

**MANAGEMENT OF THE NUTRITIONAL CARE OF CHILDREN UNDER
FIVE YEARS OLD BY NURSES IN THE NELSON MANDELA BAY
HEALTH DISTRICT**

by

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MANAGEMENT OF THE NUTRITIONAL CARE OF CHILDREN UNDER FIVE YEARS OLD BY NURSES IN THE NELSON MANDELA BAY HEALTH DISTRICT

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ABSTRACT

The aim of this study was to determine how nurses manage the nutritional care of children under the age of five years at the primary healthcare level. A quantitative approach with an explorative descriptive design was used. A self-administered questionnaire and was used to collect data. The population was 34 professional nurses working in the child health sections of 16 clinics, all of whom were accessible, but one did not respond. Ten out of the target population were also observed using an observational checklist. Findings show lack of proper implementation of Integrated Management of Childhood Illnesses (IMCI) guidelines and incorrect use of the Road-to-Health booklet. Secondly, the nurses at the child healthcare section had a high workload or had little experience in child care. The need for more emphasis on nutrition during IMCI training and the re-orientation of nurses on the optimal use of the Road-to-Health booklet were identified.

KEY TERMS

Malnutrition, children under five years, nutritional care, Integrated Management of Childhood Illnesses, Road-to-Health booklet, professional nurse.

DEDICATION

I dedicate this study to Kwasi, Kofi, Ayorkai and Joana for their support and encouragement during the course of this study.

DECLARATION

Student number: 3024-830-2

I declare that **MANAGEMENT OF THE NUTRITIONAL CARE OF CHILDREN UNDER FIVE YEARS OLD BY NURSES IN THE NELSON MANDELA BAY HEALTH DISTRICT** 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.

Marian Joyce Nyarko

June 2014

Full names

Date

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CHAPTER 1	1
ORIENTATION TO THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM	2
1.3 STATEMENT OF THE RESEARCH PROBLEM	5
1.4 AIM OF THE STUDY	6
1.4.1 Research objectives	6
1.4.2 Research Questions	6
1.5 SIGNIFICANCE OF THE STUDY	7
1.6 DEFINITION OF KEY CONCEPTS	7
Children	7
Child health department	7
Management	8
Nurses	8
Nutritional care	8
1.7 CONCEPTUAL FRAMEWORK	9
1.8 RESEARCH DESIGN AND METHOD	11
1.8.1 Population and sampling	11
1.8.2 Data collection	11
1.9 VALIDITY AND RELIABILITY	12
1.10 ETHICAL CONSIDERATIONS	12
1.10.1 Permission for access to conduct the study	12
1.10.2 Respect for persons and informed consent	13

1.10.3 Justice	13
1.10.4 Beneficence	13
1.10.5 Prevention of harm	13
1.10.6 Maintenance of anonymity and confidentiality	14
1.10.7 Communication of research results	14
1.11 SCOPE OF THE STUDY	15
1.12 CHAPTER OUTLINES	15
1.13 SUMMARY	16
CHAPTER 2	17
LITERATURE REVIEW	17
2.1 INTRODUCTION	17
2.2 GLOBAL CHILDHOOD MALNUTRITION	17
2.3 TRENDS OF CHILDHOOD MALNUTRITION IN THE REPUBLIC OF SOUTH AFRICA	18
2.4 NUTRITIONAL CARE	19
2.4.1 Nutritional care of children	21
2.4.2 Nutritional care according to the IMCI case management process	21
2.4.3 The nurse and nutritional care	23
2.5 MANAGEMENT OF NUTRITIONAL CARE	24
2.5.1 Nutritional assessment	24
2.5.1.1 Anthropometry	24
2.5.1.2 Clinical examination or assessment	28
2.5.1.3 Dietary history	28
2.5.2 Classification of nutritional status	28
2.5.3 Nutritional interventions	28
2.5.4 Monitoring and evaluating interventions	30
2.5.5 Nutritional care of children at primary level of care	31
2.6 CONCLUSION	31
CHAPTER 3	33

RESEARCH DESIGN AND METHODS	33
3.1 INTRODUCTION	33
3.2 RESEARCH DESIGN	33
3.3.1 Sampling	35
3.3.1.1 Population	35
3.3.1.2 Sample and sampling procedure	35
3.3.2 Data collection	37
3.3.2.1 Self-administered questionnaire	37
3.3.2.3 The observational checklist	39
3.3.2.4 Ethical considerations related to the data collection	39
3.4 DATA ANALYSIS	40
3.5 RELIABILITY AND VALIDITY	41
3.5.1 Reliability	41
3.5.2 Validity	42
3.6 SUMMARY	43
CHAPTER 4	44
ANALYSIS, PRESENTATION AND DESCRIPTION OF STUDY FINDINGS	44
4.1 INTRODUCTION	44
4.2 DATA PRESENTATION AND ANALYSIS	44
4.3. BIOGRAPHICAL DATA OF RESPONDENTS	45
4.3.1 Age composition (N = 33)	45
4.3.2 Gender composition (N = 33)	45
4.3.3 Respondents' highest level of education (N = 33)	46
4.3.4 Number of years practising as a professional nurse (N = 33)	46
4.3.5 Current job title (N = 33)	46
4.3.6 Respondents who have worked for more than a month in child healthcare (N = 33)	47
4.3.7 Agency nurses (temporary nurses) (N = 32)	47
4.3.8 Nutrition as part of training at nursing school (N = 32)	47

4.3.9 Respondents with administrative responsibilities (N = 33)	48
4.4 KNOWLEDGE OF NUTRITIONAL CARE MANAGEMENT OF CHILDREN	48
4.4.1 Adequacy of pre-service training in preparing respondents to identify a child with a nutritional problem	49
4.4.2 Adequacy of pre-service training in preparing respondents to plan and implement a nutritional intervention for a child with a nutritional problem	49
4.4.3 Possible underlying factors precipitating under-nutrition (N = 33)	50
4.4.3.1 Respondents' perception of the role of poor sanitation	50
4.4.3.2 Poor diet as a precipitating factor for malnutrition	50
4.4.3.3 Diarrhoea as a precipitating factor for malnutrition	51
4.4.3.4 Other childhood illnesses as important factors in precipitating malnutrition	51
4.4.3.5 Poor growth monitoring as an important factor in childhood malnutrition	52
4.4.4 Managing an exclusively breastfed child who is not gaining weight at six weeks	53
4.4.5 Knowledge of Integrated Management of Childhood Illnesses (IMCI)	54
4.4.6 Training in Integrated Management of Childhood Illnesses (IMCI)	54
4.4.7 Duration of IMCI course attended	54
4.4.8 The health facility's capacity to manage childhood illnesses	55
4.4.8.1 Trained IMCI practitioners	55
4.4.8.2 Adequacy of equipment for effective implementation of IMCI	56
4.4.8.3 Adequacy of trained support personnel	56
4.4.9 Health facility's capacity for managing under-nourished children	57
4.4.9.1 Trained personnel to manage under-nourished children	57
4.4.9.2 Adequacy of equipment needed to manage under-nourished children	58
4.4.9.3 Adequacy of trained support staff	58
4.5 ASSESSMENT OF NUTRITIONAL STATUS	59
4.5.1 Indicators used to evaluate a child's nutritional status	59
4.5.2 Regular evaluation of children	60
4.5.2.1 Evaluation of growth and development	60
4.5.2.2 Evaluation of immunisation status	61
4.5.2.3 Evaluating the child's need for food supplements	61
4.5.3 Skills needed for the assessment of the nutritional status of children	62
4.5.4 Analysis of the nutritional status of children seen at the clinics	63
4.6 NUTRITIONAL INTERVENTIONS	63

4.6.1 Intervention for a child at risk of becoming malnourished	64
4.6.2 Adapting the food the child enjoys to meet the nutritional needs	65
4.6.3 Promoting and supporting exclusively breastfeeding	66
4.6.4 Frequency of breastfeeding by a child in a 24-hour period	66
4.6.5 Issuing food supplements according to the national guidelines	66
4.7 NUTRITIONAL INTERVENTIONS PROVIDED FOR MODERATELY MALNOURISHED CHILDREN	67
4.6.8 Nutrition interventions for severely malnourished child	68
4.7 MONITORING NUTRITIONAL INTERVENTIONS	69
4.7.1 Recording nutritional interventions	69
4.7.2 Follow-up schedule of child with anaemia	70
4.7.3 Ranking the effectiveness of some nutritional interventions	70
4.9 ANALYSIS OF THE OBSERVATION CHECKLISTS	72
4.10 CONCLUSION	73
CHAPTER 5	75
CONCLUSIONS AND RECOMMENDATIONS	75
5.1 INTRODUCTION	75
5.2 THE AIM AND OBJECTIVES OF THE STUDY	75
5.3 RESEARCH DESIGN AND METHOD	75
5.4 SUMMARY AND INTERPRETATION OF RESEARCH FINDINGS	76
5.4.1 Nurses' knowledge of nutritional care management of children under five years old	77
5.4.2 Implementation of IMCI guidelines	78
5.4.3 Use of the Road-to-Health booklet	79
5.5 RECOMMENDATIONS	79
5.5.1 Recommendations to improve nurses' nutritional knowledge	79

5.5.2. Recommendations to improve nurses' use of R-t-H booklet and IMCI guidelines	80
5.5.3 Recommendations for further studies	80
5.6 CONTRIBUTIONS OF THE STUDY	81
5.7 LIMITATIONS OF THE STUDY	81
5.8 CONCLUDING REMARKS	81
LIST OF SOURCES	83

LIST OF TABLES

TABLE 1.1:	CASE FATALITY OF SEVERE ACUTE MALNUTRITION (SAM) AT THE DORA NGINZA HOSPITAL IN 2010	3
TABLE 2.1:	COMPARISON OF THE THREE DIFFERENT APPROACHES TO THE NUTRITIONAL CARE OF CHILDREN	21
TABLE 2.2:	INTERPRETATION OF INDICATORS USED IN THE R-to-H BOOKLET	26
TABLE 3.1	SAMPLE SIZE FOR THE STUDY POPULATION	36
TABLE 4.1:	RESPONDENTS' PERCEPTION OF PRE-SERVICE TRAINING AND ABILITY TO IDENTIFY A CHILD WITH A NUTRITIONAL PROBLEM (N = 33)	49
TABLE 4.2:	PLANNING AND IMPLEMENTING NUTRITIONAL INTERVENTIONS (N = 33)	50
TABLE 4.3:	POOR SANITATION AS A PRECIPITATING FACTOR FOR MALNUTRITION	50
TABLE 4.4:	POOR DIET CAN CAUSE MALNUTRITION (N = 33)	51
TABLE 4.5:	DIARRHOEA AS AN IMPORTANT PRECIPITATING FACTOR FOR MALNUTRITION (N = 33)	51
TABLE 4.6:	CHILDHOOD ILLNESSES AS IMPORTANT FACTORS IN MALNUTRITION	52
TABLE 4.7:	POOR GROWTH MONITORING AS A FACTOR IN CAUSING PRECIPITATING MALNUTRITION (N = 33)	52
TABLE 4.8:	MANAGING GROWTH FALTERING IN A BREASTFED SIX-WEEK-OLD BABY (N = 33)	53
TABLE 4.9:	RESPONDENTS WHO KNEW ABOUT IMCI (N = 33)	54
TABLE 4.10:	RESPONDENTS TRAINED IN IMCI (N = 33)	54
TABLE 4.11:	DURATION OF IMCI COURSE ATTENDED (N = 33)	55
TABLE 4.12:	ADEQUACY OF TRAINED IMCI PRACTITIONERS (N = 33)	56
TABLE 4.13:	EQUIPMENT NEEDED FOR IMCI IMPLEMENTATION (N = 33)	56
TABLE 4.14:	TRAINED SUPPORT PERSONNEL (N = 33)	57

TABLE 4.15: ADEQUACY OF TRAINED PERSONNEL TO MANAGE MALNUTRITION (N = 33)	57
TABLE 4.16: EQUIPMENT NEEDED TO MANAGE UNDER-NOURISHED CHILDREN (N = 33)	58
TABLE 4.17: TRAINED SUPPORT STAFF TO MANAGE UNDER-NOURISHED CHILDREN	58
TABLE 4.18: INDICATORS USED TO EVALUATE THE NUTRITIONAL STATUS OF CHILDREN	60
TABLE 4.19: EVALUATION OF THE CHILD'S GROWTH AND DEVELOPMENT (N = 33)	60
TABLE 4.20: EVALUATION OF THE CHILD'S IMMUNISATION STATUS (N = 33)	61
TABLE 4.21: EVALUATION OF THE CHILD'S NEED FOR FOOD SUPPLEMENTS (N = 33)	61
TABLE 4.22: SATISFACTION WITH OWN NUTRITIONAL ASSESSMENT SKILLS (N = 33)	62
TABLE 4.23: ROUTINE ANALYSIS OF CHILDREN'S NUTRITIONAL STATUS (N = 33)	63
TABLE 4.24: IMPROVING THE CHILD'S APPETITE AS A NUTRITIONAL INTERVENTION	64
TABLE 4.25: "ENJOY A VARIETY OF FOODS" AS A NUTRITIONAL INTERVENTION (N = 33)	65
TABLE 4.26: ISSUING FOOD SUPPLEMENTS ACCORDING TO THE NATIONAL GUIDELINES (N = 33)	66
TABLE 4.27: NUTRITION INTERVENTIONS FOR SEVERELY MALNOURISHED CHILD	68
TABLE 4.28: KEEPING RECORD OF THE NUTRITIONAL INTERVENTIONS DISCUSSED	69
TABLE 4.29: IMCI FOLLOW-UP SCHEDULE FOR A CHILD WITH ANAEMIA	70
TABLE 4.30: RANKING THE EFFECTIVENESS OF SOME NUTRITION INTERVENTIONS	70
TABLE 4.31: RESULTS OF OBSERVATION CHECKLISTS	72

LIST OF FIGURES

Figure 1.1	IMCI case management in the out-patient health facility and at home for the sick child aged 2 months to 5 years	10
Figure 2.1	The Triple A Cycle	19
Figure 2.2	An algorithm used in IMCI case management to identify and treat malnutrition	23
Figure 2.3	Sketches of the three graphs in the R-t-H booklet for monitoring a child's growth	28
Figure 2.4	A graph showing the different growth rates for girls and boys	28
Figure 2.4	Page from the IMCI chart booklet for infant and young child nutrition counselling	

ANNEXURE	94
Annexure A: Approval from the University	94
Annexure B: Request for Permission to conduct a study in the NMB Health District	95
Annexure C: Letter of Approval: Nelson Mandela Bay Health District	96
Annexure D: Assessment of data collection instrument	97
Annexure E Consent form and questionnaire	98
Annexure F: Observational Checklist	108
Annexure G: Demographic characteristics of the respondents	109
Annexure H: Responses for the nutritional Intervention for a child.	110

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

South Africa initiated the Integrated Management of Childhood Illnesses (IMCI) strategy (which includes the nutritional care of children) in 1998 and by 2000 the strategy was being implemented in all nine provinces. Updating the IMCI strategy to enable the country to work towards achieving goals one and four of the Millennium Development Goals (MDGs) is currently a prerogative in all healthcare service areas (Kibel, Saloojee & Westwood 2012:200).

The Nelson Mandela Bay Health District (NMBHD), a district in the Eastern Cape Province, has been gradually implementing the IMCI strategy from 2005 in all of its 49 primary health level clinics. However, over the past four years some children (who had not celebrated their fifth birthday and were still younger than five) that attended the clinic in the Sub-district C regularly for growth monitoring ended up being admitted to hospital with malnutrition.

Mahan and Escott-Stump (2008:455) define nutritional care as “an organized group of activities allowing [for the] identification of nutritional needs and [the] provision of care to meet these needs”. Dieticians use the nutritional care process as a standard in providing nutritional care. It includes the assessment of nutritional status, the identification of problems, the planning and implementation of interventions followed by the monitoring and evaluation of the said interventions. In the absence of an adequate number of dieticians, nurses can be trained. With the appropriate use of the nursing process, such trained nurses should be able to provide basic nutritional care and refer specific problems to dieticians. Nurses can therefore perform a form of Nutritional Risk Screening which is done by health professionals who are not dieticians and can be developed to fit the specific health environment (Mahan & Escott-Stump 2008:865).

Kim and Choue (2009:334) suggest that since nurses outnumber all other health professionals in most health settings they are best placed to provide nutritional care to patients, including children. It is, however, unclear how – or to what extent – nurses

provide nutritional care to children under five years old (District Health Information System [DHIS] 2013:2) in the NMBHD.

The aim of this study was to explore and describe the nutritional care provided by professional nurses in the NMBHD to children less than five years old.

1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM

Malnutrition can be over-nutrition or under-nutrition (Blössner & de Onis 2005:1). The Food and Agriculture Organization (FAO) of the United Nations (UN) (2004:4) however describes malnutrition as a condition resulting from the inadequate intake of one or more essential nutrients needed for growth, reproduction and cognitive development. This condition could be a deprivation of protein and energy (PEM) or of micronutrients such as vitamins and minerals.

The prevalence of severe acute malnutrition (SAM) is used as a proxy indicator for monitoring the MDG 1 which is concerned with eradicating extreme poverty and hunger (United Nations Development Fund [UNDP] 2010:25). Since severe malnutrition affects the intellectual abilities of its survivors, it may impact on the educability of children as well as the achievement of the MDG 2 (the achievement of universal primary education). The impact that SAM can have on the MDG 4 (that refers to the reduction in child mortality) is a major national concern. However, the aforementioned consequences of SAM could be prevented if healthcare professionals provide adequate and effective nutritional care to children.

Aimed at preventing malnutrition in children younger than five-years-old, the NMBHD has for some years now implemented the following three programmes: Growth Monitoring and Promotion (GMP), Health Facility-based Nutritional Supplementation Programme (HFBNSP) and the Integrated Management of Childhood Illnesses (IMCI). Unfortunately, despite the implementation of these three strategies, children of five years and younger are still being admitted to hospital with severe acute malnutrition (Dora Nginza Hospital paediatric ward admissions: 2010).

Table 1.1 shows the total paediatric admissions in 2010, including those admitted for malnutrition, to the Dora Nginza Hospital which is one of the two state hospitals in NMBHD with paediatric beds.

TABLE 1.1: CASE FATALITY OF SEVERE ACUTE MALNUTRITION (SAM) AT THE DORA NGINZA HOSPITAL IN 2010

	TOTAL CHILDREN UNDER FIVE YEARS WARD ADMISSIONS	CHILDREN UNDER FIVE MALNUTRITION ADMISSIONS	CHILDREN UNDER FIVE MALNUTRITION DEATHS	CHILDREN UNDER FIVE DEATHS	CASE FATALITY FOR SAM (%)
Jan 2010	248	10	3	7	30%
Feb 2010	311	9	1	4	11.11%
Mar 2010	419	11	3	13	27.28%
Apr 2010	405	15	5	14	33.33%
May 2010	386	21	8	21	38.1%
Jun 2010	445	14	6	20	42.86%
Jul 2010	378	20	2	9	10%
Aug 2010	257	12	3	7	25%
Sep 2010	208	16	1	7	6.25%
Oct 2010	236	11	0	14	0%
Nov 2010	229	8	2	9	25%
Dec 2010	228	4	1	3	25%
Total	3750	116	35	115	23.66%

(Dora Nginza Hospital data dietetics department ward admissions: 2010)

As seen in Table 1.1, the children less than five years old who were admitted from January 2010 to December 2012 to the Dora Nginza Hospital counted 3 750; of this total 116 were admitted for malnutrition. From the total of 3 750 those who died from SAM counted 35. Severe acute malnutrition therefore had a case fatality of 23.66%. Furthermore, the 81 children who were admitted with malnutrition and survived could grow up with reduced intellectual abilities, the potential to become obese as well as other added health problems. The data provided in Table 1.1 could have far-reaching consequences as they are closely related to the MDGs 1, 2, 4 and 5. Malnutrition may predispose children to infections, reduced intellectual aptitude, poor physical growth and even death (Gyalston 2010:6).

The continued incidence and mortality of malnutrition in children under five years old in Sub-district C of the NMBHD is a concern among the district's Integrated Nutrition Programme team. It was therefore essential that a research study be conducted on the nutritional management of children less than five years old.

The care of children younger than five years at primary healthcare level is guided by the Integrated Management of Childhood Illnesses (IMCI) protocol. The IMCI case-

management process recommends that nutritional assessment, the classification of any problem, appropriate management and the scheduled monitoring of planned interventions (NDOH 2008a:10) should be done whenever a child attends a clinic. The WHO explains that primary healthcare should be used as an opportunity for disease prevention, health promotion, and the detection of disease (WHO 2008:xvii). It was posited that the proper implementation of the IMCI strategy would enhance the nutritional care of children and could be used to reduce the prevalence of childhood malnutrition.

In 2003, after acknowledging that 60% of child mortality has malnutrition as an underlying cause, the WHO formulated the Global Strategy for Infant and Young Child Feeding (WHO 2003:6). The goal was to improve the nutritional status of infants and young children by raising the awareness of problems associated with Infant and Young Child Feeding (IYCF), thereby increasing the commitment of governments to encourage optimal feeding practices and to also ensure that the environments are conducive for its implementation.

However, to ensure the proper implementation of the Global Strategy for Infant and Young Child Feeding, knowledgeable healthcare professionals are needed to provide services to sick as well as healthy children. These professionals need to be skilled in appropriate IYCF support and counseling skills as recommended by the Integrated Management of Childhood Illnesses (NDOH 2008a:8).

Dieticians use the **nutritional-care process** as a standard when providing nutritional care. As indicated earlier, the steps are nutritional assessment, the classification of any problem, appropriate management and the scheduled monitoring of planned interventions. The nursing process follows similar steps. Alfaro Lefevre (2006:6) writes the five steps of the nursing process are as follows: assessment, diagnosis, planning, implementation and evaluation. The nutritional care process, the nursing process and the IMCI case management follow similar patterns, making their integration easy in areas without an adequate number of dieticians.

The NMBHD has only two registered dieticians and a registered nutritionist to provide nutrition care to patients at state health clinics. This is inadequate for a population of 1

150 136 people, 112 545 of whom are children under five years old (DHIS 2013). It is imperative that nurses, who make up a big proportion of healthcare professionals, provide good quality nutritional care to patients, especially children seeking curative care at clinics. The proper implementation of the IMCI strategy could enhance the nutritional care of children.

1.3 STATEMENT OF THE RESEARCH PROBLEM

The Nelson Mandela Bay Health Sub-district C is perceived as the best resourced among the three sub-districts. However, the District Health Information System (DHIS 2013) reports show that the district had the highest percentage of underweight and malnourished children in 2012. Referrals from the Dora Nginza Hospital indicated a similar trend for the same period as more children from Sub-district C were admitted with severe acute malnutrition than was the case in any of the other Sub-districts. According to the DHIS (2013), the utilisation rate of children less than five years old (or the number of visits per child to a primary healthcare facility) in the Nelson Mandela Bay Health Sub-district C per year was 3.9 times in 2013. This means that the average child saw a primary health care nurse three or more times in 2013, creating opportunities for nutritional care and promotion.

Nurses are the main providers of child healthcare at the primary level of care in the Sub-district. Nurses are therefore best placed to give holistic care, including nutritional care, to these children provided that the former has the necessary knowledge and skill. The knowledge aspect may, however, be compromised as it was found in a study by Kobe (2006:64) that not only did the nursing curricula in Uganda have an inadequate nutritional care component, but that was also not adequately addressed after training. In South Africa, Kgaphola, Wodarski and Garrison (1997:298) report that the nutritional knowledge of clinic nurses in Lebowa, a district in Limpopo (one of the nine provinces in South Africa) was poor. The South African Nursing Council (SANC) still has to review the teaching guide for registered nurses nutritional training after the results of the study done by Kgaphola et al in 1997 had been made known and after the introduction of the IMCI strategy in 1998 in South Africa.

Another challenge for the nutritional care management of children by nurses is an aspect highlighted by Fletcher and Carey (2011:618) that raised the concern that

nutritional care is often low on the priority list of nurses. This view is supported by Suominen, Sandelin, Soini and Pitkala (2009:292). Finally, the lack of the provision of adequate human resources may additionally impede the quality of nutritional care provided by nurses.

No previous study has been done in the NMBHD to explore the nutritional care practices of nurses who care for children less than five years old in the NMBHD. This study sought to fill in this void.

1.4 AIM OF THE STUDY

The aim of this study was to determine how effectively nurses manage the nutritional care of children under the age of five years.

1.4.1 Research objectives

The objectives of this study were to:

- explore and describe how the nutritional care of children under five years of age is managed by the nurses in the Nelson Mandela Bay Health District;
- make recommendations to adapt the national protocol to guide the nutritional care of children under five years of age by the nurses in the Nelson Mandela Bay Health District.

1.4.2 Research Questions

The research questions that applied to this study are stated below.

1. How do nurses manage the nutritional care of children less than five years old in the district?
2. What should a nutritional care protocol consist of in order to promote the optimal nutritional care to children younger than five years old by nurses in NMBHD?

1.5 SIGNIFICANCE OF THE STUDY

Grove, Burns and Gray (2013:11) suggest that the greatest ambition of nursing research is to produce evidence-based care, thereby adding to the body of knowledge. It was therefore envisaged that the findings of this study will make a contribution towards formulating protocols to guide the practices of nurses providing nutritional care to children in the NMBHD. It will then enable the nurses in the district to use the results to improve the nutritional care of children under five years old. It was further predicted that the district nurses would be able to implement the recommendations and develop district guidelines to assist professional nurses to improve the overall care of children less than five years old in the district.

1.6 DEFINITION OF KEY CONCEPTS

The key concepts as used in the context of this study are defined next.

Children

The concept 'children' refer to "young human beings below the age of puberty or the legal age of majority" (Oxford Dictionary 2013 sv "child"). In this study, 'children' denoted children less than five years old (from a one-day-old to 59-month old) seeking healthcare at any of the 16 clinics in the targeted Sub-district C.

Child health department

Kibel, Saloojee and Westwood (2012:1) describe child health as the branch of health care dealing with "the promotion of health for children, the prevention of illness and the alleviation of the effects of illness when they have developed." In this study, child health department will denote the section of the Primary Health Care clinic that deals with issues associated with children's health. This includes the promotion of health, prevention of disease and treatment of diseases.

Management

The concept 'management' is defined as "the act of coordinating the efforts of people to accomplish desired goals and objectives, using the available resources and [using them] efficiently (Ask 2014 sv "management"). 'Management' in medicine and psychiatry, according to the *Concise Oxford English Dictionary* (2006:866) means "the treatment or control of diseases or disorders, or the care of patients who suffer them". In this study 'management' referred to the coordination of the efforts of professional nurses towards providing nutritional care to children less than five years old in the specific district. The nutritional care management of children is guided by the Road-to-Health booklet and IMCI strategy.

Nurses

The concept 'nurses' refer to individuals registered in at least one of the five categories under section 31(1) of the Nursing Act No 33 of 2005 in order to practice nursing or midwifery (South Africa 2005:6). 'Nurses' in this study referred to persons registered to practice under the category "professional nurses" (SANC 2005:25) who provide support, care and treatment to children in order for them to attain or maintain health; and where this is not feasible, to care for them until they die peacefully.

Nutritional care

The concept 'nutritional care' refers to "an organised group of activities allowing for the identification of nutritional needs and the plans to meet the identified needs" as stated by Mahan and Escott-Stump (2008:455). In this study 'nutritional care' referred to the "interpretation of anthropometric measurements, the compilation of the dietary history, the correct identification and classification of nutritional needs, and the use of appropriate interventions that would be monitored and evaluated over time" (Mahan & Escott-Stump 2008:866). In this study these interventions included talks on health education, food preparation, counseling and assisting families whose child or children met the criteria set by the Department of Health with food supplements in accordance with the supplementation policy. Families should occasionally be referred to other government departments for support because of inadequate household food security or other social problems (NDoH 2007a:11).

1.7 CONCEPTUAL FRAMEWORK

Polit and Beck (2010:74) advise that conducting a quantitative study within the context of a framework allows for a broader significance and utilisation of the results. The clinical case management of IMCI provided the framework for this study as it is the standard guideline for primary level child care at clinics. According to the IMCI protocol, the primary healthcare professional must assess all children aged between two months and five years, whether sick or well, in order to classify any presenting problem and to identify the appropriate treatment (NDoH, WHO & UNICEF 2010:2).

Kibel, Saloojee and Westwood (2007:197) see IMCI case management as focusing on the out-patient management of child health with appropriate immunisation, growth monitoring and promotion. The IMCI protocol recommends that the child be assessed for feeding problems at every contact with a health worker. Furthermore, the use of treatment protocols in accordance with the National Essential Drug List (EDL) as well as the appropriate referral of sick children when necessary is also recommended by the IMCI protocol. According to Saloojee (2007:174), two of the successes of the IMCI approach to child care are a 25-30% decrease in child mortality and improved nutritional counselling to parents and caregivers.

Figure 1.1 is a diagrammatic representation of the IMCI case management strategy (which is discussed in detail in Chapter 2). The case management differentiates between infants below two months and those aged two months to five years (NDoH 2008a: 9). Only the older group chart is presented here.

Figure 1: IMCI Case Management in the outpatient health facility, first-level and at home from age 2 months up to 5 years

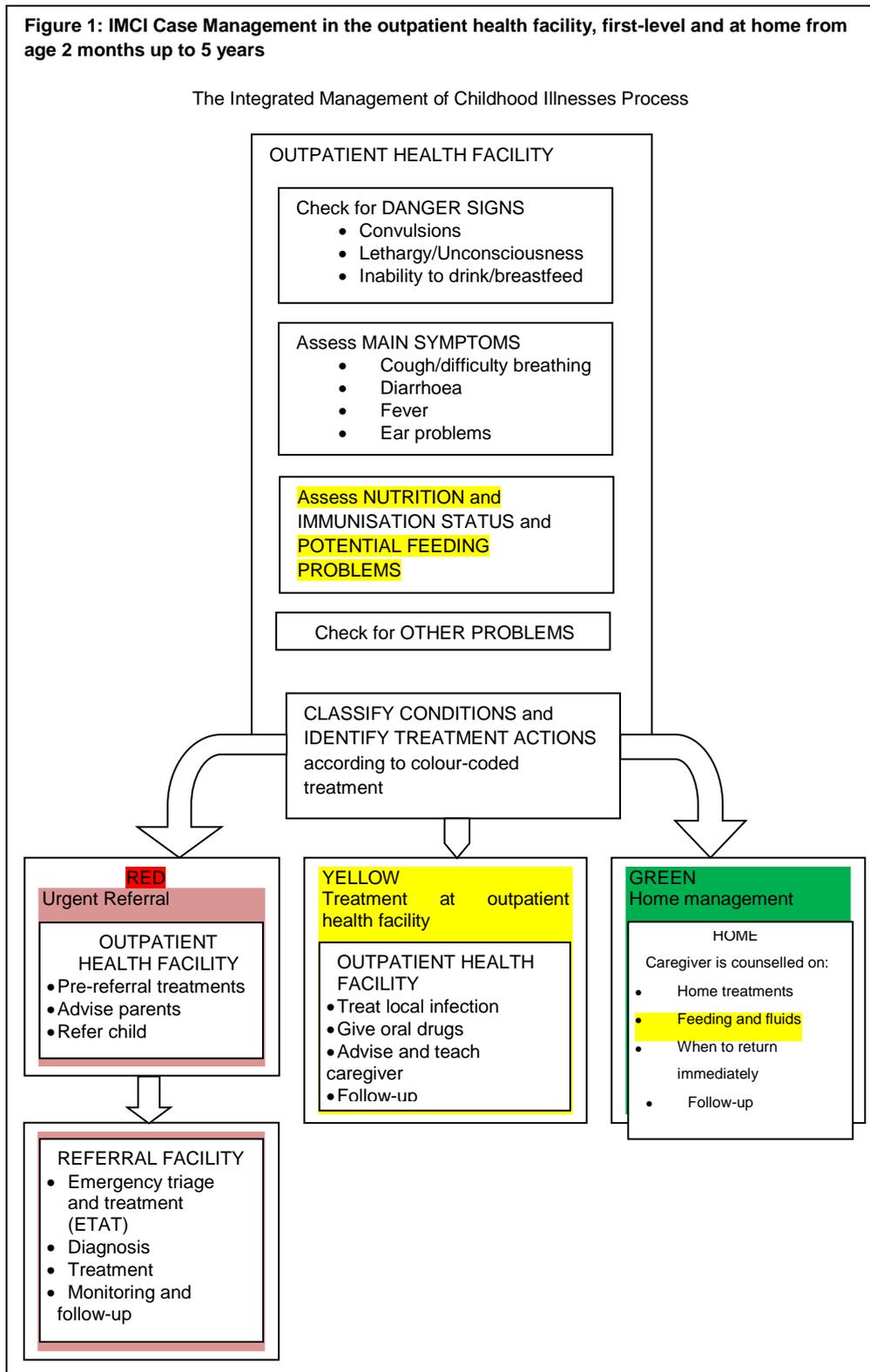


Figure 1.1 IMCI case management in the out-patient health facility and at home for the sick child aged 2 months to 5 years (Malimbe 2007:28).

1.8 RESEARCH DESIGN AND METHOD

A quantitative approach with an explorative descriptive design was used to provide information on the nutritional care of nurses caring for children less than five years old. The design is discussed in full in Chapter 3.

1.8.1 Population and sampling

The site for the study was all sixteen clinics in the Nelson Mandela Bay Health Sub-district C. The target population comprised of the whole population of professional nurses who provided care at primary level to children less than five years old. The participant target population was professional nurses from all 16 clinics in Sub-district C in the NMBHD who provided the primary level healthcare to these children. They were 34 in total; therefore, no sampling was done because Saunders, Lewis and Thornhill (2009:234) suggest that if the entire population can be used to collect the needed information, sampling may not be needed.

1.8.2 Data collection

A self-administered questionnaire and a checklist for observation were the main tools for collecting the data. Welman, Kruger and Mitchell (2005:174) recommend that if similar research has been conducted on a topic, questionnaires from such a research could be adapted for use in a different study. The self-administered questionnaire was an adaptation of a questionnaire used previously in Botswana (Nnyepi 2004:153) for participants with similar literacy levels. Ten of the nurses were also observed using an observational checklist developed by the researcher.

1.8.3 Data analysis

The data were coded, summarised, organised and presented. Descriptive statistics were used. Frequencies were calculated, and when appropriate, presented in tables using STATISTICA VERSION 11.

1.9 VALIDITY AND RELIABILITY

An adapted questionnaire from a similar research project was used for this study. The questionnaire was based on the IMCI approach of child healthcare at the primary level of care as this is the standard recommended by the NDoH. The content, criterion-related, predictive and construct validity of the data collection instrument were all considered (Brink, van der Walt & van Rensburg 2012:166).

Pre-testing was done with ten (10) IMCI-trained coordinators, clinical supervisors and nutrition coordinators – who were not part of the study population – to test both the construct and the criterion-related validity (Welman et al 2005:142). Validity and reliability are discussed in detail in Chapter 3.

1.10 ETHICAL CONSIDERATIONS

The principles of the right conduct were adhered to throughout this study. The principles of biomedical ethics as summarised in the Belmont Report (Joubert & Ehrlich 2007:31) were followed. These principles are respect for persons, justice, and beneficence, protection from discomfort or harm, and the maintenance of anonymity. This was done via a permission for access, the use of informed consent, maintaining the confidentiality of the data, the need for action on findings, and the procedures to follow when the findings are published.

1.10.1 Permission for access to conduct the study

Approval to start and conduct the study was sought from both the University of South Africa's Health Studies Ethics Committee (ethical clearance number HSHDS/161/2013) and the Nelson Mandela Health District's Ethics Committee. The researcher had to abide by the guidelines set by the institutions. The approval letters are attached as Annexure A and C respectively.

1.10.2 Respect for persons and informed consent

Burns and Grove (2009:189) encourage researchers to protect the human rights of participants, including dignity and self-respect. Polit and Beck (2006:88) postulate that “respect for human dignity includes the right to self-determination and the right to full disclosure”; hence, prospective participants could exercise their right to participate in this study voluntarily without coercion by signing a consent form. Every participant was required to give his or her informed consent and the forms were only accessible to the researcher and her supervisor. The participants could withdraw at any stage without being penalised or victimised since they had the right to self-determination.

1.10.3 Justice

The principle of justice holds that all participants must be treated in a fair manner (Burns & Grove 2009:188). Every professional nurse working in the child health department was included irrespective of gender, age and length of service in the department. All the professional nurses providing child healthcare could participate in the study.

1.10.4 Beneficence

Based on the principle of beneficence the researcher is required to “do good and avoid harm” to participants (Burns & Grove 2009:188). The participants did not derive direct benefits from this study; however, the findings may be used to improve the nutritional care practices that nurses provide to children. There would have been no loss of personal benefit if an individual practitioner refused to participate or decided to withdraw from the study. The potential benefits to the participants were: increasing their knowledge, doing something different from the daily routine, and the fact that they were contributing to the body of professional knowledge (Polit & Beck 2010:126).

1.10.5 Prevention of harm

No incentive was given to the participants and none incurred any financial loss for participating in the study. Participating in the study did not put participants at any major

risk, physically or psychologically. No adverse events were anticipated; however, the researcher was available to counsel participants if needed. The participants might have perceived the instrument as testing their knowledge, and therefore, as threatening. The purpose of the instrument was clearly explained to all the participants to alleviate any such concerns (Creswell 2014:98).

Boredom, the time used to fill in the questionnaire, and anxiety or fear of repercussions – if confidentiality was and will not be maintained – could have been viewed as potential risks to the participants in this study. For these reasons, the questionnaire was made as interesting as possible and it took the participants approximately 20 minutes to complete it. Thus, the participants were not bored and did not consider this to be a waste of time.

1.10.6 Maintenance of anonymity and confidentiality

No name, address, date of birth, telephone number or any element used for the identification of the patient, health professional or the clinic was used or revealed. This was to ensure anonymity and that no one would be able to identify the participant who completed a specific questionnaire. The findings will also be published as a group report. To Burns and Grove (2009:196), a breach in confidentiality can occur if an unauthorised person gains access to the completed questionnaire or if during publication of the findings a participant is identified.

A breach in confidentiality could harm a participant's social life, work life and health. To avoid any possibility of the aforementioned occurring, only the researcher, supervisor and statistician had access to the completed questionnaires. Due to the small sample size and the demarcation of a definite area there was, however, some risk relating to anonymity. This was managed as explained under section **1.10.2 Respect for persons and informed consent** in this chapter.

1.10.7 Communication of research results

Fabrication and the forgery of the findings were avoided and no manipulation of the results was done as the study was merely aimed at establishing the current practices. The findings will be communicated to the district health team and the participating

clinics. Members of the Mother, Child, Women's Health and Nutrition (MCWH&N) team will also be informed on the findings. Finally, the findings will be made available to the provincial MCWH&N team.

1.11 SCOPE OF THE STUDY

The study site comprised of the 16 clinics situated in Sub-district C of the NMBHD. Professional nurses providing primary care to children in Sub-district C clinics and health centres were eligible to participate in the study. This gave a total of 34 nurses as the target population. This limitation was managed by doing a thorough literature control in the results and discussion section (see Chapter 4). An observation of the actual practices of ten of the participants was done, using the observation checklist included in the annexures (see Annexure F). Some clinics have doctors providing child health services, but the study focus was on professional nurses working in the child health section at the time the questionnaires were delivered. This included the professional nurses who might have been allocated to the child health department via the periodic personnel rotation at the time this study was conducted even if they had not been trained in IMCI.

1.12 CHAPTER OUTLINES

CHAPTER 1: ORIENTATION TO THE STUDY

This chapter is primarily about the research proposal. The background to the study, including the source of the problem, is discussed. A brief review of the literature to help with the formulation of the research problems, the objectives and the research questions is discussed. The research design, including the population, the data collection and the analysis are briefly introduced. Finally, the scope of the study is mentioned.

CHAPTER 2: LITERATURE REVIEW

Chapter 2 consolidates the researcher's ideas on the views of experts on the nutritional care provided by nurses. Key points are taken, evaluated and arranged logically into ideas and themes.

CHAPTER 3: RESEARCH DESIGN AND METHODS

Chapter 3 gives a more detailed discussion on the research design, the method used, the data collection and the measurement tools, reliability, validity, and the data analysis.

CHAPTER 4: ANALYSIS, PRESENTATION AND DESCRIPTION OF STUDY FINDINGS

In this chapter the details of the findings are presented and discussed.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The chapter summarises the findings briefly. This is followed by some recommendations. Future research avenues are also recommended.

1.13 SUMMARY

Severe malnutrition in children is an increasing problem in the NMBHD. This study aimed to investigate how nurses in NMBHD manage the nutritional care of children under five years old. The nurses were given a self-administered questionnaire which was borrowed from a similar study done in Botswana. Ten of the participants were also observed for the duration of a consultation by using a checklist to improve the limitation imposed on the study because of the small target population.

Ethical compliance for the study was addressed by seeking permission from the UNISA, the NMBHD and the author of the adapted questionnaire. Every participant was required to give her or his informed consent and was at liberty to withdraw from the study at any time without fear of victimisation.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Grove et al (2013:97) describe the literature review as a summary of what is known about a particular phenomenon. Other authors are more specific and see a review of previous literature as a way of showing the theories and published works of others in a similar context (Ridley 2008:2; Hofstee 2006:91).

Textbooks, scientific journals and theses were used to find both seminal and landmark studies on the nutritional care of patients by nurses. The works of some early nursing philosophers and contemporary research findings, including the views of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) about nutritional care, are discussed in this chapter.

Finally, the nutritional care of children by nurses according to the Integrated Management of Childhood Illnesses (IMCI) and using the Road-to-Health (R-t-H) booklet for documentation, are addressed. Sketches of pertinent growth charts from the R-t-H booklet as well as copies of pages from the IMCI chart booklet (which is the standard guide for holistically managing sick children at the primary level of care) are included for clarity purposes.

2.2 GLOBAL CHILDHOOD MALNUTRITION

In 2011 the United Nations Children's Fund (UNICEF), the WHO and the World Bank (2012:1) estimated that 165 million (26%) of the world's children younger than five years were stunted (defined by the authors as "height-for-age below -2 standard deviations"). This was an improvement as there was a 35% decrease from the 1990 estimate of 253 million. Of the aforementioned 165 million children, 36% lived in Africa and 27% in Asia. The same study revealed that 101 million children less than five years old were underweight for their ages ("weight-for-age below -2 standard deviations" [UNICEF, WHO & World Bank 2011/2012:1]). This equates to 16% of under-five-year-olds globally.

2.3 TRENDS OF CHILDHOOD MALNUTRITION IN THE REPUBLIC OF SOUTH AFRICA

The United Nations' Children's Fund (UNICEF), the WHO and the World Bank (2012:9) consider 20-29% of the under-five-year-olds in South Africa to be stunted and up to 10% underweight for their age. The implications of these percentages for South Africa is troublesome since the country is classified together with Algeria, Morocco, Brazil and China as an upper middle-income country (UNICEF, WHO & World Bank 2012:33); yet, these other four countries have stunting rates of less than 20% .

According to Abrahams and Matthews (2011:42) malnutrition is a disease of poverty that affected 3 million (16%) children in South Africa in 2009, a 12% reduction from the figure of in 2007. De Sherbinin (2011:28) describes malnutrition as a “symptom of food insecurity”. Holder (2009:1158), on the other hand, suggests that starvation can still occur “amidst plenty”. This author estimates that the cost of over-nutrition and malnutrition to the United Kingdom Health System would be £6.3 billion and £13 billion a year respectively by 2015. The World Food Programme (2012:3) attributes malnutrition to inadequate dietary intake and poor health. However, the lack of safe water, poor hygiene, food insecurity, inadequate child healthcare practices, poor maternal education and inappropriate care are additional important factors to be considered when addressing malnutrition (South African Medical Research Council & FAO 2008:6).

Considering the aforementioned facts, malnutrition can be viewed as the manifestation of multiple determinants, starting from the availability or potential resources to the political, economic, social and healthcare environments in which the child is living and growing up. However, having adequate resources does not necessarily translate into good health if the culture does not promote healthy living and lifestyles. The quality of healthcare that includes the nutritional care provided to a child during the first 1 000 days of his or her life is critical to him or her or her (Shepherd 2008:1261). Thus, having access to adequate food but lacking the knowledge about the correct preparation and amounts needed, not taking the proper food safety precautions and considering the hygiene aspects could still put a child at risk of becoming malnourished.

Knowing the causes of malnutrition and discussions on malnutrition in a country cannot be done without considering the socio-economic context. Day and Gray (2010:213) show a rising trend in the underweight prevalence of children less than five years old in

South Africa. The prevalence rate was 9.3% in 1994 and 10.2% in 2005 even though the extreme poverty rate decreased from almost 35% in 1981 to 20% in 2005 (Day & Gray 2010:227) and there was a slight increment in the unemployment rate from 25.2% in 1998 to 25.3% in the second quarter of 2010.

2.4 NUTRITIONAL CARE

In Chapter 1 the nutritional care process was described as consisting of assessment, diagnosis, the implementation of organised interventions, and monitoring the outcomes of such interventions (Escott-Stump 2008:866). The United Nations' Childrens Fund (UNICEF Online [s.a.]) promotes a similar approach known as the Triple A cycle that comprises three steps. All three steps begin with the letter A as shown in the diagram in Fig 2.1.

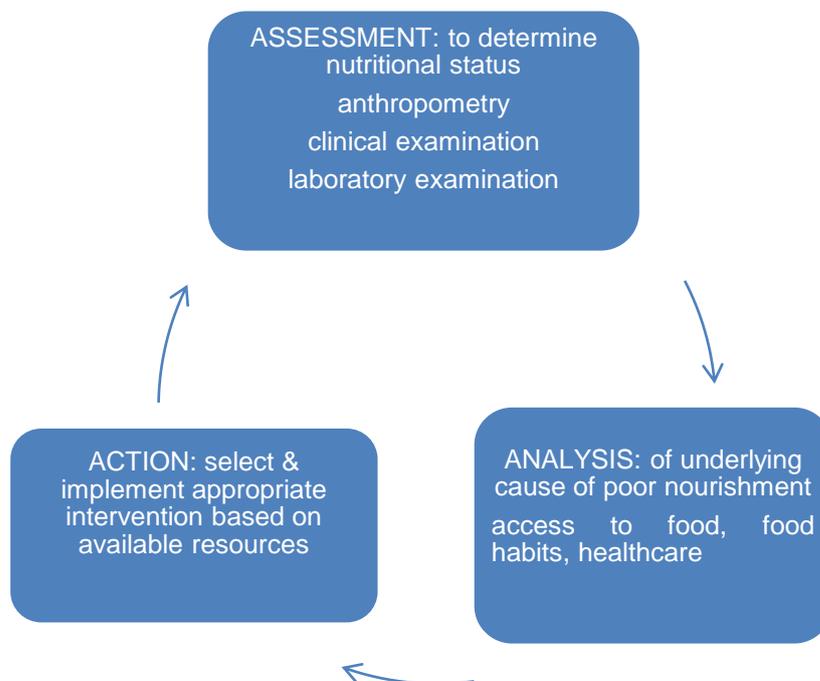


Fig 2.1 The Triple A Cycle (www.unicef.org/sowc_98/fig8.html)

The nutritional care and Triple A processes are similar and using any one of them is acceptable. However, the Triple A has almost the same steps as the IMCI case-management process that the nurses in the child healthcare clinics are supposed to use. In Table 2.1 the three different approaches are compared in terms of nutritional care.

TABLE 2.1: COMPARISON OF THE THREE DIFFERENT APPROACHES TO THE NUTRITIONAL CARE OF CHILDREN

	NUTRITIONAL CARE PROCESS	TRIPLE A CYCLE	IMCI APPROACH
Step 1	<p>Assessment: identify risk factors by using evidence-based standards like:</p> <ul style="list-style-type: none"> - dietary history - medical history - anthropometry - clinical examination - laboratory investigations 	<p>Assessment: to determine nutritional status:</p> <ul style="list-style-type: none"> - dietary history - medical history - anthropometry - clinical findings - laboratory investigations 	<p>Assessment:</p> <ul style="list-style-type: none"> - dietary history - medical history - anthropometry - clinical findings - rapid screening tests - observing a feeding if breastfeeding and baby less than 2 months old
Step 2	<p>Diagnosis: identify and classify problem:</p> <ul style="list-style-type: none"> - identify risk factors - classify clinical manifestations 	<p>Analysis: of underlying cause of poor nutrition:</p> <ul style="list-style-type: none"> - food insecurity - poor food culture - poor food hygiene - poor healthcare service 	<p>Classification: select appropriate intervention to treat identified problem</p>
Step 3	<p>Nutrition intervention: organise interventions</p> <ul style="list-style-type: none"> - nutrition education - food supplements - help family with budget planning for better nutrition - micronutrients - refer to other health professionals 	<p>Action: select and implement appropriate interventions based on available resources:</p> <ul style="list-style-type: none"> - nutrition education - enriched food supplements - micronutrients 	<p>Treatment: implementation of chosen intervention is done through counselling and scheduled follow-ups:</p> <ul style="list-style-type: none"> - nutrition education - enriched food supplements - micronutrients - food hygiene and safety

Step 4	Monitoring and evaluation: <ul style="list-style-type: none"> - effectiveness of chosen intervention - use same evidence-based standards as in Step 1 - refine the use of intervention if necessary 		
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(Escott-Stump 2008:866; NDoH 2008b:70 & UNICEF 1998)

2.4.1 Nutritional care of children

According to Steyn and Temple (2008:400) the nutritional requirements of a child for adequate growth and development are significantly high due to their accelerated growth. Contracting any one of the childhood illnesses such as pneumonia and measles increases this already high requirement further; thus putting the child further at risk of becoming malnourished. The author suggests that nutrition plays a critical role during the management of childhood illnesses and therefore advises that all children presenting at the primary level clinics should have their nutritional status assessed as recommended by the Integrated Management of Childhood Illnesses (IMCI) strategy of the South African National Department of Health (NDoH 2008a:42).

In the Nelson Mandela Bay Health District (NMBHD) the IMCI strategy is provided at primary level clinics by professional nurses using the clinical or case management component.

2.4.2 Nutritional care according to the IMCI case management process

According to the IMCI clinical case management, the health professional must check for feeding problems and the growth of all children presenting at first level health facilities. If any such problems are present the health professional must find a solution for it (NDoH 2008b:70). This is done by observing, asking questions, and examining (anthropometry and physical examination) the child. After the assessment the problem should be classified and an appropriate intervention identified. The implementation of the chosen intervention is done through counselling and scheduled follow-up visits.

The frequency of the follow-ups is laid down according to the problems identified. Comprehensive documentation is mandatory for the continuity of care as is the case in all nursing procedures. To improve compliance, the IMCI strategy makes use of algorithms. Wøien and Bjørk (2006:172) also observed that the use of nutritional support algorithms improved the nutritional care by health professionals in the ICU setting. Figure 2.2 is one of the nutritional care algorithms used in IMCI (NDoH, WHO & UNICEF 2011:35).

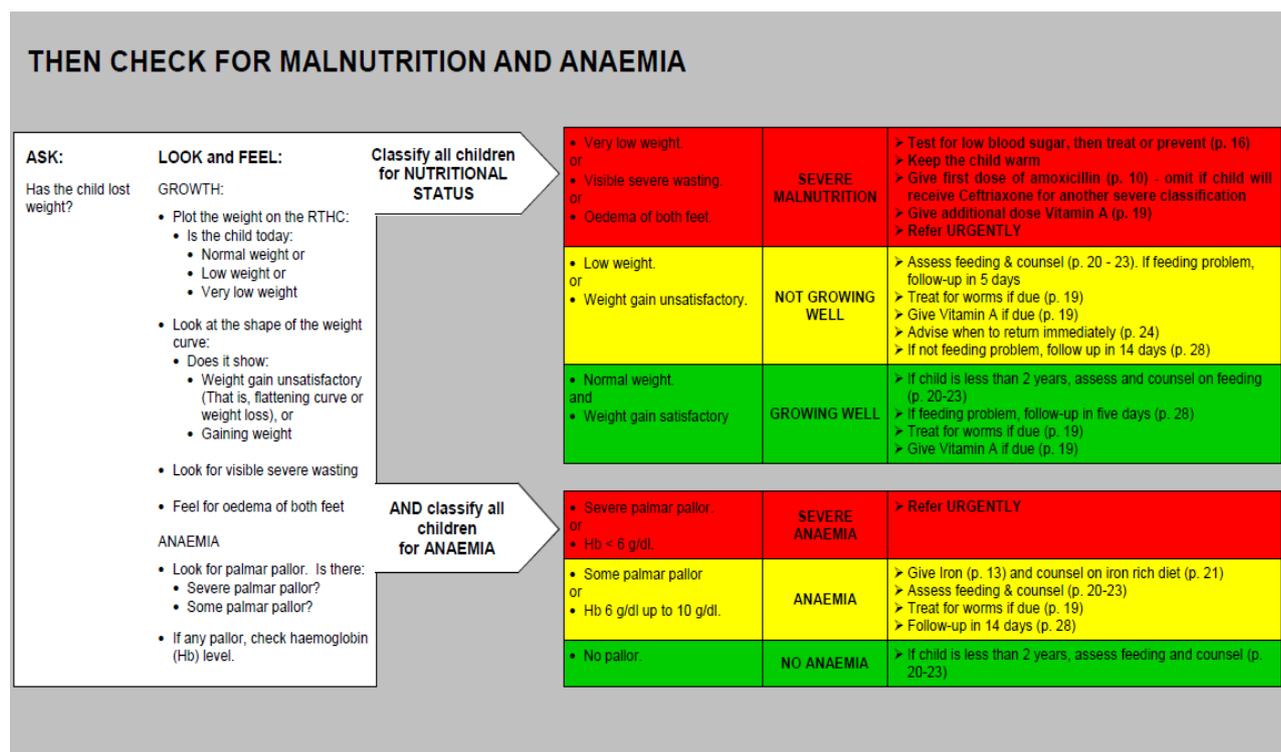


Fig 2.2 An algorithm used in IMCI case management to identify and treat malnutrition (IMCI chart/booklet [NDoH, WHO & UNICEF 2011:7])

A critical examination of the nutritional care process, Triple A cycle and the IMCI yielded significant similarities as evidenced in Table 2.1. Consequently, the results obtained from implementing any chosen one of the three processes should be similar – provided the chosen approach is followed diligently.

2.4.3 The nurse and nutritional care

Alligood and Tommey (2010:56) write about nursing theorists who believe that the nutritional care of the patient is an integral part of nursing. These theorists (or philosophers) include, but are not limited, to Nightingale, Henderson, Abdellah, Orem, Roper, Logan and Tierney. Virginia Hendersen placed 'nutrition' as number two on her 14-item list of basic needs on which nursing care is founded and Abdellah had it as number six on the typology of patient problems. According to the same authors, others, like Neuman and Roy, do not see nutrition in isolation but view it as part of the physiological factors that improve the body's resistance to disease; hence, nutrition must be supported through primary, secondary and tertiary prevention measures.

Whether nutrition is regarded as a fundamental human need, part of the typology of patients' problems or a physiological need, nursing theorists regard nutritional care as an intrinsic aspect of assisting the individual or groups in the pursuit of health. A literature search, however, showed that this is not always feasible because of high nurse workloads, the lack of nutrition knowledge or the inability to prioritise nutrition as important in the face of other nursing duties (Bjerrum, Tewes & Preben 2012:85; Fletcher & Carey 2011:619; Ros, McNeill & Bennett 2009:2406).

According to Grieve and Finnie (2002:434), in 1997 the then United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC) made professional nurses responsible for the nutritional care of those patients under their care. To the authors, the consistent use of the nursing process and the comprehensive nutritional assessment tools should ensure that every patient gets the needed nutritional care. The stance of Ros et al (2009:2406) is that the nurse's role in the nutritional care of patients is critical in preventing malnutrition. However, they recommend that a set of protocols should be developed to assist nurses with the nutritional support.

Scott (2002:928), on the other hand, observes that nurses had been providing nutritional care to patients until recently but, despite the fact that it is critical in patient care, this changed over time due to a lack of nutritional knowledge and not having nutrition as a priority in nursing care. Other authors such as Coxall, Dawes, Forsyth and Lloyd (2008:321) and Suominen et al (2009:292) found that nurses consider nutritional assessment a priority and they believe it is necessary for nursing education to emphasise the critical role that nutrition plays in the health of individuals. Christensson,

Unosson, Bachrach, Lindström and Ek (2003:229) are, however, not in complete agreement. To them, education and a nutritional care plan does not automatically lead to a positive attitude towards nutritional care by nurses. They posit that the attitudes of the nurses are influenced more by social and group norms. Additionally, as pointed out by Fletcher and Carey (2011:619), staff shortages are acknowledged as a limiting factor to the prioritisation of nutritional care when patient care is rendered.

The provision of nutritional care follows a set process. As discussed earlier, the recommended standard of care for children under five years in South African primary healthcare facilities is the IMCI approach with the R-t-H booklet as the preferred document for keeping records.

2.5 MANAGEMENT OF NUTRITIONAL CARE

Nutritional care should be an integral part of child healthcare to promote healthy growth and development of the child (Kibel, et al 2012:114) This should include assessment, analysis or classification of the problem and, finally, acting on the classification (thus providing the necessary intervention). Monitoring should be integrated into the whole process.

2.5.1 Nutritional assessment

As depicted in Table 2.1, assessment is the first step in the nutritional care process in the IMCI and the Triple A cycle. An assessment is performed to gain enough information to identify nutritional problems in individuals (Mahan, Escott-Stump & Raymond 2012:136). Nutritional assessment is made up of anthropometry (body measurements), clinical findings and laboratory investigations.

2.5.1.1 Anthropometry

Different body measurements, some of which are plotted graphically, are taken to determine the growth of a child (Holden & MacDonald 2000:162). Physical characteristics like weight-for-height, weight-for-age, height-for-age, head circumference and mid-upper-arm circumference (taken to check muscle bulk or wasting) are measured to assess the growth of children less than five years old. Some authors see

anthropometry as easy to do; as an inexpensive and non-invasive way of assessing the nutritional status of children because it gives precise measurements if done consistently (Holden & MacDonald 2000:162). The South African NDoH as well as the WHO seems to agree with these views because the use of the R-t-H booklet requires that anthropometric measurements be taken regularly to assess a child's growth.

All new-borns are supplied with an R-t-H booklet (previously known as a Road-to-Health chart) at the first contact with a health service (NDoH 2003:18). The aforementioned measurements are supposed to be taken regularly, plotted on graphs, interpreted and feedback then be given to the caregiver. The current standard is for children under two years to be weighed naked every month and their recumbent length taken every six months. Older children can be weighed in very light clothes every two to three months and upright height measurements can be taken every six months.

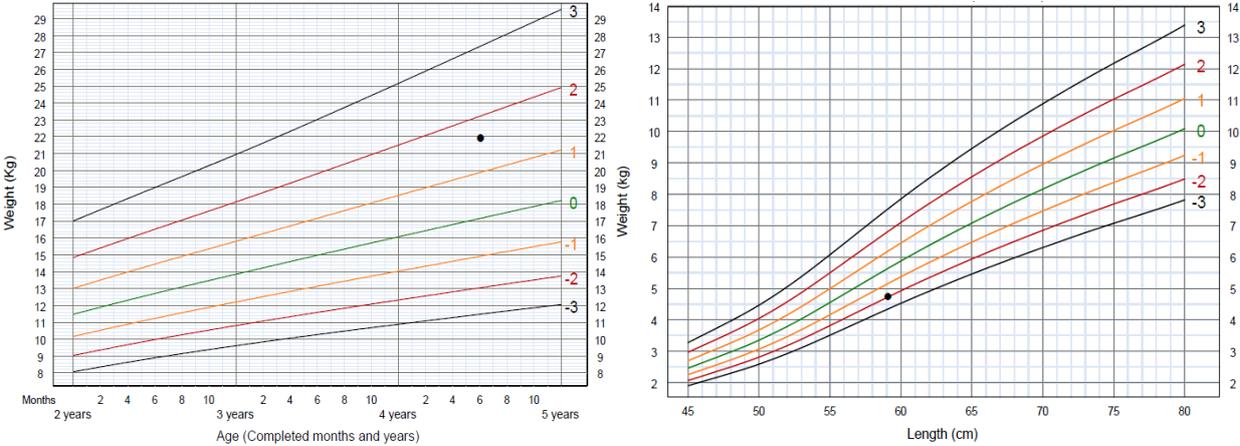
Children aged six to 59 months should have their mid-upper arm circumference determined every quarter. The head circumference is taken routinely at 14 weeks and 12 months. All the measurements taken are compared with standard norms or normal-distribution reference curves. The reference curves are represented by coloured lines. Green for the median, amber for -1 and +1, standard deviations (SD) from the median, red for -2SD and +2SD, and -3SD and +3SD are drawn in black ink. The desired measurements are between -2SD and -2SD from the median. In the R-t-H booklet graphs, z-scores are used for the SD reference curves or lines. A weight-for-age plotting below -3 z-score denotes a severely malnourished child while a z-score of one above +3 is considered to be obese. If the reading falls within -2 and -3 the child is underweight; a reading between +2 and +3 indicates an overweight child. Table 2.2 shows the interpretation in the R-t-H booklet of some of the anthropometric indicators needed in the growth monitoring of children.

TABLE 2.2: INTERPRETATION OF INDICATORS USED IN THE R-t-H BOOKLET

GROWTH INDICATORS			
z-score	Length/Height for age	Weight for age	Weight for length/height
Above 3	(Child very tall - rarely endocrine disorder)	Maybe growth problem. Assess from other indicators	Obese
Above 2			Overweight
Above 1			Possible risk of overweight
0 (median)			
Below -1			
Below -2	Stunted	Underweight	Wasted
Below -3	Stunted	Severely underweight	Severely wasted

(NDoH 2010:21)

In Figure 2.3 sketches of graphs for the weight-for-age chart, length/height-for-age chart, and the weight for height chart as they appear in the R-t-H booklet of the NDoH (NDoH 2010:33) are given.



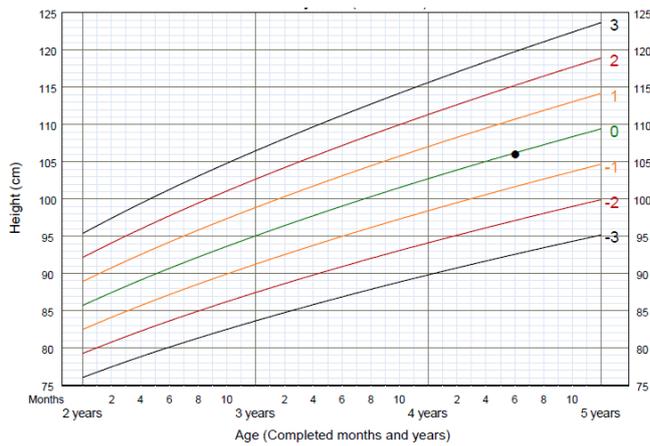


Figure 2.3 Sketches of the three graphs in the R-t-H booklet for monitoring a child's growth (NDoH 2010:33)

There are different charts for boys and girls because there are differences in their rate of growth. The booklets are also in different colours: green booklets for boys and pink booklets for girls. This will prevent a child being given, and therefore measured, by a chart meant for a child of the opposite gender. Figure 2.4 depicts a graph showing the different growth rates for girls and boys.

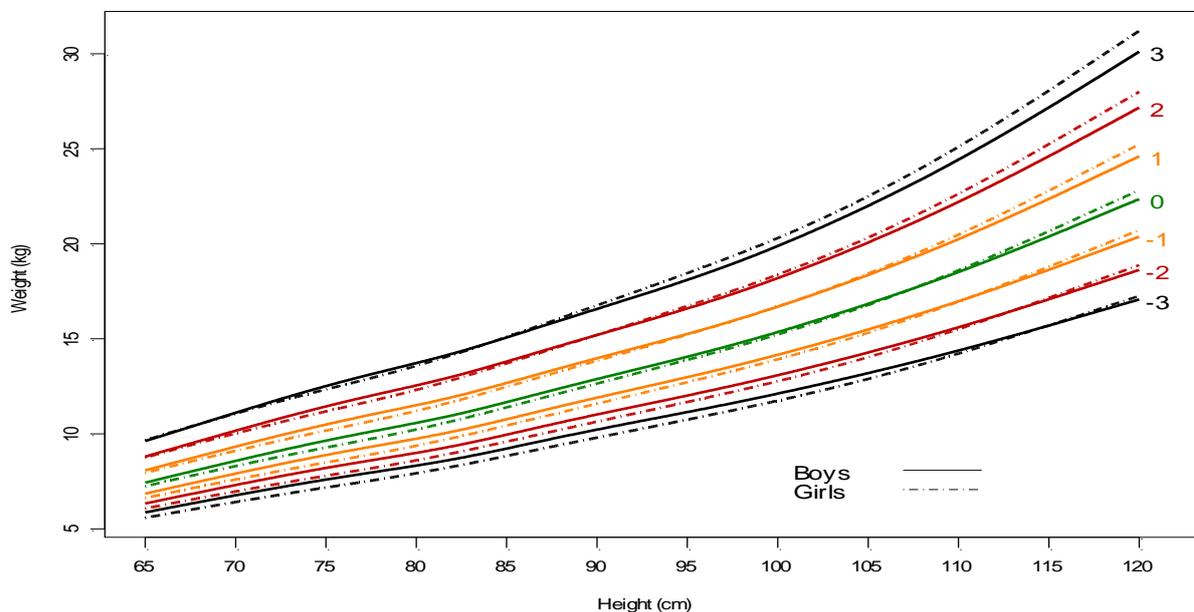


Figure 2.4 A graph showing the different growth rates for girls and boys (NDoH PowerPoint presentations 2010)

Green and Watson's (2004:70) recommendation that no single nutritional assessment method should be used in isolation is apparently endorsed by UNICEF and the NDoH as anthropometry and clinical assessment are used in the IMCI case management algorithms.

2.5.1.2 Clinical examination or assessment

A child needs to be examined to determine the physical manifestations of poor nutrition. (Escott-Stump 2008:874; Mahan et al 2013:133; Coovadia & Wittenberg 2006:197). Changes in skin as well as skin appendages (hair and nails), the colour of the palms, the eyes and the tongue are checked as deficiencies in some micronutrients manifest through these symptoms. A lack of subcutaneous tissue and fat can be confirmed by checking the skinfold thickness. Oedema can be a manifestation of malnutrition or an electrolyte imbalance. Finally, enlargement of the liver and thyroid gland denotes fatty infiltration of the liver and an iodine deficiency respectively. In the IMCI case management, however, the liver and thyroid are not routinely palpated.

2.5.1.3 Dietary history

This was to determine the amounts, the quality and the frequency of foods (Coovadia & Wittenberg 2006:197; Escott-Stump 2008:875). The child's dietary history, medical history, anthropometry and physical examination are done to determine whether she or he is at risk of malnutrition and to implement appropriate interventions to prevent morbidity and mortality.

2.5.2 Classification of nutritional status

Analysing the findings of the nutritional assessment should assist the nurse to arrive at a diagnosis or decide on how to classify the presenting problems (NDoH 2011:7). Following the IMCI algorithm for checking malnutrition and anaemia (Fig 2.2), the recommended intervention, action or treatment can then be implemented.

2.5.3 Nutritional interventions

Nutritional interventions can be promotive, preventative and curative. Schoeman, Hendricks, Hattingh, Benade, Laubscher and Dhansay (2006:2007) used weight with z-scores less than -2SD below the median and babies whose birth weight was less than 2500g to determine children at risk of becoming malnourished. Inadequate weight gain or not gaining weight from one month to the next are also considered malnutrition risk factors. The interventions recommended by the NDoH (2003:13) are:

- nutrition education and counselling
- protect, support and promote breastfeeding
- encourage appropriate complementary feeding of young children
- age-specific vitamin A supplementation every six months for prophylaxis
- age-specific vitamin A supplementation for treating vitamin A deficiency
- provision of multivitamin and mineral supplements for severely malnourished children
- provision of energy-dense and micronutrient-enriched food supplements.

Bhutta, Ahmed, Black, Cousens, Dewey, Giugliani, Haider, Kirkwood, Morris, Sachdev and Shekar (2008:41) uphold these interventions as being effective, easily available and, if used wisely, it can reduce the disability-adjusted life years or premature deaths. Nutrition education, counselling on optimal breastfeeding and vitamin and zinc supplementation (where necessary) are measures considered by Bhutta et al (2008:44) as having the greatest potential to improve child survival. Figure 2.4 shows a page taken from the IMCI chart booklet used at health facilities for nutrition counselling. It provides a comprehensive guide for health professionals to use during nutrition counselling. The R-t-H booklet contains a similar guide to be used by the caregiver for reference when away from the health facility.

FEEDING RECOMMENDATIONS

(HIV positive mothers who have chosen not to breastfeed should follow recommendations on p. 22, unless the child has HIV INFECTION or SUSPECTED SYMPTOMATIC HIV INFECTION)

<p>Up to 6 months</p>  <ul style="list-style-type: none"> • Breastfeed as often as the child wants, day and night. • Feed at least 8 times in 24 hours. • Do not give other foods or fluids, not even water. 	<p>6 months up to 12 months</p>  <ul style="list-style-type: none"> • Continue to breastfeed as often as the child wants. • If the baby is not breastfed, give formula or 3 cups of full cream cow's milk (from 9 months of age). If the baby gets no milk, give 5 nutritionally adequate complementary feeds per day. • Start giving 2-3 teaspoons of soft porridge, and begin to introduce vegetables and fruit. • Gradually increase the amount and frequency of feeds. Children between 6-8 months should have two meals a day, by 12 months this should have increased to 5 meals per day. • Give a variety of locally available food. Examples include egg (yolk), beans, dhal, meat, fish, chicken / chicken livers, mopani worms. • For children who are not growing well, mix margarine, fat, or oil with porridge. • Fruit juices, tea and sugary drinks should be avoided before 9 months of age. 	<p>12 months up to 2 years</p>  <ul style="list-style-type: none"> • Continue to breastfeed as often as the child wants. • If no longer breastfeeding, give 2-3 cups of full cream milk every day. • Give at least 5 adequate nutritious family meals per day. • Give locally available protein at least once a day. Examples include egg, beans, dhal, meat, fish, chicken / chicken livers, mopani worms. • Give fresh fruit or vegetables twice every day. • Give foods rich in iron, and vitamins A and C (see examples below). • Feed actively from the child's own bowl. 	<p>Above 2 years</p>  <ul style="list-style-type: none"> ➢ Give the child his/her own serving of family foods 3 times a day. ➢ In addition, give 2 nutritious snacks such as bread with peanut butter, full cream milk or fresh fruit between meals. ➢ Continue active feeding. ➢ Ensure that the child receives foods rich in iron and Vitamins A and C.
<p>Feeding Recommendations for PERSISTENT DIARRHOEA</p> <ul style="list-style-type: none"> ➢ If still breastfeeding, give more frequent, longer breastfeeds, day and night. ➢ If giving formula, and child is older than one year, replace milk with fermented milk products such as amasi or yoghurt. Otherwise continue with formula. ➢ For other foods, follow feeding recommendations for the child's age, but give small, frequent meals (at least 8 times a day). ➢ Avoid very sweet foods or drinks. 		<p>IRON RICH FOODS</p> <ul style="list-style-type: none"> ➢ Meat (especially kidney, spleen, chicken livers), dark green leafy vegetables, legumes (dried beans, peas and lentils). ➢ Iron is absorbed best in the presence of vitamin C. ➢ Tea, coffee and whole grain cereal interfere with iron absorption. 	
<p>Encourage feeding during illness Recommend that the child be given an extra meal a day for a week once better.</p>		<p>VITAMIN A RICH FOODS</p> <ul style="list-style-type: none"> ➢ Vegetable oil, liver, mango, pawpaw, yellow sweet potato, Full Cream Milk, dark green leafy vegetables e.g. spinach / imfino / morogo. 	
		<p>VITAMIN C RICH FOODS</p> <ul style="list-style-type: none"> ➢ Citrus fruits (oranges, naartjies), melons, tomatoes. 	

Figure 2.4 Page from the IMCI chart booklet for infant and young child nutrition counselling (NDoH 2011:21)

2.5.4 Monitoring and evaluating interventions

According to the World Bank (www.worldbank.org. Online. [s.a.]), monitoring is done by continuously and systematically collecting data on pre-selected indicators used by managers and stakeholders to track the progress and the accomplishments of objectives and the utilisation of funds. Evaluation, on the other hand, is defined as a “process of determining the worth or significance of a development activity, policy or programme. An evaluation should enable the incorporation of lessons learnt into the decision-making process of partners and donors.” This implies that the indicators used to determine the presence of a nutritional problem must be monitored (Mahan et al

2012:258). For example, if low weight-for-age and mid-upper arm circumference (MUAC) are identified as problems during anthropometry, these would be the indicators to be monitored during subsequent planned visits. If an inappropriate complementary food was the initial problem, then this is what must be monitored.

The effective monitoring of nutrition interventions needs proper documentation in the patient's records and the relevant information has to be communicated to the caregivers and members of the health team (Mowe, Bosaeus, Rasmussen, Kondrup, Unosson & Irtun 2006:525). Proper documentation ensures continuity of care and is an integral part of the nursing process. Nurses in all sectors use the nursing process or adapt it to suit specific work environments (Stanhope & Lancaster 2012:208).

2.5.5 Nutritional care of children at primary level of care

The current recommendation for health professionals in South Africa is that those at the primary level of care use the IMCI case management protocol. Saloojee (2007:172) confirms that it is indeed being implemented in all 52 districts in South Africa. The IMCI clinical case management uses a holistic approach to the management of childhood illnesses that requires parents' or caregivers' involvement in caring for and planning of the needed interventions regarding a child's health. If properly implemented, this programme consolidates the care of the (sick) child, the promotion of health, and the prevention of disease with nutritional care playing a major role in all three.

2.6 CONCLUSION

Professional nurses are required to use their assessment of the child to arrive at a nursing diagnosis, then plan an intervention and implement it. The action taken is continually monitored and evaluated to allow for any changes that might be needed. The nutritional care process, the Triple A cycle, and the IMCI case management strategy follow similar lines.

The IMCI strategy is recommended in South Africa for the management of sick children under five years old. The nutritional care of the child is very prominent in this strategy. The assessment, classification and treatment of any nutritional problem are done and based on the R-t-H booklet. The R-t-H booklet is also an educational reference book for parents and caregivers. The use of the R-t-H booklet ensures continuity of care for the

child by other health professionals and the family. Kibel et al., (2012:108) perceive the R-t-H booklet “as a powerful communication tool between health workers families with the potential to promote health and prevent disease if used accurately.

CHAPTER 3

RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

Rebar, Gersch, MacNee and McCabe (2011:29) describe the design and method section of a research study as the part that focuses on the procedures used for collecting the information. This chapter centres on the design and methods used in the current study. The approach, population, sample, sampling and the data collection methods used are described in detail.

The aim of this study was to determine how effectively nurses manage the nutritional care of children under the age of five years in the Nelson Mandela Bay Health District (NMBHD). To achieve this aim, the objectives of the study were to explore and describe how the nutritional care of children under five years of age is managed by nurses in the NMBHD.

3.2 RESEARCH DESIGN

Polit and Beck (2010:74) describe the research design as the blueprint to be followed in order to obtain answers to the research questions while Creswell (2014:3) views the research design as “procedures of enquiry”.

The researcher chose the research design based on positivism for this study as it allows for the numerical measurement and analysis of the variables (Clough & Nutbrown 2012:21; Polit & Beck 2010:68). Brink et al., (2012:11) describes the quantitative approach chosen as coming from a philosophical paradigm rooted in positivism. The positivist believes truth can be replicated and findings can be generalised across contexts because there is only one reality. The aim of enquiry is to describe, explain, predict and control while the researcher remains neutral (Walliman 2011:73).

Grove et al. (2013:24) are of the opinion that contemporary researchers in nursing use the post-positivist philosophy. Post-positivism evolved from positivism. Post-positivists believe that the truth may be imperfect and that a researcher may not be completely

objective. Thus in this research the researcher chose the sub-district with the highest prevalence of childhood malnutrition in the district.

Terre Blanche, Durrheim and Painter (2006:132) identify the following two primary strengths of quantitative research: the findings can be generalised and the data are objective. On the other hand, the liability is that the researcher has to be completely objective and put aside his or her own values, beliefs and perceptions (Burns & Grove 2009:22). The researcher tried to ensure this using a structured observation and structured questionnaire (Brink et al., 2012:150).

A quantitative approach using an explorative descriptive design was used in this study. Exploratory studies are useful when new perceptions are needed to explain a phenomenon (Saunders et al. 2009:139). Exploratory studies are conducted by doing a literature search or by interviewing experts or conducting focus group interviews. In this the researcher used literature search due to cost and time restraints. The main advantage of exploring is the flexibility to start from a broad perspective and gradually narrow the focus. This makes it an initial step in a series of studies (de Vos, Strydom, Fouché & Delport 2011:94). Exploratory studies are usually done as a precursor for larger studies as findings cannot be generalised.

Some authors suggest that descriptive designs may be observational as no manipulation is done by the researcher (Grove et al 2013:26; Rebar et al 2011:189). Descriptive studies help in the planning and development of the appropriate services and resource allocation based on the set priorities (Joubert & Ehrlich 2007:78). Descriptive studies are also used to gather information on phenomena in a particular field of study, as they happen, and without attempting to establish causality (Burns & Grove 2009:237). No manipulations were done during the use of the observation checklist.

3.3 RESEARCH METHOD

The research method details the process used to collect and analyse the data (Creswell 2014:16; Saunders et al 2009:43). The sampling, population, research site and data collection tools are discussed in this section.

3.3.1 Sampling

Sampling is the process of choosing participants who meet a set criterion from the population under study (Burns & Grove 2009:42). Sampling is employed if studying the entire population is not practical or when time and money constraints make it impossible to study all participants in the population (Saunders et al 2009:212). Sampling may not be needed if data can be collected from the whole population because of its small size.

For the current study sampling was not done. All 34 professional nurses who provided primary level healthcare to children less than five years old in the 16 targeted clinics in the specific district participated.

3.3.1.1 Population

Rebar et al (2011:106) note the study population comprises all the individuals with the characteristics of interest under study. The target population, on the other hand, is seen by Polit and Beck (2010:569) as “the entire population in which the researcher is interested and to which he or she would like to generalise the study results”. Researchers may not have access to all the cases in the target population and they may only select cases from the population that is reasonably accessible (Grove et al 2013:351).

The population for this study consisted of professional nurses in the Nelson Mandela Bay Health Sub-district C. The target population comprised of professional nurses providing child health services in all 16 Sub-district C clinics. The accessible population included all 34 professional nurses providing child healthcare at the 16 clinics in Sub-district C.

3.3.1.2 Sample and sampling procedure

Polit and Beck (2010:567) describe a sample as a subset of a population chosen to participate in a study. Selecting the appropriate sample that would be representative of the population is known as ‘sampling’. For the purpose of the current study the entire target population was included as the sample; hence, no subset was needed. The total target population consisted of 34 professional nurses all of whom were accessible.

Purposive sampling, a non-probability method, was used in order to include all 34 professional nurses in the target population (Brink et al., 2012:141; Rebar et al 2011:112). Purposive sampling was used to allow the researcher to include only professional nurses working in the child health departments in the clinics (Speziale & Carpenter 2007:24; Burns & Grove 2009:716).

The allocation list prepared for the day (changes in staff on duty and workload) at each facility was used and all nurses providing care to children on the day the researcher visited the clinic were included. The researcher discovered in four out of the 16 clinics no specific professional nurse was dedicated to child health. This was due to the small clinic structures and limited human resources. Nurses in these clinics see whoever is next in the queue.

Table 1.2 below is a list of all the accessible people in the population that was made up of 34 professional nurses.

TABLE 1.2 SAMPLE SIZE FOR THE STUDY POPULATION	
CLINIC	NUMBER OF NURSES PROVIDING CHILD HEALTHCARE
1. Algoa Park	2
2. Booyens Park	1
3. Central Rose Street	4
4. Central CHC	2
5. Chatty	4
6. Gelvandale	2
7. Govan Mbeki	2
8. Hellenvale	1
9. Korsten	2
10. Kwadwesi	1
11. Linton Grange	1
12. Missionvale	2
13. New Brighton CHC	4
14. Walmer 14 th Avenue	2
15. Walmer Gqeberra	2
16. West End	2

Accessible sites: All 16 clinics in the Sub-district were included.

3.3.2 Data collection

Data were collected using a self-administered questionnaire and an observational checklist. The questionnaire was formulated in English, which is the language understood by all professional nurses in Sub-district C (de Vos et al 2011:192).

3.3.2.1 Self-administered questionnaire

According to Brink et al. (2012:153), using a self-administered questionnaire is a quick and less expensive way of collecting data from literate participants. There is a greater sense of anonymity and therefore the participants are more inclined to be candid. The standardisation of the questionnaire means that the mood of the interviewer does not

affect the format, making it easy to test for reliability and validity. There are, however, drawbacks when using questionnaires: the respondents may provide socially acceptable responses, not answer all the questions, and the researcher has little control over the quality of the answers (Joubert & Ehrlich 2007:108; Brink et al., 2012:153).

The self-administered questionnaire used in this study was an adaptation of a questionnaire used previously in Botswana (Nnyepi 2004:153) for participants with literacy levels similar to that of the participants in the current study. The researcher requested permission from the copyright owner to use the self-administered questionnaire for data collection via email; permission was granted via email (nnyepims@mopipi.ub.bw).

The study supervisor and statistician were both consulted extensively during the design of the questionnaire (see Annexure E for the questionnaire). The questionnaire was then pre-tested on 10 nurses made up of clinic supervisors, Integrated Management of Childhood Illnesses (IMCI) trainers and Mother-and-Child programme managers; none of whom was part of the study population. The feedback from this testing was used to refine the questions in order to improve on their clarity and the completeness of the given responses. This also helped in the estimation of the time needed to complete the questionnaire (Grove et al 2013:428).

The researcher personally delivered the questionnaires with a corresponding number of self-addressed envelopes by hand to all the eligible professional nurses in the participating facilities. She then collected the completed questionnaires over a following period of nine days. The original plan was for the completed questionnaires to be collected the next day; however, six of the participants were not able to complete the questionnaires according to the plan because of high workloads and absence from work.

The questionnaire was divided into five sections as shown below.

- Section A: Demographic information

- Section B: Knowledge of nutritional care management
- Section C: Assessment of nutritional status
- Section D: Nutritional interventions
- Section E: Monitoring nutritional interventions

3.3.2.3 The observational checklist

To Grove et al (2013:422) checklists are used to verify the occurrence of predetermined behaviours. According to these authors, each category of behaviour to be observed must be explained and the researchers using the checklists need to have an in-depth knowledge of the phenomena being studied.

The use of a structured observation tool in the form of a checklist was added the self-administered questionnaire to improve the reliability of the information collected, especially as the study population was small (Polit & Beck 2010:356). A careful selection of the behaviours being studied was listed on the left, with space on the right of the tick with the number of occurrences of that particular behaviour (see Annexure F for checklist).

A 10-point checklist based on the questionnaire and the Primary Health Care Supervision Manual (NDoH 2009:5,19) was used for this study. While using the checklist, the researcher observed 10 of the participants for one hour each at work. Tally marks were used every time a particular behaviour on the checklist occurred, and this scored a mark. Any other behaviour not included in the checklist did not elicit a tally mark. The nurses knew they were being observed and were uncomfortable during the initial three to five minutes. When the researcher made no effort to neither interrupt nor distract the nurses, they became comfortable and continued to do their work.

3.3.2.4 Ethical considerations related to the data collection

Permission to collect the data from the Nelson Mandela Health District was first given by the District Manager (copy of approval letter is added as Annexure C) and confirmed by the manager of Sub-district C who sent messages to all three clinic supervisors and the 16 facility managers informing them of the study. At each facility, the researcher consulted the facility manager, did the observation – using the checklist – before leaving

the questionnaire with the participant to be collected the next day. (As noted earlier, six completed questionnaires could not be collected on the following day due to various reasons; however, after nine days the researcher had collected all completed questionnaires).

To ensure informed consent, the researcher explained the reason for the study to each participant. She answered all questions pertaining to the study from all participants before they were given the consent forms (that had been approved by the Department Health Studies Ethics Committee of the University of South Africa) to sign.

Participant bias was minimised by ensuring the anonymity of the respondents and by leaving the questionnaire for the respondents to complete at their own pace (Saunders et al 2009:156). The participants were assured that their anonymity was guaranteed in that they were not requested to divulge any information such as surnames, names or any other form of identification on the questionnaires. Also, the data collected would remain confidential and no information they shared could be used to trace them or link them to the questionnaires. The signed consent form was collected before the questionnaire was handed to the participant. The completed questionnaires were coded, analysed, filed and stored in a locked cupboard in the researcher's study at home before being entered into the computer program.

3.4 DATA ANALYSIS

Rebar et al (2011:27) describes data analysis as the consolidation of information in order to present a clear picture but without disclosing the implications.

In this study the data analysis started at the designing stage of the questionnaire. The statistician from the Nelson Mandela Metropolitan University Statistics Department had to approve via email that the questions were structured to provide data that could be analysed statistically (Annexure D). Most of the questions were coded for easy data capturing but the open-ended questions were coded after the data collection (de Vos et al 2011:252). The questionnaires were then scanned onto a disc and kept as a back-up with only the statistician, the researcher and the supervisor having access to them. The disc will be erased after three years, unless the university library decides to store the electronic data collection tools in a repository.

The data collected from the participants were cleaned and analysed with the help of a statistician using STATISTICA VERSION 11. The data were then presented in graphs, tables and figures where appropriate but focusing mainly on the dispersion of the variables.

The responses to the two open-ended questions were coded around central themes and analysed in a similar manner as the rest of the questions. The data from the 10 observational checklists were incorporated into the discussions where appropriate by either confirming that a specific behaviour occurred or disputing it when it does not occur.

3.5 RELIABILITY AND VALIDITY

Saunders et al (2009:156) suggest that for the research findings to be credible, particular attention must be paid to the reliability and validity of the design. Substantial efforts must be made to reduce the risk of getting wrong answers in any study.

3.5.1 Reliability

Reliability in a research study relates to the ability of the measuring instrument to consistently give the same results, irrespective of time, place or of the person administering it. According to Saunders et al (2009:156), four factors can threaten reliability. These four factors as well as how they were overcome in the current study are addressed next.

- i. **Subject or participant error** was overcome by administering the questionnaires at times when the clinics were not extremely busy. In keeping with recommendations by Brink et al. (2012:164), Friday afternoons (when participants may be exhausted by the week's events) and Monday mornings (when clinics are busy) were not used for field work to limit participant error. The questionnaires were left with the participants and they were collected the next day. Six of the participants were only able to present the completed questionnaires after seven to nine days because of high workloads and absences.

- ii. **Participant bias** was overcome with the assistance of the covering letter that reassured the participants that their anonymity would be protected at all times and that the confidentiality of the data would be maintained. The questions were also free from answers that could be used to identify any specific participants.
- iii. **Observer error** was minimised by using a structured questionnaire and the researcher administered them herself.
- iv. **Observer bias** was also reduced by using structured questionnaires. The use of structured questionnaires and structured observation checklists reduce the possibility of the observer only observing behaviour that is in keeping with preconceived ideas.

3.5.2 Validity

Validity refers to the extent to which the measuring tool measures what the researcher wanted it to measure (Saunders et al 2009:157). The four forms of validity, namely content, face, criterion and construct validity described by Brink et al., (2012:165) are mentioned next together with a short discussion of how validity applied to this study.

- i. **Content validity** is concerned with the concepts being researched. The questionnaire used in this study was an adaptation of one that was used in a similar study in Botswana. Unfortunately, the previous researcher did not specify the validity and reliability data used for the questionnaire in the report. The researcher also sought the assistance of a peer in the health clinic field to assist with the construction and validation of the questionnaire.
- ii. **Face validity** is the apparent content validity and not the actual validity. Brink et al., (2012:166) suggests that it should be used to determine “readability and clarity of content”. A clinic supervisor and the statistician read through the questionnaire and agreed that the content was clear.

- iii. **A criterion** is concerned with the relationship between one measure and another. The questionnaire was given to a clinic supervisor and the statistician to check whether it made for easy reading as the data collection tool.
- iv. **Construct validity** relates to the degree to which a theoretical construct is measured. Pretesting of the instrument was a way of measuring the construct validity.

Having a high degree of structure to the observation checklist was intended to reduce observer error. Some check questions were also included in the questionnaire as a measure for the internal consistency (de Vos et al 2011:192: Brink et al., 2012:157).

3.6 SUMMARY

In this chapter an overview of the research methodology used was given. The procedures and the processes employed before and during the field work were emphasised.

In the next chapter the analysis made from the field work data is presented.

CHAPTER 4

ANALYSIS, PRESENTATION AND DESCRIPTION OF STUDY FINDINGS

4.1 INTRODUCTION

Chapter 3 provided an in-depth explanation of the research methodology chosen and followed in this study. In this chapter the researcher presents the results and discusses the findings in tandem with the trends identified in the literature. Where possible, the researcher highlights any similarities and anomalies between the results of this study and those highlighted and emphasised by scholars and researchers in the literature.

The findings presented in this chapter were obtained from the primary data gathering tools, namely the questionnaire and the observation checklist. In total, the data were collected from 33 out of the 34 participants (as there was one non-respondent) as well as from the 10 observation checklists. It must be noted that in some instances a respondent might not have answered a question so for the particular question, 'N' became 32 instead of 33 and the software recognised it as a missing system.

4.2 DATA PRESENTATION AND ANALYSIS

The data were statistically analysed and interpreted with the help of a statistician using the STATISTICA VERSION 11. The data were summarised and presented using descriptive statistics. According to Polit and Beck (2010:392), descriptive statistics are used to synthesise and present the data. For this study, frequencies and percentages were used. All the questions, except two, needed the respondents to select a single response from a list. When the participants had to choose more than one option, the percentages added up to more than 100%. The percentages were also rounded up to the nearest whole number when the only one answer was needed. The categorical responses were analysed using a categorical system.

4.3. BIOGRAPHICAL DATA OF RESPONDENTS

Section A of the questionnaire required the respondents to provide information on their age, gender, highest educational qualification, years of practice as a professional nurse, and current job title. They were also asked to give information about the length of time spent at the child health department; whether they were full-time employees of the Nelson Mandela Bay Health District (NMBHD) or agency nurses. In this section the respondents were also asked whether they had administrative duties in addition to their nursing duties and whether nutrition was part of their training at nursing school.

The data are presented as the Demographical Characteristics of Participants table in Annexure G.

4.3.1 Age composition (N = 33)

According to the responses, 21% of the respondents were between 20-29 years old; 30% were between 30-39 years and 24% of them were between 40-49 years of age. Eighteen percent (18%) were aged 50 to 59 years and 6% were older than 60. In total, 51% of the sampled population were within the 20-39 years age group. This is a very different picture to the age distribution of similar professionals on register at the South African Nursing Council (SANC 2014). On 31 December 2013 the SANC had 4% professional nurses aged less than 30 years registered, 19% between 30 and 39 years and 29% falling within the 40 to 49 years range. The researcher can only presume that having both a university and a college training nurses in NMBHD make it more likely that new graduates will be employed as “community service nurses”. The highest percentage was the 50 to 59 years age group which accounted for 31% of all of the SANC’s registered professionals (SANC 2014).

4.3.2 Gender composition (N = 33)

Two (6%) out of the 33 respondents were males and 94% (n=31) were females, a ratio that is not far off from the national ratio. The SANC has 10 817 male professional nurses and 118 198 female professional nurses on its register (SANC 2014). In effect, 8.38% of professional nurses in South Africa are males.

4.3.3 Respondents' highest level of education (N = 33)

All of the respondents in this study were professional nurses. The qualification of nurses is predetermined by their professional affiliation. The SANC makes it mandatory for professional nurses to be registered in order to practise as a nurse in South Africa. To be registered as a professional nurse, the minimum qualification required is a diploma. The expectation is thus that all practising professional nurses in South Africa are suitably qualified.

A total of 70% of the nurses in this study had a diploma in nursing, 18% had completed a nursing degree and only one person (3%) had a postgraduate qualification. This confirms Lutwama's (2011:156) finding that nurses with postgraduate degrees are rare at clinical level.

4.3.4 Number of years practising as a professional nurse (N = 33)

Thirty-six percent of the nurses had less than five years' professional experience. This means that the majority (n=21 [64%]) had more than five years' experience. This was not surprising as 79% of the respondents were older than 29 years.

The SANC's minimum requirement for admission into a nursing college is a senior certificate. The professional nurse must have completed twelve years of schooling (Grades 1 to 12) before undertaking four-year professional nursing training at a tertiary institution. Gede and Lawanson (2011:563) found that employees that are experienced due to long years of service are more likely to perform better at their job if they practice what had been learnt.

4.3.5 Current job title (N = 33)

A job title is synonymous with the length of service (Public Service & Administration [PSA] 2007:4). Nurses just out of college or university must do a year's community service to be registered as a professional nurse. Professional Nurse Grade 1 is entry level into the public service after the community service year.

Seventy-eight (78%) of the respondents was Professional Nurse Grades 1 and 2. Professional Nurses Grade 2, according to the PSA (2007:16) must have "a minimum of

10 years appropriate or recognisable experience in nursing after registration as Professional Nurse with the SANC in General Nursing”. In addition to clinical nursing duties Grade 3 nurses (“minimum of 20 years appropriate or recognisable experience in nursing after registration as Professional Nurse with the SANC in General Nursing” [PSA 2007:49) and above are more likely to have other nursing administrative responsibilities as well.

4.3.6 Respondents who have worked for more than a month in child healthcare (N = 33)

When asked if they had worked in the child health department for more than a month, 31 out of the 33 respondents answered ‘Yes’. Only 2 had been there for less than a month. Sub-district C has a training section in charge of skills development. Ideally, new personnel are given an orientation to unfamiliar sections within a few months by the facility manager, the clinic supervisor, or the programme manager. Getting to know the guidelines, policies and standard operating procedure in the child health department may take more than a month. It is also unlikely that the nurses would have been trained in the management of the nutritional care of children if it was not part of the training curriculum.

4.3.7 Agency nurses (temporary nurses) (N = 32)

Agency nurses are used when staff shortage occurs in a healthcare facility. Agencies nurses are usually not considered as departmental employees and are therefore not sent for training, even if such training would improve the care given to the patients. Sending agency nurses on courses is usually not a priority. An agency nurse or part-time nurse may be moonlighting from a primary job in a totally different setting and she or he may therefore not have the necessary nutritional knowledge needed for managing children less than five years old. Also, Bhengu (2001:51) observes that agency or part-time nurses may be exhausted, resulting in poor work output. Only one out of the 32 respondents who answered this question was an agency nurse; the rest were all permanent employees of the NMBHD.

4.3.8 Nutrition as part of training at nursing school (N = 32)

Only 22% of the respondents had no nutritional education during their training to become professional nurses. In effect, 7 out of the 32 had had no pre-service training in

nutrition and therefore could not fully provide nutritional care without any in-service training. Saloojee (2007:174) comments on the fact that health professionals have the weakness of ignoring the nutritional aspect of the Integrated Management of Childhood Illnesses (IMCI). This undoubtedly happens if the practitioner does not have a working knowledge of nutrition.

The SANC's regulations relating to the Scope of Practice of Persons who are Registered or Enrolled under the Nursing Act (No 50 of 1978 as amended) is currently under review but it is stipulated in this regulation that professional nurses are expected to facilitate "the maintenance of nutrition of a patient" (SANC 1991:chapter 2[1]). The extent or depth of knowledge required is left to the discretion of the various nursing schools.

4.3.9 Respondents with administrative responsibilities (N = 33)

A total of 75% of the respondents had administrative responsibilities in addition to caring for children. According to Saloojee (2007:174), despite a reported decline in mortality of at least 25% due to the use of the IMCI approach, the approach is not used more widely. The reason may be that because the IMCI may take approximately four minutes longer per patient for consultation than does a traditional consultation, it could easily add 80 minutes to the nurse's duties – this is if the professional nurse sees a minimum of only 20 children. Thus, having additional administrative responsibilities may influence professional nurses to do traditional consultations as a way to save time or, conversely, to use the IMCI but ignore the nutritional component. Fletcher and Carey (2011:619) agree that other nursing duties often take priority over the nutritional care of patients.

4.4 KNOWLEDGE OF NUTRITIONAL CARE MANAGEMENT OF CHILDREN

Section B of the questionnaire addressed knowledge of nutritional care of children. Respondents were asked about the adequacy of their nutritional knowledge, adequacy of their facility's equipment to manage nutrition, and the perceived causes of malnutrition. The Global Strategy for Infant and Young Child feeding (WHO 2003:20) recommends that training institutions be responsible for ensuring that the curricula covers the basics necessary to equip the health professional with the skills needed to support breastfeeding and the appropriate complementary feeding.

Although currently under review, the SANC’s scope of practice of registered nurses has the “facilitation of the maintenance of nutrition of a patient” as number 12 on a list of 20 steps or procedures to be performed by the professional nurse (SANC 1991:Chapter 2[1]). In order to perform this effectively, nurses need to have adequate nutritional knowledge. Nurses working in the child health section especially are requested to assess the nutritional status of the children every time the child attends the clinic, using the Road-to-Health (R-t-H) booklet and the IMCI guidelines.

4.4.1 Adequacy of pre-service training in preparing respondents to identify a child with a nutritional problem

Percentages here are rounded up for practical reasons. Twenty-three (70%) of the 33 nurses questioned perceived that their pre-service training was adequate in preparing them to identify a child with a nutritional problem (see Table 4.4 below). Although all the nurses had nutrition education as a subject at school, only 30% (10) of the participants felt that their training was inadequate. This result is similar to the findings of Nnyepi (2006:7) that all nurses had nutrition education as a subject at school.

TABLE 4.1: RESPONDENTS’ PERCEPTION OF PRE-SERVICE TRAINING AND ABILITY TO IDENTIFY A CHILD WITH A NUTRITIONAL PROBLEM (N = 33)				
		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	2	6 %	6%
	Adequate	21	64%	64%
	Inadequate	10	30 %	30 %
	Total	33	100%	100%

4.4.2 Adequacy of pre-service training in preparing respondents to plan and implement a nutritional intervention for a child with a nutritional problem

As shown in Table 4.2 below, 33% (11) of the respondents perceived their nursing education as being inadequate for planning and implementing nutritional interventions. Lindorff-Larsen, Rasmussen, Kondrup, Staun and Ladefoged (2007:373) found that 48% of nurses and doctors surveyed in 2004 cited a lack of knowledge as a barrier to screening for nutritional problems.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	4	12 %	12%
	Adequate	18	55%	55%
	Inadequate	11	33%	33%
	Total	33	100%	100%

4.4.3 Possible underlying factors precipitating under-nutrition (N = 33)

The questionnaire required the respondents to rank five possible factors that might precipitate malnutrition from 'Very important' to 'Not important'. Frequency distribution tables were compiled for each factor.

4.4.3.1 Respondents' perception of the role of poor sanitation

The results depicted in Table 4.3 below shows that 85% (28) of the respondents perceived the lack of adequate sanitation as a possible factor for precipitating under-nutrition. Kibel, Saloojee and Westwood (2012:34) report that unsafe water, poor sanitation and poor hygiene cause 94% of diarrhoeal diseases in children less than five years old. These authors also suggest that malnutrition and diarrhoea may form a vicious cycle that could result in the death of the child (Kibel et al 2012:361).

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Not important	5	15%	15%
	Somewhat important	4	12%	12%
	Important	6	18%	18%
	Very important	18	55%	55%
	Total	33	100%	100%

4.4.3.2 Poor diet as a precipitating factor for malnutrition

Table 4.4 shows the percentage distribution of respondents agreeing that poor diet can precipitate malnutrition. All the respondents agreed that poor diet can precipitate under-nutrition. Mahan et al (2012:129) suggest that adequate nutrient intake supports growth, development, general health and protection from disease and that when the diet is poor or inadequate, under-nutrition will occur.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Somewhat important	3	9%	9%
	Important	2	6%	6%
	Very important	28	85%	85%
	Total	33	100%	100%

According to Steyn and Temple (2008:666), poor diet and infection reinforce each other, precipitating malnutrition. Under-nutrition reduces a person's ability to fight infections while infections increase the nutrient requirements. Loss of appetite, malabsorption and intestinal damage may cause reduced nutrient intake and reduced absorption of nutrients which may then worsen the nutritional status.

4.4.3.3 Diarrhoea as a precipitating factor for malnutrition

A total of 32 (97%) out of the 33 respondents agreed that diarrhoea is a possible underlying cause of under-nutrition as shown in Table 4.5. One person (3%) did not think diarrhoea could precipitate under-nutrition.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Not important	1	3.0%	3.0%
	Somewhat important	5	15%	15%
	Important	4	12%	12%
	Very important	23	70%	70%
	Total	33	100%	100%

Steyn and Temple (2008:421) cite three reasons why diarrhoea may lead to malnutrition. Firstly, the patient will reduce his or her food intake; in some cultures sometimes even withhold food totally. Secondly, possible physiological damage to epithelial cells may cause the malabsorption of some nutrients. Finally, there is an increased nutrient requirement because of the diseased state. In effect, diarrhoea for any length of time can precipitate malnutrition in children.

4.4.3.4 Other childhood illnesses as important factors in precipitating malnutrition

All the respondents (n=33) agreed that childhood illnesses can precipitate under-nutrition as illustrated in Table 4.6 below. Infections increase the energy requirements of

an individual by 10% (NDoH 2007:5). In immuno-compromised children, the energy requirement may double if severe malnutrition is present. Unfortunately, a lack of appetite is likely to be present in any illness (NDoH 2008a:54) and this results in the possible reduced intake of food which then reduces energy levels.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Somewhat important	5	15%	15%
	Important	5	15%	15%
	Very important	23	70%	70%
	Total	33	100%	100%

Coovadia and Wittenberg (2006:195) describe a condition known as ‘Nutritionally Acquired Immune Dysfunction Syndrome (NAIDS)’ that occurs as a three-way relationship between malnutrition, immunodeficiency and infection. The child becomes immune-compromised from malnutrition which makes her or him susceptible to infections and these further aggravate her or his already poor nutritional state.

4.4.3.5 Poor growth monitoring as an important factor in childhood malnutrition

All 33 (100%) respondents agreed that poor growth monitoring can eventually result in under-nutrition. Table 4.7 depicts the frequency distribution of the nurses’ perceptions on poor growth monitoring as a factor in the development of childhood malnutrition. Steyn and Temple (2008:387) suggest that children’s growth be monitored throughout the first five years and those with deviations from set standards be referred for assistance.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Important	1	3.0%	3.0%
	Very important	32	97.0%	97.0%
	Total	33	100%	100%

4.4.4 Managing an exclusively breastfed child who is not gaining weight at six weeks

This section asked what the respondents would do if a six-week-old baby on exclusive breastfeeding is not gaining weight. The participants were given five options to choose from. As seen in Table 4.8 a total of 31 (94%) observed the mother breastfeeding to correct any problems with positioning and attachment. However, two (6%) out of 33 responded they would encourage supplementary feeding. Botha (2008:91) notes that 51% of mothers discontinued with breastfeeding after their children had started to receive supplements.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Option A	1	3.0%	3.0%
	Option B	31	94%	94%
	Option C	1	3.0%	3.0%
	Total	33	100%	100%

The current South African Infant and Young Child Feeding policy is quite clear on this issue (NDoH 2013a:20). Exclusive breastfeeding is recommended for the first six months of life; therefore, at every visit the health worker should counsel the mother and encourage, promote and support her to breastfeed her baby. Mahan et al (2012:379) agree because, according to them, “human milk is unquestionably the food of choice for the infant”.

Stephen, Bamford and Wittenberg (2013:16) report that a failure to follow well-recognised guidelines is the most common modifiable factor contributing to the mortality of children at primary healthcare level in the Child Healthcare Problem Identification Programme (child PIP). Two (6%) of the respondents reported they would encourage supplementary feeding while the majority 31 (94%) would encourage breastfeeding. This concurs with the NDoH’s (2013a:20) guidelines on exclusive breastfeeding the first six weeks of life.

4.4.5 Knowledge of Integrated Management of Childhood Illnesses (IMCI)

Table 4.9 below shows that 32 (97%) of the respondents knew about the Integrated Management of Childhood Illnesses (IMCI); one (3%) had not heard about it. This is worrying since the care of children under five years at the primary healthcare level is guided by the IMCI case-management protocol. The IMCI (NDoH 2011:34) chart also stipulates the nutritional management of children through the use of flowcharts and algorithms.

TABLE 4.9: RESPONDENTS WHO KNEW ABOUT IMCI (N = 33)				
		FREQUENCY	PERCENT	VALID PERCENT
Valid	Yes	32	97.0%	97.0%
	No	1	3.0%	3.0%
	Total	33	100%	100%

4.4.6 Training in Integrated Management of Childhood Illnesses (IMCI)

Twenty-nine (88%) of the nurses interviewed had attended an IMCI workshop (see Table 4.10). During a workshop professional nurses are trained to use evidence-based and action-oriented classifications that represent the fundamental management of sick children at the clinic or out-patient department (NDoH 2008a:7). Ideally, health professionals providing primary level of care to children under five years old should be trained in IMCI.

Saloojee (2007:173) suggests that the IMCI is not just about the care of a specific child. It is also a strategy to improve the skills of the health practitioner, the health system, and the community practices related to child survival and development.

TABLE 4.10: RESPONDENTS TRAINED IN IMCI (N = 33)				
		FREQUENCY	PERCENT	VALID PERCENT
Valid	Yes	29	87.9%	87.9%
	No	4	12.1%	12.1%
	Total	33	100%	100%

4.4.7 Duration of IMCI course attended

Currently, the IMCI case-management course for professional nurses is 11 days (NDoH 2008a:4). The NMBHD conducts the workshop over a two-week period. After the 11

days of training, an additional five-day workshop is conducted for nurses that are willing to become facilitators for IMCI training. The basic four-year nursing and 12-month primary healthcare courses currently include IMCI (NDoH 2008a:5).

Twenty-nine (100%) respondents' answers were calculated for this factor because the software recognised 4 (12%) as missing due to them not having being answered as this question was a follow-up on the previous one. Accordingly, as seen in Table 4.11, twenty-four (72.7%) of the counted 29 answers indicated the nurses had undergone the two-week training, 2 (6.1%) the three-week training and three (9.1%) had four weeks' training.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	2 weeks	24	78%	83%
	3 weeks	2	6%	7%
	4 weeks	3	9%	10%
	Total	29	88%	100%
Missing	System	4	12%	
Total		33	100%	

4.4.8 The health facility’s capacity to manage childhood illnesses

The IMCI strategy has three components (Kibel et al 2012:201). These are the skills of health professionals, the health system and household, and community practices. The respondents were asked to rate the adequacy of the trained IMCI practitioners, the equipment needed, and the trained support staff necessary to implement IMCI effectively.

4.4.8.1 Trained IMCI practitioners

The NDoH (2008a:75) recommends that at least 60% of professional nurses working at primary healthcare facilities be IMCI trained to improve child healthcare and reduce child morbidity and mortality. Twenty-nine (88%) of the nurses in this study perceived that their facility had adequately trained IMCI personnel to manage childhood illnesses while only 12% had inadequately trained personnel as illustrated in Table 4.12.

TABLE 4.12: ADEQUACY OF TRAINED IMCI PRACTITIONERS (N = 33)				
		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	15	46%	46%
	Adequate	12	36%	36%
	Somewhat adequate	2	6%	6%
	Not adequate	3	9%	9%
	Very inadequate	1	3%	3%
	Total	33	100%	100%

Saloojee (2007:174) states health systems' limitations and the duration of IMCI case management course as reasons for inadequate implementation of the IMCI strategy.

4.4.8.2 Adequacy of equipment for effective implementation of IMCI

The health system component of the IMCI strategy is concerned with supporting improved clinical management. Some of the issues addressed here include the drug supply, equipment, sanitation and information systems (NDoH 2008a:76). The majority of the participants (31 [94%]) perceived the availability of equipment to manage childhood illnesses as being adequate as seen in Table 4.13 below.

TABLE 4.13: EQUIPMENT NEEDED FOR IMCI IMPLEMENTATION (N = 33)				
		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	9	27%	27%
	Adequate	18	55%	55%
	Somewhat adequate	4	12%	12%
	Not adequate	2	6%	6%
	Total	33	100%	100%

4.4.8.3 Adequacy of trained support personnel

Table 4.14 presents the results. Only three (15%) of the 33 respondents perceived their facilities as not having adequately trained support personnel. The support personnel include transport personnel for prompt referral, pharmaceutical staff, water and sanitation, and health information personnel. Saloojee (2007:175) identifies nine health system weaknesses that hinder effective IMCI implementation; the lack of adequate pharmacological support is particularly mentioned.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	6	18.2%	18.2%
	Adequate	17	51.5%	51.5%
	Somewhat adequate	5	15.2%	15.2%
	Not adequate	4	12.1%	12.1%
	Very inadequate	1	3.0%	3.0%
	Total	33	100.0%	100%

4.4.9 Health facility's capacity for managing under-nourished children

The respondents were asked to rank their health facility's capacity to manage under-nourished children. Three components were given: trained personnel, equipment and support staff.

4.4.9.1 Trained personnel to manage under-nourished children

Twenty-nine (88%) of the nurses perceived their clinics as having adequate trained practitioners to manage children who are under-nourished. The NDoH (2008b:47) states that 70% or more of under five-year-old child deaths manifest some degree of malnutrition; however, most of these children were not visibly malnourished.

The 11-day IMCI course has improved the nurses' ability to classify the nutritional status of children as one of its objectives (NDoH 2008a:46). The results shown in Table 4.15 correspond with the answers as to whether the facilities had enough IMCI trained personnel.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	7	21.2%	21.2%
	Adequate	18	54.5%	54.5%
	Somewhat adequate	4	12.1%	12.1%
	Not adequate	4	12.1%	12.1%
	Total	33	100%	100%

4.4.9.2 Adequacy of equipment needed to manage under-nourished children

Only three (15%) of the respondents thought the equipment available at their clinics was not adequate to manage the under-nourished child effectively. Table 4.16 presents the frequency of the answers given by the nurses. The minimum requirement is for IMCI sites to have functional weighing scales and thermometers (NDoH 2008a:77).

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	2	6%	6%
	Adequate	19	58%	58%
	Somewhat adequate	7	21%	21%
	Not adequate	5	15%	15%
	Total	33	100%	100%

4.4.9.3 Adequacy of trained support staff

It was perceived by 25 (76%) of the respondents that their facility had adequately trained support personnel to manage malnutrition in children. These results are found in Table 4.17. The second component of the IMCI strategy is health systems support such as leadership, financing, health workforce capacity, medicines and other supplies, and health information systems for monitoring the whole process (NDoH 2008b:5).

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very adequate	1	3.0%	3.0%
	Adequate	14	42.4%	42.4%
	Somewhat adequate	10	30.3%	30.3%
	Not adequate	7	21.2%	21.2%
	Very inadequate	1	3.0%	3.0%
	Total	33	100%	100%

In a study conducted in Bulawayo it was found that clinics there had low medical supplies and only 20% of the nurses providing IMCI were trained (Gombe et al 2010:9).

4.5 ASSESSMENT OF NUTRITIONAL STATUS

Section C of the questionnaire sought to find out how nurses assess the nutritional status of children. Questions ranged from the indicators used to evaluate malnutrition to whether nurses routinely analyse the nutritional status of the children seen.

4.5.1 Indicators used to evaluate a child's nutritional status

According to the IMCI case-management, whenever the child at the primary care level has no serious signs or symptoms, he or she must be assessed for malnutrition and anaemia (NDoH 2008a:42). This is done by taking body measurements and a biochemical analysis.

All the respondents (n=33) reported using the weight-for-age body measurement to assess the nutritional status of children. A high percentage of 94% used the mid-upper-arm circumference (MUAC) routinely; but only 52% of the nurses assessed children for anaemia using palmer pallor. As many as 17 out of the 33 reported using the skin turgor for the assessment of the child's nutritional status. Using skin turgor as a nutrition assessment indicator shows a gap in the knowledge of the nurses about nutrition assessment.

Skin turgor or skin pinch is used in the IMCI case management to assess the severity of dehydration in children with diarrhoea (Kibel et al 2012:359). The NDoH (2008b:25), however, acknowledges that in children with marasmus, the skin pinch may mimic that of dehydration and so should not be used in such circumstances. Weight-for-age, length/height-for-age, mid-upper-arm circumference, palmer palor and haemoglobin levels are the recommended indicators unless there is visible severe wasting and oedema of both feet (NDoH 2008a:48). In Table 4.18 the indicators used by the respondents in their clinics to evaluate that nutritional state of children are indicated.

TABLE 4.18: INDICATORS USED TO EVALUATE THE NUTRITIONAL STATUS OF CHILDREN (N = 99)				
		RESPONSES		PERCENT OF CASES
		N	PERCENT	
Valid	Weight-for-age	33	33.3%	100.0%
	Skin turgor	18	18.2%	54.5%
	Palmer pallor	17	17.2%	51.5%
	MUAC	31	31.3%	93.9%
Total		99	100%	300%

4.5.2 Regular evaluation of children

The IMCI strategy encourages health professionals to evaluate the growth, development, immunisation status and any other problem every time the child attends a clinic (NDoH 2011:1). Child health professionals have to comply with this mandate.

4.5.2.1 Evaluation of growth and development

When asked whether they always evaluated the growth and development of children, 26 (80%) of the 33 respondents affirmed they 'Always' evaluated it. Four (12%) replied they did so 'Frequently' and two (6%) did so 'Sometimes'. As shown in Table 4.19, only one (3%) nurse out of the 33 'Never' evaluated the growth and development of the children seen.

The recommendation is that the growth and development of children must be evaluated at every contact with the facility. Caregivers are encouraged to always take the child's R-t-H booklet (or chart) whenever she or he is taken to a health facility. When done properly, growth monitoring can be a valuable health screening and promotion tool (Kibel et al 2012:109). If the growth and development of the child are not evaluated, the nurse might not know whether the child is growing and developing or not; in this case an intervention from other professionals such as dieticians and doctors may be needed.

TABLE 4.19: EVALUATION OF THE CHILD'S GROWTH AND DEVELOPMENT (N = 33)				
		FREQUENCY	PERCENT	VALID PERCENT
Valid	Never	1	3%	3%
	Sometimes	2	6%	6%
	Frequently	4	12%	12%
	Always	26	78%	78%
	Total	33	100%	100%

4.5.2.2 Evaluation of immunisation status

As seen in Table 4.20 a total of 32 (94%) of the respondents reported ‘Always’ evaluating the immunisation status of every child during consultation. It is recommended by the IMCI strategy that the immunisation status of children should be assessed at every visit; and that “missed opportunities” must be avoided (NDoH 2008a:72). To Kibel et al (2012:1280), immunisation is seen as one of the most cost-effective ways of decreasing child morbidity and mortality.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Never	2	6.1%	6.1%
	Always	31	93.9%	93.9%
	Total	33	100%	100%

4.5.2.3 Evaluating the child’s need for food supplements

Of the 33 respondents, 17 (52%) responded that they ‘Always’ evaluated the child’s need for food supplements during consultations. Three (9%) ‘Never’ did and one nurse (3%) rarely evaluated the child’s need for supplements as the results in Table 4.22 below show. It is a worrying factor that not all the participants indicated they ‘Always’ did this evaluation as, according to the NDoH (2012a:10), South Africa decided to use the supplementary feeding approach as one of the interventions to prevent and treat malnutrition in vulnerable groups and it therefore has to be used in all public health facilities. In this respect, it is pivotal that this intervention needed to be used by the nurse respondents in all of their clinics.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Never	3	9%	9%
	Rarely	1	3%	3%
	Sometimes	5	15%	15%
	Frequently	7	21%	21%
	Always	17	52%	52%
	Total	33	100%	100%

Kibel et al (2012:123) support the notion of giving food supplements to vulnerable children but cautions that supplementation may not yield the desired results if not

properly implemented. Of note is that all 10 of the observed participants (see Chapter 3 sub-section 3.3.2.2 *The observational checklist*) discussed the preparation of food supplements with the caregivers of children needing supplementation.

4.5.3 Skills needed for the assessment of the nutritional status of children

In Table 4.22 the respondents’ answers to the question whether they were satisfied with their own nutritional assessment skills are reflected. A total number of 26 (79%) reported being satisfied with their skills in assessing the nutritional status of children while seven (21%) were not satisfied. Only half (50%) of the participants observed by the researcher (n = 10) during the checklist observations determined the z-score for the children seen, recognised those below -2 z-score as being malnourished and discussed the needed interventions with the caregiver.

TABLE 4.22: SATISFACTION WITH OWN NUTRITIONAL ASSESSMENT SKILLS (N = 33)

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Very satisfied	7	21%	21%
	Satisfied	19	58%	58%
	Not satisfied	5	15%	15%
	Very dissatisfied	2	6%	6%
	Total	33	100%	100%

After having conducted an intervention study, Bjerrum et al (2011:81) concluded that although nurses readily admitted to being taught some nutritional topics as part of their training, many complained that they still had a lack of nutritional knowledge. Fletcher and Carey (2011:619) came to a similar conclusion, stating inadequate knowledge is cited as the reason for inadequate nutritional assessment of patients in various studies. The South African Nursing Council (SANC) sums up the necessity of adequate knowledge in all aspects of nursing by the policy statement below.

“Competencies are a combination of knowledge, skills, judgement, attitudes, values, capacity and abilities that underpin effective performance in a profession. Competencies are requirements of a practitioner to be considered competent in a designated role and practice setting” (SANC [s.a]:2)

4.5.4 Analysis of the nutritional status of children seen at the clinics

On the questionnaires, 28 (85%) of the nurses answered that they routinely analyse the nutritional status of children they see at their clinic. (See Table 4.23 below). However, this was not confirmed by the results of the researcher's observation as only five (50%) of the participants determined the z-score of children seen and would have been able to recognise when the child was malnourished. The NDoH (2008a:44) stipulates that the nutritional status of every child, irrespective of the reason for a visit to the clinic, must be analysed. According to the NDoH (2008b:47), this is a crucial recommendation that should be adhered to since more than 70% of child deaths was related to some form of malnutrition. Malnourishment in children can easily be missed if careful assessment and analysis are not performed during all routine analyses (NDoH 2008b:47).

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Yes	28	85%	85%
	No	5	15%	15%
	Total	33	100%	100%

4.6 NUTRITIONAL INTERVENTIONS

Section D sought to find out interventions used by the respondents after their assessments to care for children who are at risk of becoming malnourished or are presenting with malnutrition. According to the nutrition care process, assessments are done to help with diagnosing a problem after which an intervention must be done (Mahan et al 2012:254). To these authors, the involvement of the primary caregiver in any nutritional intervention is crucial both during the planning and the implementation stages. This is similar to the format of IMCI case management, namely assess, classify and treat (NDoH 2011:1). It is also similar to the format of the nursing process as described by Mamseri (2012:125). Patients must first be assessed in order for a nursing diagnosis to be made. The nurse then plans the care needed and implements it. The patient is then evaluated to see if the process yielded the expected results. Nurses use this process in the care of patients in all settings. The child needing nutritional care is just one setting.

4.6.1 Intervention for a child at risk of becoming malnourished

When asked what interventions should be recommended for a child at risk of becoming malnourished, 29 (88%) of the 33 respondents reported that they would ask about the child's appetite and suggest ways to improve it to the caregiver. One of the nurses did not answer this question which resulted in the software identifying it as 'Missing'. (see Table 4.24). Kibel et al (2012:122) suggest that young children need age-appropriate assistance to ensure the consumption of adequate complementary foods. Caregivers may be supported in doing this by skilled and knowledgeable health practitioners.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Yes	29	88%	91%
	No	3	9%	9%
	Total	32	97%	100%
Missing	System	1	3.0%	
Total		33	100%	

To Rolfes, Pinna and Whitney (2012:477), however, a child's appetite might decrease during periods of slow growth, and then increase again during the rapid growth phases. The IMCI's (NDoH 2008b:79) suggested interventions are:

- use of favourite foods in small amounts to encourage eating
- vary the food
- avoid sweets and other foods with little nutritive value
- use of soft and easy tolerated food
- encourage small frequent meals
- encourage active feeding
- more frequent breastfeeding if child is breastfeeding.

The starting point of any negotiation with the caregiver is for health professionals to measure, plot and interpret the child's anthropometric measurements correctly. The findings should then be explained to the caregiver to enable an informed discussion and negotiation (NDoH 2009:5,19). Although all the participants observed by the researcher (n = 10) plotted the child's weight, only half (50%) of them discussed the growth curve with the caregiver and gave age-appropriate feeding advice.

4.6.2 Adapting the food the child enjoys to meet the nutritional needs

As shown in Table 4.25, the majority (28 [85%]) of the respondents reported that enquiring about the types of food the child enjoys and suggesting ways of adapting them to meet the child’s nutritional needs is an intervention they recommended for children at risk of becoming malnourished.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Yes	28	84.8%	84.8%
	No	5	15.2%	15.2%
	Total	33	100%	100%

The South African Food-based Dietary Guidelines (NDoH 2012b:19) agrees that to “**enjoy a variety of foods**” is the first key message to healthy eating. This is because people need to enjoy the food they eat. Adaptation of one’s favourite food may mean cooking it in a different way, adding nutrient-rich foods, increasing or limiting the quantity eaten at a time. An individual’s food consumption enjoyment is shaped by family and cultural traditions, the food budget, types of food available in the community, nutritional knowledge and the marketing of the food industry (NDoH 2012b:6).

South Africa’s Infant and Young Child Feeding (IYCF) Policy suggests that children aged from one to nine years have less than 67% of the recommended dietary allowance for 12 vital minerals and vitamins (NDoH 2013a:47). This is attributed to inappropriate feeding practices. In December 2006 the World Food Programme (WFP) and UNICEF suggested that inappropriate feeding practices together with inadequate nutrient-rich foods are a major cause of the onset of malnutrition (WFP & UNICEF 2006:21).

Stephen and Bamford (2013:11) identified inadequate quality/quantity of food at home for children as one of five modifiable factors that led to the death of children in the “Saving Children 2010 – 2011 report”.

4.6.3 Promoting and supporting exclusively breastfeeding

All 33 respondents regarded supporting optimal exclusive breastfeeding as an intervention for combating malnutrition in children. The NDoH (2013a:20) recommends that health workers encourage and support mothers to reinforce exclusive breastfeeding for the first six months of their baby's life. Every encounter with the health facility should also be used as an opportunity to assess, promote and counsel mothers on the importance of exclusive breastfeeding.

Kibel et al (2012:118) agree that exclusive breastfeeding for the first six months of life need to be promoted as this reduces the chances of the infant getting infections and allergies whilst increasing maternal milk production for it as the more she or he feeds the more milk is produced. Also in support, Steyn and Temple (2008:413) regard exclusive breastfeeding is an effective way of protecting the infant against food-borne diseases and provides immune factors against other illnesses.

4.6.4 Frequency of breastfeeding by a child in a 24-hour period

A total of 32 out of the 33 respondents considered investigating the frequency of breastfeeding within a 24-hour period as being important. The WHO and The United Nations Children's Fund (UNICEF) (2009:125) recommend that babies on exclusive breastfeeding be fed on demand. According to these organisations, feeding-on-demand or baby-led feeding has numerous advantages that are all to the advantage of the child. The baby should be allowed to feed for as long, and as often, as he or she wants but this should occur at least eight times in 24 hours.

4.6.5 Issuing food supplements according to the national guidelines

Thirty (91%) of the respondents reported that children at risk of becoming malnourished should be issued food supplements in accordance with the national guidelines. As seen in Table 4.26 two (6%) nurses indicated they would not issue food supplements and one (3%) abstained from answering.

		FREQUENCY	PERCENT	VALID PERCENT
Valid	Yes	30	90.9%	4%
	No	2	6.0%	6.0%
	Total	32	97%	100%
Missing	System	1	3%	
Total		33	100%	

Kibel et al (2012:123) describe the food supplementation scheme as a way of addressing the level of malnutrition in children who are found to be at risk of, or are malnourished according to the anthropometric guidelines. Of the 10 participants observed by the researcher all the caregivers of the children needing supplements were educated on how to use the supplements.

4.7 Nutritional interventions provided for moderately malnourished children

The respondents were asked to write the interventions they would provide to a moderately malnourished child. They were at liberty to provide more than one intervention. The responses were tabulated as frequencies and added as an annexure (see Annexure H).

As many as 52% (n = 17) of the nurses would admit a moderately malnourished child into the nutritional supplementation programme. Of these, 46% (n = 15) would counsel the mother or caregiver to provide an age-appropriate nutritious diet whilst 39% (n = 13) would refer such children to the dietician. Only 36% (n = 12) would ask the mother or caregiver to return with the child after two weeks for reassessment. Eight out of the 33 respondents would give an age-appropriate vitamin A supplement and deworm the child. Six out of the 33 nurses would assess and classify the feeding and manage any subsequent problems appropriately.

According to the NDoH (2008b:50), after the nurse has formally assessed how a child is fed, found out the possible causes and has addressed them, moderate malnutrition should be managed at home. Vitamin A and deworming are given when due and the child is followed up in five or 14 days' time if a feeding problem was determined. The child must also be referred if there is persistent diarrhoea. All the participants observed

(n = 10) by the researcher gave the caregiver a follow-up date to monitor interventions discussed and 30% (n=3) referred a moderately malnourished child to the social worker.

4.6.8 Nutrition interventions for severely malnourished child

When asked what nutritional intervention should be provided to a severely malnourished child, 73% nurses reported they would refer the child to a paediatrician; 27% would encourage regular weighing; 24% would give food supplements and 15% would check the blood glucose level, provide antibiotics, and keep the baby or child warm. Table 4.27 shows the responses of the respondents.

RESPONSE	FREQUENCY	PERCENT
Refer to paediatrician or hospital	24	73%
Refer to dietician or nutritionist	5	15%
Admit to the nutrition supplementation programme and provide nutritional supplements	8	24%
Assess and classify feeding after which age-appropriate counselling is done	3	9%
Give age-appropriate vitamin A supplement and deworm	4	12%
Give multivitamin syrup	1	3%
Check blood sugar level, give an antibiotic and keep warm	5	15%
Check for severe wasting and oedema	1	3%
Encourage regular weighing	9	27%
Assess for TB/HIV and other health problems	3	9%
Admit to the nutrition supplementation programme and provide nutritional supplements	8	24%

The NDoH (2011:13) recommends that severely malnourished children be referred to the hospital for admission. For severe malnutrition the blood sugar level must be checked, any signs of hypoglycaemia must be prevented or corrected, age-appropriate vitamin A must be given, the child should be kept warm and referred to hospital (NDoH 2008b:50).

4.7 MONITORING NUTRITIONAL INTERVENTIONS

Stephen, Bamford, Patrick and Wittenberg (2009:42) recognise the importance of monitoring the implementation of standardised guidelines. The top five modifiable factors for clinics were all related to the IMCI not being implemented correctly. Monitoring should be an integral part of any intervention, including nutritional interventions. Monitoring starts with record keeping which enables nurses or other health professionals to track the progress of the child.

Nurses in the child health department of the NMBHD have 2 registers to monitor patient nutritional care: the Malnutrition Register (to monitor children on food supplements) and the Primary Health Care (PHC) tick register that is used to record all patients seen on a daily basis (NDoH 2009:5,11) The R-t-H booklet is a patient retained health record booklet which is issued to the new-borns when being discharged from the delivery facility after at birth. It is used to monitor the health of the child over years. The unwritten recommendation is that both are kept updated as they are legal documents.

4.7.1 Recording nutritional interventions

The respondents were requested to report where interventions discussed with caregivers were recorded. Some chose more than one answer. The results are presented in Table 4.28. (The dichotomy group tabulated at value 1.)

		RESPONSES		PERCENT OF CASES
		N	Percent	
Valid	R-t-H booklet	14	25.5%	42.4%
	PHC tick register	11	20.0%	33.3%
	No recording, just counselling	1	1.8%	3.0%
	R-t-H & PHC tick register	29	52.7%	87.9%
Total		55	100.0%	166.7%

Except for one respondent, the rest would all record the interventions as they were discussed with the caregiver. Only 53% of them would record in both the R-t-H booklet and the Malnutrition Register while 26% and 20% would record in the booklet only and

in the Malnutrition Register respectively. The NDoH (2009:5,19) recommends in the Primary Health Care supervision manual that supervisors check the R-t-H booklets for complete recording and also that the PHC tick registers are available in each consulting room, filled in correctly and every time after a child has been seen.

4.7.2 Follow-up schedule of child with anaemia

The IMCI protocol recommends that a child with anaemia be reviewed after 14 days. When asked what the recommendation was, 79% respondents reported within 14 days as shown in Table 4.29 below.

TABLE 4.29: IMCI FOLLOW-UP SCHEDULE FOR A CHILD WITH ANAEMIA (N = 33)				
		FREQUENCY	PERCENT	VALID PERCENT
Valid	0 days	2	6%	6%
	5 days	2	6%	6%
	7 days	3	9%	9%
	14 days	26	79%	79%
	Total	33	100%	100%

4.7.3 Ranking the effectiveness of some nutritional interventions

The respondents were asked to rank five interventions according to their perceived effectiveness in children older than six months if followed up over a period of time. One person did not answer this question; thus (n = 32). Table 4.30 below depicts how the respondents ranked some nutritional interventions (percentages were not rounded off).

TABLE 4.30: RANKING THE EFFECTIVENESS OF SOME NUTRITION INTERVENTIONS						
(1 INDICATED 'LEAST' AND 5 REPRESENTED 'BEST') (n = 32)						
INTERVENTION	1	2	3	4	5	TOTAL
Ask caregiver about child's appetite and suggest ways to improve it.	5 (15.6%)	5 (15.6%)	6 (18.8%)	4 (12.5%)	12 (37.5%)	32 (100%)
Enquire about the types of food the child enjoys and suggest ways of adapting them to meet child's nutritional needs.	3 (9.4%)	6 (18.8%)	2 (6.2%)	4 (12.5%)	17 (53.1%)	32 (100%)
Encourage caregiver to give an extra meal.	5 (15.6%)	5 (15.6%)	8 (25.0%)	11 (34.4%)	3 (9.4%)	32 (100%)
Counsel caregivers to use and familiarise themselves with health promotion messages in the R-t-H booklet.	4 (12.5%)	3 (9.5%)	6 (18.8%)	6 (18.8%)	13 (40.6%)	32 (100%)
Give food supplements according to national guidelines when necessary.	4 (12.5%)	3 (9.4%)	4 (12.5%)	2 (6.3%)	19 (59.4%)	32 (100%)

Fifty-nine percent (n = 19) ranked food supplements at the top; 53% (n = 17) enquired about the child's likes and suggested ways to adapt them if necessary. Thirteen respondents (40.6%) thought the health promotion messages in the R-t-H booklet were the most effective intervention for the caregiver to implement while 37.5% (n = 12) placed improving the child's appetite at the top. Giving an extra meal to the child would yield the best results according to 34% (n = 11) of the respondents. The NDoH (2013b:13) realised in their *2009 Landscape Analysis* that stakeholders in nutritional intervention programmes tend to have a perception that the provision of food parcels and food gardens are all that is needed.

The WFP and UNICEF (2006:20) encourage health workers to implement evidence-based workable solutions in solving the nutritional problems of childhood. According to these organisations, nutrition education and promotion programmes, food security

programmes, micro-nutrient supplementation, the control of endemic parasites, good hand washing etiquette and the use of safe, clean water are effective interventions.

The current R-t-H booklets provide health promotion messages for every one of the child's developmental stages. Health professionals and caregivers can use this effectively to ensure the proper growth and development of the child. The messages (in the R-t-H booklet) include optimal nutrition, play and stimulation, oral rehydration as well as when referral to the hospital is needed (NDoH 2010:10)

The NDoH's (2012b:9) stance is that supplements are necessary to combat any deficiencies in an individual's micronutrient and energy requirements. Kibel et al (2012:124) suggest that although food supplementation "has had limited implementation", when linked to strategies such as nutritional counselling and education, food supplementation can be a very effective intervention.

4.9 ANALYSIS OF THE OBSERVATION CHECKLISTS

Ten of the participants were observed for an hour each by the researcher. Table 4.31 depicts the results.

In total, the ten observed nurses attended to 28 children within an hour. All the children seen by the nurses had R-t-H booklets or charts for the nurses to use for recording their weights, age-appropriate vitamin A recommendations as well as any other interventions agreed upon with the primary caregiver. The ten nurses all plotted the weight in the growth chart but five did not determine the weight-for-age z-score for the child or discuss his or her growth with the caregiver. Subsequently, the same participants may have missed children that were at risk of becoming malnourished; they therefore did not give age-appropriate feeding advice. When comparing this to the data from the questionnaire (see Table 4.19) the evaluation of the child's growth and development, 26 out of the 33 respondents 'Always' determined the child's growth. The five observed participants who did not determine the weight-for-age z-score could be from the seven who 'Never' or only determined the z-scores 'Occasionally'. It is also interesting to note that seven of the participants stated that they had no pre-service training in the nutritional care management of children less than five years old.

TABLE 4.31: RESULTS OF OBSERVATION CHECKLISTS (n = 10)											
PARTICIPANTS	1	2	3	4	5	6	7	8	9	10	%
Number of children seen in 60 minutes.	4	3	2	3	3	2	2	3	4	2	100 %
R-t-H chart or booklet is used.	Yes	100 %									
All children less than 5 years old are weighed and weight plotted in growth chart of the R-t-H booklet or chart.	Yes	100 %									
Weight for age z-score is determined for each child and discussed with caregiver.	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No	50%
Children below -2 Z-score weight-for-age line in new R-t-H or below the 3 rd centile line in the old R-t-H chart are recognised as being malnourished.	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No	50%
Age-appropriate feeding advice discussed with the caregiver.	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No	50%
Age-appropriate vitamin A supplementation given if due.	Yes	100 %									
Caregivers of children needing food supplements are educated on how to use such supplements.	Yes	100 %									
Malnourished clients are referred to social worker or other community support systems.	Yes	Yes	Yes	No	30%						
Caregiver is given a follow-up date to monitor interventions agreed upon with the caregiver.	Yes	100 %									

4.10 CONCLUSION

In this chapter the analysis of the data collected was presented. A total of 33 out of the 34 questionnaires distributed were returned; a response rate of 97% was thus obtained. The data were then analysed using STATISTICA VERSION 11. Percentages were, however, rounded off in the report.

The findings revealed that most of the professional nurses had pre-service nutrition education and they perceived this as adequate knowledge for them to have when working in the child health department. This percentage was, however, reduced when an in-depth knowledge of nutrition was needed such as the ability to identify and manage a child with nutritional problems.

The second objective was to make recommendations to adapt the national protocol to guide the nutritional care of children less than five years old by the nurses in the Nelson Mandela Bay Health District. In Chapter 5 this is discussed in detail.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter is a presentation of the key findings, their significance; it the limitations of this study. Recommendations for improving the nutritional care of children by nurses and areas for further research are also presented.

5.2 THE AIM AND OBJECTIVES OF THE STUDY

The findings are presented according to the research aim and objectives. The aim of this study was to determine how effectively nurses manage the nutritional care of children under five years old.

The objectives of this study were to:

- explore and describe how the nutritional care of children under five years of age was managed by the nurses in the Nelson Mandela Bay Health District
- make recommendations to adapt the national protocol to guide the nutritional care of children under five years of age by the nurses in the Nelson Mandela Bay Health District.

5.3 RESEARCH DESIGN AND METHOD

A quantitative approach using an explorative descriptive design was employed for the study. A self-administered questionnaire and an observational checklist were the data gathering tools for the field work. Before the researcher began with the field work, permission to conduct the study was sought from the University of South Africa (Department of Health Studies Higher Degrees Committee) and the Nelson Mandela Bay Health District (study site) management.

The participants were 34 professional nurses providing primary healthcare services to children in all 16 clinics in Sub-district C of the Nelson Mandela Bay Health District (NMBHD). The target population comprised of the whole population of professional nurses providing primary level care to children less than five years old. Every participant

completed a self-administered questionnaire that was hand delivered by the researcher and the completed document was collected within a week. There was one non-respondent, giving a respondent rate of 97%. Data analyses were done using STATISTICA VERSION 11 and the findings were presented in tables and text where appropriate.

The researcher observed 10 of the participants performing their normal duties at work and completed a checklist for each of the ten. The findings of the checklist were presented in a tabular form and discussions were incorporated into the findings of the questionnaire where appropriate.

5.4 SUMMARY AND INTERPRETATION OF RESEARCH FINDINGS

The findings of the study indicate that the nutritional care management of children under five years old in Sub-district C of NMBHD had many challenges. The findings are discussed according to the stated objectives.

Objective one

With regard to the first objective the findings illustrated that nurses' inadequate knowledge of nutritional care issues was compounded by the lack of the appropriate implementation of the Integrated Management of Childhood Illnesses (IMCI) guidelines and the correct use of the Road-to-Health (R-t-H) booklet or chart. This made it impossible for nurses to accurately assess the nutritional status of children and initiate accurate nutritional intervention strategies to prevent or manage malnutrition.

Secondly, 36% of the nurses in the child health department had been practicing as professional nurses for less than five years. Two of the participants had been caring for children for less than a month and 75% had additional administrative responsibilities. The nurses providing child health services were either inexperienced or seemingly had high workload.

Objective two

Currently the national protocol guiding the nutritional care of children under five years, namely IMCI and the use of the Road-to-Health booklet are not being followed

consistently by nurses in the NMBHD. In 2011 the Committee on Morbidity and Mortality in Children under 5 Years (CoMMiC) recommended to the NDoH that the existing priority child survival programmes must be strengthened and complemented (NDoH 2011:103). Mentoring, standards and norms were seen as necessities if the child survival in South Africa was to be improved. Based on CoMMiC's recommendations, objective two was made redundant. Holder (2009:1158) comments that nutritional care falls within the scope of nurses and so nurses need to base their care on national initiatives to improve nutritional care.

The researcher considered it not necessary to recommend changes to the current guidelines as they are not being fully implemented. The IMCI chart booklet (NDoH 2011:35) recommends that the health professional checks the growth by plotting the weight in the R-t-H booklet and determine the weight-for-age. Three pages out of the 63 pages in the Health Department's 2011 IMCI chart booklet are dedicated to checking for malnutrition feeding and growth of the child. In addition to these, nine pages focus solely on counselling for feeding problems and six pages are growth charts extracted from the R-t-H booklet. In all, 18 pages (out of 63) of the IMCI chart booklet (28.6%) are dedicated to nutritional care. Revealing how important the National department considers childhood nutrition. The objective was set with the presumption that nurses were implementing the national guidelines without achieving the desired outcome. The nurses must be mentored and coached to implement the national guidelines before any adaptation can be done.

5.4.1 Nurses' knowledge of nutritional care management of children under five years old

According to the findings, 78% of the nurse respondents had pre-service training on nutrition; 70% perceived their pre-service training as adequate to identify a child with a nutrition problem and 67% perceived their pre-service training as adequate in preparing them to plan and implement nutrition interventions. When asked about precipitating factors for under-nutrition, 73% perceived poor sanitation as a factor, 91% recorded poor diet and 82% stated diarrhoea as an important factor. The World Food Programme (WFP) and UNICEF (2006:20) report that hygiene education and nutrition promotion have a great impact on reducing child morbidity and mortality due to diarrhoea, respiratory tract infections and malnutrition.

Although all the respondents agreed that poor growth monitoring practices by health professionals was an important factor in childhood malnutrition, only 50% (five out of the 10) participants observed determined the z-scores of the children seen and discussed their growth curves with the caregivers. Other authors who report on the fact that nutritional care are considered to be of less importance on the priority list of nurses even while acknowledging that it is a necessary part nursing care are Ros et al (2009:2406). Half (50%) of the nurses observed determined the z-score of the children by plotting the weights and heights. This aided in their recognising children who were malnourished, making them initiate the necessary nutrition intervention. The other half did not determine the z-scores of children seen, making it possible to miss children at risk of becoming malnourished or even malnourished children.

Having nutritional care within the scope of practice of professional nurses does not automatically make them competent to perform the necessary assessment, analysis and actions needed. That can only be done if they have the necessary knowledge, skills and capability.

Currently the nutritional care (assessment, analysis, classification and management) of sick children at primary care level is implemented within the IMCI strategy (Kibel et al 2012:87). All nurses providing care at this level are supposed to be implementing this strategy with the IMCI booklet or chart as the standard. Ninety-seven percent (97%) the respondents knew about IMCI, 88% were trained in IMCI and 3% had not heard about IMCI before the study. Almost ninety percent (89.9%) of the respondents thought their facilities had enough IMCI trained nurses while 74.9% thought their facilities had enough trained support personnel.

5.4.2 Implementation of IMCI guidelines

Twenty-nine (88%) of the participating respondents had attended IMCI case management workshop for two weeks and five had attended additional workshops on IMCI. A similar percentage was recorded for nurses who perceived their facilities as having adequate trained IMCI nurses but 36.4% thought the clinics do not have adequate equipment to manage under-nourished children. One respondent had never heard of IMCI, even though this particular nurse had been providing care for children for more than a month.

Weight-for-age was the most common measurement used to assess the nutritional status of a child. Just over half of them associated palmer pallor, which denotes anaemia, as an indicator for malnutrition. The evaluation of children's growth was 'Always' done by 80% of the nurses, 6% did so 'Sometimes' and 3% 'Never' evaluated the children's growth. Of the nurses, 21.3% were dissatisfied with their nutrition assessment skills. This finding showed a gap in their knowledge that needs attention.

5.4.3 Use of the Road-to-Health booklet

The findings showed that all of the observed participants weighed the children and plotted the weights in the R-t-H booklets, but only 50% of them discussed growth and age-appropriate feeding advice with the caregiver. Mudau (2010:98) had a similar finding and concluded that not empowering caregivers creates dependency on the nurses and inability of parents to tackle health issues at household level. The R-t-H booklet contains comprehensive nutrition promotion messages that caregivers should be encouraged to read and apply in the daily care of the child to prevent disease and reduce child mortality.

5.5 RECOMMENDATIONS

The following recommendations are made based on the findings of the study to improve nurses' knowledge of nutritional care of children and the implementation of the IMCI guidelines.

5.5.1 Recommendations to improve nurses' nutritional knowledge

The findings revealed that not all professional nurses are knowledgeable about nutritional care management of children even though they are supposed to be providing comprehensive care to children. Training in nutritional care management of children is urgently needed if the NMBHD is to achieve MDG 4 by the end of 2015.

- Training nurses on the practical application of anthropometric measurements and their proper interpretation, taking dietary history, adequate identification and classification of nutritional needs, and the use of appropriate interventions for managing nutritional care of children is needed urgently. The interventions

should include clinical case management based on standards and guidelines, and also prevention of malnutrition and nutrition promotion.

- The South African Nursing Council (SANC) needs to relook at the nutrition component of the four-year training curriculum. Accurate nutrition is acknowledged as a fundamental health need and as such should be given a prominent place in all healthcare professional training curricula. The nutritional care component of the IMCI case management course needs to be emphasised and given prominence during IMCI training courses in the NMBHD.
- Accurate use and interpretation of the information available in the R-t-H booklet should form part of the curricula at nursing schools. The SANC will therefore need to review the competency standards or hours needed for a nurse to become competent in providing nutritional care.

5.5.2. Recommendations to improve nurses' use of R-t-H booklet and IMCI guidelines

- New nurses in the child health department should be appropriately orientated by the facility manager and programme managers, to all guidelines, standards and protocols used in this area.
- Re-orientation of every professional nurse providing child health care is needed with regard to the use of the R-t-H booklets.
- Nurses in NMBHD need to be provided with a desktop laminated flowchart of the IMCI guidelines with the nutritional care part highlighted for added visibility.
- There is an urgent need for the mentoring of nurses who provide care for children by the Sub-district C management team. Mentoring of nurses after IMCI training or of new professional nurses will improve their competence and capability to care for children. It may also improve their performance and adherence to national guidelines.

5.5.3 Recommendations for further studies

Recommended further studies based on the findings of this study are noted below.

- An investigation into the depth of nutritional knowledge that nurses are exposed to during pre-service professional training at universities and colleges.

- A comparative study of the nutritional care practices of nurses in all the seven districts of the Eastern Cape.
- The extent to which nurses in the whole district adhere to the standard guidelines in the nutritional care of children.

5.6 CONTRIBUTIONS OF THE STUDY

This study revealed a gap in the nutritional knowledge of professional nurses in Sub-district C clinics in NMBHD and identified the need for in-depth nutritional training with regard to children and the implementation of the IMCI guidelines.

5.7 LIMITATIONS OF THE STUDY

The study results cannot be generalised for all the nurses in the NMBHD because only Sub-district C was surveyed due to time and resource constraints. A larger sample comprising of all nurses in providing child health care in all of NMBHD clinics would have rendered a more generalisable results. This study, however, provided vital information on how professional nurses manage the nutritional care of children in one Sub-district.

The researcher happens to be a programme manager in the district and observes nurses at work regularly some participants may have felt very comfortable with her whilst others may have been nervous.

The participants consent form did not specifically mention the use of the observation checklist even though the observed participants were informed individually.

5.8 CONCLUDING REMARKS

This study revealed inadequate nutritional knowledge of nurses caring for children under five years old. There is a gap between the recommendations of how the R-t-H booklet should be used and the practices of nurses. A second gap exists between how

the IMCI is practiced and the case management guidelines. Limitations of the study were discussed and recommendations for future research and strategies to improve the nutritional care management of children were also proposed.

“We are guilty of many errors and many faults, but our worst crime is abandoning the children, neglecting the fountain of life. Many of the things we need can wait. The child cannot. Right now is the time his bones are being formed, his blood is being made, and his senses are being developed. To him we cannot answer ‘Tomorrow,’ his name is Today.”

Gabriela Mistral (1948)

Nobel Prize winner poet from Chile

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Annexure B: Request for Permission to conduct a study in the NMB Health District

The Chairperson

Nelson Mandela Health District Ethics Committee

Private Bag X28000

Port Elizabeth

6001

Dear Sir/Madam,

Request to conduct a study on the Nutritional care of children under five by nurses in the Nelson Mandela Metropolitan Area.

I am currently studying through University of South Africa for a Master's degree in Public Health. The final requirement is to do a dissertation of limited scope. With your permission, I would like to investigate the *"Management of Nutritional care of children under five by nurses in the Nelson Mandela Metropolitan Area"*.

The target population is professional nurses providing child health (including nutritional care) services in clinics. Eligible professional nurses in chosen clinics who are willing to participate will be required to give informed consent. Completed forms will only be accessible to authorized persons (the researcher, research supervisor and the statistician). The questionnaire does not require participants to identify themselves or their facilities. This will ensure that any information given remains anonymous. Copies of the informed consent document, as well as the questionnaire are attached.

The findings of the study, I trust, will show which aspect of nutrition education needs to be prioritized to improve the nutritional practices of nurses. The study results will be communicated to the district management team, clinics and the programme managers for Mother, Child and Women's Health and Nutrition. The whole study will also be available electronically upon request.

Yours sincerely

Marian Joyce Nyarko

MPH student (UNISA)

Annexure C: Letter of Approval: Nelson Mandela Bay Health District



Province of the
EASTERN CAPE
HEALTH

Office of the Nelson Mandela Bay Health District Manager
Private Bag X28000 • Greenacres • PORT ELIZABETH • 6057 • REPUBLIC OF SOUTH AFRICA

Enquiries : Dr. L.P. Mayekiso
Telephone : 041-391-8150
Facsimile : 041-391-8133
E-mail :

Our Reference :
Our Reference :
Date : 02 October 2013

Mrs. M.J. Nyarko
MPH Student
UNISA

Dear Mrs. Nyarko

REQUEST FOR PERMISSION TO DO RESEARCH ON THE NUTRITIONAL CARE OF CHILDREN UNDER FIVE BY NURSES IN THE NELSON MANDELA METROPOLITAN AREA

In response to your application for permission to conduct the above research, permission is hereby granted with the following proviso:

- ❖ Health service delivery should not be disrupted under any circumstances.
- ❖ Timeous appointments must be made with the relevant persons prior to commencement of interviews/visits.

The Nelson Mandela Bay Health District, as the research site, will expect a copy of the final research report when the study is completed. If the duration of the research period is required to be extended, the District Office (District Manager, Dr. Mayekiso) will be informed accordingly.

This Office would like to wish you well in your research study.

Yours faithfully


DISTRICT MANAGER

Approved


United in achieving quality health care for all

24 hour call centre: 0800 0323 64
Website: www.ecdoh.gov.za



Ikamva elizaqambileyo!

Annexure D: Assessment of data collection instrument

(2014/06/02) Joyce Nyarko - RE: questionnaire for nurses

Page 1

From: "Pietersen, Jacques (Dr) (Summerstrand Campus North)"
<Jacques.Pietersen@nmmu.ac.za>
To: "maritje@unisa.ac.za" <maritje@unisa.ac.za>
CC: Joyce Nyarko <Joyce.Nyarko@impilo.ecprov.gov.za>
Date: 2013/09/30 08:21 AM
Subject: RE: questionnaire for nurses

Dear Prof Maritz,

This is to confirm that I had a look at Joyce's questionnaire and that I am satisfied with it in the sense that it will provide data that can be statistically analysed.

Regards

J Pietersen
Unit for Statistical Consultation
NMMU
PE

From: Joyce Nyarko [mailto:Joyce.Nyarko@impilo.ecprov.gov.za]
Sent: Monday, September 30, 2013 6:13 AM
To: Pietersen, Jacques (Dr) (Summerstrand Campus North)
Cc: maritje@unisa.ac.za
Subject: questionnaire for nurses

Dear Dr Pietersen,

Here is the questionnaire as discussed on Thursday. Prof Maritz, my supervisor is being sent a copy. If you are satisfied with the questionnaire, please send Prof Maritz an email to that effect.

Thank you Sir.

M J Nyarko

Disclaimer:
This email is subject to a disclaimer which, amongst other usage policies may be found on the Eastern Cape Provincial Government website by clicking on this link :
disclaimer.<<http://www.ecpg.gov.za/page.php?index=42>> If you would prefer, the specific email disclaimer can be e-mailed to you by clicking here<<mailto:support@ecprov.gov.za?subject=Please%20supply%20me%20with%20the%20ECPG%20email%20disclaimer>>.

NOTICE: Please note that this eMail, and the contents thereof, is subject to the standard NMMU eMail disclaimer which may be found at:
<http://www.nmmu.ac.za/disclaimer/email.htm>

Annexure E Consent form and questionnaire

Participant Consent Form/ Covering letter for survey

P. O. Box 4182

Korsten

6014

Dear Respondent,

My name is Marian Joyce Nyarko. I am currently studying towards a Masters degree in Public Health (MPH) at UNISA. One of the requirements of the MPH programme is that I complete a research project. In this regard, I have elected to undertake an investigation into ***“Management of Nutritional Care of Children under five years by nurses in the Nelson Mandela Bay Health District”***. As a professional nurse caring for children less than five years, you are invited to participate in this study. There will be no form of remuneration, but you will be contributing towards nursing knowledge and practice.

There is no right or wrong responses to the questions in this questionnaire. I would therefore appeal to you to be as candid as possible when providing feedback for each of the questions. Please be assured that your identity will not be divulged under any circumstance and all of your responses will be kept in strict confidentiality. You will not be victimized or penalized if you refuse to complete this questionnaire as it is completely voluntary and not work related.

It would be appreciated if you could kindly return the completed questionnaire to me. For any queries please contact my research supervisor, Professor Jeanette Maritz on 012 429 429-6534 or maritje@unisa.ac.za.

Please sign below if you understand and would like to participate.

.....

Date:/10/2013

Signature of participant

Questionnaire for professional nurses

Respondent Code	
------------------------	--

Research project: *Management of nutritional care of children under five years by nurses in the Nelson Mandela Bay Health District.*

Thank you for taking time to complete this questionnaire. The information collected will help us understand how you currently provide nutritional care to children under five years. Use only your own knowledge, thoughts and perceptions to complete this questionnaire. **Please do not ask your colleagues to help you to complete this questionnaire. If you have any questions, please ask the investigator.** *Completing the questionnaire will require approximately 20 minutes of your time).*

SECTION A: DEMOGRAPHICAL DATA (mark the correct box with a cross “X”)

1. Age in years

20- 29	30-39	40-49	50-59	60-65	66 and above
1	2	3	4	5	6

2. Gender

Male	Female
1	2

3. What is your highest educational qualification?

Std 7 /Grade 9 or less	Std 8/ Grade 10	Std 9/Grade 11	Std 10/ Grade 12	Diploma	Degree	Postgraduate degree
1	2	3	4	5	6	7

4. How long have you been practicing as a professional nurse?

0-5 years	6-10 years	11-15 years	16-20 years	21-25 years	26-30 years	31-35 years	36-39 years	40-45 years	46 years and above
1	2	3	4	5	6	7	8	9	10

5. What is your current job title?

Comserv PN	PN Grade 1	PN Grade 2	PN Grade 3	Contract PN
1	2	3	4	5

Question	Statement	Yes	No
6	Have you worked in the Child Health department for more than a month?	1	2
7	Are you an agency nurse?	1	2
8	Was nutrition a part of your training at nursing school?	1	2
9	Do you have administrative responsibilities in addition to caring for children in this health facility?	1	2

SECTION B: KNOWLEDGE OF NUTRITIONAL CARE MANAGEMENT OF CHILDREN

For questions 10 to 15, please complete the statement by marking in the appropriate box with a cross “X”. The completed statement should accurately reflect your perception about your background training in child nutrition.

	Very adequate	Adequate	Inadequate	Very inadequate
10. My pre-service training was in preparing me to identify a child with nutrition problem				
11. My pre-service training was in preparing me to plan and implement a nutrition intervention for a child with nutrition problem.				

12. On a scale of 1 to 5, where 1 is least important and 5 is very important, how would you rate the following factors as possible underlying factors in precipitating under-nutrition?

	Not Important	Somewhat Important	Important	Very Important
Lack of adequate sanitation	1	2	3	4
Poor diet	1	2	3	4
Diarrhoea	1	2	3	4
Other childhood diseases	1	2	3	4
Poor growth monitoring	1	2	3	4

13. What will you do if an exclusively breastfed child of 6 weeks is not gaining weight?
(Please put a cross "X" in the most appropriate box)

a.	Give mother enriched porridge to give to the child	
b.	Observe mother breast-feeding, (correct positioning and attachment if necessary) and encourage mother to feed more often.	
c.	Encourage mother to supplement breastfeeding with formula	
d.	Reassure mother and ask her to eat properly in order to produce enough milk.	
e.	Prescribe multivitamin syrup for baby.	

14. Have you heard about the Integrated Management of Childhood Illnesses (IMCI)?

Yes	No
1	2

15. If yes, have you attended a workshop/seminar on the Integrated Management of Childhood Illnesses?

Yes	No
1	2

16. If yes, for how long? weeks

17. Place an **X** in the box indicating **your perception** regarding your health facility's capacity (with respect to staff training and equipment) **to manage childhood illnesses?**

	Very adequate	adequate	Somewhat adequate	Not adequate	Very inadequate
a. Trained IMCI practitioners	1	2	3	4	5
b. Equipment (scales, height measures, etc)	1	2	3	4	5
c. Trained support staff	1	2	3	4	5

18. Place an “X” in the box indicating **your perception** regarding your health facility’s capacity (with respect to staff training and equipment) **to manage under-nourished children.**

	Very adequate	Adequate	Somewhat adequate	Not adequate	Very inadequate
a. Trained practitioners	1	2	3	4	5
b. Equipment	1	2	3	4	5
c. Trained support staff	1	2	3	4	5

SECTION C: ASSESSMENT OF NUTRITIONAL STATUS

19. Choose from the table below, **three** very important indicators that **you currently use** to evaluate a child’s **nutritional status.**

Temperature	1	Palmer pallor	5
Blood pressure	2	Pulse	6
Weight for age	3	Respiration	7
Skin turgor	4	Mid-Upper-Arm circumference	8

20. When children come to the clinic for consultation, do you **always** (without fail) evaluate their:

		Never	Rarely	Sometimes	Frequently	Always
a	Growth and development	1	2	3	4	5
b	Immunisation status	1	2	3	4	5
c	Need for food supplements	1	2	3	4	5
d	Other (specify)	1	2	3	4	5

21. Since you began practicing, how satisfied have you been with your skills in assessing the **nutritional status of children**?

Very satisfied	
Satisfied	
Not satisfied	
Very dissatisfied	

22. Do you **routinely** analyse the nutritional status of the children you see at the clinic?

Yes	No
1	2

SECTION D: NUTRITIONAL INTERVENTIONS

23. What interventions do you recommend if your assessment suggests the child is at risk of becoming malnourished?

a	Ask the caregiver about the child’s appetite and suggest ways to improve it.	Yes	No
b	Enquire about the types of food the child enjoys and suggest ways of adapting them to meet child’s nutritional needs.	Yes	No
c	For the exclusively breastfed child, observe a breastfeed and correct any bad positioning and poor attachment if needed.	Yes	No
d	If the child is breastfeeding, find out how often the child was breastfed in the last 24 hours	Yes	No
e	Give food supplements according to national guidelines when necessary.	Yes	No

24. What nutritional intervention should be provided for children who during consultation are found to be moderately malnourished (below the 3rd centile line in the old road-to-health chart or below the -2 z-score weight-for-age line in new road-to-health booklet)?

.....

.....

.....

.....

25. What nutritional intervention should be provided for children who during consultation are found to be severely malnourished (below the 60% of the 50th centile in the chart or below the -3 z-score line in the new road-to-health booklet)?

.....

.....

.....

SECTION E: MONITORING NUTRITION INTERVENTIONS

26. Where do you record nutritional interventions discussed with the caregiver?

In Road-to-Health Booklet	1
In Primary Health Care Register	2
Do not record; only make sure caregiver understands what to do.	3
In Road-to-Health Booklet and Primary Health Care Register	4

27. According to the IMCI protocol, a child with anaemia (some palmar pallor or haemoglobin level of 6g/dl up to 10g/dl) must be followed up after how many days?

0 days	5 days	7 days	10 days	14 days
1	2	3	4	5

28. In your opinion, which of the following interventions will yield better results for a child older than six months, when followed up over a period of time? (***Please rank from 1 to 5, with 1 being the least and 5 the best.***)

a	Ask caregiver about child's appetite and suggest ways to improve it.	
b	Enquire about the types of food the child enjoys and suggest ways of adapting them to meet child's nutritional needs.	
c	Encourage caregiver to an extra meal	
d	Counsel caregivers to use and familiarise themselves with health promotion messages in the Road-to-health booklet	
e	Give food supplements according to national guidelines when necessary.	

THANK YOU

Annexure F: Observational Checklist

CHECKLIST FOR THE NUTRITIONAL MANAGEMENT PRACTICES OF NURSES IN THE NMBHD FOR CHILDREN UNDER 5						
No	Expected practice	Client 1 (yes/No)	Client 2 (yes/No)	Client 3 (yes/No)	Client 4 (yes/No)	Client 5 (yes/No)
1.	Road-to-Health chart or booklet is used					
2.	All children less than 5 years are weighed and weight plotted in growth chart of the R-t-H booklet or chart					
3.	Weight for age z-score is determined for each child and discussed with caregiver					
4.	Children below -2 Z-score weight-for-age line in new road-to-health or below the 3 rd centile line in the old road-to-health chart are recognised as being malnourished.					
5.	Age-appropriate feeding advice discussed with caregiver					
6.	Age Appropriate Vitamin A supplementation given if due					
8.	Caregivers of children needing food supplements are educated on how to use such supplements					
9.	Malnourished clients are referred to social worker or other community support systems.					
10.	Caregiver is given a follow-up date to monitor interventions agreed upon with care giver.					

Annexure G: Demographic characteristics of the respondents

TABLE DEPICTING CHARACTERISTICS OF THE RESPONDENTS (N = 33)		
DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
GENDER:		
Male	2	6
Female	31	94
AGE (YEARS):		
20-29 years	7	21.2
30-39 years	10	30.3
40-49 years	8	24.2
50-59 years	6	18.2
60-65 years	2	6.1
HIGHEST EDUCATIONAL LEVEL		
Grade 10	1	3.0
Grade 12	2	6.1
Diploma	23	69.7
Degree	6	18.2
Postgraduate	1	3.0
YEARS OF PRACTISING AS PROFESSIONAL NURSE		
0-5 years	12	36.4
6-10 years	6	18.2
11-15 years	7	21.2
16-20 years	2	6.1
21-25 years	3	9.1
31-35 years	1	3.0
36-39 years	1	3.0
40-45 years	1	3.0
CURRENT JOB TITLE		
Comserv PN	3	9.1
PN Grade 1	15	45.5
PN Grade 2	11	33.3
PN Grade 3	3	9.1
Contract PN (Agency Nurse)	1	3.0
PRE-SERVICE NUTRITION TRAINING KNOWLEDGE		
Yes	25	75.8
No	7	21.2
Total	32	97.0
Missing System	1	3.0
PARTICIPANTS WITH ADMINISTRATIVE RESPONSIBILITIES		
Yes	24	72.7
No	8	24.2
Total	32	97.0

Annexure H: Responses for the nutritional Intervention for a child.

TABLE 6.2: NUTRITIONAL INTERVENTION FOR A MODERATELY MALNOURISHED CHILD (N = 33)		
RESPONSE	FREQUENCY	PERCENT
Inquire about feeding methods and frequency of feeds	5	15.2%
Refer to dietician or nutritionist	13	39.4%
Explain the child's growth to the mother using the R-t-H chart	2	6.1%
Admit to the nutrition supplementation programme and provide nutrition supplements	17	51.5%
Counsel mother on giving age-appropriate nutritious food	15	45.5%
Observe a breastfeeding session if less than 6 months old and on exclusive breastfeeding; correct any incorrect positioning and attachment if present	4	12.1%
Assess and classify feeding	6	18.2%
Give age-appropriate vitamin A supplement and deworming	8	24.2%
Review within 2 weeks	12	36.4%
Give multivitamin syrup	6	18.2%
Reassure and encourage the child's mother	1	3.0%
Encourage monthly weighing	4	12.1%
Assess for TB/HIV and other health problems	4	12.1%
Refer to social worker, if needed, after assessing the financial status of the family	4	12.1%
Encourage the cultivation of one's own vegetables	1	3.1%