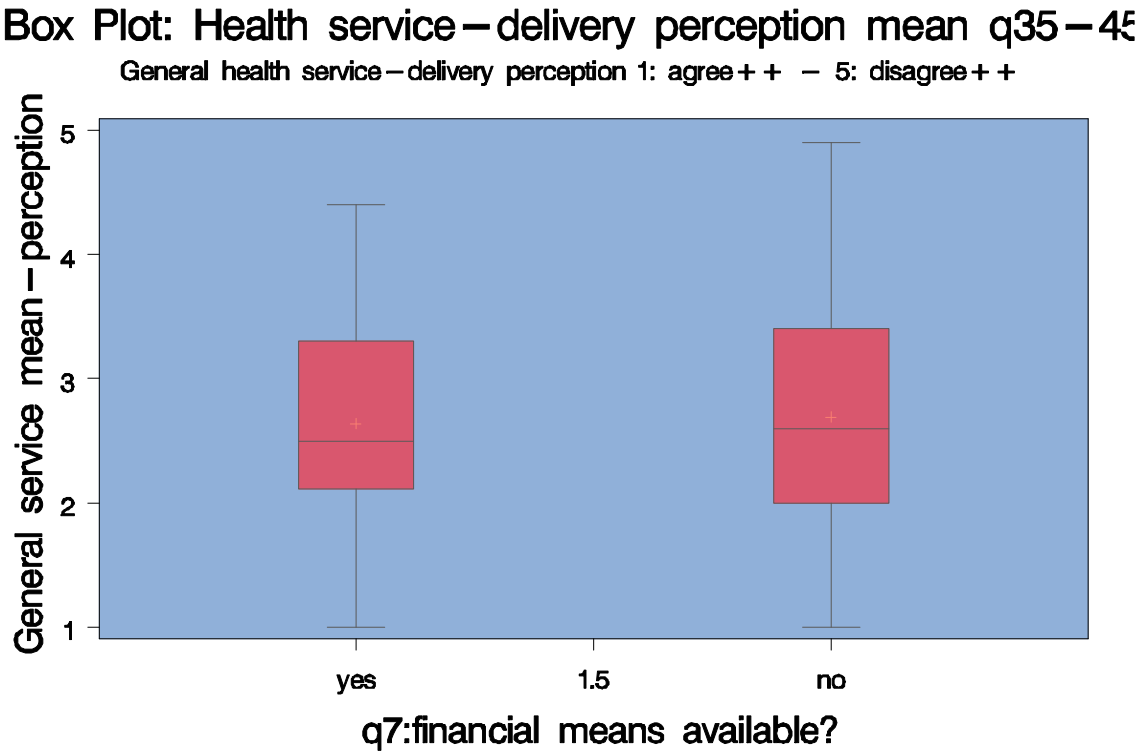
Wilcoxon Scores (Rank Sums) for Variable CService Classified by financial means available					
ind2	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
yes	58	4735.50	4814.0	292.792073	81.646552
no	107	8959.50	8881.0	292.792073	83.733645
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	4735.5000
Normal Approximation Z	-0.2664
One-Sided Pr < Z	0.3950
Two-Sided Pr > |Z|	0.7899
t Approximation	
One-Sided Pr < Z	0.3951
Two-Sided Pr > |Z|	0.7903
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	0.0719
DF	1
Pr > Chi-Square	0.7886

Comment:
The chi-square probability of 0.7886 is > 0.05, therefore non-significant, indicating that perception means according to financial means-categories do not doffer significantly. Service perceptions are not significantly affected by availability of financial means.

Although the mean perceptions reflected below do not differ significantly, they give a graphical presentation of respondents mean perceptions.


Box Plot: Health service – delivery perception mean q35 – 45
General health service – delivery perception 1: agree + + – 5: disagree + +
General service mean – perception
5
4
3
2
1
yes
1.5
no
q7:financial means available?

3. Who treated baby previously for listed ailment?

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Among	1	1.107243	1.107243	1.6421	0.2022
Within	139	93.722923	0.674266		
Average scores were used for ties.					

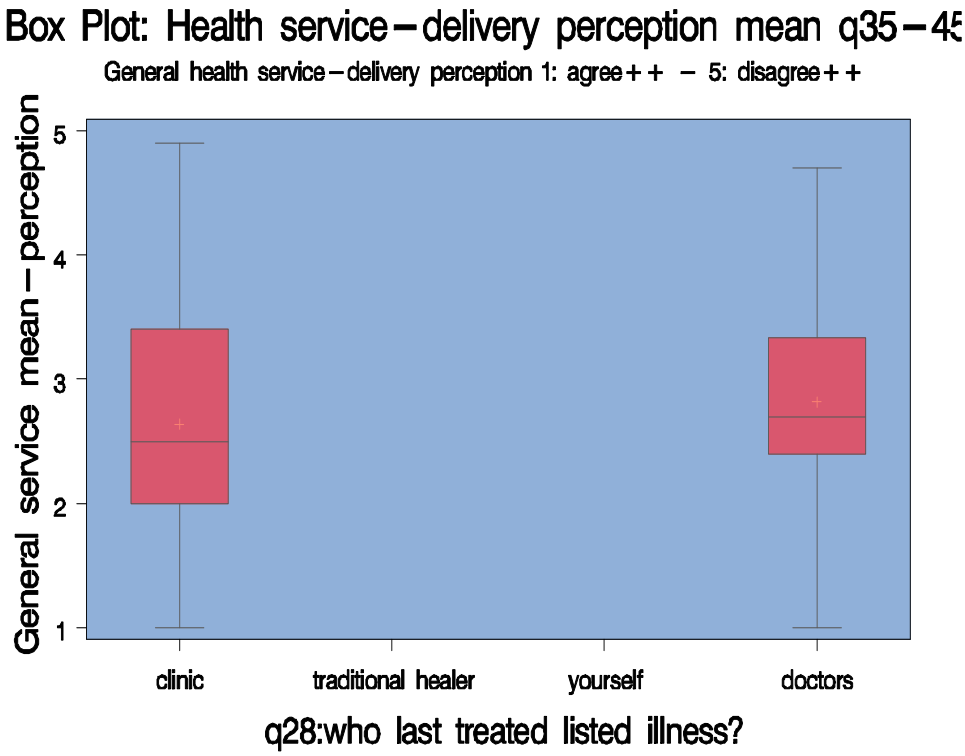
Wilcoxon Scores (Rank Sums) for Variable CService Classified by Variable ind3					
ind3	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
clinic	75	4952.50	5325.0	241.817491	66.033333
doctors	66	5058.50	4686.0	241.817491	76.643939
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	5058.5000
Normal Approximation	
Z	1.5384
One-Sided Pr > Z	0.0620
Two-Sided Pr > |Z|	0.1240
t Approximation	
One-Sided Pr > Z	0.0631
Two-Sided Pr > |Z|	0.1262
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	2.3729
DF	1
Pr > Chi-Square	0.1235

Comment:
The chi-square probability of 0.1262 is > 0.05, therefore non-significant, indicating that perception means according to who treated the baby previously-categories do not doffer significantly. Service perceptions are not significantly affected who treated the baby previously.

Although the mean perceptions reflected below do not differ significantly, they give a graphical presentation of respondents mean perceptions.


Box Plot: Health service – delivery perception mean q35 – 45
General health service – delivery perception 1: agree + + – 5: disagree + +
General service mean – perception
5
4
3
2
1
clinic
traditional healer
yourself
doctors
q28:who last treated listed illness?

4. Treatment needed for listed illness?

Analysis of Variance for Variable Service Classified by treatment needed for listed illness		
ind4	**N**	**Mean**
yes	147	2.719134
no	9	2.277778

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Among	1	1.652014	1.652014	2.4300	0.1211
Within	154	104.695655	0.679842		
Average scores were used for ties.					

Wilcoxon Scores (Rank Sums) for Variable CService Classified by Variable ind4					
ind4	**N**	**Sum of Scores**	**Expected Under H0**	**Std Dev Under H0**	**Mean Score**
yes	147	11724.0	11539.50	131.466647	79.755102
no	9	522.0	706.50	131.466647	58.000000
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	522.0000
Normal Approximation Z	-1.3996
One-Sided Pr < Z	0.0808
Two-Sided Pr > |Z|	0.1616
t Approximation	
One-Sided Pr < Z	0.0818
Two-Sided Pr > |Z|	0.1636
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	1.9695
DF	1
Pr > Chi-Square	0.1605

Comment:
The chi-square probability of 0.1605 is > 0.05, therefore non-significant, indicating that perception means according to whether treatment was required-categories do not doffer significantly. General service perceptions were not significantly affected by whether treatment was required or not.

Although the mean perceptions reflected below do not differ significantly, they give a graphical presentation of respondents mean perceptions.

5. Biographical variable: Prefer people to use clinic?

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Among	1	13.087174	13.087174	20.3305	<.0001
Within	163	104.926324	0.643720		
Average scores were used for ties.					

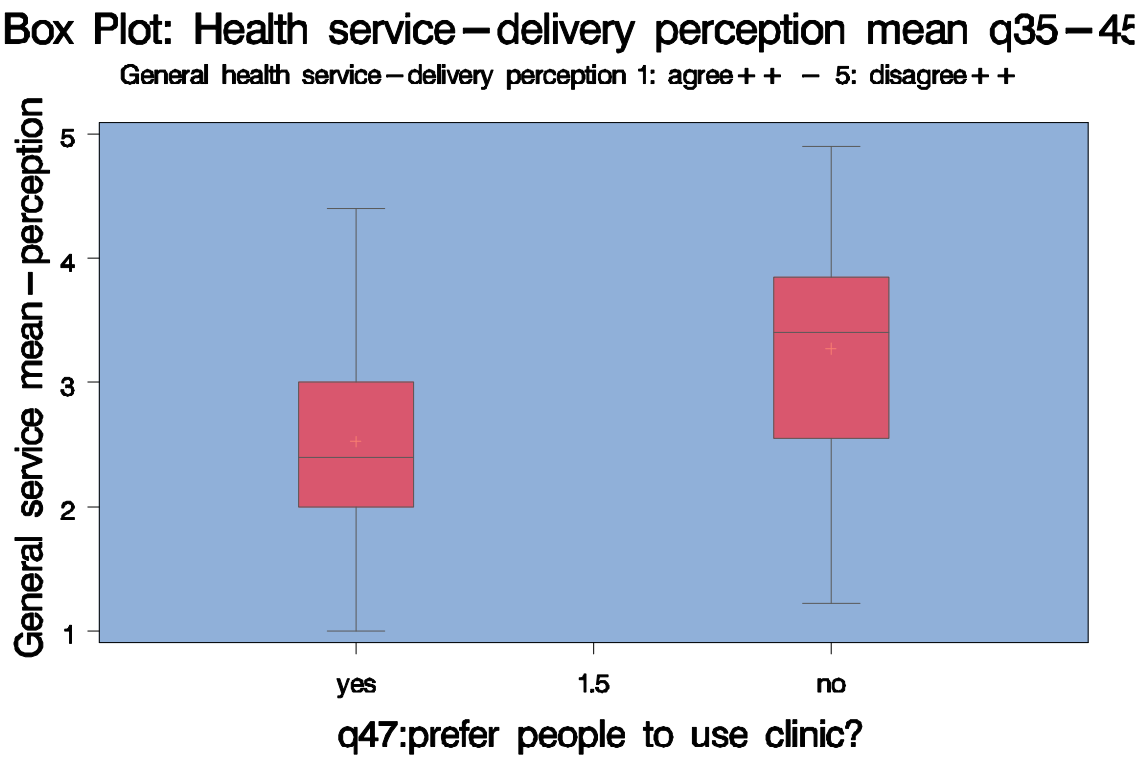
Wilcoxon Scores (Rank Sums) for Variable CService Classified by prefer people to use clinic?					
ind5	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
yes	137	10478.50	11371.0	230.199946	76.485401
no	28	3216.50	2324.0	230.199946	114.875000
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	3216.5000
Normal Approximation	
Z	3.8749
One-Sided Pr > Z	<.0001
Two-Sided Pr > |Z|	0.0001
t Approximation	
One-Sided Pr > Z	<.0001
Two-Sided Pr > |Z|	0.0002
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	15.0316
DF	1
Pr > Chi-Square	0.0001

Comment:
The chi-square probability of 0.0001 is < 0.05, therefore **significant**, indicating that perception means according to whether the respondent prefers people to use a clinic or dr-categories do differ significantly. Service perceptions are significantly affected by whether respondents prefer people to use a clinic or dr.

the mean perceptions reflected below do differ significantly, and they give a graphical presentation of respondents mean perceptions.


Box Plot: Health service – delivery perception mean q35 – 45
General health service – delivery perception 1: agree + + – 5: disagree + +
General service mean – perception
5
4
3
2
1
yes
1.5
no
q47:prefer people to use clinic?

6. Biographical variable: Did you take your child to a private dr?

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Among	1	1.472067	1.472067	2.1356	0.1459
Within	159	109.600951	0.689314		
Average scores were used for ties.					

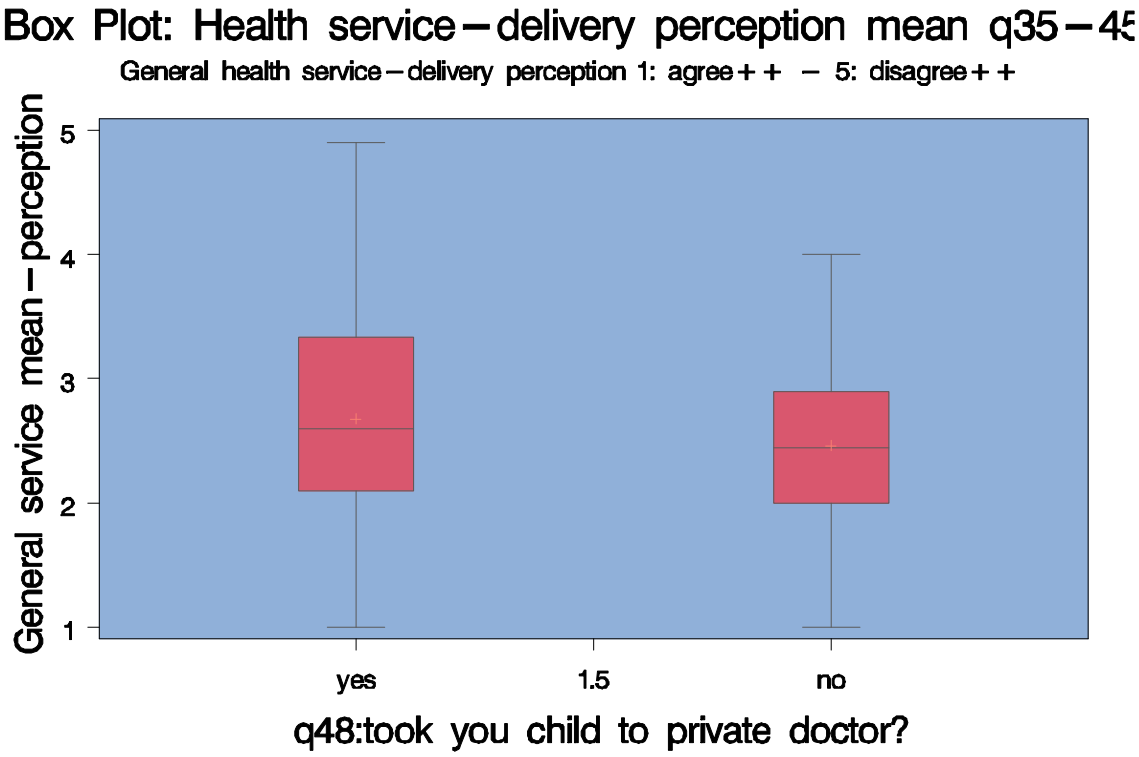
Wilcoxon Scores (Rank Sums) for Variable Service perception Classified whether respondent took her baby to a private dr.					
ind6	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
no	43	3118.0	3483.0	261.551299	72.511628
yes	118	9923.0	9558.0	261.551299	84.093220
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	3118.0000
Normal Approximation	
Z	-1.3936
One-Sided Pr < Z	0.0817
Two-Sided Pr > |Z|	0.1634
t Approximation	
One-Sided Pr < Z	0.0827
Two-Sided Pr > |Z|	0.1654
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	1.9475
DF	1
Pr > Chi-Square	0.1629

Comment:
The chi-square probability of 0.1629 is > 0.05, therefore non significant, indicating that service perception means according to whether the respondent took her child to a private dr.-categories do not differ significantly. General Service perceptions are not significantly affected by whether respondents take their babies tro a private dr.

the mean perceptions reflected below do not differ significantly, but they give a graphical presentation of respondents mean perceptions.


Box Plot: Health service – delivery perception mean q35 – 45
General health service – delivery perception 1: agree + + – 5: disagree + +
General service mean – perception
5
4
3
2
1
yes
1.5
no
q48:took you child to private doctor?

7. Biographical variable: Prefer taking you child to a private dr.

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Among	1	10.805789	10.805789	16.7341	<.0001
Within	153	98.797624	0.645736		
Average scores were used for ties.					

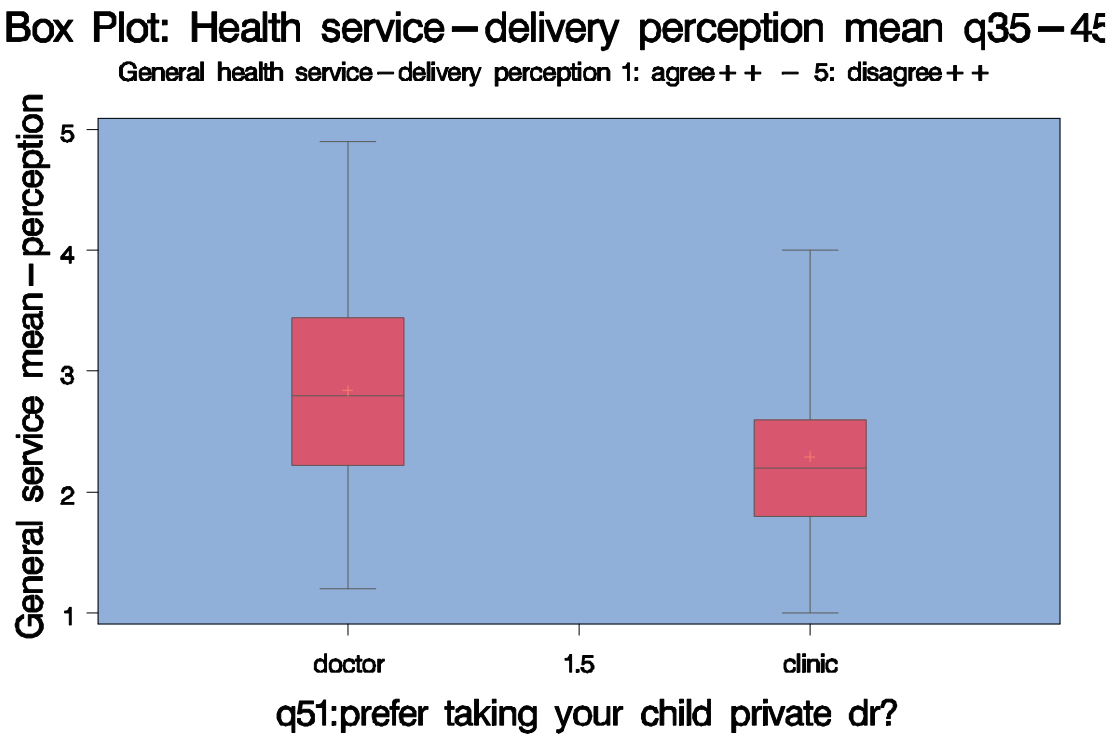
Wilcoxon Scores (Rank Sums) for service perception Classified by prefer taking your child to private dr?					
ind7	N	Sum of Scores	Expected Under H0	Std Dev Under H0	Mean Score
clinic	56	3302.0	4368.0	268.276218	58.964286
doctor	99	8788.0	7722.0	268.276218	88.767677
Average scores were used for ties.					

Wilcoxon Two-Sample Test	
Statistic	3302.0000
Normal Approximation	
Z	-3.9717
One-Sided Pr < Z	<.0001
Two-Sided Pr > |Z|	<.0001
t Approximation	
One-Sided Pr < Z	<.0001
Two-Sided Pr > |Z|	0.0001
Z includes a continuity correction of 0.5.	

Kruskal-Wallis Test	
Chi-Square	15.7888
DF	1
Pr > Chi-Square	<.0001

Comment:
The chi-square probability of 0.1629 is < 0.001is also <0.05, therefore highly significant, indicating that service perception means according to whether the respondent prefers taking her child to a private dr.-categories **do differ significantly**. General Service perceptions are significantly affected by whether respondents prefer taking their babies to a private dr.

the mean perceptions reflected below do differ significantly, and they give a graphical presentation of respondents mean perceptions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General health service – delivery perception 1: agree + + – 5: disagree + +
General service mean – perception
5
4
3
2
1
doctor
1.5
clinic
q51:prefer taking your child private dr?